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WATER RESOURCES STUDY

Metropolitan Spokane Region

APPENDIX C
Water Use

JANUARY 1976

METROPOLITAN SPOKANE REGION
WATER RESOURCES STUDY

LIST OF REPORTS AND APPENDICES

REPORTS

Summary Report

Technical Report

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METROPOLITAN SPOKANE REGION WATER RESOURCES STUDY

APPENDIX C

WATER USE

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Department of the Army
Corps of Engineers, Seattle District

Kennedy-Tudor Consulting Engineers

KT KENNEDY TUDOR

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The summary report was prepared by the Seattle District C\ ps of Engineers. The technical report and appendices were prepared for the Seattle District, Corps of Engineers by Kennedy-Tudor Consulting Engineers.

PREFACE

With the enactment of the Federal Water Pollution Control Act Amendment of 1972 (Public Law 92-500), new national goals have been established for the elimination of pollution discharges into our streams and lakes. This appendix is a part of the report prepared to assist local government in satisfying State and Federal Requirements relating to Public Law 92-500. The suggestions contained in this report are for implementation by local interests with available assistance from other local, State and Federal agencies. The study suggests a regional wastewater management plan for the metropolitan Spokane urban area and provides m. for input to Washington State Department of Ecology Section 303e plans for the Spokane River Basin in Washington State. Also included in the study are planning suggestions for urban runoff and flood control, and the protection of the area's water supply resources.

As listed on the inside front cover, documentation for this study consists of a Summary Report and a Technical Report with supporting Appendices A through J.

The Technical Report summarizes Appendices A through J, which contain 58 individual task section reports prepared during the study. These task sections are listed by title in Attachment I of the Technical Report. Generally, the numbering of appendix task sections reflects the following system:

Study Task Sections	Type of Study Activity
300's	Data Collection
400's	Data Evaluation and Projection
500's	Identification of Unmet Needs
600's	Development of Alternative Plans
700's	Evaluation Comparison and Selection of Plans
800's	Institutional Arrangements

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701.2 - 45

Task section identifier

Identifies page number, numbered consecutively from beginning of task section

APPENDIX C - WATER USE

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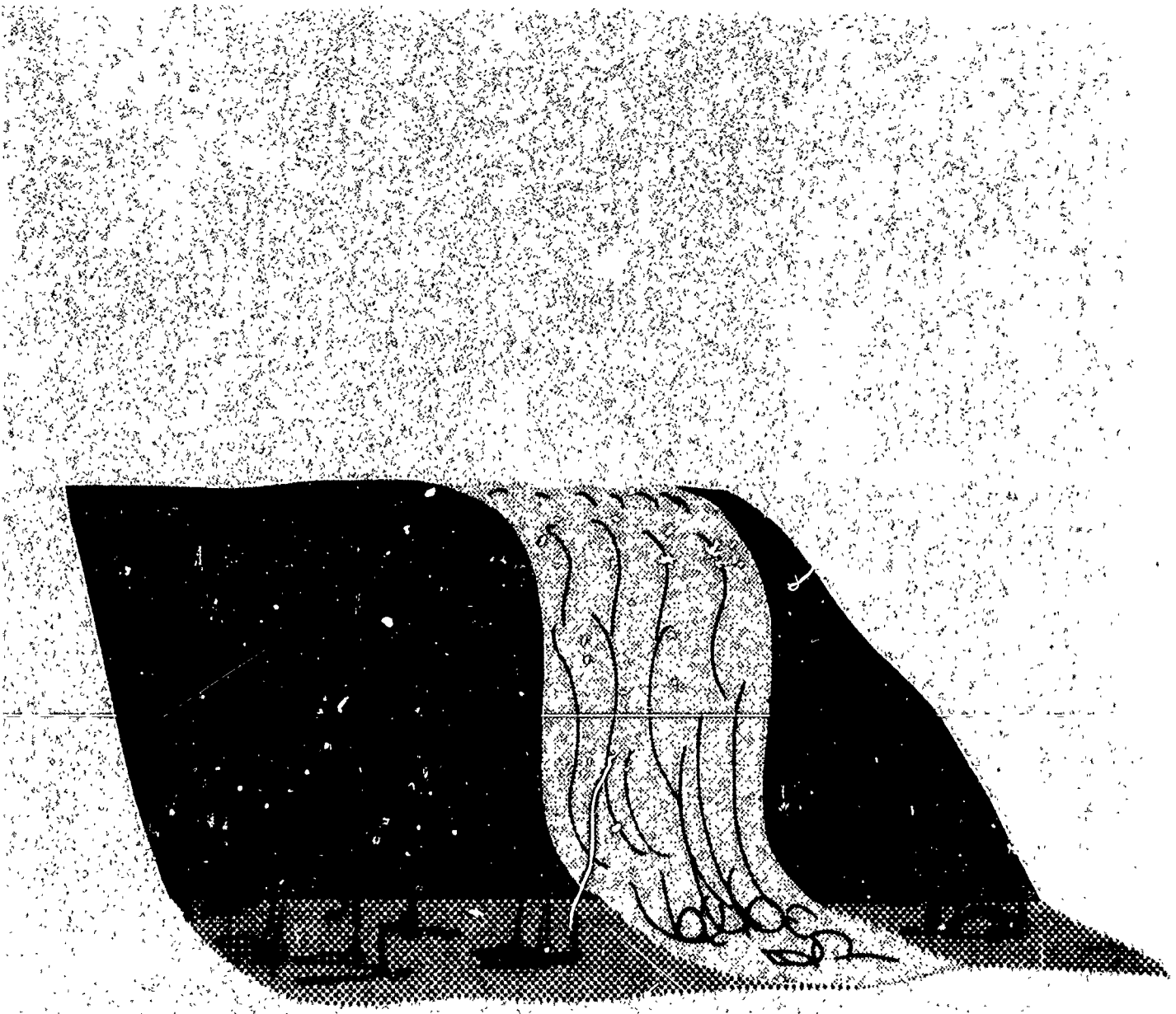


SECTION 313

WATER SOURCES AND WATER UTILIZATION

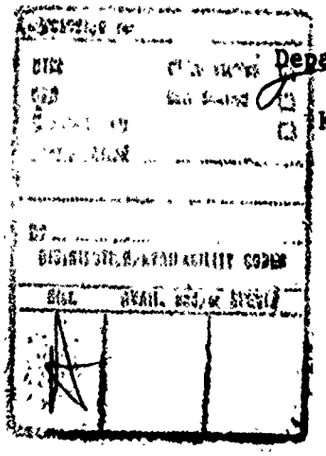
WATER RESOURCES STUDY

METROPOLITAN SPOKANE REGION

SECTION 313

WATER SOURCES AND WATER UTILIZATION

17 April 1974



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Scope and Objectives

The purpose of this section of the report is to complete for the study area the following data gathering objectives:

1. Identification of all agencies that supply water for domestic, industrial, agricultural and other uses.
2. Description of the service area and service facilities of the water service agencies.
3. Identification of major individual water users.
4. Determination of the total use and rates of use of water for all purposes.
5. Determination of the water sources used and the quantity drawn from each.
6. The extent to which water is recycled and the potential for additional recycle.

The data gathering and reporting effort is to cover the entire study area but with greatest detail devoted to the urban planning area. Major emphasis is to be on delineation of service areas, quantities and rates of water use for the most recent period and on the sources of water with lesser emphasis on the existing physical plant for water distribution and utilization.

Overview

Water resource development in the study area is characterized by almost exclusive reliance on groundwater. The uniquely favorable

characteristics of the primary Spokane Valley aquifer has been the magnet that has drawn residential, industrial and irrigated agricultural development to its surface. The boundary of this aquifer generally corresponds to the boundary of intensive development in the study area. Even in areas away from the primary aquifer, the predominant source is groundwater. Out of a total annual use of 158,880 acre feet for the study area, 146,130 acre feet are supplied from groundwater, and, of this groundwater source, 129,330 acre feet are supplied by the primary aquifer.

Throughout this section reference is made to the various groundwater sources in the study area. For a complete description of the groundwater aquifers in the study area refer to the section Geology and Groundwater. The groundwater resources of the study area can be considered in three categories: The primary aquifer of the Spokane Valley, the basalt aquifer of the Columbia Plateau and all other aquifers including those of the Little Spokane River and Chamokane Creek valleys. The primary aquifer is a deep valley fill of glacial outwash gravels supplied by recharged sources outside the study area; the estimated mean annual groundwater flow entering the study area being of the order of 1000 cubic feet per second. The basalt aquifer consists of horizontal layers of fractured rock interlayed with relatively impermeable materials; the mechanism of recharge is not well understood and the rate of recharge is estimated to be small. Aquifers in the Little Spokane and Chamokane valleys are gravel deposits recharged from local streams.

The significant uses of surface water are limited for other than non-consumptive uses such as hydroelectric power generation, maintenance of fishery resources and recreation. There is some use for irrigated agriculture, primarily in the Little Spokane Valley, and the industrial cooling use by Kaiser Trentwood in the amount of 6387 million gallons per year or 19,600 acre feet of Spokane River water. This water is used in a once-through cooling system and returned to the Spokane River immediately downstream from its point of diversion. In effect it is not a consumptive use of water.

Another characteristic of the study area is the large number of water suppliers and users with individual sources. There are 175 purveyors and users with individual supplies, not counting individual dwellings or farms with their own supply. Of this number, 42 are agency purveyors of water and the remainder cover a wide variety ranging from industries and large government owned facilities through developer's systems to parks, motels, mobile home parks and schools.

Considering the agency purveyors, the City of Spokane Department of Utilities is the dominant agency serving approximately 175,000 persons out of a total of approximately 290,000* persons in the study area. Eighteen agencies have service populations ranging from 1,000 to 17,000. There are twenty-three agencies of various sizes including the City of Spokane, which draw from the primary aquifer.

* The total population obtained by adding the reported population served in DSHS reports of agencies in the study area is 309,844, which exceeds the 1970 census population indicated here.

There are only thirty-nine significant industrial water users in the study area, all located in the urban planning area and all, except for the Kaiser Trentwood cooling and process water, supplied from the primary aquifer. Of these thirty-nine, thirty-two are supplied with all or part of their needs from municipal systems, seven provide all their own needs from individual wells and ten supplement their municipal supply with individual wells.

Irrigated agriculture, like residential development and industrial development, is located predominantly on the primary aquifer. The largest concentration is in the valley east of the City of Spokane. A smaller concentration is north of the city. In the eastern part of the valley the agricultural demand is supplied primarily by irrigation districts. In all other areas, the agricultural demand is supplied from private wells. The amount of water and the number of acres irrigated from private wells can only be estimated from Department of Ecology water rights records.

Of the total amount of water used in the study area, the division between classes of use is as follows:

Class of Use	Total Annual Use, Acre Feet
Domestic	96,740
Industrial	24,580
Agricultural irrigation	35,960
Non-Agricultural irrigation	1,600
TOTAL	158,880

In the above table, the industrial component again is stated excluding the Kaiser Trentwood cooling water use.

The domestic component contains a significant irrigation component as is evident from the pattern of annual use which exhibits a heavy peak in summer. The domestic use of water for irrigation in summer appears to be of the same order of magnitude as the total irrigated agriculture use. Per capita domestic use for the City of Spokane is 290 gallons per capita per day (gpcd) annual average with 183 gpcd for the winter months and 430 gpcd for the summer months. These per capita rates also are indicative of the heavy irrigation use associated with the domestic supply.

Domestic Water Systems

Number and Kinds of Systems. There are approximately 175 separate domestic water systems in the study area exclusive of those which serve a single residence. These systems range in size from that of the City of Spokane which serves a population of 175,000, down to systems which serve a motel or campground.

These domestic water systems are operated by a variety of governmental agencies and private enterprises. The owning and operating agencies have been placed in the following ten categories:

1. Municipal
2. Water Districts
3. Irrigation Districts
4. Private Water Companies
5. Water Associations and Cooperatives
6. Private Residential Developments
7. Federal Agencies
8. State and County Agencies
9. Schools
10. Miscellaneous private operations including resorts, campgrounds, motels, trailer and mobile home parks, and golf and country clubs.

The detailed listing of the systems which fill the above categories including the breakdown by service areas and pressure zones is included in Appendix I. In Appendix I each system and zone is given an identifying number. For those cases where it exists, the Department of Social and Health Serivce (DSHS) number is also given.

Table 1 lists the agencies and companies which fill categories 1 through 5 above plus Fairchild Air Force Base from category 7.

These 43 agencies and companies represent the major purveyors of water for domestic use in the study area. A number of these agencies operate more than one service area, that is a single contiguous area, and a number of these service areas are further subdivided into pressure service zones, all as shown in Appendix I.

These 43 agencies and companies represent the overwhelming majority of population served and water used, and as a consequence are the subject of the more detailed discussion and description herein. The remaining 132 purveyors of water, although not inventoried in comparable detail, are important indicators of the proliferation of separate water service facilities. Many of these small separate facilities are made necessary by the remote locations served, as is the case of campgrounds and resorts. Many, however, are in or near larger service entities and are the result of the readily available water supply provided by the primary aquifer of the Spokane Valley. In addition to their large numbers, the almost universal lack of records for these small systems makes detailed description difficult.

Appendix II consists of a summary of information about each major system arranged in order of identifier number as shown in Appendix I. These data are discussed by system category below.

The location and service areas of domestic water systems are shown on Plates 314-1, -2, and -3. Location only is shown for small remote systems. Larger systems and all systems in the Urban Planning Area, Plate 314-3, are delineated to show service area.

Summary data consisting of population served, number of services, average daily demand and source of water supply are shown in Table 2 for individual systems. Summary data by category is shown in Table 3.

Municipal Systems. There are 11 municipal systems in the study area as listed in Table 1. All are in Spokane County except Tekoa, which is in Whitman County. Approximately 62 percent of the study area population is served by municipal systems of which the City of Spokane alone represents 57 percent. All municipal systems except the City of Spokane and Millwood are in isolated communities and are not in the primary aquifer.

Airway Heights K-T No. A 1.01, DSHS No. 00650.

Airway Heights is a suburban residential community located on the Columbia plateau formation approximately 5 miles west of the City of Spokane between Spokane International Airport and Fairchild AFB. The population is 1,197. The entire system is a single pressure zone served from a 317,000 gallon standpipe. The water source is the basalt aquifer

which is tapped by four wells with a total installed pump capacity of 499 gallons per minute.

Cheney K-T No. A 1.02, DSHS No. 12400.

Cheney is located on the Columbia plateau approximately 16 miles southwest of the City of Spokane. Cheney is the site of Eastern Washington State College (EWSC). The present size and potential of Cheney are intimately tied to EWSC since most of the population and commercial enterprise are in support of EWSC, and to a much smaller extent to the surrounding agricultural area.

The Cheney water system serves a permanent population of approximately 6,500. EWSC, which has its own water system that can be interconnected with the Cheney system, has a transient student population of 5,500. Each has the basalt aquifer as its source of water. Cheney has four wells with an installed pump capacity of 2,025 gpm and EWSC has two wells totaling 400 gpm. Although EWSC owns its own distribution piping system and the two wells, the Cheney-EWSC facilities are functionally a single system.

The Cheney system includes two pressure service zones and is provided with four storage tanks with an aggregate capacity of 3,438,000 gallons.

Cheney is one of the cooperating agencies participating in the West Plains Water Study (Black and Veatch Engineers, 1973). The West Plains Water Study was undertaken to find a solution to the chronic water shortage suffered by certain communities drawing their supply from the basalt aquifer.

Deer Park K-T No. A 1.03, DSHS No. 18500.

Deer Park is located approximately 20 miles north of the City of Spokane on a tributary of the Little Spokane River. The population served by the single zone system is 1,350. Sources of supply are four wells with total installed pumping capacity of 890 gpm. System storage is provided by two tanks with a total capacity of 850,000 gallons.

Fairfield K-T No. A 1.04, DSHS No. 24450

Fairfield is located approximately 25 miles south of the City of Spokane in the Hangman Creek watershed on the Columbia plateau formation. Population served by the single zone system is 514. Sources of supply are three wells into the basalt aquifer with a total installed capacity of 585 gpm. System storage is provided by two tanks with a total capacity of 180,000 gallons.

Latah K-T No. A 1.05, DSHS No. 46150

Latah is located approximately 33 miles south of the City of Spokane on Hangman Creek situated in the Columbia plateau formation. There is a single zone serving a population of 169 from a single well, 250 gpm, and a single storage tank, 50,000 gallons. The well is in the basalt aquifer. The town suffered a severe water shortage in the summer of 1973.

Medical Lake K-T No. A 1.06, DSHS No. 53400.

Medical Lake is located approximately 13 miles southwest of the City of Spokane on the Columbia plateau. Medical Lake exists primarily in support of Eastern (Washington) State Hospital (ESH) and is

dependent upon ESH for its water supply and storage facilities. The Medical Lake single zone system serves a population of 1,872 and ESH has a population of 3,580 to 6,500. The ESH system also supplies Lakeland Village.

The Medical Lake-ESH system has 2 wells. One well was deepened following the water shortage suffered by Medical Lake and ESH in the summer of 1973. Both Medical Lake and ESH are participants in the West Plains Water Study (Black and Veatch Engineers, 1973).

Millwood K-T No. A 1.07, DSHS No. 54850.

Millwood is located on the Spokane River one mile east of the City of Spokane limits. The single zone system serves a population of 1,800. Source of supply is the primary aquifer which is tapped by 3 wells with a total installed capacity of 2,500 gpm. Storage is provided by a single 800,000 gallon standpipe.

Millwood is a well built up residential community that anticipates little growth within the service area.

Rockford K-T No. A 1.08, DSHS No. 73550.

Rockford is located on Rock Creek, a tributary of Hangman Creek, approximately 19 miles south of the City of Spokane. A population of 367 is served by the two-zone system. Source of supply is a single well in the basalt aquifer with a pump capacity of 100 gpm. There is a single storage tank of 112,000 gallons. There is a shortage of water water in the summer months.

Spangle K-T No. A 1.09, DSHS No. 82870.

Spangle is located approximately 15 miles south of the City of Spokane on the Columbia plateau formation. The single zone system serves a population of 212 with two wells, with a total capacity of 100 gpm, and one storage tank of 75,000 gallons. Wells are in the basalt aquifer.

City of Spokane K-T No. A 1.10, DSHS No. 83100.

The City of Spokane serves a population of approximately 175,000 with a major complex water facility. In addition to supplying water for domestic use, the City also supplies all or a part of the use of industries located inside its service zone. The City provides a part of the supply for Washington Water Power (WWP) Service Area No's. 1, 3A, and the Whitworth Water District, and all of the supply for WWP Service Area No. 4.

Not all of the City corporate limits are served. Portions not served by any public system are shown in Plate 314-3. Most of this area lies in the northwest part of Spokane, adjacent to Indian Trails Road.

Areas within the City served by other purveyors are shown also in Plate 314-3. Small portions of North Spokane are served by the Whitworth Water District, and the Washington Water Power Co..

Areas outside the City that are served include the Washington Water Power Service Zone No. 4 and some of the Moran Prairie Area. These and other smaller areas are shown on Plate 314-3.

The source of water for the City system is the primary aquifer of the Spokane Valley. A total of seventeen wells tap this aquifer with an aggregate installed pumping capacity of 171,000 gpm from 30

pumps. Much of this capacity is concentrated in the eastern part of the City near Spokane Dam, a City owned hydro-electric generating facility which provides electric power for the well pumps. Other significant concentrations are located at the Hoffman, Grace, and Nevada sites. Refer to Plate 314-10 and discussion of utilization concentration for all users.

The City distribution system is subdivided into 15 pressure service zones and includes 19 storage reservoirs with total storage of 85,615,000 gallons and is served by 15 booster pumping stations. For a detailed description of the City system and facilities refer to Appendix II.

Chlorination is provided for all City areas except Indian Canyon.

Tekoa K-T No. A 1.11, DSHS No. 87300.

Tekoa is located on Hangman Creek in the southern extremity of the study area, approximately 40 miles south of the City of Spokane. The area is on the Columbia plateau formation. The single zone system serves a population of 808 from three wells to the basalt aquifer, total capacity 675 gpm. A single tank of 450,000 gallons provides storage.

Water Districts. There are five water districts in the study area as listed in Table 1. Colbert and Four Lakes are newly organized as water districts but their predecessor agencies had been water purveyors. The Water Districts are scattered geographically with two north of the City, two east and one southwest.

Colbert Water District No. 9. K-T No. A 2.01, DSHS No. (None)

Colbert is located approximately 7 miles north of the north

limits of the City of Spokane in the Little Spokane River Valley. This is a single zone system with one 125 gpm well and one 300,000 gallon storage tank serving a population of 210. This service area is one in which considerable growth might be expected in the near future.

East Spokane Water District No. 1. K-T No. A 2.02, DSHS No. 21650 and 06265.

This system is located within one mile of the City eastern limits and lies partially on the valley floor and partially on the foothills. The two zone system serves a population of 3,200. Source of supply is the primary aquifer from which water is withdrawn by three wells with a total capacity of 1,810 gpm. Two tanks with a total capacity of 1,027,000 gallons provide storage.

The area is already well built up and future growth within the service area is expected to be small.

Four Lakes Water District No. 10. K-T No. A 2.03, DSHS No. 26200.

Four Lakes is located approximately 5 miles southwest of Spokane International Airport. This small single zone system serves a population of 200 from two wells totaling 60 gpm and one 26,000 gallon storage tank. The wells are in the basalt aquifer of the Columbia plateau.

Building restrictions have been imposed due to the shortage of water.

Irvin Water District No. 6. K-T No. A 2.04. DSHS No. 36050.

Irvin Water District is located east of and adjoining Millwood on the Spokane River. A population of 1,650 is served from the single zone system. Water supply is from three wells with a total installed capacity of 2,940 gpm in the primary aquifer. There is one 300,000 gallon storage tank.

Whitworth Water District No. 2. K-T No. A 2.05, DSHS No's. 96600, 96601, 96602, 96603, 96607, 28000.

The Whitworth Water District abuts the North City limits of Spokane and includes an irregularly shaped non contiguous group of areas extending north to the Little Spokane River and beyond. There are five non-contiguous elements which do not correspond with the pressure service zones.

Pressure Zones 1, 2, and 3 are interconnected and Zone 1 is connected to the City of Spokane. Zone 4 abuts Zone 3 but is not interconnected. Zone 8, which includes the former Gleneden system is geographically isolated and not interconnected with any of the other zones. A Washington Water Power Service area separates parts of Zone 1 from each other and separates Zone 1 from Zone 2.

This complex of service zones and areas serves a population of 8,908. Water is supplied from nine wells with a total installed capacity of 8,475 gpm plus a connection to the City. Six tanks provide a total of 3,600,000 gallons of storage.

This district has been experiencing growth at the rate of 6% per year and is expected to have a continuing high rate of growth.

Service	Total pump capacity, gpm
Domestic	18,950
Spray Irrigation	3,000
Ditch Irrigation	12,800
Total	34,750

Note the disproportionate pumping capacity required for irrigation use which is concentrated in a few months as compared with the year around domestic use.

The domestic system serves a population of 11,000. Two tanks with a total capacity of 5,000,000 gallons provide storage.

Consolidated I.D. No. 19. K-T No. A 3.02, DSHS No's. 10220, 10223, 10228, 10232, 10236, 10240.

The Consolidated I.D. consists of seven geographic service areas strung through the Spokane Valley from the vicinity of Trentwood to the State line. Only one area is contiguous to another. Consolidated was organized from the U. S. Bureau of Reclamation Spokane Valley Project. Only 38 percent of the current annual deliveries are for domestic use. The remaining 62 percent are used for agricultural irrigation of approximately 2600 acres of land.

There is only a single system in each pressure zone for both domestic and irrigation use. There are six pressure zones, which combine certain of the geographic units, with characteristics as follows:

and derive their water supply from wells to the primary aquifer. All have a single pressure service zone.

The summary characteristics of these six similar systems are as follows:

	Population	Wells		Storage Tanks		
District	Served	Number	Total Cap. gpm	Number	Total Cap. Gallons	Remarks
Carnhope	1400	1	1700	none	none	(1)
Hutchinson	2100	2	5100	1	75,000	
Model	4075	4	5625	1	250,000	
Orchard	3500	2	8000	none	none	
Pasadena	2000	3	5000	1	300,000	(2)
Trentwood	3400	5	9700	1	1,000,000	

(1) Carnhope has 50 to 150 acres of irrigated agriculture. An emergency connection is provided to WWP service Area 1.

(2) Pasadena is well built up and little further expansion is the service area is expected.

Vera I.D. No. 15. K-T No. A 3.10, DSHS No. 91450.

Vera I.D. is located 7 miles east of the Spokane City Limits on the south side of the valley. Agricultural irrigation accounts for 25 percent of the annual water use. There are three separate service systems; domestic, spray irrigation and ditch irrigation. There is a single pressure zone in the domestic system.

The system has seven wells. Certain well pumps are assigned to each of the three services. The total installed well pump capacity for each service is as follows:

Service	Total pump capacity, gpm
Domestic	18,950
Spray Irrigation	3,000
Ditch Irrigation	12,800
Total	34,750

Note the disproportionate pumping capacity required for irrigation use which is concentrated in a few months as compared with the year around domestic use.

The domestic system serves a population of 11,000. Two tanks with a total capacity of 5,000,000 gallons provide storage.

Consolidated I.D. No. 19. K-T No. A 3.02, DSHS No's. 10220, 10223, 10228, 10232, 10236, 10240.

The Consolidated I.D. consists of seven geographic service areas strung through the Spokane Valley from the vicinity of Trentwood to the State line. Only one area is contiguous to another. Consolidated was organized from the U. S. Bureau of Reclamation Spokane Valley Project. Only 38 percent of the current annual deliveries are for domestic use. The remaining 62 percent are used for agricultural irrigation of approximately 2600 acres of land.

There is only a single system in each pressure zone for both domestic and irrigation use. There are six pressure zones, which combine certain of the geographic units, with characteristics as follows:

Zone Name	Population	Wells		Tanks	
		Number	Total Cap. GPM	Number	Total Cap. Gallons
Carder	210	3	4,590	1	50,000
Corbin	2500	6	13,560	2	100,000
East Farms	660	9	19,720	3	150,000
Greenacres	320	4	10,260	1	50,000
Otis Orchards	1000	9	18,920	3	150,000
West Farms	850	3	5,580	1	50,000
Totals	5540	34	72,630	11	550,000

The service population above is not in agreement with the total of 6500 shown on reports to the Bureau of Reclamation.

Moab I.D. No. 20. K-T No. A 3.04. DSHS No. 55440.

The service areas of the Moab I.D. are located in the side valley leading to Newman Lake. Approximately 27% of the total production is estimated to be for domestic use. A population of 167 is served by the single zone system which has three wells at one site, with a total pump capacity of 4000 gpm, and one storage tank of 33,000 gallons.

North Spokane I.D. No. 8. K-T No. A 3.06, DSHS No. 61300.

This is the only irrigation district that is not in the valley east of the City. The North Spokane I.D. abuts the northeast corner of the City and is on the east side of the Hillyard trough. Little agriculture remains in the area. The water use is predominantly domestic.

A population of 1900 is served by the single zone system. Supply is from four wells drilled in the Hillyard trough portion of the

primary aquifer. Total pump capacity is 4500 gpm. There is one 100,000 gallon storage tank.

Private Water Companies. This category should be more formally classified as stock holder owned or private enterprise owned to make the distinction from those which are owned by a government agency or by the customers themselves as is the case for mutuals or cooperatives.

There are eleven companies in this category ranging in size from a service population of 16 to over 17,000. Two companies, Modern Electric Water Co. and Washington Water Power, dominate this category with service populations of over 14,000 and 17,000 respectively. Of the remaining nine, six have service populations of less than 100 and three have service populations of less than 1,000. The two major companies are discussed individually and the smaller companies are discussed as a group.

Modern Electric Water Co. K-T No. A 4.05, DSHS 55600.

The service area of Modern Electric covers an area in the heart of the Spokane Valley beginning less than two miles east of the City of Spokane boundary and including a large part of the communities of Dishman and Opportunity. The service area covers what was the site of the initial irrigated agriculture in the valley and the company was originally organized to provide irrigation water.

Modern Electric is stockholder owned but the stock distribution and ownerwhip are tied to the land ownership within the service area. Therefore it has aspects of a mutual or cooperative although

organized as a stock company. The company is also engaged in electrical power distribution (purchased wholesale from Bonneville Power Administration) within the same area as its water distribution.

A population of 14,588 is served by this system with two pressure zones. Less than 2 percent of revenues now come from irrigation service. The area has become predominantly residential, but with a large home lawn and landscape irrigation component.

The source of water is the primary aquifer which is tapped by nine wells with an aggregate pump capacity of 29,720 gpm. Storage is provided by three tanks with a total capacity of 700,000 gallons.

Washington Water Power Company

Washington Water Power Company (WWP) is the regions primary generator and distributor of electrical power, WWP is also the largest stockholder owned water purveyor when the aggregate population served in ten separate service areas is considered. These ten service areas are widely scattered and highly variable in size and service population. The location of these ten service areas are as follows:

WWP No.	K-T No.	DSHS No.	Name - Location	
1	4.09	93350	West Spokane Valley	Abuts East City boundary
2	4.10	93351	South Spokane Valley	Four separate areas south of Opportunity
3A	4.11	93353	North Spokane	Abuts North City boundary
3B	4.12	93354	Mead	Mead and N. W. of Mead
3BP	4.13	93355	Pine River	North of Mead

3C	4.14	93356	Riverview Hills	North of Colbert
3D	4.15	93357	Chattaroy Hills	West of Little Spokane River at Chattaroy
4	4.16	93358	South Spokane	Abuts South City boundary
6	4.17	93360	Waterview Terrace	On Long Lake
21	4.62	13450	Clayton	4 miles N.W. of Deer Park

In In addition WWP operates 3 small systems serving its own power generation facilities, one each at Nine Mile Dam, Long Lake Dam and Little Falls Dam.

All of the 10 public service systems are served from groundwater sources except WWP No. 21 at Clayton which is served from Beaver Creek. The characteristics of the 10 systems are summarized as follows:

WWP			Wells		Storage Tanks		
No.	Name	Population Served	No.	Total Cap. GPM	No.	Total Cap. Gallons	Number of Pressure Zones
1	West S.V.	3872	6	2180	1	1,000,000	3
2	South S.V.	4737	5	7200	3	1,088,000	4
3A	N. Spokane	3824	2	2000	1	608,000	2
3B	Mead	1205	5	2540	1	3,000	3
3BP	Pine River	475	2	420	1	55,000	1
3C	Riverview H.	223	2	184	1	50,000	2
3D	Chattaroy H.	213	1	425	1	46,750	2
4	S. Spokane	511	Note (1)			None	1
6	Waterview	9	1	275	1	3,000	1
21	Clayton	207	Note (2)		1	3,000	1

Note (1). The South Spokane system obtains all of its water from the City of Spokane system.

Note (2). Two pumps of 100 gpm each are used to draw water from Beaver Creek.

Other private water companies

The three next largest private water companies after Modern Electric and WWP are Dishman, K-T No. A 4.01, DSHS No. 19450, Greenacres, K-T No. A 4.02, DSHS No. 29650 and Liberty Lake Utilities Co., K-T No. A 4.03, DSHS No. 47150. Dishman serves a foothill area on the south side of the Spokane Valley within a mile of the east City of Spokane boundary. Its customers are largely commercial. Greenacres is unusual in that its service area is intermingled with a portion of the Consolidated Irrigation District (CID) service area. The Greenacres system serves domestic customers who do not have the need for the irrigation waters available from CID and do not want to pay the initial connection charge to join CID. Both Dishman and Greenacres draw their supply from the primary aquifer.

Liberty Lake Utilities serves the residential development around the northwest side of Liberty Lake. This service area has experienced rapid growth which is expected to continue. Liberty Lake Utilities (LLU) draws its supply from the aquifer in the side valley which joins Liberty Lake to the main part of the Spoknne Valley. This side aquifer is not part of the primary aquifer. The wells of LLU are apparently more advantageously located than that of the adjoining Liberty Lake Improvement Club which has had to seek supplementary supply from LLU.

The remaining six private water systems all with a service population of less than 100 are widely scattered, serving isolated communities except Rivilla and Pleasant Prairie which are on the fringes of suburbia. The location of these water systems are as follows:

K-T No.	DSHS No.	System Name	Location
A 4.61	45120	Lakeridge Water Co.	Overlooking Long Lake
A 4.04	None	Milan Water Co.	On the Little Spokane River
A 4.06	60780	North Mountain View Water Co.	West side of Little Spokane River opposite Colbert
A 4.07	67880	Pleasant Prairie Water Co.	Foothills N. W. of Trentwood
A 4.08	73050	Rivilla Water Corp.	Near Dartford on Little Spokane River
A 4.19	95450	West Shore Water Co.	Overlooking Long Lake

All of these water companies have groundwater as their source. Those adjacent to Long Lake draw from the aquifer which follows the Spokane Valley. Those in the watershed of the Little Spokane draw from that valley's groundwater body. Pleasant Prairie draws from a well on the primary aquifer south of the service zone itself which has an extremely limited groundwater potential. All have a single pressure service zone.

The characteristics of the nine private companies discussed above are summarized as follows:

System Name	Population Served	Wells		Storage Tanks	
		No.	Total Cap. GPM	No.	Total Cap. Gallons
Dishman	500	1	500	1	70,000
Greenacres	790	1	500		None
Lakeridge	65	1	325	1	2,000
Liberty Lake	900	2	4880	1	95,000
Milan	30-70	2	Unknown	1	10,000
N. Mountain View	16	1	20	1	Unknown
Pleasant Prairie	34	1	100	1	16,000
Rivilla	97	1	50	1	14,000
West Shore	18	1	350	1	34,500

Water Associations and Cooperatives.* Of the seven systems in this category, six serve populations of 100 and less. Only the Liberty Lake Improvement Club system is of significant size with a service population of 300. All except Glenrose, K-T A 5.04, DSHS 28135 and Liberty Lake Improvement Club, K-T No. A 5.05, DSHS 47145 are at isolated locations. Glenrose is near the southeast corner of the City of Spokane.

Four of the seven are in the Columbia plateau areas and draw their supplies from the basalt aquifer. These are located as follows:

Name	K-T No.	DSHS No.	Location
Palmers Garden	A 5.01	04179	Approx. 4 Miles W. of Spokane
Cedar Knolls	A 5.02	11935	Approx. 2 Miles S. of Spokane
Marshall	A 5.06	51845	Approx. 4 Miles S.W. of Spokane
Waverly Hts.	A 5.07	93820	Approx. 2 Miles S.W. of Fairfield

*See note on page 25.

Elk, K-T A 5.03, DSHS 22915, is the only one of this category north of Spokane, located in the northern part of the Little Spokane River Valley.

All systems in the category rely on groundwater sources. The characteristics of the systems are summarized as follows:

Name	Population Served	Wells		Storage Tanks		Pressure Zones
		No.	Total Cap. GPM	No.	Total Cap. Gallons	
* Balmers Garden	30	2	40	1	750	1
* Cedar Knolls	7	1	30	1	1,000	1
Elk	20	1	35	3	550	1
* Glenrose	27	1	20	1	13,000	1
Liberty Lake Imp.	300	2	600	1	20,000	1
* Marshall	74	1	60	1	15,000	2
Waverly Heights	9	1	45	1	770	1

Fairchild Air Force Base K-T No. B 1.01 DSHS 24350.

Fairchild AFB, located approximately 8 miles west of the City of Spokane on the Columbia plateau, is the third largest water system in the study area considering population served in a single contiguous area, being exceeded only by the City of Spokane and Modern Electric Water Co. The Fairchild AFB service population is approximately 6,000 persons (given as 15,000 on DSHS forms).

This system, although eight miles from the nearest point on the primary aquifer, takes the larger part of its supply from there. Three wells with total pump capacity 4900 gpm are located in the primary aquifer near the Spokane River. A single well with 800 gpm pumping capacity is located in the basalt aquifer approximately 2 miles

* Associations that may be developer owned rather than customer owned.

south of the AFB.

The three wells at the Spokane River discharge into an 800,000 gallon storage tank from which booster pumps draw to pump through the transmission main to the base where terminal in-system storage of two 500,000 gallon tanks is provided. The nearby well pumps directly into the distribution system where pressure is maintained by four elevated tanks of a total capacity of 725,000 gallons.

Water Use and Sources. The average daily demand on an annual basis is summarized for individual systems in Table 2, along with service population, number of services and an indication of the water source by aquifer and number of wells. Table 3 aggregates average daily water use, population and number of services by system categories and expands the use data to include peak day demand, maximum 7-day demand, total annual use and average annual per capita use. These later data are summarized from the corresponding items listed for each individual system as shown in Appendix II.

The basic source for these use, population and service data is the annual reports made by each organization to the State Department of Social and Health Services (DSHS). In addition, supplemental data were obtained directly from four of the largest water purveyors; City of Spokane, Washington Water Power, Consolidated Irrigation District and Vera Irrigation District. Other organizations were contacted but these four agencies have the accounting and record keeping capability to add significantly to the data normally reported to DSHS.

Note that the population data in Tables 2 and 3 are the populations reported by each agency in their report to DSHS. The total in Table 3 of 309,844 does not agree with the population of the study area developed from 1970 census data which gives a value of approximately 290,000. This represents an overall overstatement of population by 7 percent which exceeds the forecast population growth from 1970 to 1973 of less than 2 percent. This apparent net overstatement of 5 percent is not regarded as an indication of invalid data for comparative purposes but it should be given recognition in derivation and selection of per capita use for forecasting purposes.

The use figures reported in Tables 2 and 3 for irrigation districts have been adjusted to delete known agricultural irrigation use and to tabulate only the net domestic use. No attempt has been made to correct all categories of domestic systems for the lawn landscape, garden and pasture irrigation widely practiced by "domestic" customers. This aspect of domestic irrigation use is discussed further below.

The use figures reported in Tables 2 and 3 are corrected to delete major industrial users for whom data were obtainable. Minor industrial use and commercial use is included in domestic use totals.

The total domestic use in the study area is dominated by the municipal agencies which account for 62 percent of the total use. The City of Spokane in turn accounts for 95 percent of the municipal category use or 59 percent of the study area use. Therefore, the study area totals and characteristics are largely dependent upon the City of Spokane. The next largest organization categories are the irrigation districts with 24 percent of the study area use and the private water

companies with 7.3 percent. Note that the population served by the irrigation districts and private water companies are almost equal, being approximately 36,000 and 32,000 respectively. There is, however, a significant difference in per capita water use which results in the use by irrigation districts being almost three times that of private companies.

The population and water use by the various categories of domestic water agencies are compared graphically in Figure C.

Table 3 indicates that the average daily demand on an annual basis for domestic use is 86 million gallons per day or 133 cubic feet per second for the entire study area. Using the service population figures shown in Tables 2 and 3, this indicates a study area-wide annual average use of 279 gallons per capita per day. As indicated above, this figure is dominated by the effect of the City of Spokane and is not necessarily representative of other agencies or locations. The effect of location on study area water use is demonstrated below in discussion of water sources. The component of this per capita use represented by landscape irrigation and other domestic user irrigation is discussed under pattern of use.

The peak day demand and maximum 7 day rate of use on a study area-wide basis are shown in Table 3 to be 3.06 and 2.51 times the annual average respectively. These figures probably are not representative of the true values which would be obtained for the study area as a whole. The totals shown in Table 3 represent the sum of individual system peaks and therefore do not exhibit the diversity which would be realized for the study area as a whole. Since such a large proportion

of the study area is represented by a single system, the true peak to average for the study area can be estimated as being between the factors for the City of Spokane and the sum of individual peaks in Table 3.

Detailed characertistics of domestic water use by the five largest agencies are shown in Table 4. Of these five agencies, three, City of Spokane, Vera and Modern, represent single systems and two, Consolidated and Washington Water Power, represent aggregations of a number of non-interconnected systems.

For the City of Spokane, the peak day to annual average ratio is 2.8 to 1 and the 7 day peak to annual average ratio is 1.6 to 1. For Vera and Modern the corresponding ratios are significantly higher, as shown below, as would be expected for smaller service populations.

Agency	Peak Day to Annual Average	7 Day Peak to Annual Average
City of Spokane	2.8	1.6
Vera	2.8	2.3
Modern	9.6	7.9

The extremely high ratios for Modern cannot be explained entirely on the basis of service population. The proportion of the use represented by domestic user irrigation is the dominant factor in this case.

The pattern of monthly domestic water use is available from three agencies representing 70 percent of the total domestic use: City of Spokane, Vera Irrigation District and Washington Water Power. These data as use in millions of gallons and as percent of annual use

are shown in Table 5. The agricultural irrigation season in the study area extends from April to October. If the use from November through March is taken as representative of domestic use not influenced by domestic irrigation, an estimate can be made of the domestic and domestic irrigation components in these three agencies. The results of this computation are also shown on Table 5. As would be expected, the City of Spokane, which is more densly populated and characterized by smaller lots, shows the largest percent of domestic use component at 63 percent and the smallest domestic irrigation component at 37 percent. The per capita use for the domestic component alone is 183 gpcd* compared with 290 gpcd based on total use. The 183 gpcd is in excess of the approximately 165 gpcd found for dry weather sanitary sewage flow to the City of Spokane sewage treatment plant.

The indicated domestic component of use from the Vera I.D. and Washington Water Power, which serve areas in the suburbs with large lots, is 29 percent or less of the total use leaving 71 percent or more to be accounted for by domestic irrigation.

The records of Consolidated Irrigation District (CID) do not yield directly separate quantities for domestic and agricultural use. In CID's report to the Bureau of Reclamation, purely domestic use is reported as the 12-month equivalent of the average rate of use during 5 months, November through March, equal to 2000 acre feet for 1972. To this is added the amount 2500 acre feet as the estimated use for domestic irrigation giving a total domestic customer use of 4500 acre feet. This estimate

* gallons per capita per day.

of total domestic customer use is subtracted from total water deliveries to arrive at the estimated agricultural water use, 15,250 acre feet. This indicates a total use of 19,750 acre feet.

Analysis of Vera I.D.'s water use pattern indicates that CID's method of estimation results in an understatement of domestic irrigation use and an overstatement of agricultural irrigation use. Also, the pumping records report a total delivery of 21,521 acre feet for 1972. A synthesis of CID's total domestic use based on the assumption that it is similar in annual use pattern to Vera's and that total use is equal to pump deliveries results in revised figures as follows:

	mg/Year	Acre feet/Year
CID domestic use	2,643	8,112
CID agricultural irrigation	4,369	13,409
Total CID Delivery, 1972	7,012	21,521

The per capita water use by individual systems is shown in Table 2 along with an indication of the source of supply for the system. The per capita rates for individual systems show a high degree of variation. In general it can be said that suburban areas supplied from the primary aquifer have the highest rates of use. This appears to be the result of the combination of large lots on which irrigation can be applied with an abundant supply at low cost. In general the communities taking their supply from the basalt aquifer show lower per capita use reflecting the less abundant water supply. Even in the basalt area, however, there is a significant domestic irrigation use.

With a single exception, the Clayton system of WWP, all domestic water systems are supplied from groundwater sources. Only 4.1 million gallons per year are supplied from surface water to Clayton compared with 31,519 million gallons from groundwater to the remainder of the study area. Of the groundwater sources, the primary Spokane Valley aquifer predominates, supplying 29,271 million gallons annually, or 93 percent of all groundwater supplies. Approximately 2,018 million gallons per year, 6.4 percent, are drawn from the basalt aquifer and 230 million gallons per year, 0.7 percent, are drawn from aquifers in the Little Spokane River Valley.

The number of wells and their installed pumping capacity by agency categories is shown in Table 6 along with an indication of the extent of treatment of supplies, if any. These data are summarized from data for individual systems shown in Appendix II. In general, treatment if any, is limited to chlorination and flouridation. The number of wells with chlorination as recorded in Table 6 does not reflect the limited extent of this practice when agencies are considered. The City of Spokane accounts for all but four of the wells with chlorination in the municipal category and Washington Water Power accounts for all of the chlorinated wells in the private systems category.

The one system with surface supply, WWP Clayton, has both filtration and chlorination.

The location of the domestic systems sources is shown on Plates 314-8,9 and 10 and are identified in Appendix III.

Industrial Water Use

Identification of Industries. All of the major industries in the study area are located in or near the City of Spokane. The water supplies for these industries are derived from two principal sources, the domestic water system of the area in which they are located or a private system belonging to the industry, or to a combination of both.

Thirty-nine major industries with significant water use are identified and listed in Table 7 along with their sources of water supply and average and peak monthly water consumption. The location of thirty of the largest are shown on Plate 314-4. Other industrial users not here listed have their water use included in the overall domestic water use of the area in which they are located. These other industries have not been identified as having any significant process water use. Major hospitals are not included herein as an industry; their use being left in the overall domestic use.

Detailed data obtained for individual industries is included in Appendix IV. The thirty-nine identified industries range in diversity from major heavy industry such as the Kaiser Aluminum facility and Inland Empire Paper to laundries and food processing. The most significant industrial water users are as follows, each with an average use of over 100,000 gallons per work day or 2 million gallons per month:

Name	Type
Bonanza Meat Packing	Meat Packing
Burlington Northern	Railroad Yards and Shops
Centennial Mills	Gluten and Starch
Central Heating, WWP	Steam District Heating
Central Premix	Sand and Gravel
Crescent	Department Store
Darigold	Dairy
Hillyard Processing	Aluminum Products
Hygrade Foods	Meat Packing
Inland Empire Paper	Paper Mill
Kaiser (Mead)	Aluminum Products
Kaiser (So. Mead)	Coke Production
Kaiser (Trentwood)	Aluminum Fabrication
Nalleys	Potato Chips
Seven-Up Bottling	Soft Drinks
Spokane Industrial Park	General Industry
Spokane Rendering	Rendering Plant
Spokesman-Review	Newspaper Printing
Union Pacific	Railroad Yards and Shops

These in turn are dominated by three industries which use over 100 million gallons per month each, namely Inland Empire Paper and two Kaiser plants. These three plants account for approximately 66 percent of the total industrial use excluding the Kaiser Trentwood cooling water supply.

Kaiser Trentwood Cooling Water Supply. The Kaiser Trentwood cooling water supply deserves special mention from the outset since it is so large and is of unique character compared with other industrial use. For this reason it has been treated as a special category herein and, in general is not included with other industrial use in the tables and analyses which follow. The characteristics which make the Kaiser Trentwood cooling supply unique are: (1) it is drawn from the Spokane River whereas all other industrial supplies are taken from groundwater; (2) it is returned after use directly to the Spokane River immediately

downstream from its point of withdrawal. The volume of this cooling water flow is 532 million gallons per month or about 80 percent of all other industrial use combined.

Industrial Water Use and Sources.* Table 7 indicates the source of each industrial supply. The total monthly use is 668 million gallons or 8,016 million gallons per year. This is equal to approximately 25 percent of the total domestic water use of the study area. Of this 668 million gallon per month total, 285 million gallons or 43 percent are from municipal systems and 383 million gallons or 57 percent are from private industrial sources. All of the supply, both municipal and private industrial are from groundwater drawn from the primary Spokane Valley aquifer.

Table 8 lists the industries with private supplies, the number of wells, pump capacity and annual use. The locations of these withdrawals is shown on Plate 314-10 with identifiers in Appendix V.

Recycle and Recycle Potential. Major industrial water users were canvassed for their present practice in recycling water and for recycle potential. Prior to discussing the results of this survey it is necessary to define what is meant by recycling.

Theoretically any water could be reused for some purpose if sufficiently treated to make its quality acceptable for the succeeding use. The only water uses not theoretically subject to recycling are those uses that actually consume the water by incorporating it into a product or

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* Throughout this paragraph the discussion excludes Kaiser Trentwood cooling water supply.

converting the water to vapor which escapes.

Both the character of the wastewater and the succeeding use to which it is to be put determine the degree of treatment required and hence the economic practicality of recycling. The problem of location must also be considered. There may be a use whose quality requirements make it possible to accept a certain kind of waste flow with little or no treatment, but unless that use is near the water source it may be uneconomical to recycle.

The objectives of the industrial survey regarding recycling and recycle potential are to:

1. Determine to what extent water is presently being used more than once either by -

    a) Using the untreated waste from one process recirculated -

        (1) through the same process
        (2) through another process

    b) Using treated waste from one process recirculated -

        (1) through the same process
        (2) through another process

2. Determine to what extent waste waters are being produced that are substantially of a quality that could be re-used with little or no treatment or with a simple type of treatment.

3. Determine what processes could use water of less than optimum quality that might be available as an untreated or economically treated waste.

Table 10 summarizes the information from 29 industries. Three categories of information are reported corresponding to the above cited

objectives. The available data on kind of wastes being produced that are amenable to recycling indicates that cooling water and boiler blowdown are sufficiently common to warrant specific headings.

In general each industry is a special case that requires qualifying statements and makes the summarizing of the results for all industries, for an overall picture, potentially misleading. Excluding the Kaiser Trentwood cooling water use, which as previously indicated is functionally a non-consumptive use, the following summary statements can be made based on Table 10.

1. At present, industrial recycling is negligible in quantity except for the Inland Empire Paper Company recirculation of process water which is motivated by product recovery. In general, water is so available and inexpensive that there is little if any economic incentive for recycling.

2. There is a significant use of water for cooling which produces a waste that is substantially unmodified chemically and pollutionally except for temperature increase. These waters should not be regarded without qualification to be free of pollution since there is always pollution potential from leaks in the heat exchanger equipment. Hence, its consideration for reuse should be qualified by that limitation. For example, it could not be used as wash water for a food product. The total use of "once through" cooling water is approximately 6.3 mgd average.

3. There are waste flows other than cooling water with quality characteristics that have potential for reuse but the total quantity is insignificant on a study area-wide basis. The potential of these other flows is substantially limited to "in-house" recycling. The total of these flows is less than 1.5 mgd.

4. The industrial uses which could use reclaimed water in significant quantities are limited to three industries with an aggregate demand of 1.5 mgd. Cooling water is not listed as potentially reusable in this sense.

At present most industrial waste waters are disposed of by either the City of Spokane sewage collection system or to a private

disposal system. Once mixed with sanitary sewage the recovery and recycle problem becomes part of the larger problem for the areas sanitary sewage. The loss in potential reuse is significant for unpolluted cooling waters. There are two major exceptions to sewer disposal: Central Premix returns waste wash water to the surface gravel pit, from which it presumably percolates to groundwater, and The Kaiser Trentwood cooling water returns to the Spokane River.

Agricultural Irrigation

Sources of Data and Identification of Irrigated Areas. Four sources of data are evaluated and interpreted to form the basis for the estimation of irrigated agricultural acreage and water use. None of the sources or combinations of sources provide sufficient data to remove the conclusions reached from the qualification of "estimate."

The four sources evaluated are:

(1) U. S. Department of Commerce Bureau of the Census: 1969 Census of Agriculture.*

(2) U. S. Department of Agriculture, Soil Conservation Service. Washington Soil and Water Conservation Needs Inventory, 1970.

(3) Department of Ecology: Water Rights Files.

(4) Records of Irrigation Districts supplemented by interviews with District management.

The 1969 Census of Agriculture is a compilation based on responses to questionnaires mailed to all known farmers. The data so

*This is the most recent census of agriculture. The next census is scheduled to be made in the winter of 1974.

obtained is compiled by counties as the smallest unit. This source provides a total figure for irrigated agriculture by county and a total water use for irrigation. These data are shown in Table 10 together with the calculated average rate of use.

Table 10 also shows total cropland and irrigated agricultural land by counties from the second source, the Soil Conservation Service publication Washington Soil and Water Conservation Needs Inventory. This source, although published in 1970, indicates that the data are for the year 1967. Note that the total cropland data from this second source are all in substantial agreement with first source (less than 5% difference) but the data given for irrigated land are in substantial agreement only for Lincoln, Spokane, and Stevens counties. The value for Pend Oreille county is 15 percent higher and that for Whitman county is 46 percent lower.

The more recent and more detailed data from the 1969 Census of Agriculture are selected as the more representative source. This source provides the additional detail by type of agricultural use shown in Table 11. Table 11 indicates that there are significant differences between the kinds of agriculture practiced in the five counties and in the type of agriculture in which irrigation is used. The two northern counties, Pend Oreille and Stevens, which are more mountainous and forested, are predominantly devoted to pasture and hay or silage, both in support of livestock. Lincoln and Whitman counties which are almost entirely in the Columbia plateau region are predominantly dry farmed areas, and the small portion of irrigated lands are in small grains and

field crops. Spokane county has the most diversified irrigated agriculture with 10.3 percent in pasture, 17.8 percent in small grains, 31.5 percent in hay or silage, 25.2 percent in field seeds, and 7.0 percent in vegetables. The extend of field seed and vegetables uses in Spokane county are unique in the study area.

The significance of the irrigated land in each county as a whole to that of the study area may be estimated from the following which shows the percent of the total of each county that lies in the study area.

County	Percent of total county area lying in the study area
Lincoln	8.6
Pend Oreille	13.3
Spokane	78.2
Stevens	21.1
Whitman	1.1

Rather than allocate on the basis of ratios of the gross areas as indicated above, a more refined method of allocation is developed from the third data source.

The third data source is the State Department of Ecology (DOE) Recorded Water Rights which is available as a computer print-out grouped by Water Resource Inventory Areas.

The DOE Water Rights inventory is a compilation of water rights applications made by individuals in which each reports the quantity of ground and surface water claimed for beneficial use for domestic and agricultural irrigation purposes. The data is reported by location to section within the township-range grid system. This source provides both expected water use quantity and areas expected to be irrigated in

adequate location detail. The drawback of this source is that it reports wishes and expectations rather than what is actually happening. This source requires testing against a yardstick of reality. The 1969 Census of Agriculture data for Spokane County provides one such yardstick. The records of the irrigation districts operating in Spokane county provide another.

The water quantity data contained in the Recorded Water Rights is evaluated as being unreliable since most is based on estimated application rates per acre, in many cases as suggested by the Water Rights application form itself. No use has been made of these data herein. Only the estimated irrigated areas are utilized.

Table 12 summarizes the irrigated acreages given in the Recorded Water Rights. The study area total for Spokane county is found to be 43,990 acres. Of this total, 18,608 acres are claimed by irrigation districts. These same districts presently estimate that they are serving irrigation water to 5,100 acres. A comparison of the Recorded Water Rights and the actual present irrigated lands is shown in Table 13 for the irrigation districts involved. The data from Table 12 for Spokane county is combined with the irrigation district data of Table 13 into Table 14 to arrive at a revised total of irrigated land claims after deletion of the presently unexercised claims of irrigation districts. This results in an area of 25,382 acres claimed in Water Rights for irrigation by other than irrigation districts in Spokane county.

It is assumed that a negligible portion of the 17,371 irrigated acres reported by the 1969 Census of Agriculture for Spokane county is outside the study area. The location and character of the area

support this assumption since the southwest corner of the county is in the Columbia plateau region south of Medical Lake. Of this 17,371 acres, 5,100 are accounted for by irrigation districts leaving 12,271 acres for irrigation by individuals. If this figure is compared with the net Water Rights totals for individuals of 25,382 acres, the ratio is found to be 2.068 to one.

This factor rounded to 2.00, derived for Spokane county, relating irrigated acreage claimed in water rights to actual irrigated acreage is selected as applicable for estimation of actual irrigated acreages in adjoining counties. Table 15 shows this calculation. The values for Spokane county in Table 15 are developed by subtracting out the irrigation district claims, adjusting the remainder by the factor 2.068 and adding back the actual irrigation district areas. For reasons which are developed below regarding water use, it is desirable to identify the area supplied by groundwater in WRIA 57 separately. The irrigated area supplied from groundwater in WRIA 57 is 7,302 acres.

The approximate location and a scale indication of the extent of irrigated agriculture are shown in Plates 314-5,6 and 7, based on the Recorded Water Rights adjusted as indicated in Table 15. On Plates 314-5 and 6, which cover the study area at a scale of 1:125,000, the locations and areas are shown for each township. Townships divided by a WRIA boundary have the locations and areas subdivided correspondingly. Plate 314-7, which covers the urban planning area at a scale of 1:62,500, shows the area and location by section within each township.

The areas shown on Plates 314-5,6 and 7 are a scale indication of the estimated actual irrigated areas in the individual townships

or sections. The location shown is not the true location or shape but rather a square arbitrarily located representing the aggregate area in the township or section.

Estimation of Quantity of Water Used for Irrigation. The county wide average intensity of annual application of water for irrigation is calculated from data in the 1969 Census of Agriculture in Table 10. These county wide averages range from 1.05 feet per year for Pend Oreille County to 2.03 for Whitman County.

Only one irrigation district, Consolidated, keeps records from which an annual rate of application can be determined. Refer to the discussion of Consolidated's records under domestic water use and the synthesis of agricultural irrigation use from the total delivery. This synthesis indicates a 1972 agricultural irrigation use of 13,409 acre feet applied to 2,600 acres for an average rate of 5.2 feet per year. This rate is more than double the rate of 2.5 feet per year contemplated by the U.S.B.R. design criteria for the Spokane Valley Project, the project from which Consolidated developed.

Comparing the 1969 Census of Agriculture total water use for Spokane county of 24,112 acre feet on a total of 15,694 acres with Consolidated's 13,409 acre feet on 2,600 acres would leave only 10,713 acre feet for the 13,094 acres outside of Consolidated, or 0.82 feet per year. In addition to Consolidated, there are 4,603 acres served by groundwater in WRIA 57 where the rate of application is probably at least 2.0 feet per year, equal 9,206 acre feet. This would seem to indicate that the Spokane county total per the 1969 Census of Agriculture is low or that the county total of irrigated land is too high.

For the purpose of estimating the current rate of water use for agricultural irrigation, the following criteria are selected: for the 5,100 acres served by irrigation districts and the 2,103 acres served from groundwater by private irrigation in WRIA 57 a rate of 3.0 feet per year; for the remainder of Spokane county, 0.8 feet per year; for Lincoln, Pend Oreille and Stevens Counties, 1.58, 1.05 and 1.44 feet per year respectively per the 1969 Census of Agriculture. The estimated water use by irrigated agriculture is computed on this basis in Table 16. The resultant total agricultural irrigation use for Spokane county is 29,745 acre feet which is 23 percent greater than the 24,112 acre feet given by the 1969 Census of Agriculture. It should be recognized that all of the agricultural irrigation use figures are estimates and subject to a large degree of uncertainty, probably of the order of plus or minus 30 percent.

The only records for seasonal pattern of agricultural irrigation use are those synthesized from the records of the Consolidated Irrigation District. The total agricultural irrigation use by months from groundwater and surface water sources is shown in Table 17 based on the total use developed in Table 16.

The irrigation season extends from April through October, but the significant quantities are used from May through September. The peak month is July, for which the average rate of application is 0.45 feet per month, on a study area wide basis.

The peak month withdrawal rate from the area in WRIA 57 served by groundwater from the primary aquifer is equivalent to 98.11 cfs.

Non-agricultural Irrigation

Non-agricultural irrigation as referred to herein includes irrigation of parks, golf courses and highway landscaping. Landscape, home gardening and pasture irrigation by individual home owners is not included having been included as a component of domestic water use.

Non-agricultural irrigation is supplied from two sources in the study area; from regular water systems and from separate wells specifically for this purpose. There are cases where both sources apply to a given location.

Highway Landscaping.

The State Highway Department estimates that there are 19 acres irrigated at various locations in the urban area on which the annual usage is 100.7 acre feet, or 5.27 feet per year. All highway landscape irrigation is supplied from public water systems.

Golf Courses.

There are City, County and privately owned golf courses in the study area. Available data on golf courses is shown in Table 18. The golf courses for which application data are available indicate an average rate of 2.0 feet per year. This average rate is used to develop use for other courses for which data are not available. Total irrigated area is 1,126 acres to which 2,250 acre feet per year are applied.

Parks.

The City Park Department estimates that there are approximately 1,000 acres of irrigated area in about 60 parks throughout the city. Water for irrigation is dispensed from the city water system through approximately 170 meters. A compilation of water use is not kept.

Spokane County has approximately 3,670 acres of parkland in all classes ranging from neighborhood to regional parks. Of this amount, it is estimated that 92 acres are irrigated. The source of water for county park irrigation is a mixture of public park systems and individual wells. It is estimated that 70 acres are served from public water systems and 22 acres from individual wells. Records of water use that can be correlated with irrigation are not available.

In the absence of application rate data for parks, a factor of 2.6 feet per year is selected based on the observation that irrigated park areas are about 80 percent similar to golf course and 20 percent similar to intensive highway landscaping.

Summary - Non-agricultural Irrigation.

Non-agricultural irrigation is summarized in Table 19. The total irrigated area is 1,754 acres and the total annual use is 3,934 acre feet. Of this, the amount supplied from public water systems is already acounted for in the amount of 2,332 acre feet. The use from separate wells not otherwise accounted for is 1,602 acre feet.

Annual use pattern information is available for the highway landscaping and city golf courses. These data are combined and used as a basis for extrapolation to other non-agricultural use. The peak month use is shown in Table 19. The annual use pattern, April through October, is shown in Table 22.

Summary

Annual water use for the study area for each of the four major categories of use is shown in Table 20 and Figure A. The totals are developed for groundwater and surface water sources separately and combined. For all categories of use, the groundwater source is predominant and, overall, represents 92 percent of consumptive use.

So called domestic use is by far the largest category of use at 60.9 percent followed by agricultural irrigation and industrial use, each at 22.6 percent and 15.5 percent respectively. Non-agricultural irrigation, not otherwise accounted for under domestic use, is of small significance. That part of non-agricultural use included in domestic use is also small, being 2.4 percent of the domestic total.

Irrigation of home landscaping, gardens and pasture is not precisely measurable but can be estimated from the annual use pattern. The estimated use for domestic irrigation determined on this basis is 15,000 million gallons per year or approximately 50 percent of the total domestic use. For suburban areas considered alone, the irrigation use is as high as 75 percent of the total annual use.

Strictly domestic (that is, indoor) use is therefor about 30.4 percent of total study area use and the domestic irrigation component is also 30.4 percent of the total study area use. These components individually are approximately 35 percent larger than agricultural irrigation and one hundred percent more than industrial use.

The strictly domestic component of per capita use at 139 gpcd for the study area as a whole is high compared with national averages.

The unusually high domestic indoor and outdoor uses appear to be the consequences of the abundance and relative low cost of water in the study area.

A further breakdown of use by source is shown in Table 21. This shows that the primary aquifer provides 88.5 percent of the groundwater supply and that 3.2 percent and 8.3 percent are supplied by the Little Spokane Valley and basalt and other aquifers respectively.

Table 21 shows that the only significant surface water withdrawal from the Spokane River is for industrial purposes, amounting to only 2,372 million gallons of consumption use and 6,387 million gallons for the Kaiser Trentwood cooling water diversion. The consumptive use is equal to an average flow of 10 cfs and the Kaiser Trentwood diversion to 27 cfs. For comparison, the mean annual flow of the Spokane River at Spokane is 6,927 cfs.

By comparison to the available flow, the surface water use from the Little Spokane River is proportionately more significant. Table 21 shows that the predominant use of surface water from the Little Spokane is agricultural irrigation and amounts to 2,489 acre feet annually, equal to an average of 3.4 cfs. For the peak month in the irrigation season, this diversion is estimated to be of the order of 11.3 cfs. For comparison, the Little Spokane River has a mean annual flow of 665 cfs, and a minimum flow of 63 cfs at the Dartford gage.

The annual pattern of water use for all categories is shown in Table 22 and Figure B. This shows that the peak use in July, is equal to 18.4 percent of the average annual use. For groundwater from all

aquifers, the July use is 8,847 million gallons and for the primary aquifer is 7,753 million gallons. The peak month withdrawal rate for the primary aquifer is equal to a rate of 394 cfs. This is a significant proportion of the estimated 1000 cfs flow of groundwater entering the study area at the State line.

Water utilization by location is summarized in three drawings, Plates 314-8, 9 and 10. These drawings show the location of major groundwater and surface water withdrawals by location throughout the study area, with a scale indication of the annual quantity at each point. The concentration of users and quantity in the primary aquifer is obvious.

TABLE 1

PRINCIPAL DOMESTIC WATER SERVICE ORGANIZATIONS

CATEGORY	NAME	K-T Number	DSHS Number
Municipal Water Departments			
	Airway Heights	A 1.01	00650
	Cheney	A 1.02	12400
	Deer Park	A 1.03	18500
	Fairfield	A 1.04	24450
	Latah	A 1.05	46150
	Medical Lake	A 1.06	53400
	Millwood	A 1.07	54850
	Rockford	A 1.08	73550
	Spangle	A 1.09	82870
	Spokane	A 1.10	83100
	Tekoa	A 1.11	87300
Water Districts			
	Colbert W.D. No. 9	A 2.01	None
	East Spokane W.D. No. 1	A 2.02	21650, 06265
	Four Lakes W.D. No. 10	A 2.03	26200
	Irwin W.D. No. 6	A 2.04	36050
	Whitworth W.D. No. 2	A 2.05	96600, 96603 96607, 28000
Irrigation Districts			
	Carnhope I.D. No. 7	A 3.01	11250
	Consolidated I.D. No. 19	A 3.02	10220, 10223 10228, 10232 10236, 10240
	Hutchinson I.D. No. 16	A 3.03	35100
	Moab, I.D. No. 20	A 3.04	55440
	Model I.D. No. 18	A 3.05	55550
	North Spokane I.D. No. 8	A 3.06	61300
	Orchard Ave. I.D. No. 6	A 3.07	64000
	Pasadena Park I.D. No. 17	A 3.08	66300
	Trentwood I.D. No. 3	A 3.09	89250
	Vera I.D. No. 15	A 3.10	91450
Private Water Companies			
	Dishman Water Co., Inc.	A 4.01	19450
	Greenacres Waterworks	A 4.02	29650
	Lakeridge Water Co.	A 4.61	45120
	Liberty Lake Utilities Co.	A 4.03	47150
	Milan Water Co.	A 4.04	None
	Modern Electric Water Co.	A 4.05	55600
	North Mountain View Water Co. Inc.	A 4.06	60780

TABLE 1 (continued)

PRINCIPAL DOMESTIC WATER SERVICE ORGANIZATIONS

CATEGORY	NAME	K-T Number	DSHS Number
Private Water Companies			
	Pleasant Prairie Water Co.	A 4.07	67880
	Rivilla Water Corp.	A 4.08	73050
	Washington Water Power Co.	A 4.09	93350
		A 4.10	93351
		A 4.11	93352
		A 4.12	93354
		A 4.13	93355
		A 4.14	93356
		A 4.15	93357
		A 4.16	93358
		A 4.17	93360
		A 4.62	13450
	West Shore Water Co., Inc.	A 4.19	95450
Water Associations and Cooperatives			
	Balmer's Garden Community Water System	A 5.01	04179
	Cedar Knolls Water Association	A 5.02	11935
	Elk Water Association	A 5.03	22915
	Glenrose Water Association	A 5.04	28135
	Liberty Lake Improvement Club	A 5.05	47145
	Marshall Community Water Assoc.	A 5.06	51845
	Waverly Heights Water Assoc.	A 5.07	93820
Federal			
	Fairchild Air Force Base	B 1.01	24350
	Bureau of Indian Affairs, Wellpinit	B 1.61	None
State			
	Eastern State Hospital	B 2.01	21850
	Eastern Washington State College	B 2.02	21960
Other Categories			
	Residential Developments		
	Mobile Home Park		
	Resorts and Campgrounds		
	Schools		
	Golf and Country Clubs		
	Motels		

TABLE 2

DOMESTIC WATER USE BY INDIVIDUAL SYSTEMS

K-T Number	Agency	Ownership	Population	No. Water Services	Avg. Daily Demand, Gal.	Sources		Per Capita Use gpcd.
						Primary Aquifer	Other Ground Water Sources	
A 1.01	Airway Heights, Town of	Municipal	1,197	283	153,000	-	4	128
A 1.02	Cheney Water Dept.	Municipal	6,500-10,000	1,267	1,000,000	-	4	100-154
A 1.03	Deer Park, City of	Municipal	1,350	602	352,000	-	4	261
A 1.04	Fairfield Water Dept.	Municipal	514	231	150,000	-	3	291
A 1.05	Latah, Town of	Municipal	169	84	52,500	-	1	311
A 1.06	Medical Lake Water Dept.	Municipal	1,872	578	408,000	-	-	218
A 1.07	Millwood Water Dept.	Municipal	1,800	600	263,000	3	-	146
A 1.08	Rockford Water Dept.	Municipal	367	154	43,000	-	1	117
A 1.09	Spangle, Town of	Municipal	212	87	53,000	-	2	250
A 1.10	Spokane Dept. Utilities	Municipal	175,250	54,972	50,760,000	16	1	290
A 1.11	Tekoa, City of	Municipal	808	343	200,000	-	3	248
A 2.01	Colbert W.D. #9	Water District	210	60	34,600	-	1	165
A 2.02	East Spokane W.D. #1	Water District	3,200	900	271,000	3	-	85
A 2.03	Four Lakes W.D. #10	Water District	200	51	8,000	-	2	40
A 2.04	Irvin W.D. #6	Water District	1,650	550	210,000	3	-	127
A 2.05	Whitworth W.D. #2	Water District	8,908	2,581	1,190,000	7	2	133
A 3.01	Carnhope I.D. #7	Irrigation District	1,400	459	1,000,000	1	-	714
A 3.02	Consolidated I.D. #19	Irrigation District	6,500	1,702	7,240,000	34	-	1,114
A 3.03	Hutchinson I.D. #16	Irrigation District	2,100	693	262,000	2	-	125
A 3.04	Moab I.D. #20	Irrigation District	167	67	94,500	1	-	565
A 3.05	Model I.D. #18	Irrigation District	4,075	1,200	575,000	4	-	141
A 3.06	North Spokane I.D. #8	Irrigation District	1,900	654	405,000	4	-	225
A 3.07	Orchard Avenue I.D. #6	Irrigation District	3,500	1,000	1,045,000	2	-	299
A 3.08	Pasadena Park I.D. #17	Irrigation District	2,000	670	1,644,000	3	-	822
A 3.09	Trentwood I.D. #3	Irrigation District	3,400	837	1,550,000	5	-	456
A 3.10	Vera I.D. #15	Irrigation District	11,000	2,920	6,490,000	7	-	590
A 4.01	Dishman Water Co.	Private Co.	500	117	60,000	1	-	120
A 4.02	Greenacres Water Works	Private Co.	790	225	52,000	1	-	66
A 4.61	Lakeridge Water Co.	Private Co.	65	27	5,250	-	2	124
A 4.03	Liberty Lake Utilities Co., Inc.	Private Co.	900	386	500,000	-	2	556
A 4.04	Milan Water Co.	Private Co.	50	15	7,500	-	2	150
A 4.05	Modern Electric Water Co.	Private Co.	14,588	4,168	2,290,000	9	-	157
A 4.06	N. Mt. View Water Co.	Private Co.	18	5	3,000	-	1	150

WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept. of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	DOMESTIC WATER USE BY INDIVIDUAL SYSTEMS	TABLE 2

TABLE 2 (continued)

K-T Number	Agency	Ownership	Population	No. Water Services	Avg. Daily Demand, Gal.	Sources: Primary Aquifer	Sources: Other Ground Water Sources	Per Capita Use gpcd.
A 4.07	Pleasant Prairie Water Co.	Private Co.	34	10	14,000	1	-	412
A 4.08	Rivilla Water Corp.	Private Co.	97	25	15,000	-	1	150
A 4.09	Washington Water Power Co.	Private Co.	17,900	4,635	3,320,000	13	10 (Plus 1 Surface Source for Clayton, Wash.)	185
A 4.82	Little Falls	Wash. Water Power	2	2	130	-	1	65
A 4.81	Long Lake	Wash. Water Power	10	10	650	-	Spring	65
A 4.18	Nine Mile Falls Power Sta.	Wash. Water Power	12	12	650	1	-	65
A 4.19	W. Shore Water Co., Inc.	Private Co.	18	10	260	-	1	14
A 5.01	Balmes's Garden Comm. Water Sys.	Community Owned	30	10	500	-	2	17
A 5.02	Cedar Knolls Water Assoc.	Non-Profit Corp.	7	3	560	-	1	80
A 5.03	Elk Water Assoc.	Non-Profit Corp.	20	8	2,500	-	1	125
A 5.04	Glenrose Water Assoc.	Cooperative	27	8	3,375	-	1	125
A 5.05	E. Side Liberty Lake Imprvmt. Club	Non-Profit Corp.	300	118	184,600	-	1	525
A 5.06	Marshall Comm. Water Assoc.	Non-Profit Corp.	74	17	4,400	-	1	59
A 5.07	Waverly Hts. Water Assoc.	Non-Profit Corp.	9	8	1,000	-	1	111
A 6.61	Bunch Estates	Private Development	60	17	6,000	-	1	100
A 6.51	Camp Diamond	Residential Development	140-175	40-50	26,100	-	1	165
A 6.13	Carmel Estates	Private Development	16	5	3,000	-	1	185
A 6.81	Cayuse Cove (Lincoln Co.)	Private Development	42	12	4,200	-	1	100
A 6.82	Conrad's Development	Private Development	56	16	5,600	-	Spring	100
A 6.11	Deborah	Private Development	-	-	-	-	-	-
A 6.08	Fairway Addition	Private Development	4	1	400	-	2	100
A 6.62	Feltons Addition	Private Development	20	6	2,000	-	1	100
A 6.09	Glines Addition	Private Development	12	3	1,200	-	2	100
A 6.01	Halfmoon Ranchos	Non-Profit Comm. Owned	21	6	3,900	-	1	185
A 6.83	Koontz's Squaw Canyon Dev.	Private Development	Several	-	4,000	-	Spring	100
A 6.84	Loughbon Bay	Private Development	-	-	-	-	-	-
A 6.02	N. Glen Estates	Private Development	25	7	5,000	-	2	200
A 6.03	Panorama Acres	Private Development	40	9	7,400	-	2	185
A 6.85	Peace Farm	Commune	50	14	5,000	-	1	100
A.6.04	Prairie Pines	Private Development	10	10	1,250	-	1	125
A 6.86	Rinker-Bolenus Development	Private Development	-	-	-	-	-	-
A 6.05	Rivervale Water System	Private Development	7	2	875	-	1	125
A 6.06	Spokane Lake Park	Private Development	6	2	6,000	-	1	100

WATER RESOURCES STUDY METHOPOLITAN SPOKANE REGION Dept. of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	DOMESTIC WATER USE BY INDIVIDUAL SYSTEMS	TABLE 2 (cont.)

TABLE 2 (continued)

K-T Number	Agency	Ownership	Population	No. Water Services	Avg. Daily Demand, Gal.	Sources: Primary Aquifer	Sources: Other Ground Water Sources	Per Capita Use gpcd.
A 6.63	Stonelodge	Private Development	140	40	1/,500	-	1	125
A 6.63	Stonelodge 1st Add.	Private Development	158	45	19,625	-	1	124
A 6.64	Strong & Turosky	Private Development	22	6	2,200	-	1	100
A 6.66	Sunshine Shores	Private Development	80	23	8,000	-	1	100
A 6.07	Velview Estates	Private Development	50	14	5,000	-	1	100
B 1.01	Fairchild A.F.B.	Federal	15,097	2,043	2,100,000	3	1	133
B 1.61	Wellpinit	Federal & BIA	50	10	10,000	-	2	200
B 2.01	Eastern State Hospital	State	3,580-6,500	5	750,000	-	2	115-195
B 2.02	E. Washington State College	State	4,000-7,000	30	833,000	-	2	119-208
B 3.01	Spokane International Airport	Airport	1,500-3,000	26	465,000	-	2	155-310
	Other *	Private, State, Federal	6,174	-	-			

* Includes Motels, trailer parks, schools, resorts, and campgrounds.

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WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept. of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	DOMESTIC WATER USE BY INDIVIDUAL SYSTEMS	TABLE 2 (cont.)

TABLE 3

DOMESTIC WATER USE SUMMARY

Agency Type	Population	No. of Services	Avg. Daily Demand/MGD	Peak Day Demand/MGD	Max. 7-Day Demand/MG	Total Annual Demand/MG	Average Per Capita Demand/GPCD	No. of Wells
Municipal	191,789	59,201	53.43	150.00	858.60	19,501	279	42
Irrigation Districts	35,942	10,262	20.31	52.79	309.60	7,412	565	63
Water Districts	14,168	4,082	1.71	13.28	76.14	624	121	18
Private Co's.	31,846	9,213	6.27	36.69	209.90	2,289	197	43
Assn's-Coops	517	172	0.20	0.39	2.28	73	387	9
Developments(a)	1,745	577	0.23	0.54	3.09	84	132	25
Residential Totals(d)	276,007	83,507	82.15	253.70	1460.00	29,983	298	200
Federal(b)	15,147	2,057	2.02	7.30	41.80	737	133	6
State(b)	10,540	35	1.58	2.25	12.89	577	150	4
Spokane Int. Airport	2,250	26	0.46	0.65	3.50	168	204	2
Other (c)	5,900	-	0.16	0.45	2.38	58	27	52
TOTAL	309,844	85,625	86.37	264.30	1520.00	31,523	279	264

Notes:

(a) Includes Mobile Homes

(b) Does not Include Campgrounds.

(c) Includes Motels, Trailer Parks, Schools, Resorts & Campgrounds.

(d) Considers only the first 6 Agency Types.

TABLE 4

DOMESTIC WATER DEMANDS

FIVE LARGEST AGENCIES

WATER DEMAND	SPOKANE *		CONSOLIDATED *		VERA		MODERN		W.W.P.	
	Million Gallons	Per-Capita Gallons	Million Gallons	Per-Capita Gallons	Million Gallons	Per-Capita Gallons	Million Gallons	Per-Capita Gallons	Million Gallons	Per-Capita Gallons
Minimum Day	23.66	135	-	-	1.44	131	-	-	-	-
Average Day	50.76	290	7.24	1,114	6.49	590	2.29	157	3.32	225
Peak Day	142.81	815	14.50	2,231	18.33	1,666	21.87	1,499	13.30	899
Peak 7-Day	818.00	4,667	83.08	12,782	105.00	9,545	125.00	8,569	76.20	5,153
Min. Month	945.00	5,394	44.80	6,892	40.31	3,665	-	-	12.80	866
Avg. Month	1548.00	8,833	220.00	33,846	197.00	17,909	69.70	4,778	101.00	6,830
Peak Month	3,012.00	17,187	716.00	110,154	642.00	58,364	575.00	39,416	271.00	18,326
ANNUAL TOTAL	18,582.00	106,031	2,643.00	406,615	2,368.00	215,273	836.00	57,307	1,212.00	82,026

* Data for this Agency has been adjusted to reflect Domestic Water use only.

TABLE 5

MONTHLY PATTERN OF DOMESTIC WATER USE

FOR THREE AGENCIES, 1972

Month	CITY OF SPOKANE Use Million Gal.	CITY OF SPOKANE Percent of Annual	VERA I.D. Use Million Gal.	VERA I.D. Percent of Annual	WASHINGTON WATER POWER Use Million Gal.	WASHINGTON WATER POWER Percent of Annual	THREE AGENCY TOTALS Use Million Gal.	THREE AGENCY TOTALS Percent of Annual
January *	970	5.22	51.4	2.171	9.8	0.81	1,031	4.65
February *	928	4.99	43.1	1.820	9.4	0.78	981	4.43
March *	961	5.17	40.3	1.702	62.3	5.14	1,064	4.80
April	1,094	5.89	80.9	3.416	53.0	4.37	1,228	5.54
May	1,735	9.33	231.5	9.776	96.0	7.92	2,062	9.30
June	2,060	11.08	349.8	14.772	131.0	10.81	2,541	11.46
July	3,065	16.49	641.6	27.095	180.1	14.86	3,887	17.53
August	2,886	15.53	474.3	20.030	270.9	22.35	3,631	16.38
September	1,703	9.16	306.6	12.948	224.7	18.54	2,234	10.08
October	1,178	6.34	43.8	1.850	109.9	9.07	1,332	6.01
November *	961	5.17	44.0	1.858	46.3	3.82	1,051	4.74
December *	1,046	5.63	60.7	2.563	19.0	1.57	1,126	5.08
YEAR	18,587	100.00	2,368.0	99.998	1,212.0	100.04	22,168	100.00
* 5-Mo. Total	4,866		239.5		146.8		5,253	
Annual Equal to 5-Mo. Rate	11,678		574.8		352.3		12,607	
Annual Equal 5-Mo. % of Annual	62.8		24.27		29.1		56.9	
Per Capita Based on Annual Equal to 5-Mo. Rate	183		143		54		169	

TABLE 6

SUMMARY - WELLS FOR DOMESTIC SYSTEMS

Agency, TYPE	Number of Wells	Combined Pump Capacity, GPM	Number of Wells with Type of Treatment		
			None	Chlorination	Fluoridation
Municipal	42	178,979	16	23	7
Irrigation Districts	63	151,005	62	1	0
Water Districts	18	13,410	16	2	0
Private Water Companies	43	51,769	32	11	0
Assn's, Cooperatives, Etc.	9	845	8	1	0
Private Developments (a)	25 (b)	-	17	1	0
Residential Totals (e)	200	396,008	151	39	7
Federal Agencies	6	5,825	5	1	1
State Agencies (c)	4	2,000	4	0	0
Spokane Int. Airport	2	700	0	2	0
Other (d)	52 (b)	-	-	-	-
TOTAL	264	404,533	160	42	8

(a) Includes Mobile Homes.
(b) Estimated.
(c) Does not include State Campgrounds.
(d) Includes Motels, Trailer Parks, Schools, Resorts & Campgrounds.
(e) Considers only the first six Agency Types.

TABLE 7

INDUSTRIAL WATER SYSTEMS

Industry	Industry Type	Water Sources	Monthly Water Use Millions of Gallons Average	Peak
Alladin Metalcraft	Plating	C	0.18	0.24
Alsco Linen	Laundry	C,P	1.52	1.80
American Bumper Service	Plating	C	0.01	0.01
American Sign & Indicator	Mfg-Display Signs	C,P	0.19	0.22
Arden Farms	Dairy Distributor	C	1.00	2.17
Becwar Meat Packing	Meat Packing	C	1.59	2.33
Bonanza Meat Packing	Meat Packing	C	2.76	4.97
Burlington Northern	Railroad	C,P	21.60	26.90
Carnation Co.	Dairy	C	0.86	2.41
Centennial Mills(Sprague)	Gluten & Starch	C,P	14.62	16.72
Centennial Mills(Trent)	Wheat Flour	C,P	0.61	0.76
Central Heating	Heating Plant	C	7.36	11.91
Central Premix	Sand & Gravel	C,P	17.00	28.30
Coca Cola Bottling	Soft Drink Bottling	C	0.80	1.08
Crescent (Downtown)	Department Store	C	16.48	37.10
Crystal Linen	Laundry	C,P	1.66	1.91
Culligan Soft Water	Water Softening	C	0.83	0.97
Darigold	Dairy	C	20.00	28.50
Hillyard Proc.(Sullivan)	Aluminum Processing	P	16.07	21.55
Hillyard Proc.(Wellesley)	Aluminum Processing	P	0.01	0.01
Hollister-Stier	Pharmaceuticals	C	1.25	2.85
Hygrade Foods	Meat Packing	C,P	14.08	21.81
Ideal Laundry	Laundry	C	-	-
Inland Empire Paper	Paper Mill	CM,P	103.70	121.60
Inland Empire Plating	Plating	C	1.16	1.55
ITT Bakery	Bakery	C	1.00	1.44
Kaiser(Mead)	Aluminum Prod.	P	136.90	206.40
Kaiser(So. Mead) & R. A. Hanson	Coke Prod. & Equip. Mfg.	P	9.49	11.60
Kaiser(Trentwood)	Aluminum Fabrication	P,R	197.80	236.67
Linde-Union Carbide	Acetylene Prod.	C	0.49	1.37

TABLE 7 (continued)

Industry	Industry Type	Water Sources	Monthly Water Use Millions of Gallons Average	Peak
Metallic Arts	Plating	C	0.18	0.24
Nalley's	Potato Chip Prod.	C	2.43	3.94
Seven-Up Bottling	Soft Drink Bottling	C	2.01	3.10
Spokane Industrial Park	Industrial Park	P	57.83	86.75
Spokane Rendering	Rendering Plant	P	3.89	5.42
Spokesman-Review	Newspaper Pub.	C	4.10	4.67
Troy Laundry	Laundry	C,P	0.61	0.68
Union Pacific	Railroad	C	5.55	17.30
Victory Plating	Plating	C	0.03	0.04
Industrial Use			667.65	917.29
Kaiser (Trentwood) Cooling		R	532.22	584.57
TOTAL INDUSTRIAL USE			1199.87	1501.86

C = City of Spokane
CM = City of Millwood
P = Private Well(s)
R = Spokane River

TABLE 8

INDUSTRIAL WATER SOURCES OTHER THAN MUNICIPAL SYSTEMS

Industry	Source		Annual Withdrawal Millions of Gallons	Pump Capacity GPM
	Groundwater No. of Wells	Surface Water		
Alsco Linen	1		16.4	120
American Sign	1		2.0	32
Burlington Northern	3		216.0	1,490
Centennial (Sprague)	1		56.3	110
Centennial (Trent)	1		1.4	-
Central Pre-Mix	4		204.0	650
Crystal Linen	1		19.7	250
Hillyard (Sullivan)	1		193.0	450
Hillyard (Wellesley)	1		0.12	150
Hygrade	1		144.0	385
Inland Empire Paper	4		1,244.0	8,500
Kaiser (Mead)	3		1,643.0	-
Kaiser (So. Mead) & R.A. Hanson	-		114.0	-
Kaiser (Trentwood)	1		1.5	3,900
Spokane Cold Storage	1		-	-
Spokane Industrial Park	3		694.0	3,150
Spokane Rendering	1		45.5	450
Troy Laundry	1		5.4	-
SUBTOTAL FROM WELLS			4,600.0	-
Kaiser (Trentwood)		(a)	8,759.0	
SUBTOTAL SURFACE WATER			8,759.0	
TOTAL			13,359.0	

(a) Source: Spokane River

TABLE 9

INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL

Industry Name	Type	Total Monthly Water Use Million Gal.	Present Use Categories	Extent of Present Reuse	Waste Flows With Potential for Reuse		Present Use with Potential for Utilization of Reclaimed Water
					Cooling Water	Other as Specified	
Alsco Linen	Laundry	1.52	Process (Washing), Steam Generation, Domestic	None	None	0.5 mg/mo.* Rinse Water	0.5 mg/mo. for Wash Water
American Sign & Indicator	Mfg. Display Signs	0.19	Domestic, Irrigation	None	None	None	None
Becwar Packing	Meat Packing	1.59	Cooling (Refrigeration), Wash Down, Domestic	None	0.8 mg/mo.	None	None. Wash Water must be of Drinking water quality.
Burlington Northern Railroad	Railroad	21.60	Car Washing, Steam Gen., Locomotive Cooling, Paint Stripper Washing, Domestic	None	Minimal	0.008 mg/mo. Washing	0.008 mg/mo. Washing
Carnation	Dairy	0.86	Cooling, Steam Gen., Process, Wash Down, Domestic	Minor Amounts of Cooling Water (Cooling Tower)	0.34 mg/mo.	None	None
Centennial Mills (Sprague Ave.)	Produce Gluten & Wheat Starch	14.62	Process, Cooling, Wash Down, Domestic	None, Recycle Evaporator being tested.	3.5 mg/mo.	10.5 mg/mo. Process Water	10.5 mg/mo. Process Water
Centennial Mills (Trent Ave.)	Wheat Milling	0.61	In Product, Steam Generation, Domestic, Irrigation	None	None	None	None
Central Heating	Heating Plant	7.36	Steam Generation	None, Condensate not recycled.	None	None	None
Central Premix	Sand and Gravel	17.00	Gravel Washing, In product-(Redi-Mix), truck washing, Domestic	Truck wash water (minor use) Redi-Mix water (minor use)	None	15.0 mg/mo. Gravel wash water	15.0 mg/mo. Gravel wash water

* Millions of gallons per month.

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WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept. of the Army, Seattle District Corps of Engineers Kennedy – Tudor Consulting Engineers	INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL	TABLE 9

TABLE 9 (continued)

INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL

Industry Name	Type	Total Monthly Water Use Million Gal.	Present Use Categories	Extent of Present Reuse	Waste Flows With Potential for Reuse		Present Use with Potential for Utilization of Reclaiming Water
					Cooling Water	Other as Specified	
Crescent (Downtown)	Department Store	16.48	Cooling - (Air-Conditioning), Domestic	None	15.00 mg/mo.	None	None
Crystal Linen	Laundry	1.66	Process (Washing), Steam Generation, Domestic	None	None	0.5 mg/mo. Rinse Water	0.5 mg.mo. Wash Water
Culligan Soft Water Service	Regenerate Water Softeners	0.83	Process - (Resin Recharge), Domestic	Small portion of backwash water used for NaCl makeup	None	0.82 mg/mo. Backwash Water	0.82 mg/mo. Recharge Water
Darigold	Dairy	20.00	Cooling, Steam Gen., Process, Wash Down, Domestic	None	15.0 mg/mo.	None	None
Hillyard Processing (Sullivan St.)	Aluminum Dross Process	16.07	Chemical Process, Wash Down, Domestic	None	None	15 mg/mo. Chem. Process (Washing Alum. Dross)	15 mg/mo. Chem. Process (Washing Alum. Dross)
Hillyard Processing (Wellesley St.)	Aluminum Can, Etc. Shredding	0.01	Domestic, Fire	None	None	None	None
Hollister Stier	Pharmaceuticals	1.25	Steam Gen., Cooling, Distilled Water, Dish-washing, Irrigation, Domestic	Rinse from dishwasher used for wash of next cycle	Minor	None	None
Hygrade Foods	Meat Packing	14.08	Cooling (Refrigeration), Wash Down, Domestic	None	9.0 mg/mo.	None	None. Wash Water must be of drinking water quality.
Inland Empire Paper	Paper Mfg.	103.70	Process, Cooling, Domestic	Most of the 72 mg/mo. process water is reused at least once to recover fibers	31 mg/mo.	None	31 mg/mo. of coolin water reusable as process water

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WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL

TABLE 9 continued)

INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL

Industry Name	Type	Total Monthly Water Use Million Gal.	Present Use Categories	Extent of Present Reuse	Waste Flows With Potential for Reuse		Present Use with Potential for Utilization of Reclaiming Water
					Cooling Water	Other as Specified	
Kaiser (Mead)	Aluminum Production	136.90	Domestic, Cooling, Steam Generation	Total Recycling in wet scrubber - due to be replaced with dry scrubber	106 mg/mo.	None	None
Kaiser (So. Mead) & R. A. Hanson	Coke Prod. & Equip. Mfg.	9.49	Domestic, Cooling	None	9.46 mg/mo.	None	None
Kaiser (Trentwood)	Aluminum Fabrication	197.80	Process, Cooling, Domestic, Irrigation	None	(5.30 mg/mo)*	Unknown	Unknown
Linde-Union Carbide	Acetylene Production	0.49	Process Water, Cooling, Hydraulic-Cylinder-Testing, Domestic	None	0.24 mg/mo.	0.09 mg/mo. Hydraulic Cylinder testing	0.19 mg/mo. Process Water. 0.09 mg/mo. Hydraulic Cylinder testing
Malley's Foods	Potato Chip Prod.	2.43	Process (washing), Wash Down, Domestic	2.2 mg/mo. Process wash water reused. Peeled potato wash water reused to wash raw potatoes.	None	None	None
Seven-Up Bottling Co.	Bottling Co.	2.01	Bottle Washing, In Product, Domestic	None	None	0.7 mg/mo. Wash Water	0.7 mg/mo. Wash Water
Spokane Ind. Park	Ind. Park	57.83	Varied	-	-	-	-

* Source of this once through cooling water is the Spokane River.

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WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL	TABLE 9 (cont.)

TABLE 9 (continued)

INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL

Industry Name	Type	Total Monthly Water Use Million Gal.	Present Use Categories	Extent of Present Reuse	Waste Flows With Potential for Reuse		Present Use with Potential for Utilization of Reclaiming Water
					Cooling Water	Other as Specified	
Spokane Rendering	Rendering Plant	3.89	Process, Wash Down, Domestic	0.8 mg/mo. Wash Down Water	None	None	None
Spokesman Review	Newspaper Pub.	4.10	Domestic, Process, Cooling	None	0.8 mg/mo.	None	0.8 mg/mo. Process-using cooling water
Troy Laundry	Laundry	0.61	Process (Washing), Steam Generation, Domestic	None	None	0.46 mg/mo. Rinse Water	0.46 mg/mo. Wash Water
Union Pacific Railroad	Railroad	5.55	Car Washing, Engine Cooling, Steam Generation, Domestic	None	Minimal	1.0 mg/mo. Wash Water	1.0 mg/mo. Wash Water

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WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	INDUSTRIAL RECYCLE AND RECYCLE POTENTIAL	TABLE 9 (cont.)

TABLE 10

AGRICULTURAL IRRIGATION: LAND AREA AND WATER USE

PER 1969 CENSUS OF AGRICULTURE

County	ALL FARMS			CLASS 1 - 5 FARMS*		
	Irrigated and Non-Irrigated Crop Lands Acres	Total Irrigated Land		Irrigated Land, Acres	Water Use	
		Acres	Percent of Co. Total		Acre Feet	Feet/Year#
Lincoln	909,338	34,284	3.8	34,196	54,061	1.58
Pend Oreille	34,308	3,819	11.1	3,467	3,648	1.05
Spokane	465,427	17,371	3.7	15.694	24,112	1.54
Stevens	156,387	12,213	7.8	11,517	16,574	1.44
Whitman	1,076,320	11,727	1.1	11,652	23,514	2.03

* Farms with sales of $2500 or more.
\# Calculated.

PER WASHINGTON SOIL AND WATER CONSERVATION NEEDS INVENTORY

County	County Cropland, Acres	
	Total	Irrigated
Lincoln	864,378	31,804
Pend Oreille	32,723	4,448
Spokane	457,812	14,274
Stevens	160,347	12,353
Whitman	1,039,967	6,460

TABLE 11

CATEGORIES OF IRRIGATED AGRICULTURE BY COUNTIES

Item	Category of Irrigated Land	COUNTIES (1) Lincoln Area Acres	Lincoln %	Pend Oreille Area Acres	Pend Oreille %	Spokane Area Acres	Spokane %	Stevens Area Acres	Stevens %	Whitman Area Acres	Whitman %
1	Pasture	1,898	5.6	1,061	30.6	1,618	10.3	2,302	20.0	2,319	19.9
2	Small Grains	19,156	56 .0	44	1.3	2,788	17.8	1,495	13.0	2,443	21.0
3	Hay or Silage	5,949	17.4	2,310	66.6	4,938	31.5	7,314	63.5	3,227	27.7
4	Field Seeds	275	0.8	-	-	3,962	25.2	-	-	165	1.4
5	Field crops other than Items 2 - 4	2,036	6.0	52	1.5	636	4.1	182	1.6	2,945	25.3
6	Vegetables	-	-	-	-	1,092	7.0	2	0.0	-	-
7	Unspecified Crops (2)	4,882	14.3	-	-	660	4.2	222	1.9	553	4.7
	TOTALS (3)	34,196	100.1	3,467	100.0	15,694	100.1	11,517	100.0	11,652	100.0

Source: U. S. Dept. of Commerce, Bureau of the Census. 1969. Census of Agriculture

(1) Quantities are for Class 1-5 Farms, that is farms with sales over $2500 per year.
(2) This includes reported other crops, plus the difference in irrigated land, found in the data of tables 9 & 20 of the 1969 Census of Agriculture.
(3) Source of Data: Table 9 of 1969 Census of Agriculture Report for the respective Counties.

TABLE 12

WATER RIGHTS CLAIMED FOR IRRIGATED AGRICULTURE - ACREAGES

County	WRIA BASINS												STUDY AREA TOTALS		
	*G.W.	*S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.
Lincoln	1,086	745	1,831	-	-	-	-	-	-	-	-	-	1,086	745	1,831
Pend Oreille	-	-	-	1,248	947	2,195	-	-	-	-	332	332	1,248	1,279	2,527
Spokane	4,430	280	4,710	7,650	4,480	12,130	2,010	1,800	3,810	21,890	1,450	23,340	35,980	8,010	43,990
Stevens	2,111	1,199	3,310	1,111	359	1,470	-	-	-	-	-	-	3,222	1,558	4,780
TOTALS	7,627	2,224	9,851	10,009	5,786	15,795	2,010	1,800	3,810	21,890	1,782	23,672	41,536	11,592	53,128

* G.W. Ground Water

S.W. Surface Water

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TABLE 13

RELATION BETWEEN IRRIGATED AREAS
PER RECORDED WATER RIGHTS AND ACTUAL
IRRIGATED LAND FOR IRRIGATION DISTRICTS

WRIA 57	Areas * Per Water Rights Acres	Actual # Irrigated Areas Acres
U S B R (Consolidated I.D.)	7,568	2,600
Carnhope I.D.	250	50
Trentwood I.D.	575	575
Pasadena Park I.D.	1,660	200
Orchard Ave. I.D.	570	0
Modern Electric	3,000	200
Irvin Water District	27	0
Vera I.D.	2,500	810 **
Hutchinson I.D.	311	125
Model I.D.	260	57
Bacon Tract I.D.	190	0
Moab I.D.	630	450
Subtotal	17,541	5,067
WRIA 55		
W.W.P.	500	0
N. Spokane I.D.	567	0
Subtotal	1,067	0

Note: * Data is obtained from recorded water rights information.

Estimated Actual Acreages were obtained from Irrigation District Managers.

** An article from the Spokane Valley Herald (March 6, 1974) reports 115 acres are irrigated.

TABLE 14

ADJUSTMENT OF IRRIGATED AREAS IN SPOKANE COUNTY

DESCRIPTION	IRRIGATED AREAS, ACRES				
	WRIA BASINS				
	54	55	56	57	TOTAL
1. Total Irrigated Areas per Recorded Water Rights	4,710	12,130	3,810	23,340	43,990
2. Portion of Recorded Water Rights claimed by Irrigation Districts (See Table 13)	-	1,067	-	17,541	18,608
3. Irrigated Area per Recorded Water Rights reduced by I.D. Claims (Line 1 - Line 2)	4,710	11,063	3,810	5,799	25,382
4. Estimated Actual Area being irrigated by I.D. (See Table 13)	-	0	-	5,100	5,100
5. Recorded Water Rights for I.D. not being exercised (Line 2 - Line 4)	-	1,067	-	12,441	13,508

TABLE 15

ESTIMATION OF ACTUAL IRRIGATED LAND
IN THE STUDY AREA (BASED ON ADJUSTMENT OF WATER RIGHTS DATA
TO MATCH CONTROL TOTAL FROM 1969 CENSUS OF AGRICULTURE)

	IRRIGATED AREAS, ACRES														
	WATER RESOURCE INVENTORY AREAS												STUDY AREA TOTAL		
	54			55			56			57					
County	G.W.*	S.W.*	Tot.*	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.
Lincoln#	543	373	916	-	-	-	-	-	-	-	-	-	543	373	916
Pend Oreille#	-	-	-	624	474	1,098	-	-	-	-	166	166	624	640	1,264
Spokane I.D.	-	-	-	0	-	0	-	-	-	5,100	-	5,100	5,100	-	5,100
" w/o I.D.+	2,142	135	2,277	3,183	2,166	5,349	972	870	1,842	2,103	701	2,804	8,400	3,872	12,272
Spokane (Total)	2,142	135	2,277	3,183	2,166	5,349	972	870	1,842	7,203	701	7,904	13,500	3,872	17,372
Stevens#	1,056	599	1,655	556	179	735	-	-	-	-	-	-	1,612	778	2,390
Whitman	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	3,741	1,107	4,848	4,363	2,819	7,182	972	870	1,842	7,203	867	8,070	16,279	5,663	21,942

* G.W. - Ground Water Source. S. W. - Surface Water Source Tot. -Total G.W. & S.W.
\# For Counties other than Spokane, adjusted by factor 0.50
\+ For Spokane County without Irrigation District claims, adjusted by factor 0.4835

TABLE 16

ESTIMATION OF ANNUAL WATER USE

FOR AGRICULTURAL IRRIGATION

County	ANNUAL WATER USE, ACRE-FEET														
	WATER RESOURCE INVENTORY AREAS												STUDY AREA TOTAL		
	54			55			56			57					
	G.W.*	S.W.*	Tot.*	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.
Lincoln (1)	858	589	1,447	-	-	-	-	-	-	-	-	-	858	589	1,447
Pend Oreille (2)	-	-	-	655	498	1,153	-	-	-	-	174	174	655	672	1,327
Spokane I.D. (3)	-	-	-	0	-	0	-	-	-	15,300(4)	-	15,300	15,300	-	15,300
" w/o I.D. (3)	1,714	108	1 822	2,546	1,733	4,279	778	696	1,474	6,309(4)	561	6,870	11,347	3,098	14,445
Spokane (Total)	1,714	108	1,822	2,546	1,733	4,279	778	696	1,474	21,609	561	22,170	26,647	3,098	29,745
Stevens (5)	1,521	863	2,384	801	258	1,059	-	-	-	-	-	-	2,322	1,121	3,443
Whitman	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	4,093	1,560	5,653	4,002	2,489	6,491	778	696	1,474	21,609	735	22,344	30,482	5,480	35,962

* G.W. - Ground Water. S.W. - Surface Water. Tot. - Total G.W. & S.W.

(1) Based on 1.58 ft/yr
(2) Based on 1.05 ft/yr
(3) Based on 0.80 ft/yr
(4) Based on 3.00 ft/yr
(5) Based on 1.44 ft/yr

TABLE 17

SEASONAL PATTERN OF WATER USE FOR AGRICULTURAL IRRIGATION IN THE STUDY AREA

Month	WATER USE, ACRE-FEET		
	Ground Water	Surface Water	TOTAL
January	-	-	---
February	-	-	-
March	-	-	-
April	806	145	951
May	5,052	908	5,960
June	6,004	1,079	7,083
July	8,350	1,501	9,851
August	5,997	1,078	7,075
September	3,854	693	4,547
October	418	75	493
November	-	-	-
December	-	-	-
TOTAL	30,481	5,479	35,960

TABLE 18

GOLF COURSE IRRIGATION

Name	Ownership	Irrigated Area, Acres	Annual Water Use Acre Feet	Water Source	Remarks	Annual Application Factor--Feet
Downriver	City	135 (1)	329	City of Spokane		2.44
Esmeralda	City	132 (1)	224	City of Spokane		1.70
Indian Canyon	City	165 (1)	318	City and Well		1.93
Hangman Valley	County	144 (1)	288 (3)	Well	Unmetered	2.00
Liberty Lake	County	120 (1)	240 (3)	Well	Unmetered	2.00
Manito	Private	45	152	City of Spokane		3.38
Pine Acres	Private	25 (4)	50 (3)	Well		2.00
Spokane Country Club	Private	88 (2)	176 (3)	Spring	Unmetered	2.00
Sun Dance	Private	110 (2)	173 (2)	Well	Unmetered	1.57
Sunset	Private	7 (2)	26.9 (2)	Well		3.84
Valley View	Private	55 (2)	107 (2)	Well	Unmetered	1.95
Wandermere	Private	100 (2)	166 (2)	Spring	Unmetered	1.66
		1,126	2,250			2.00

(1) Estimated to be 80% of gross land area.
(2) Estimated by Golf Course operator.
(3) Calculated - based on average for other courses.
(4) Estimated.

TABLE 19

NON-AGRICULTURAL IRRIGATION

Description	Irrigated From Public Water Systems				Irrigated From Separate Wells			Total	
	Average Annual Application Feet	Area Acres	Annual Use Acre Feet	Peak Month Use Acre Feet	Area Acres	Annual Use Acre Feet	Peak Month Use Acre Feet	Area Acres	Annual Use Acre Feet
Highway Landscape	5.27	19	101	27.6	-	-	-	19	101
Golf Cources	2.00	312	705	328	814	1,545	719	1,126	2,250
City Parks	2.60	517	1,344	626	-	-	-	517	1,344
County Parks	2.60	70	182	84.8	22	57	26.5	92	239
TOTAL	12.47	918	2,332	1,066.4	836	1,602	746	1,754	3,934

TABLE 20

ANNUAL WATER USE

STUDY AREA SUMMARY, 1972

Use Category	ANNUAL WATER USE						Percent of Total		
	Billion Gallons			Acre Feet					
	G.W.*	S.W.*	Tot.*	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.
Domestic	31.52	-	31.52	96,740	-	96,740	60.9	-	60.9
Industrial #	5.64	2.37	8.01	17,310	7,270	24,580	10.9	4.6	15.5
Agricultural	9.93	1.79	11.72	30,480	5,480	35,960	19.2	3.4	22.6
Non-Agricultural Irrigation	0.52	-	0.52	1,600	-	1,600	1.0	-	1.0
TOTAL	47.61	4.16	51.77	146,130	12,750	158,880	92.0	8.0	100.0

* G.W. - Ground Water. S.W. - Surface Water. Tot. Total G.W. & S.W.
\# Not including Kaiser Trentwood's non-consumptive cooling water use.

TABLE 21

ANNUAL WATER UTILIZATION BY SOURCE

Use Category	Water Use - Million Gallons: Surface Water: Spokane River	Surface Water: Little Spokane & Trib.	Surface Water: Other Sources	Ground Water: Primary Aquifer	Ground Water: Little Spokane Valley	Ground Water: Other (Basalt) Aquifers	Totals: Ground Water	Totals: Surface Water	Totals: Total
Domestic	-	4.1	-	29,271	230	2,018	31,519	4.1	31,523
Industrial *	2,372	-	-	5,640	-	-	5,640	2,372	8,012
Agriculture	-	811	975	7,041	1,304	1,587	9,932	1,786	11,718
Non-Agricultural Irrigation	-	-	-	186	7.6	329	523	-	523
TOTAL	2,372	815	975	42,138	1,542	3,934	47,614	4,162	51,776

* Does not include Kaiser Trentwood's non-consumptive cooling water use.

TABLE 22

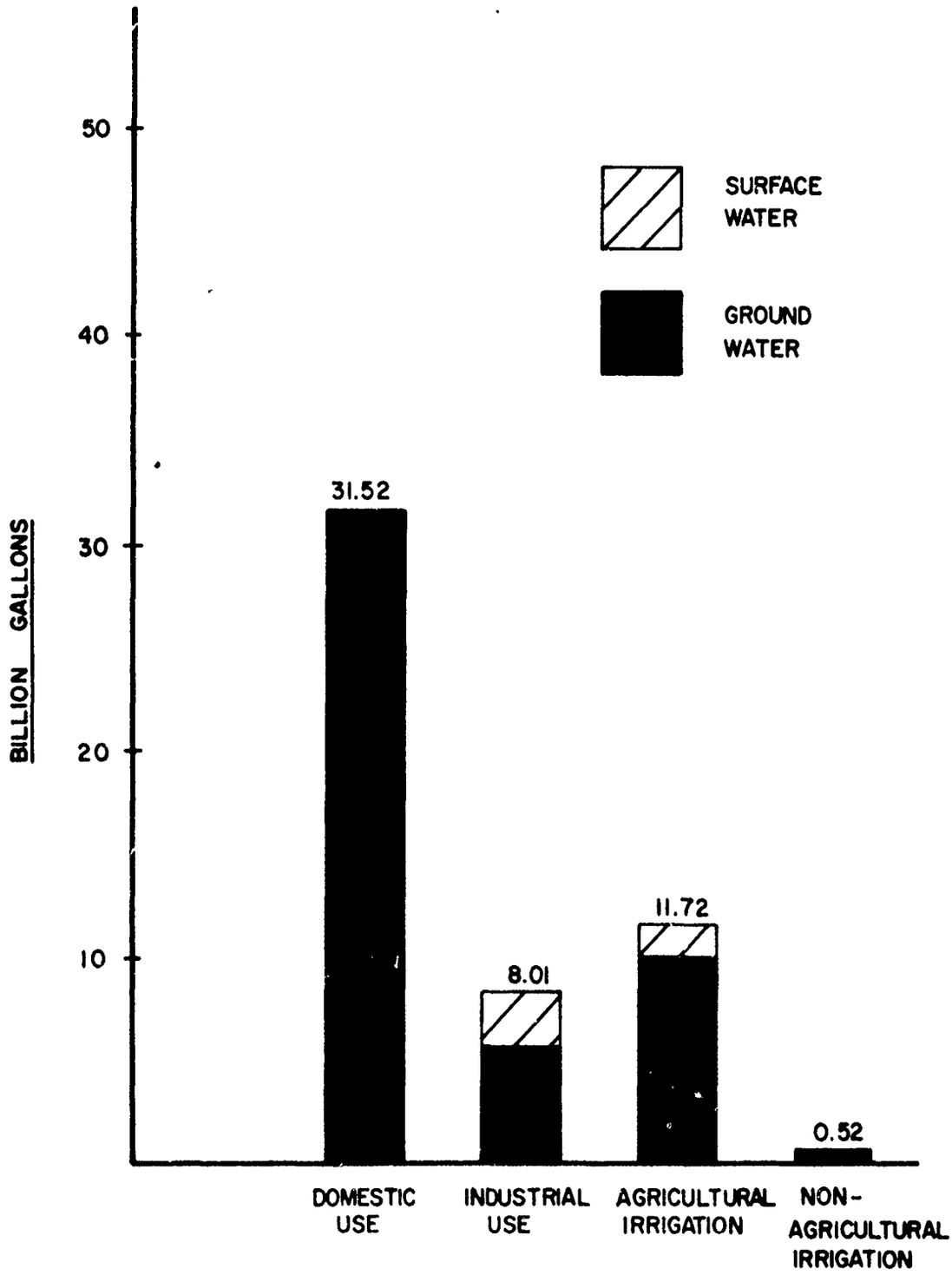
MONTHLY WATER USE, 1972

STUDY AREA SUMMARY

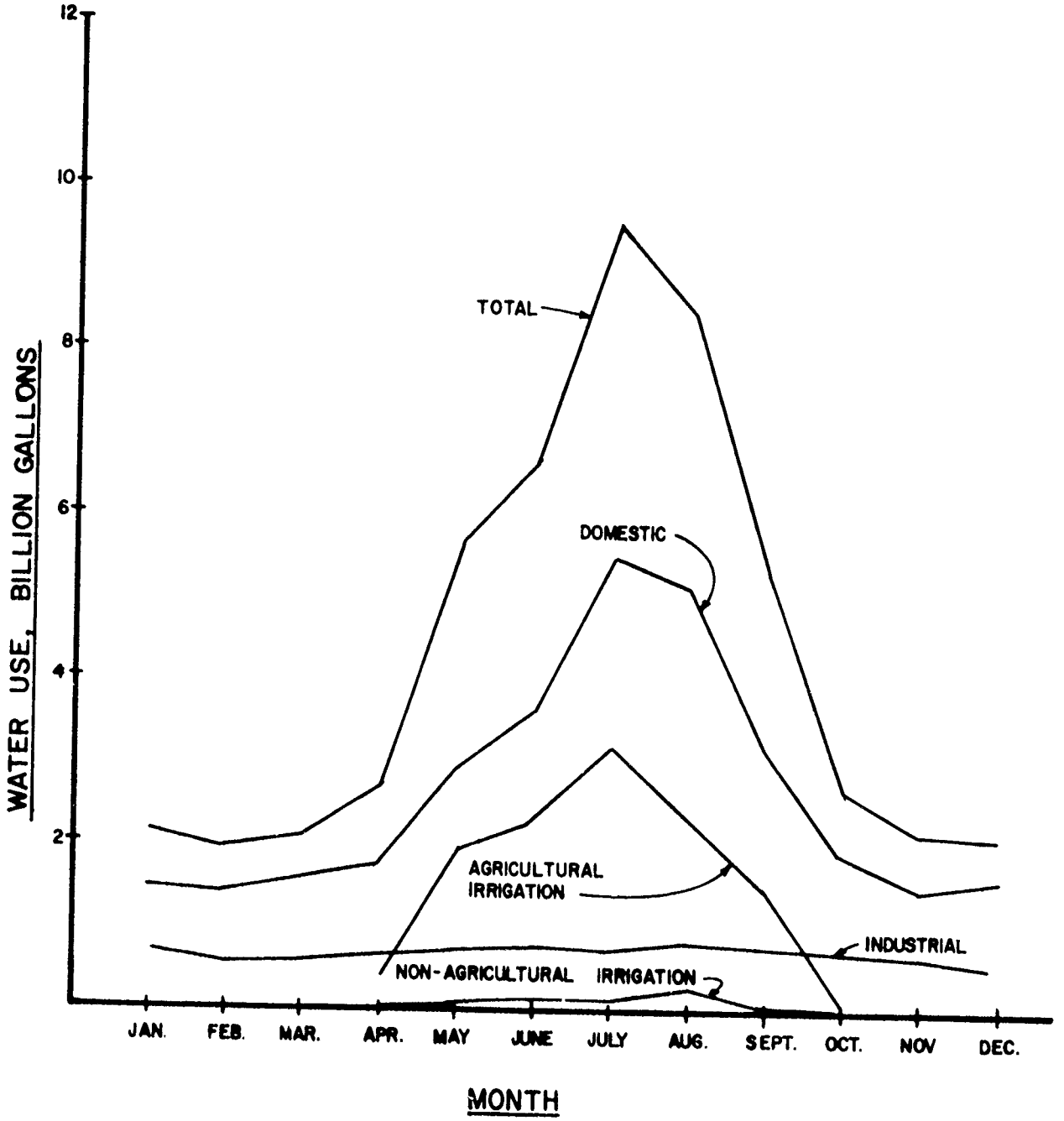
MONTHLY WATER USE, MILLION GAL.*

Month	Domestic			Industrial *			Agricultural			Non-Agric. Irrigation			Total		
	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.	G.W.	S.W.	Tot.
January	1,465	-	1,465	467	196	663	-	-	-	-	-	-	1,932	196	2,128
February	1,396	-	1,396	383	161	544	-	-	-	-	-	-	1,779	161	1,940
March	1,513	-	1,513	404	170	574	-	-	-	-	-	-	1,917	170	2,087
April	1,747	-	1,747	443	186	629	263	47	310	7	-	7	2,460	233	2,693
May	2,932	-	2,932	506	213	719	1,646	296	1,942	26	-	26	5,110	509	5,619
June	3,613	-	3,613	540	227	767	1,956	352	2,308	91	-	91	6,200	579	6,779
July	5,525	-	5,525	500	210	710	2,721	489	3,210	101	-	101	8,847	699	9,546
August	5,163	-	5,163	581	244	825	1,954	351	2,305	243	-	243	7,941	595	8,536
September	3,177	-	3,177	545	229	774	1,256	226	1,482	46	-	46	5,024	455	5,479
October	1,895	-	1,895	448	189	637	136	24	160	8	-	8	2,487	213	2,700
November	1,494	-	1,494	456	192	648	-	-	-	-	-	-	1,950	192	2,142
December	1,602	-	1,602	367	155	522	-	-	-	-	-	-	1,969	155	2,124
YEAR	31,522	-	31,522	5,640	2,372	8,012	9,932	1,785	11,717	522		552	47,616	4,157	51,773

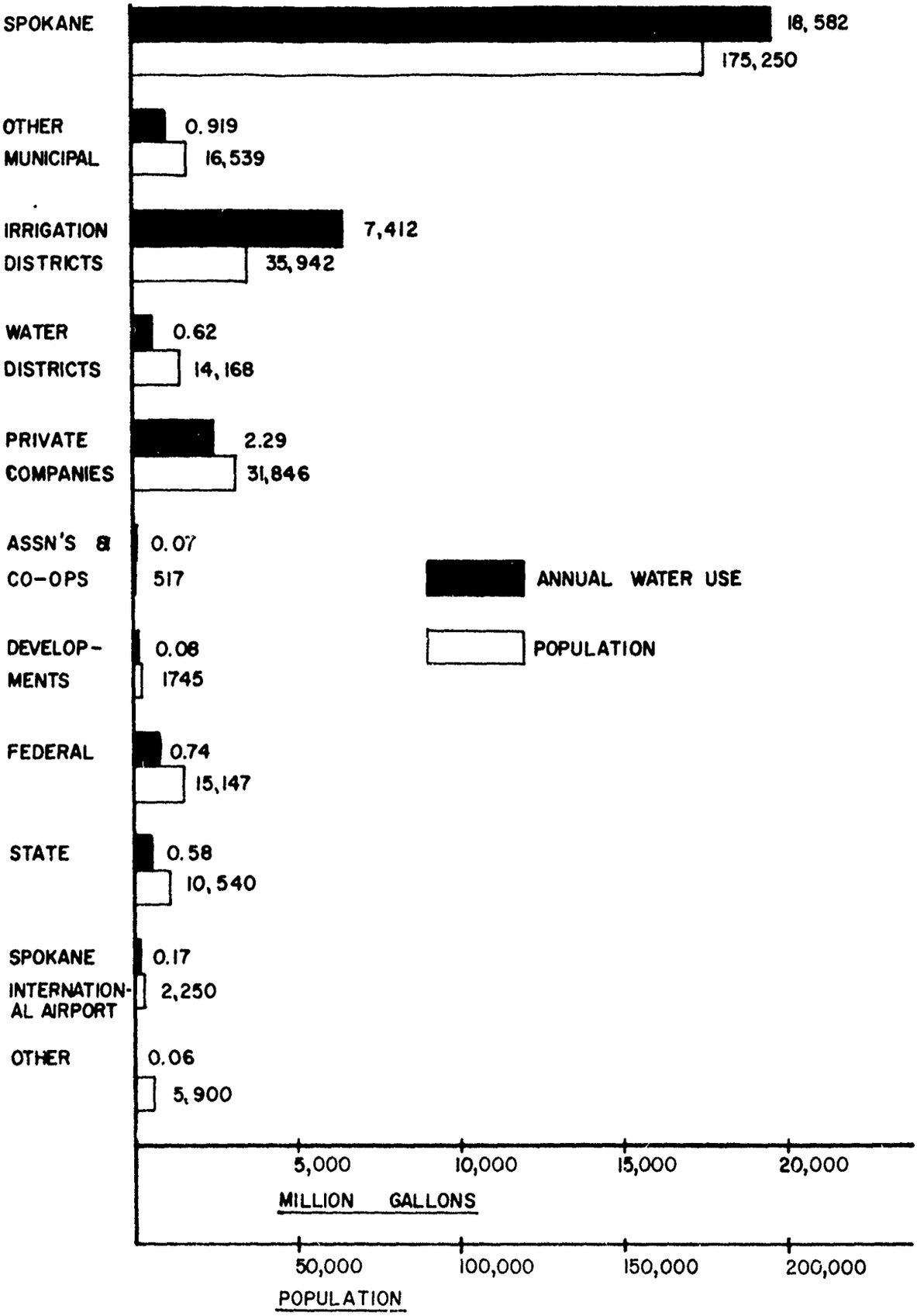
G.W. - Ground Water. S.W. - Surface Water
\- - Indicates essentially zero.
* - Does not include Kaiser Trentwood's non-consumptive cooling water use.



WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept. of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	CLASSIFICATION OF ANNUAL WATER USE	FIGURE A



WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept. of the Army, Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	MONTHLY PATTERN OF WATER USE	FIGURE B



WATER RESOURCES STUDY METROPOLITAN SPOKANE REGION Dept of the Army Seattle District Corps of Engineers Kennedy - Tudor Consulting Engineers	ANNUAL DOMESTIC USE AND SERVICE POPULATION BY AGENCY CLASSIFICATION	FIGURE C

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APPENDIX I

WATER SYSTEM IDENTIFICATION NUMBERS

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
		MUNICIPAL AGENCIES		
A 1.01	00650	Town of Airway Heights		2557
A 1.02A	12400	City of Cheney	Main	2520
A 1.02B	12400	City of Cheney	High	2610
A 1.03	18500	City of Deer Park		2286
A 1.04	24450	Town of Fairfield		2689
A 1.05	46150	Town of Latah		2620
A 1.06	53400	Town of Medical Lake		2626
A 1.07	54850	Town of Millwood		2060
A 1.08A	73550	Town of Rockford	Main	2500
A 1.08B	73550	Town of Rockford	High	
A 1.09	82870	Town of Spangle		2528
A 1.10A	83100	City of Spokane	Low	2097
A 1.10B	83100	" " "	North Hill	2187
A 1.10C	83100	" " "	Intermediate	2267
A 1.10D	83100	" " "	High	2467
A 1.10E	83100	City of Spokane	Top	2543
A 1.10F	83100	" " "	Glenaire	2849
A 1.10G	83100	" " "	Woodland Heights	2278
A 1.10H	83100	" " "	Highland	2383
A 1.10J	83100	" " "	Geiger Heights	2472
A 1.10K	83100	City of Spokane	Midbank	2290
A 1.10L	83100	" " "	Indian Hills	2327
A 1.10M	83100	" " "	Panorama Terrace	2375
A 1.10N	83100	" " "	Northwest Terrace	
A 1.10P	83100	" " "	Cannon Hill Park	
A 1.10Q	83100	" " "	Indian Canyon Park	2281
		WATER DISTRICTS		
A 1.11	87300	City of Tekoa		2600
A 2.01	-	Colbert Water District No. 9		2011
A 2.02A	21650	East Spokane Water Dist. No. 1	Main -	2095
A 2.02B	06265	East Spokane Water Dist. No. 1	Beverly Hills	2030
A 2.03	26200	Four Lakes Water Dist. No. 10		2540
A 2.04	36050	Irvin Water Dist. No. 6		2150
A 2.05A	96600	Whitworth Water Dist. No. 2	System 1	2231
A 2.05B	96601	" " " No. 2	System 2	2160
A 2.05C	96602	" " " No. 2	System 3 - Low	1956
A 2.05D	96602	" " " No. 2	System 3 - High	

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
A 2.05E	96603	Whitworth Water Dist. No. 2	System 4	1852
A 2.05F	96607	" " " No. 2	System 8 - Gleneden	1850
		IRRIGATION DISTRICTS		
A 3.01	11250	Carnhope Irr. Dist. No. 7		
	..	Consolidated Irrigation,		
A 3.02A	10220	Dist. No. 19	Carder	2190
A 3.02B	10223	Dist. No. 19	Corbin	2230
A 3.02C	10228	Dist. No. 19	East Farms	2200
A 3.02D	10232	Dist. No. 19	Greenacres	2140
A 3.02E	10236	Dist. No. 19	Otis Orchards	2210
A 3.02F	10240	Dist. No. 19	West Farms	2160
A 3.03	35100	Hutchinson Irr. Dist. No. 16		2055
A 3.04	55440	Moab Irr. Dist. No. 20		2320
A 3.05	55550	Model Irr. Dist. No. 18		2190
A 3.06	61300	North Spokane Irr. Dist. No. 8		2121
A 3.07	64000	Orchard Ave. Irr. Dist. No. 6		
A 3.08	66300	Pasadena Park Irr. Dist. No. 17		2165
A 3.09	89250	Trentwood Irr. Dist. No. 3		2192
A 3.10A	91450	Vera Irr. Dist. No. 15	Domestic	2211
A 3.10B	91450	" " Dist. No. 15	Spray Irrigation	
A 3.10C	91450	" " Dist. No. 15	Gravity Ditch Irrigation	
		WATER COMPANIES - STOCKHOLDER-OWNED		
A 4.01	19450	Dishman Water Co., Inc.		2079
A 4.02	29650	Greenacres Waterworks		
A 4.03	47150	Liberty Lake Utilities Co.		2280
A 4.04	-	Milan Water Co.		
A 4.05A	55600	Modern Electric Water Co.	Main	2100
A 4.05B	55600	Modern Electric Water Co.	High	2135
A 4.06	60780	North Mountain View Water Co., Inc.		
A 4.07	67880	Pleasant Prairie Water Co.		
A 4.08	73050	Rivilla Water Corp.		
		WWP - System 1,		
A 4.09A	93350	West Spokane Valley,	Zone 1	2170
A 4.09B	93350	West Spokane Valley,	Zone 2	2094
A 4.09C	93350	West Spokane Valley,	Zone 3	2274
		WWP - System 2,		
A 4.10A	93351	South Spokane Valley,	Zone 1	2223
A 4.10B	93351	South Spokane Valley,	Zone 2	2290
A 4.10C	93351	South Spokane Valley	Zone 3	2260
A 4.10D	93351	South Spokane Valley	Zone 4	

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
		WWP - System 3A		
A 4.11A	93353	North Spokane	Zone 1	
A 4.11B	93353	North Spokane	Zone 2	2115
A 4.12A	93354	WWP - System 3B - Mead	Zone 1	2084
A 4.12B	93354	WWP - " " "	Zone 2	2084
A 4.12C	93354	WWP - " " "	Zone 3	2084
A 4.13	93355	WWP - System 3BP - Pineriver		
		WWP - System 3C,		
A 4.14A	93356	Riverview Hills	Zone 1	
A 4.14B	93356	Riverview Hills	Zone 2	1900
		WWP - System 3D,		
A 4.15A	93357	Chattaroy Hills	Zone 1	
A 4.15B	93357	Chattaroy Hills	Zone 2	
A 4.16	93358	WWP - System 4, South Spokane		
A 4.17	93360	WWP - System 6, Waterview Terrace		
A 4.18	59550	WWP - Nine-Mile Power Sta. & Dam		
A 4.19	95450	West Shore Water Co. Inc.		
A 4.61	45120	Lakeridge Water Co.		
A 4.62	13450	WWP - System 21 - Clayton		
A 4.81		WWP - Long Lake Power Sta. & Dam		
A 4.82		WWP - Little Falls Power Sta. & Dam		
		WATER ASSOCIATIONS, COOPERATIVES		
A 5.01	04179	Balmer's Garden Comm. Water Sys.		
A 5.02	11935	Cedar Knolls Water Ass'n.		
A 5.03	22915	Elk Community Water Ass'n.		
A 5.04	28125	Glenrose Water Ass'n.		
A 5.05	47145	Liberty Lake Improvement Club		
A 5.06	51845	Marshall Comm. Water Ass'n.		
A 5.07	93820	Waverly Heights Water Ass'n.		
A 5.61	90750	Uranium City Water System (No Facilities)		
		MISCELLANEOUS WATER SYSTEMS - DEVELOPMENTS		
A 6.01	30420	Halfmoon Ranchos		
A 6.02	60520	North Glen Estates		
A 6.03	65910	Panorama Acres		
A 6.04	69165	Prairie Pines		
A 6.05	72962	Rivervale (Also listed No. 72965)		

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
A 6.06	83034	Spokane Lake Park		
A 6.07	91445	Velview Estates		
A 6.08		Fairway Addition		
A 6.09		Glines Addition		
A 6.51		Camp Diamond		
A 6.10		Carmel Estates		
A 6.11		Deborah		
A 6.61		Bunch Estates		
A 6.62		Felton Addition		
A 6.63	84544	Stonelodge (Also listed No. 84545)		
A 6.64		Strong & Turosky		
A 6.65		Suncrest		
A 6.66		Sunshine Shores		
A 6.81		Cayuse Cove		
A 6.82		Conrad's Squaw Canyon		
A 6.83		Koontz's Squaw Canyon		
A 6.84		Loughbon Bay		
A 6.85		Peace Farm (Commune)		
A 6.86		Rinker-Bolenus		
A 6.87		Sun Pine Acres		
		MISCELLANEOUS WATER SYSTEMS - MOBILE HOME PARKS		
A 7.01		Chattaroy Valley Mobile Estates		
A 7.02		Frazer-Ulman Court		
A 7.03		Fairchild Mobile Park		
A 7.04		Indian Canyon Mobile Home Park		
A 7.05		Pinecroft Mobile Home Park		
A 7.06		Sunset Highway & Grove Road		
A 7.51		Circle Moon Mobile Homes		
		GOVERNMENT AGENCIES - FEDERAL		
B 1.01	24350	Fairchild Air Force Base		2550
B 1.61		Wellpinit (Spokane Tribe of Indians)		2425
B 1.62		Cayuse Cove Recreation Area		
B 1.81		Fort Spokane Campground		
A 1.82		Porcupine Bay Campground		
		GOVERNMENT AGENCIES - STATE OF WASHINGTON		
B 2.01	21850	Eastern State Hospital		2626
A 2.02A	21900	Eastern Washington State College		2520
A 2.02B	21900	Eastern Washington State College		2610

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
B 2.03	56620	Mt. Spokane State Park		
B 2.04	72840	Riverside State Park		
B 2.51	66870	Pend Oreille State Park		
B 2.61		Little Falls Campground		
B 2.62	48023	Long Lake Campground		
		GOVERNMENT AGENCIES - REGIONAL & COUNTY		
B 3.01		Spokane International Airport		2508
B 3.11		Hangman Valley Golf Course		
B 3.12		Liberty Lake Golf Course		
B 3.21		Central Valley Lions Club Area Park		
B 3.22		Elk Co. Park		
B 3.23		Eloika Lake Lots Co. Park		
B 3.24		Farwell Co. Park		
B 3.25		Fish Lake Co. Park		
B 3.26		Five Mile School Co. Park		
B 3.27		Harvard Co. Park		
B 3.28		Knox Co. Park		
B 3.29		Liberty Lake Co. Park		
B 3.30		Mirabeau Co. Park		
B 3.31		Morrow Co. Park		
B 3.32		Peone Creek Co. Park		
B 3.33		Pineriver Co. Park		
B 3.34		River Terrace Co. Park		
B 3.35		Silver Lake Co. Park		
B 3.36		Sontag Co. Park		
B 3.37		Sullivan Co. Park		
B 3.38		Valleyford Co. Park		
B 3.39		Woodward Co. Park		
		GOVERNMENT AGENCIES - PUBLIC SCHOOLS		
B 4.01		Chattaroy Grade School		
B 4.02		Colbert School		
B 4.03		Elk Grade School		
B 4.04		Freeman Elementary School		
B 4.05		Garden Springs School		
B 4.06		Great Northern School		
B 4.07		Green Bluff School		
B 4.08		Nine Mile Falls School		
B 4.09		Ponderosa Upper Elementary School		

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
B 4.21		Freeman High School		
B 4.22		Liberty High School		
B 4.23		Riverside High School		
B 4.81		Tolstoy School		
		PRIVATE SCHOOLS		
C 1.01		Antonian School		
C 1.02		St. George's School		
C 1.03		Upper Columbia Academy		
C 1.04		Whitworth College		
		INDUSTRIAL		
C 2.01		Ace Concrete		
C 2.02		Acme Concrete		
C 2.03		Alsco Linen		
C 2.04		American Sign & Indicator Co.		
C 2.05		Burlington Northern Railroad		
C 2.06		Centennial Mills		
C 2.07		Central Premix Concrete Co.		
C 2.08		Crystal Linen		
C 2.09	33370	Hillyard Processing Co.		
C 2.10		Hygrade Packing Co.		
C 2.11		Ideal Cement Co.		
C 2.12		Inland Empire Paper Co.		
C 2.13	37420	Kaiser Aluminum & Chem.- Mead Works		
C 2.14		South Mead Works		
C 2.15	37450	Trentwood Works		
C 2.16		Little King Tungsten Mine		
C 2.17		Northside Redi-Mix		
C 2.18		Northwest Refining & Chemical Corp.		
C 2.19	83027	Spokane Industrial Park		
C 2.20		Spokane Rendering Plant		
C 2.21		Troy Laundry		
C 2.51		Ford Timber		
C 2.52		Hunter Enterprises		
C 2.61		Dawn Mining Corp.		
C 2.62		Midnight Mines (Spokane Tribe of Indians)		
C 2.63		Suntex Vernier		

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
		TRAILER & RECREATIONAL VEHICLE PARKS		
C 3.01		Babbling Brook		
C 3.02		Explorer		
C 3.03		Fairview Heights		
C 3.04		Rooney's		
C 3.05		Shady Pines		
		MOTELS		
C 4.01		Bell		
C 4.02		Benson		
C 4.03		Big Arrow		
C 4.04		Cedar Village		
C 4.05		Circle B		
C 4.06		Evergreen Village		
C 4.07		Hilltop		
C 4.08		Linders Lodge		
C 4.09		Maple Leaf		
C 4.10	56610	Mt. Spokane		
C 4.11		Our Villa		
C 4.12		Pine Grove		
C 4.13		Ranch		
C 4.14		Rogers		
C 4.15		Shadows		
C 4.16		Skyline		
C 4.17		Starlight		
		RESORTS, CAMPGROUNDS, RECREATION AREAS		
C 5.01		Camp Sekani (Boy Scouts)		
C 5.02		Holiday Hills		
C 5.03		Snowblaze Lodges & Condominiums		
C 5.51		American Campgrounds		
C 5.52		Bushby's Resort		
C 5.53		Camp Cowles (Boy Scouts)		
C 5.54		Camp Reed (YMCA)		
C 5.55		Cedar Creek Resort		
C 5.56		Harbor Resort		
C 5.57		Rohner's Resort		
C 5.58		Sacheen Lake Resort		
C 5.59		Willow Cove Resort		

K-T No.	DSHS No.	Agency Type and Name	Service Zone	Pressure Elev. Ft.
C 5.61	25785	Ford Trading Post		
C 5.62		Rocky Point Resort		
C 5.63	89675	Tum Tum Resort		
C 5.64		Willow Bay Resorts & Campground		
		OTHER WATER USERS - COMMERCIAL GOLF COURSES & COUNTRY CLUBS		
C 6.01		Manito Golf & Country Club		
C 6.02		Pine Acres Golf Course & Driving Range		
C 6.03		Spokane Country Club		
C 6.04		Sun Dance Golf Course, Inc.		
C 6.05		Sunset Golf Course		
C 6.06		Valley View Golf Course		
C 6.07		Wandermere Golf Course		

DSHS No. 00650 K-T No. A 1.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Airway Heights Agency Type Municipal

Population Served 1,197 Number of Services 283

WATER USE STATISTICS

Average Daily Rate, MGD 0.153 Per capita, gpcd 128

Peak Daily Rate, MGD 0.306

Max. Week, Mil. Gal. 1.75 Max. Month, Mil. Gal. 7.47

Total Annual, Mil. Gal. 56

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	160	None
	2	42	"
	3	72	"
	4	225	"
Total:		499	

Water Treatment: None X, Chlorination ____, Fluoridation ____, Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
317,000	Standpipe		

Distribution System: Number of service zones 1

Pipe sizes: Mostly size 6-inch, with smallest 4-inch and largest 12-inch.

REMARKS

One well partially filled with rock. Heavy summer drawdown extends water table below pump suction.

DSHS No.	K-T No.
12400	A 1.02A A 1.02B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Cheney Agency Type Municipal

Population Served 6,500 - 10,000 Number of Services 1,267

WATER USE STATISTICS

Average Daily Rate, MGD 1.0 Per capita, gpcd 100 - 154
Peak Daily Rate, MGD 3.0
Max. Week, Mil. Gal. 17.2 Max. Month, Mil. Gal. 49
Total Annual, Mil. Gal. 365

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	550	Yes
	2	600	Yes *
	3	450	Yes
	4	425	Yes
Total:		2,025	

Water Treatment: None ____, Chlorination X, Fluoridation X,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
2,000,000	Ground	238,000	Ground
1,000,000	"	200,000	Elevated

Distribution System: Number of service zones 2

Pipe sizes: 6-inch or larger lines.

REMARKS

* Standby power available to Pump 1 or 2, but not both.

Cheney & EWSC are connected, with Cheney serving 1/3 of EWSC water.

DSHS No. 18500 | K-T No. A 1.03

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Deer Park | Agency Type Municipal
Population Served 1,350 | Number of Services 602

WATER USE STATISTICS

Average Daily Rate, MGD 0.352 | Per capita, gpcd 261
Peak Daily Rate, MGD 0.857
Max. Week, Mil. Gal. 5.2 | Max. Month, Mil. Gal. 35
Total Annual, Mil. Gal. 128

SOURCE OF SUPPLY

Groundwater X | Springs ____ | Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	225	No
	2	350	No
	3	280	Yes
	4	35	No
Total:		890	

Water Treatment: None ____, Chlorination X *, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
100,000	Elevated		
750,000	Standpipe		

Distribution System: Number of service zones 1

Pipe sizes: Mostly size 6-inch, with smallest 4-inch and largest 10-inch.

REMARKS

* Well No. 1 only.

DSHS No. 24450 K-T No. A 1.04

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Fairfield Agency Type Municipal
Population Served 514 Number of Services 231

WATER USE STATISTICS

Average Daily Rate, MGD 0.150 Per capita, gpcd 291
Peak Daily Rate, MGD 0.365
Max. Week, Mil. Gal. 2.09 Max. Month, Mil. Gal. 9.8
Total Annual, Mil. Gal. 55

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	420	Yes
2	125	No
3	40	No
Total:	585	

Water Treatment: None ____, Chlorination X *, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
80,000	Elevated		
100,000	Ground		

Distribution System: Number of service zones 1

Pipe sizes: Primarily 6-inch.

REMARKS

* No. 3 Well only

20% of town population resides in nursing home.
Town growth is slow.

DSHS No. 46150 | K-T No. A 1.05

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Latah Agency Type Municipal
Population Served 169 Number of Services 84

WATER USE STATISTICS

Average Daily Rate, MGD 0.0525 Per capita, gpcd 311
Peak Daily Rate, MGD 0.157
Max. Week, Mil. Gal. 0.90 Max. Month, Mil. Gal. 3.4
Total Annual, Mil. Gal. 19.1

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	250	No

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
50,000	Elevated		

Distribution System: Number of service zones 1

Pipe sizes: Mostly 4-inch.

REMARKS

Severe water shortage, summer 1973.

DSHS No. 53400 K-T No. A 1.06

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Medical Lake Agency Type Municipal
Population Served 1,872 Number of Services 578

WATER USE STATISTICS

Average Daily Rate, MGD 0.408 Per capita, gpcd 218
Peak Daily Rate, MGD 1.20
Max. Week, Mil. Gal. 6.3 Max. Month, Mil. Gal. 20
Total Annual, Mil. Gal. 149

SOURCE OF SUPPLY (*)

Groundwater_____ Springs_____ Surface Water_____

FACILITIES (*)

Wells: Well No. Pump Cap. GPM Standby Power

Total:

Water Treatment: None_____, Chlorination_____, Fluoridation_____,
Other_____

Storage:

Capacity, Gal. Type Capacity, Gal. Type

(*)

Distribution System: Number of service zones 1

Pipe sizes: Varies from 1 to 8-inch.

REMARKS * See Eastern State Hospital Report.

Medical Lake obtains all of its water from the Eastern State Hospital system, via 2 lines to Eastern State Hospital storage tanks.

Severe water shortage in summer. Town growth is restricted because of this.

DSHS No. 54850 | K-T No. A 1.07

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Millwood | Agency Type Municipal

Population Served 1,800 | Number of Services 600

WATER USE STATISTICS

Average Daily Rate, MGD 0.263 | Per capita, gpcd 146

Peak Daily Rate, MGD 0.525

Max. Week, Mil. Gal. 3.0 | Max. Month, Mil. Gal. 17.3

Total Annual, Mil. Gal. 96

SOURCE OF SUPPLY

Groundwater X | Springs ____ | Surface Water ____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	1,000	No
2	1,000	Yes
3	500	No
Total:	2,500	

Water Treatment: None X, Chlorination ____, Fluoridation ____, Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
800,000	Standpipe		

Distribution System: Number of service zones 1

Pipe sizes: ____

REMARKS

Fire hydrants provided.

Little growth expected. Major leak problems in distribution lines.

DSHS No. 73550

K-T No. A 1.08A A 1.08B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Rockford Agency Type Municipal

Population Served 367 Number of Services 154

WATER USE STATISTICS

Average Daily Rate, MGD 0.043 Per capita, gpcd 117

Peak Daily Rate, MGD 0.086

Max. Week, Mil. Gal. 0.49 Max. Month, Mil. Gal. 2.80

Total Annual, Mil. Gal. 15.7

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:

Well No.	Pump Cap. GPM	Standby Power
1	100	No

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
112,000	Hilltop		

Distribution System: Number of service zones 2

Pipe sizes: 4-inch & 6-inch.

REMARKS

Fire hydrants provided.

Additional well has plugged sand screen. Slow town growth. Seasonal water use restrictions.

DSHS No.	K-T No.
82870	A 1.09

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Spangle Agency Type Municipal
Population Served 212 Number of Services 87

WATER USE STATISTICS

Average Daily Rate, MGD 0.053 Per capita, gpcd 250
Peak Daily Rate, MGD 0.117
Max. Week, Mil. Gal. 0.67 Max. Month, Mil. Gal. 3.4
Total Annual, Mil. Gal. 19.3

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	50	No
	1	50	No

Total: 100

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
75,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: Mostly 6-inch and 4-inch. Some 2-inch and 8-inch exists.

REMARKS

One well is leased from the railroad. Slow town growth expected.

DSHS No.	K-T No.
83100	A 1.10A thru A 1.10Q

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Spokane Agency Type Municipal

Population Served 175,250 Number of Services 54,972

WATER USE STATISTICS

Average Daily Rate, MGD 53.48* Per capita, gpcd 290 - Domestic
Peak Daily Rate, MGD 150.46*
Max. Week, Mil. Gal. 862 * Max. Month, Mil. Gal. 3,165*
Total Annual, Mil. Gal. 19,575*

*Total system use including industrial. See supplemental sheet for breakdown.

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No. Pump Cap. GPM Standby Power

See Supplemental sheet.

Total:

Water Treatment: None _____, Chlorination X , Fluoridation _____,
Other _____

Storage:

Capacity, Gal. Type Capacity, Gal. Type

See Supplemental sheet.

Distribution System: Number of service zones 15

Pipe sizes: _____

_____

REMARKS

K-T No.

A 1.10A
thru
A 1.10Q

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Spokane

WATER USE STATISTICS (Breakdown)

	Domestic Only	Industrial Only	Total Domestic plus Industrial
Average Daily , MGD	50.76	2.72	53.48
Peak Daily Rate, MGD	142.81	7.65	150.46
Maximum Week, Million Gal.	818	44.00	862
Maximum Month, Million Gal.	3,012	153	3,165
TOTAL Annual Million Gal.	18,582	993	19,575

K-T No.

A 1.10A
thru
A 1.10Q

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Spokane

FACILITIES

Well Station	Well No.	Pump Capacities GPM	System Served
Well Electric	1	1,600, 5,900	Low & Intermediate, Respt.
" "	2	8,400, 8,400	North Hill
Parkwater	1*	1,120, 7,400	Intermediate & Low, Respt.
"	2*	7,400, 7,400	Low
"	3*	7,400, 7,400	Low
"	4*	7,400, 7,400	Low
Ray St.	1	7,250, 7,250	Intermediate
" "	2	7,250	Intermediate
Hoffman	1	5,450	North Hill
"	2	5,450	" "
Grace	1	9,000, 9,000	" "
Baxter	1	1,420	Low
"	2	1,420	Low
Nevada	1	6,200, 6,200, 6,200, 6,200	Low
Central	1	3,700, 3,700	North Hill
"	2	3,700, 3,700	" "
Indian Canyon	1	730	Indian Canyon Park
TOTAL	17	171,040	

* 4 Dug Wells, but each well is extended with 2 drilled wells.

K-T No.
A 1.10A
thru
A 1.10Q

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Spokane

FACILITIES - (continued)

Booster Pump Station	Pump Capacities GPM	System Served
Lincoln Hts	2,700, 3,700, 3,700, 4,500, 6,800, 6,800, 7,700, 7,700	High
14th & Grand	2,750, 4,200	High
9th & Pine	3,000, 4,500	Intermediate
Bishop Ct.	2,800	Intermediate
9th & E	550, 600	Woodland Hts
Belt St.	335, 335, 335, 335	Midbank
Sunset	40, 160, 165	Highland
Div. Manito	700, 700, 1,600	Top
Garden Pk	1,600, 2,200, 4,200, 4,200	Top
Milton	200, 460	Highland
Abbott	150, 150, 150, 400	Geiger Hts
Panorama	180, 180	Panorama
Glenaire	36, 130	Glenaire
Indian Hills	245, 888	Indian Hills
Alti-Control	12,000	North Hill

K-T No.
A 1.10A
thru
A 1.10Q

WAT APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Spokane

FACILITIES - (continued)

Storage Reservoir	Capacity Gal.	High Water Level, Ft.*	Type	System Served
Lincoln Hts (uncovered)	24,000,000	2,267	Hilltop	Intermediate
North Hill (uncovered)	15,000,000	2,156	Hilltop	North Hill
Rockwood Vista	11,000,000	2,097	Hilltop	Low
Glenaire	150,000	2,849	Hilltop	Glenaire
Geiger Hts.	250,000	2,472	Elevated	Geiger Hts.
33rd & Lamonte	1,250,000	2,461	Standpipe	High
9th & Pine	7,200,000	2,097	Hilltop	Low
Shadle Park	4,800,000	2,099	Hilltop	Low
Five Mile	10,200,000	2,187	Hilltop	North Hill
West Drive	1,000,000	2,097	Hilltop	Low
Garden Park	3,100,000	2,467	Hilltop	High
14th & Grand	365,000	2,267	Standpipe	Intermediate
Sunset	350,000	2,278	Hilltop	Woodland
Brown Pk.	5,000,000	2,543	Hilltop	Top
Midbank	580,000	2,290	Standpipe	Midbank
Highland	1,000,000	2,383	Standpipe	Highland
Panorama	30,000	2,375	Hilltop	Panorama
Indian Hills	30,000	2,327	Hilltop	Indian Hills
Indian Canyon	310,000	2,281	Hilltop	Indian Canyon Pk.
TOTAL	85,615,000			

* Based on U.S.G.S. DATUM

DSHS No. 87300 K-T No. A 1.11

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Tekoa Agency Type Municipal

Population Served 808 Number of Services 343

WATER USE STATISTICS

Average Daily Rate, MGD 0.20 Per capita, gpcd 248

Peak Daily Rate, MGD 0.52

Max. Week, Mil. Gal. 2.98 Max. Month, Mil. Gal. 13

Total Annual, Mil. Gal. 73

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	200	No
	2	350	No
	3	125	No
Total:		675	

Water Treatment: None ____, Chlorination ____, Fluoridation X,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
450,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: ____

REMARKS

Slow growth expected.

DSHS No. K-T No.

A 2.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Colbert Water District #9 Agency Type Water District
Population Served 210 Number of Services 60

WATER USE STATISTICS

Average Daily Rate, MGD 0.0346 * Per capita, gpcd 165
Peak Daily Rate, MGD 0.178 *
Max. Week, Mil. Gal. 1.08 * Max. Month, Mil. Gal. 3.45 *
Total Annual, Mil. Gal. 12.6 *

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	125	No

Total:

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
300,000	Ground		

Distribution System: Number of service zones 1

Pipe sizes: Consists of 4-inch, 6-inch and 8-inch pipe.

REMARKS * Estimated. No record.

Well is leased. Population expected to double in 2 years.
Possible water shortage.

DSHS No.	K-T No.
21650	A 2.02A
06265	A 2.02B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name East Spokane Water District #1 Agency Type Water District

Population Served 3,200 Number of Services 900

WATER USE STATISTICS

Average Daily Rate, MGD 0.271 Per capita, gpcd 85

Peak Daily Rate, MGD 1.27

Max. Week, Mil. Gal. 7.28 Max. Month, Mil. Gal. 17.8

Total Annual, Mil. Gal. 99

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	900	No
2	700	No
3	50; 160	No
Total:	1,810	

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
1,000,000	Hilltop		
27,000	Hilltop		

Distribution System: Number of service zones 2

Pipe sizes: 4-inch to 12-inch range.

REMARKS

Each zone served by one tank. Systems can be connected in case of emergency.

Little future change.

DSHS No.	K-T No.
26200	A 2.03

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Four Lakes Water District No. 10 Agency Type Water District

Population Served 200 Number of Services 51

WATER USE STATISTICS

Average Daily Rate, MGD 0.008 Per capita, gpcd 40

Peak Daily Rate, MGD 0.014

Max. Week, Mil. Gal. 0.08 Max. Month, Mil. Gal. 0.39

Total Annual, Mil. Gal. 2.92

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	30	No
	2	30	No
Total:		60	

Water Treatment: None _____, Chlorination X, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
26,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: 3/4-inch to 4-inch range.

REMARKS

Well No. 1 has gone dry. Building restriction due to water shortage.

DSHS No.	K-T No.
36050	A 2.04

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Irvin Water District No. 6 Agency Type Water District
Population Served 1,650 Number of Services 550

WATER USE STATISTICS

Average Daily Rate, MGD 0.21 Per capita, gpcd 127
Peak Daily Rate, MGD 4.0
Max. Week, Mil. Gal. 7.5 Max. Month, Mil. Gal. 13.7
Total Annual, Mil. Gal. 76

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	1,300	No
	2	340	No
	3	1,300	No
Total:		2,940	

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
300,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 10-inch range.

REMARKS

DSHS No.	K-T No.
96600	A 2.05A
96601	A 2.05B
96602	A 2.05C
96603	A 2.05D
96607	A 2.05E
28000	A 2.05F

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Whitworth Water District #2 Agency Type Water District

Population Served 8,908 Number of Services 2,581

WATER USE STATISTICS

Average Daily Rate, MGD 1.19 Per capita, gpcd 133

Peak Daily Rate, MGD 7.82

Max. Week, Mil. Gal. 44.8 Max. Month, Mil. Gal. 78.3

Total Annual, Mil. Gal. 435

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No. Pump Cap. GPM Standby Power

See Supplemental Sheet.

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
435,000	Hilltop	70,000	Hilltop
1 000,000	Hilltop	70,000	Hilltop
2,000,000	Hilltop	25,000	Hilltop

Distribution System: Number of service zones - - - 5 zones.

Pipe sizes: _____

_____

REMARKS

Major connection with City of Spokane's water system.

6% Annual growth rate in area (average). Whithworth Water District serves some of Whitworth College's water.

K-T No.
A 2.05A
A 2.05B
A 2.05C
A 2.05D
A 2.05E
A 2.05F

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Whitworth Water District #2

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	500	No
	1A	1,300	"
	2	2,000	"
	2A	1,100	"
	3	500	"
	3A	1,750	"
	4	350	"
	8	175	"
	9	800	"
Total:		8,475	

DSHS No.	K-T No.
11250	A 3.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Carnhope Irrigation Dist. No. 7 Agency Type Irrigation District
Population Served 1,400 Number of Services 459

WATER USE STATISTICS

Average Daily Rate, MGD 1.0 Per capita, gpcd 714
Peak Daily Rate, MGD 1.7
Max. Week, Mil. Gal. 18.6 Max. Month, Mil. Gal. 65.7
Total Annual, Mil. Gal. 365

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	600, 1,100	No *
Total:		1,700	

* Emergency connection to WWP System 1A

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
None			

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 10-inch. Fire hydrants provided.

REMARKS

50 - 150 acres are still irrigated for agricultural purposes; mostly corn, pasture land, etc.. Agriculture is declining here.

DSHS No.	K-T No.
10220	A 3.02A
10223	A 3.02B
10228	A 3.02C
10232	A 3.02D
10236	A 3.02E
10240	A 3.02F

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Consolidated Irrig. Dist. No. 19 Agency Type Irrigation District

Population Served 6,500 Number of Services 1,702

WATER USE STATISTICS

Average Daily Rate, MGD 19.21* Per capita, gpcd 1114 domestic

Peak Daily Rate, MGD 38.47*

Max. Week, Mil. Gal. 220.38* Max. Month, Mil. Gal. 1913*

Total Annual, Mil. Gal. 7,012*

* Total system use including agricultural irrigation. See Supplemental sheet for breakdown.

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No. Pump Cap. GPM Standby Power

See Supplemental sheet.

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type

See Supplemental sheet.

Distribution System: Number of service zones 6

Pipe sizes: 6-inch to 26-inch. Fire hydrants provided.

REMARKS

Largest "agricultural" irrigation district, with 2,600 acres under cultivation. Mostly truck crops & grass seeds. This district was organized from a U. S. Bureau of Reclamation project.

K-T No.
A 3.02A
A 3.02B
A 3.02C
A 3.02D
A 3.02E
A 3.02F

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Consolidated Irrigation District #19

WATER USE STATISTICS (Breakdown)

	Domestic Only	Irrigation Only	Total Domestic plus Irrigation
Average Daily, MGD	7.24	11.97	19.21
Peak Daily Rate, MGD	14.50	23.97	38.47
Maximum Week, Million Gal.	83.08	137.3	220.38
Maximum Month, Million Gal.	716	1,197	1,913
TOTAL Annual Million Gal.	2,643	4,369	7,012

K-T No.
A 3.02A
A 3.02B
A 3.02C
A 3.02D
A 3.02E
A 3.02F

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Consolidated Irrig. Dist. No. 19

FACILITIES

Wells: Well No.	Pump Capacity GPM	System Served
1A	1,170	Carder
1B	2,250	Carder
1C	1,170	Carder
2A	1,400	Corbin
2B	3,020	Corbin
2C	2,340	Corbin
3A	2,340	Corbin
3B	1,440	Corbin
3C	3,020	Corbin
4A	3,240	Greenacres
4B	1,890	Greenacres
4C	1,890	Greenacres
4D	3,240	Greenacres
5A	2,700	West Farms
5B	1,440	West Farms
5C	1,440	West Farms
6A	3,060	Otis Orchards
6B	1,580	Otis Orchards
6C	1,580	Otis Orchards
7A	1,620	East Farms
7B	3,330	East Farms
7C	1,620	East Farms
8A	3,060	Otis Orchards
8B	1,580	Otis Orchards
8C	1,580	Otis Orchards
9A	1,620	Otis Orchards
9B	1,620	Otis Orchards
9C	3,240	Otis Orchards
10A	1,620	East Farms
10B	1,620	East Farms
10C	3,240	East Farms
11A	3,330	East Farms
11B	1,670	East Farms
11C	1,670	East Farms
TOTAL	72,630	

K-T No.
A 3.02A
A 3.02B
A 3.02C
A 3.02D
A 3.02E
A 3.02F

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Consolidated Irrig. Dist. No. 19

FACILITIES - (continued)

Storage:

Storage Tank	Capacity Gal.	Approximate Elevation, Ft.	Type	
1	50,000	2,190	Elevated	Carder
2	50,000	2,190	"	Corbin
3	50,000	2,230	"	Corbin
4	50,000	2,140	"	Greenacres
5	50,000	2,160	"	West Farms
6	50,000	2,210	"	Otis Orchards
7	50,000	2,200	"	East Farms
8	50,000	2,210	"	Otis Orchards
9	50,000	2,210	"	Otis Orchards
10	50,000	2,200	"	East Farms
11	50,000	2,220	"	East Farms
TOTAL	550,000			

DSHS No.	K-T No.
35100	A 3.03

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Hutchinson Irrig. Dist. No. 16 Agency Type Irrigation District
Population Served 2,100 Number of Services 693

WATER USE STATISTICS

Average Daily Rate, MGD 0.262 Per capita, gpcd 125
Peak Daily Rate, MGD 0.525
Max. Week, Mil. Gal. 3.01 Max. Month, Mil. Gal. 17.28
Total Annual, Mil. Gal. 96

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	2,500	No
	2	400, 1,000, 1,200	Yes, on 1,000 gpm only.

Total: 5,100

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
75,000	Elevated		

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 12-inch range.

REMARKS

Irrigation water is primarily used for lawns and small gardens.

DSHS No.	K-T No.
55440	A 3.04

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Moab Irrigation District No. 20 Agency Type Irrigation District
Population Served 167 Number of Services 67

WATER USE STATISTICS

Average Daily Rate, MGD 1.30* Per capita, gpcd 565 domestic
Peak Daily Rate, MGD 3.40*
Max. Week, Mil. Gal. 19.45* Max. Month, Mil. Gal. 144.1*
Total Annual, Mil. Gal. 474.5*

* Total system use including agricultural irrigation. See Supplemental sheet for breakdown.

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	400, 1,200, 2,400	No

Total: 4,000

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
33,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: _____

_____

REMARKS

Most of this area is devoted to irrigated agriculture, however, agriculture is declining.

K-T No.
A 3.04

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Moab Irrigation District No. 20

WATER USE STATISTICS (Breakdown)

	Domestic Only	Irrigation Only	Total Domestic plus Irrigation
Average Daily, MGD	0.0945	1.21	1.30
Peak Daily Rate, MGD	0.246	3.15	3.40
Maximum Week, Million Gal.	1.41	18.05	19.45
Maximum Month, Million Gal.	6.21	137.9	144.1
TOTAL Annual Million Gal.	34.5	440	474.5

DSHS No.	K-T No.
55550	A 3.05

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Model Irrig. District No. 18 Agency Type Irrigation District
Population Served 4,075 Number of Services 1,200

WATER USE STATISTICS

Average Daily Rate, MGD 0.575 Per capita, gpcd 141
Peak Daily Rate, MGD 2.604
Max. Week, Mil. Gal. 14.9 Max. Month, Mil. Gal. 37.8
Total Annual, Mil. Gal. 210

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power*
	1	250, 500, 750, 1,000	No
	2	525	Yes (Gear Head Pulley)
	3	1,600	No
	4	1,000	No
Total:		5,625	

Water Treatment: None _____, Chlorination X **, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
250,000	Elevated		

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 12-inch range.

REMARKS

** Well No. 2 only
* Wells 1 & 4 are served by different electric utility than 2 & 3.
Little Agriculture left. Large amounts of potential growth.
Area was platted in 1910.

DSHS No. 61300 | K-T No. A 3.06

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name North Spokane Irrig. Dist. No. 8 Agency Type Irrigation District

Population Served 1,900 Number of Services 654

WATER USE STATISTICS

Average Daily Rate, MGD 0.405 Per capita, gpcd 225

Peak Daily Rate, MGD 2.38

Max. Week, Mil. Gal. 13.6 Max. Month, Mil. Gal. 26.6

Total Annual, Mil. Gal. 148

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	1,000	No
	2	1,000	"
	3	1,200	"
	4	1,300	"
Total:		4,500	

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
100,000			

Distribution System: Number of service zones 1

Pipe sizes: 6-inch or larger.

REMARKS

Little agriculture.

DSHS No.	K-T No.
64000	A 3.07

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Orchard Ave. Irrig. Dist. No. 6 Agency Type Irrigation District
Population Served 3,500 Number of Services 1,000

WATER USE STATISTICS

Average Daily Rate, MGD 1.04 Per capita, gpcd 299
Peak Daily Rate, MGD 7.36
Max. Week, Mil. Gal. 42.2 Max. Month, Mil. Gal. 68.4
Total Annual, Mil. Gal. 380

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	2,250, 1,500, 750	No
2	1,750, 1,750	Yes, One pump only.

Total: 8,000

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
None			

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 14-inch range. Pressure controlled by regulators.

REMARKS

Irrigation for lawns and gardens.

DSHS No. 66300 K-T No. A 3.08

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name: Pasadena Park Irrig. Dist. No. 17 Agency Type Irrigation District
Population Served 2,000 Number of Services 670

WATER USE STATISTICS

Average Daily Rate, MGD 1.64 Per capita, gpcd 822
Peak Daily Rate, MGD 2.4
Max. Week, Mil. Gal. 13.8 Max. Month, Mil. Gal. 108
Total Annual, Mil. Gal. 600

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	500, 1,000	No
2	1,500	No
3	2,000	No
Total:	5,000	

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
300,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 12-inch range.

REMARKS

Little growth expected. Area is primarily residential.

DSHS No. 89250 | K-T No. A 3.09

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Trentwood Irrig. Dist. No. 3 Agency Type Irrigation District
Population Served 3,400 Number of Services 837

WATER USE STATISTICS

Average Daily Rate, MGD 1.55 Per capita, gpcd 456
Peak Daily Rate, MGD 2.45
Max. Week, Mil. Gal. 14.0 Max. Month, Mil. Gal. 103
Total Annual, Mil. Gal. 570

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	300, 500, 1,000	No
	2	900	No
	3	3,000	No
	4	2,000	No
	5	2,000	No
Total:		9,700	

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
1,000,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 12-inch range.

REMARKS

Little agriculture in this area.

DSHS No.	K-T No.
91450	A 3.10A
	A 3.10B
	A 3.10C

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Vera Irrig. District No. 15 Agency Type Irrigation District

Population Served 11,000 Number of Services 2,920

WATER USE STATISTICS

Average Daily Rate, MGD 8.66* Per capita, gpcd 590 domestic

Peak Daily Rate, MGD 24.46*

Max. Week, Mil. Gal. 140 * Max. Month, Mil. Gal. 859*

Total Annual, Mil. Gal. 3160 *

* Total system use including agricultural irrigation. See Supplemental sheet for breakdown.

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:

Well No.	Pump Cap. GPM	Standby Power

See Supplemental sheet.

Total:

Water Treatment: None X, Chlorination **, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
1,000,000	Hilltop		
4,000,000	"		

Distribution System: Number of service zones 3#

Pipe sizes: 4-inch to 16-inch.

REMARKS

** Portable emergency chlorination available.
# Separated areas, not connected pressure zones.

Ditch irrigation being phased out. Agriculture, in general, is diminishing.

K-T No.
A 3.10A
A 3.10B
A 3.10C

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Vera Irrigation District No. 15

WATER USE STATISTICS (Breakdown)

	Domestic Only	Irrigation Only	Total Domestic plus Irrigation
Average Daily, MGD	6.49	2.17	8.66
Peak Daily Rate, MGD	18.33	6.13	24.46
Maximum Week, Million Gal.	105	35.1	140
Maximum Month, Million Gal.	642	217	859
TOTAL Annual Million Gal.	2,368	792	3,160

K-T No.
A 3.10A
A 3.10B
A 3.10C

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Vera Irrigation District No. 15

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	350, 3,000, 3,700*	This Agency has its own electrical distribution facilities. Only 350 GPM pump in well 1 has a standby motor.
2	400, 3,000, 3,000*	
3	2,700, 2,700, 2,800*, 2,800*	
4	1,200**, 1,800**	
5	900, 1,900	
6	4,000	
7	500*	

* Used for ditch irrigation.
** Used for spray irrigation.

DSHS No.	K-T No.
19450	A 4.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Dishman Water Co. Agency Type Private Co.

Population Served 500 Number of Services 117

WATER USE STATISTICS

Average Daily Rate, MGD 0.06 Per capita, gpcd 120

Peak Daily Rate, MGD 0.10

Max. Week, Mil. Gal. 0.573 Max. Month, Mil. Gal. 3.96

Total Annual, Mil. Gal. 22

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:

Well No.	Pump Cap. GPM	Standby Power
1	500	No

Total:

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
70,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: 6-inch to 10-inch range.

REMARKS

No agriculture or industry in this area.

DSHS No. 29650 K-T No. A 4.02

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Greenacres Water Works Agency Type Private Co.
Population Served 790 Number of Services 225

WATER USE STATISTICS

Average Daily Rate, MGD 0.052 Per capita, gpcd 66
Peak Daily Rate, MGD 0.32
Max. Week, Mil. Gal. 1.83 Max. Month, Mil. Gal. 3.42
Total Annual, Mil. Gal. 19

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	200,300	No

Total: 500

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
None			

Distribution System: Number of service zones 1

Pipe sizes: ____

REMARKS

This system has no definite service boundary. Its customers are located within Consolidated's Greenacres zone.

DSHS No.	K-T No.
45120	A 4.61

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Lakeridge Water Co. Agency Type Private Co.
Population Served 65 Number of Services 27

WATER USE STATISTICS

Average Daily Rate, MGD 0.00525 Per capita, gpcd 124
Peak Daily Rate, MGD 0.0105
Max. Week, Mil. Gal. 0.06 Max. Month, Mil. Gal. 0.54
Total Annual, Mil. Gal. 1.9

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	50	Probably none
	2	275	" "
Total:		325	

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
2,000	Hydropneumatic		

Distribution System: Number of service zones 1

Pipe sizes: _____

REMARKS

DSHS No.	K-T No.
47150	A 4.03

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Liberty Lake Utilities Co., Inc. Agency Type Private Co.
Population Served 900 Number of Services 386

WATER USE STATISTICS

Average Daily Rate, MGD 0.5 Per capita, gpcd 556
Peak Daily Rate, MGD 1.0
Max. Week, Mil. Gal. 5.73 Max. Month, Mil. Gal. 32.76
Total Annual, Mil. Gal. 182

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	690	No
	2	690, 1,750, 1,750	Yes*

Total: 4,880

Water Treatment: None X**, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
95,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 12-inch range.

REMARKS

Rapid residential growth.

* Only for the 690 GPM pump
** Standby Chlorinators are available.

DSHS No. K-T No.

A 4.04

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Milan Water Co. Agency Type Private Co.

Population Served 30 - 70 Number of Services 10 - 20

WATER USE STATISTICS

Average Daily Rate, MGD 0.0075 Per capita, gpcd 150

Peak Daily Rate, MGD 0.025

Max. Week, Mil. Gal. 0.15 Max. Month, Mil. Gal. 0.75

Total Annual, Mil. Gal. 2.74

SOURCE OF SUPPLY

Groundwater X Springs X* Surface Water

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	Unknown	No
	2	"	No
	3*		No

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
10,000	Hydropneumatic		

Distribution System: Number of service zones 2

Pipe sizes: ____

REMARKS

* Spring source, currently dry.

DSHS No. 55600

K-T No. A 4.05A A 4.05B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Modern Electric Water Co. Agency Type Private Co.

Population Served 14,588 Number of Services 4,168

WATER USE STATISTICS

Average Daily Rate, MGD 2.29 Per capita, gpcd 157

Peak Daily Rate, MGD 21.87

Max. Week, Mil. Gal. 125 Max. Month, Mil. Gal. 575

Total Annual, Mil. Gal. 836

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No. Pump Cap. GPM Standby Power

See Supplemental Sheet.

Total:

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
100,000	Elevated	500,000	Elevated
100,000	Elevated		

Distribution System: Number of service zones 2

Pipe sizes: 4-inch to 16-inch range.

REMARKS

Minor agriculture in this area.

K-T No.
A 4.05A
A 4.05B

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Modern Electric Water Co.

FACILITIES

Wells:	Well No.	Installed Pump Capacity, GPM.	Standby Power
	1	1,950, 2,650	None *
	2	3,035	
	3	1,325, 2,000	
	4	1,800, 2,600	
	5	1,850, 3,700	
	6	1,200 2,650	
	7	600, 1,000	
	8	1,760	
	9	1,600	
	TOTAL	29,720	

* This Agency has its own electrical distribution facilities.

DSHS No.	K-T No.
60780	A 4.06

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name North Mountain View Water Co., Inc. Agency Type Private Co.

Population Served 16 Number of Services 5

WATER USE STATISTICS

Average Daily Rate, MGD 0.003 Per capita, gpcd 150

Peak Daily Rate, MGD 0.010

Max. Week, Mil. Gal. 0.061 Max. Month, Mil. Gal. 0.30

Total Annual, Mil. Gal. 1.10

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	20	

Total:

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
Unknown	Hydropneumatic		

Distribution System: Number of service zones _____

Pipe sizes: 6-inch.

REMARKS

DSHS No.	K-T No.
67880	A 4.07

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Pleasant Prairie Water Co. Agency Type Private Co.
Population Served 34 Number of Services 10

WATER USE STATISTICS

Average Daily Rate, MGD 0.014 Per capita, gpcd 412
Peak Daily Rate, MGD 0.028
Max. Week, Mil. Gal. 0.16 Max. Month, Mil. Gal. 0.92
Total Annual, Mil. Gal. 5.1

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	100	None

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
16,000	Hydropneumatic		

Distribution System: Number of service zones 1

Pipe sizes: _____

_____

REMARKS

Water rights for 37 homes only.

DSHS No.	K-T No.
73050	A 4.08

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Rivilla Water Corp. Agency Type Private Co.
Population Served 97 Number of Services 25

WATER USE STATISTICS

Average Daily Rate, MGD 0.0146 Per capita, gpcd 150
Peak Daily Rate, MGD 0.0292
Max. Week, Mil. Gal. 0.177 Max. Month, Mil. Gal. 1.46
Total Annual, Mil. Gal. 5.33

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	75, 75	No

Total: 150

Water Treatment: None X, Chlorination ___, Fluoridation ___,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
14,000	Hydropneumatic		

Distribution System: Number of service zones 1

Pipe sizes: _____

REMARKS

more homes is saturation limit.

DSHS No.	K-T No.
93350	A 4.09A A 4.09B A 4.09C

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power * Agency Type Private Co.
Population Served 3,872 Number of Services 1,106

* Zone #1 (West Spokane Valley)

WATER USE STATISTICS

Average Daily Rate, MGD 0.808 Per capita, gpcd 209
Peak Daily Rate, MGD 3.712
Max. Week, Mil. Gal. 20.74 Max. Month, Mil. Gal. 61.7
Total Annual, Mil. Gal. 295

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	200	None (WWP delivers its own electric power)
2	650	
3	400	
4	325	
5	415	
5A	190	
Total:	2,180	

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
1,000,000	Hilltop		

Distribution System: Number of service zones 3

Pipe sizes: _____

_____

REMARKS

Emergency connection to Carnhope Irrigation District. in case of Carnhope failure.

Connection to City of Spokane's system.

DSHS No.	K-T No.
93351	A 4.10A A 4.10B A 4.10C A 4.10D

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power ** Agency Type Private Co.

Population Served 4,737 Number of Services 1,353

** Zone #2 (South Spokane Valley)

WATER USE STATISTICS

Average Daily Rate, MGD 1.284 Per capita, gpcd 271

Peak Daily Rate, MGD 4.054

Max. Week, Mil. Gal. 23.23 Max. Month, Mil. Gal. 105

Total Annual, Mil. Gal. 469

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	2 - 1	650	None (WWP delivers its own electric power)
	2 - 2	500	
	2 - 4	2,400	
	2 - 5	3,500	
	2 - 7	150	
Total:		7,200	

Water Treatment: None _____, Chlorination X*, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
1,000,000	Hilltop	50,000	Elevated
38,000	Ground		

Distribution System: Number of service zones 4

Pipe sizes: _____

_____

REMARKS

* Except Well No. 2 - 7.

DSHS No. 93353

K-T No. A 4.11A A 4.11B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power * Agency Type Private Co.

Population Served 3,824 Number of Services 1,093

*Zone #3A (North Spokane)

WATER USE STATISTICS

Average Daily Rate, MGD 0.764 Per capita, gpcd 200

Peak Daily Rate, MGD 3.446

Max. Week, Mil. Gal. 19.38 Max. Month, Mil. Gal. 58.5

Total Annual, Mil. Gal. 279

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
3-1	1,100	None (WWP delivers its own electric power.
3-2	900	
Total:	2,000	

Water Treatment: None ____, Chlorination X, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
608,000	Hilltop		

Distribution System: Number of service zones 2

Pipe sizes: ____

REMARKS

Connection to City of Spokane's system.

DSHS No. 93354

K-T No. A 4.12A, A 4.12B, A 4.12C

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power ** Agency Type Private Co.

Population Served 1,205 Number of Services 344

** Zone # 3B (Mead)

WATER USE STATISTICS

Average Daily Rate, MGD 0.281 Per capita, gpcd 233

Peak Daily Rate, MGD 1.289

Max. Week, Mil. Gal. /.635 Max. Month, Mil. Gal. 31.9

Total Annual, Mil. Gal. 102

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	3 - 4	300	None (WWP delivers its own electric power.)
	3 - 4A	150	
	3 - 5	290	
	3 - 6	300	
	3 - 7	1,500	
Total:		2,540	

Water Treatment: None X*, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
3,000	Hydropneumatic		

Distribution System: Number of service zones 3

Pipe sizes: ____

REMARKS

* Well No. - 7 is Chlorinated.

DSHS No. 93355 K-T No. A 4.13

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power * Agency Type Private Co.
Population Served 475 Number of Services 136

* Zone #3BP (Pine River)

WATER USE STATISTICS

Average Daily Rate, MGD 0.079 Per capita, gpcd 166
Peak Daily Rate, MGD 0.281
Max. Week, Mil. Gal. 1.78 Max. Month, Mil. Gal. 5.26
Total Annual, Mil. Gal. 28.8

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	3 - 8	330	None (WWP delivers its own electric power)
	3 - 8A	90	
Total:		420	

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
55,000	Elevated		

Distribution System: Number of service zones 1

Pipe sizes: ____

REMARKS

DSHS No.	K-T No.
43356	A 4.14A
	A 4.14B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power * Agency Type Private Co.

Population Served 223 Number of Services 64

* Zone #3C (Riverview Hills)

WATER USE STATISTICS

Average Daily Rate, MGD 0.046 Per capita, gpcd 206

Peak Daily Rate, MGD 0.236

Max. Week, Mil. Gal. 1.43 Max. Month, Mil. Gal. 3.86

Total Annual, Mil. Gal. 16.7

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	3 - 9	76	None (WWP delivers its own electric power)
	3 - 9A	108	
Total:		184	

Water Treatment: None _____, Chlorination X, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
50,000	Standpipe		

Distribution System: Number of service zones 2

Pipe sizes: _____

REMARKS

DSHS No.	K-T No.
93357	A 4.15A A 4.15B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power * Agency Type Private Co.

Population Served 213 Number of Services 61

* Zone #3D (Chattaroy Hills)

WATER USE STATISTICS

Average Daily Rate, MGD 0.049 Per capita, gpcd 230

Peak Daily Rate, MGD 0.25

Max. Week, Mil. Gal. 1.60 Max. Month, Mil. Gal. 4.17

Total Annual, Mil. Gal. 17.9

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	3 - 10	425	None (WWP delivers its own electric power)

Total:

Water Treatment: None _____, Chlorination X, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
46,750	Elevated		

Distribution System: Number of service zones 2

Pipe sizes: _____

REMARKS

DSHS No. 93358 K-T No. A 4.16

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power ** Agency Type Private Co.
Population Served 511 Number of Services 146

WATER USE STATISTICS

** Zone #4 (South Spokane)

Average Daily Rate, MGD 0.106 Per capita, gpcd 207
Peak Daily Rate, MGD 0.433
Max. Week, Mil. Gal. 2.86 Max. Month, Mil. Gal. 10.80
Total Annual, Mil. Gal. 38.3

SOURCE OF SUPPLY *

Groundwater _____ Springs _____ Surface Water _____

FACILITIES

Wells: Well No. Pump Cap. GPM Standby Power

Total:

Water Treatment: None _____, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal. Type Capacity, Gal. Type

Distribution System: Number of service zones _____

Pipe sizes: _____

_____

REMARKS

* This zone has no distribution or storage facilities of its own. It draws all of its water from the City of Spokane's system.

DSHS No.	K-T No.
93360	A 4.17

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power Co.* Agency Type Private Co.

Population Served 9 Number of Services 3

* Zone #6 (Waterview Terrace)

WATER USE STATISTICS

Average Daily Rate, MGD 0.000465 Per capita, gpcd 52

Peak Daily Rate, MGD 0.001

Max. Week, Mil. Gal. 0.0057 Max. Month, Mil. Gal. 0.07

Total Annual, Mil. Gal. 0.17

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	6 - 1	275	None (WWP delivers its own electric power)

Total:

Water Treatment: None _____, Chlorination X, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
3,000	Hydropneumatic		

Distribution System: Number of service zones 1

Pipe sizes: _____

REMARKS

Small isolated system on shores of Long Lake.

DSHS No. 13450 K-T No. A 4.62

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Washington Water Power * Agency Type Private Co

Population Served 207 Number of Services 59

* Zone #21 (Town of Clayton)

WATER USE STATISTICS

Average Daily Rate, MGD 0.0111 Per capita, gpcd 54

Peak Daily Rate, MGD 0.0588

Max. Week, Mil. Gal. 0.3875 Max. Month, Mil. Gal. 1.21

Total Annual, Mil. Gal. 4.1

SOURCE OF SUPPLY

Groundwater _____ Springs _____ Surface Water X

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	21 - 1	100,100	None (WWP delivers its own electric power)

Total: 200

Water Treatment: None _____, Chlorination X, Fluoridation _____,
Other Filtration

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
3,000	Hydropneumatic		

Distribution System: Number of service zones 1

Pipe sizes: _____

_____

REMARKS

Water is drawn from Beaver Creek.

DSHS No. 95450 K-T No. A 4.19

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name West Shore Water Co., Inc. Agency Type Private Co.

Population Served 18 Number of Services 10

WATER USE STATISTICS

Average Daily Rate, MGD 0.00026 Per capita, gpcd 14

Peak Daily Rate, MGD 0.00122

Max. Week, Mil. Gal. 0.007 Max. Month, Mil. Gal. 0.03

Total Annual, Mil. Gal. 0.1

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	350	Probably none

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
34,500			

Distribution System: Number of service zones _____

Pipe sizes: 6-inch to 8-inch. (Max.)

_____

REMARKS

DSHS No. 04179

K-T No. A 5.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Balmer's Garden Agency Type Association

Population Served 30 Number of Services 10

WATER USE STATISTICS

Average Daily Rate, MGD 0.0005 Per capita, gpcd 17

Peak Daily Rate, MGD 0.002

Max. Week, Mil. Gal. 0.03 Max. Month, Mil. Gal. 0.024

Total Annual, Mil. Gal. 0.18

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	20	Probably none
	2	20	
Total:		40	

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
750	Hydropneumatic		

Distribution System: Number of service zones _____

Pipe sizes: Primarily 2-inch.

REMARKS

DSHS No. 11935 K-T No. A 5.02

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Cedar Knolls Water Ass'n. Agency Type Association
Population Served 7 Number of Services 3

WATER USE STATISTICS

Average Daily Rate, MGD 0.00056 Per capita, gpcd 80
Peak Daily Rate, MGD 0.0021
Max. Week, Mil. Gal. 0.012 Max. Month, Mil. Gal. 0.036
Total Annual, Mil. Gal. 0.2

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	30	Probably none

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
1,000	Hydropneumatic		

Distribution System: Number of service zones ____

Pipe sizes: ____

____

REMARKS

DSHS No. 22915 | K-T No. A 5.03

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Elk Water Association | Agency Type Association
Population Served 20 | Number of Services 8

WATER USE STATISTICS

Average Daily Rate, MGD 0.0025 | Per capita, gpcd 125
Peak Daily Rate, MGD 0.0057
Max. Week, Mil. Gal. 0.035 | Max. Month, Mil. Gal. 0.25
Total Annual, Mil. Gal. 0.9

SOURCE OF SUPPLY

Groundwater X | Springs ____ | Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	35	Probably none

Total:

Water Treatment: None ____, Chlorination X, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
350	Hydropneumatic		
100	"		
100	"		

Distribution System: Number of service zones ____

Pipe sizes: Primarily 2-inch.

REMARKS

DSHS No. 28125 | K-T No. A 5.04

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Glenrose Water Association Agency Type Association

Population Served 27 Number of Services 8

WATER USE STATISTICS

Average Daily Rate, MGD 0.003375 Per capita, gpcd 125

Peak Daily Rate, MGD 0.019

Max. Week, Mil. Gal. 0.11 Max. Month, Mil. Gal. 0.214

Total Annual, Mil. Gal. 1.2

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	20	Probably none

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
13,000	Hydropneumatic		

Distribution System: Number of service zones ____

Pipe sizes: Less than 6-inch.

_____

REMARKS

DSHS No.	K-T No.
47145	A 5.05

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Liberty Lake Improvement Club Agency Type Association

Population Served 300 Number of Services 118

WATER USE STATISTICS

Average Daily Rate, MGD 0.184 Per capita, gpcd 525

Peak Daily Rate, MGD 0.35

Max. Week, Mil. Gal. 2.01 Max. Month, Mil. Gal. 12.1

Total Annual, Mil. Gal. 67

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	350	No
	2	250	No
Total:		600	

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
20,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: 4-inch to 6-inch range

REMARKS

This agency has experienced a water shortage, and is considering buying water from Liberty Lake Utilities.

DSHS No.	K-T No.
51845	A 5.06

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Marshall Community Water Ass'n. Agency Type Association
Population Served 74 Number of Services 17

WATER USE STATISTICS

Average Daily Rate, MGD 0.0044 Per capita, gpcd 59
Peak Daily Rate, MGD 0.012
Max. Week, Mil. Gal. 0.07 Max. Month, Mil. Gal. 0.29
Total Annual, Mil. Gal. 1.6

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	60	No

Total:

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
15,000	Hydropneumatic		

Distribution System: Number of service zones 2

Pipe sizes: 2-inch to 6-inch range

REMARKS

DSHS No. 93820 | K-T No. A 5.07

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Waverly Heights Water Association Agency Type Association
Population Served 9 Number of Services 8

WATER USE STATISTICS

Average Daily Rate, MGD 0.001 Per capita, gpcd 111
Peak Daily Rate, MGD 0.002
Max. Week, Mil. Gal. 0.012 Max. Month, Mil. Gal. 0.07
Total Annual, Mil. Gal. 0.4

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells: Well No.	Pump Cap. GPM	Standby Power
1	45	Probably none

Total:

Water Treatment: None X, Chlorination ____, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
770	Hydropneumatic		

Distribution System: Number of service zones ____

Pipe sizes: Primarily 3-inch.

REMARKS

DSHS No.	K-T No.
24350	B 1.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Fairchild Air Force Base Agency Type Federal
Population Served 15,097 Number of Services 2,043

WATER USE STATISTICS

Average Daily Rate, MGD 2.01 Per capita, gpcd 133
Peak Daily Rate, MGD 7.25
Max. Week, Mil. Gal. 41.5 Max. Month, Mil. Gal. 105
Total Annual, Mil. Gal. 765

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells: Well No. Pump Cap. GPM Standby Power

See Supplemental sheet for Wells and Boosters.

Total:

Water Treatment: None _____, Chlorination X*, Fluoridation X*,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type

See Supplemental Sheet.

Distribution System: Number of service zones 1

Pipe sizes: _____

_____

REMARKS

No growth expected.

* Only Well No. 2 is treated.

APPENDIX II
WATER AGENCY INFORMATION SHEET

(Supplemental Sheet)

Name Fairchild Air Force Base

FACILITIES

Wells:

Well No.	Pump Capacities GPM
2	800
5	1,000, 1,000, 500
6	1,000
7	1,400
TOTAL	5,700

Booster Pumps:

Pump Capacities GPM	Tank Source
800	1
800	1
1,250	1
1,250	1
1,000 *	3A, 3B
1,000 *	3A, 3B
2,000	3A, 3B
2,000	3A, 3B

* Standby engine drive pumps.

Storage:

Tank	Capacity, Gal.	Type
1	800,000	Ground
2A	150,000	Elevated
2B	75,000	Elevated
3A	500,000	Ground
3B	500,000	Ground
4A	250,000	Standpipe
4B	250,000	Standpipe
TOTAL	2,525,000	

DSHS No. K-T No.

B 1.61

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Bureau of Indian Affairs - Wellpinit Agency Type Federal

Population Served 50 Number of Services

WATER USE STATISTICS

Average Daily Rate, MGD 0.010 Per capita, gpcd 200

Peak Daily Rate, MGD 0.050

Max. Week, Mil. Gal. 0.30 Max. Month, Mil. Gal. 1.0

Total Annual, Mil. Gal. 3.65

SOURCE OF SUPPLY

Groundwater X Springs Surface Water

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	100	No
	2	25	No
	3 (Standby)	20	No
Total:		145	

Water Treatment: None X*, Chlorination , Fluoridation ,
Other

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
70,000	Elevated		

Distribution System: Number of service zones 1

Pipe sizes:

REMARKS

This agency only serves the Indian Agency Center area at Wellpinit.

* Chlorinators are available.

DSHS No. 21850 | K-T No. B 2.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Eastern State Hospital Agency Type State

Population Served 3,580 - 6,500 Number of Services 5

WATER USE STATISTICS

Average Daily Rate, MGD 0.75 Per capita, gpcd 115 - 195

Peak Daily Rate, MGD 1.25

Max. Week, Mil. Gal. 7.16 Max. Month, Mil. Gal. 34

Total Annual, Mil. Gal. 275

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	1,000	No
	2	600	No
Total:		1,600	

Water Treatment: None X, Chlorination _____, Fluoridation _____, Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
2,000,000	Hilltop		
500,000	Hilltop		

Distribution System: Number of service zones 1

Pipe sizes: _____

_____

REMARKS

Population is declining. Eastern State Hoapital serves water to Medica Lake. The hospital draws irrigation water from West Medical Lake.

DSHS No.	K-T No.
21900	B 2.02A B 2.02B

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Eastern Washington St. College Agency Type State

Population Served 4,000 - 7,000 Number of Services 30

WATER USE STATISTICS

Average Daily Rate, MGD 0.833 Per capita, gpcd 119 - 208
Peak Daily Rate, MGD 1.0
Max. Week, Mil. Gal. 5.73 Max. Month, Mil. Gal. 12.14
Total Annual, Mil. Gal. 305

SOURCE OF SUPPLY

Groundwater X Springs _____ Surface Water _____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	150	No
	2	250	No
Total:		400	

Water Treatment: None X, Chlorination _____, Fluoridation _____,
Other _____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
5,000	Hydropneumatic		
10,000	"		

Distribution System: Number of service zones 2

Pipe sizes: _____

REMARKS

Eastern Washington State College buys about 1/3 of its water from Cheney.

DSHS No. 83030 | K-T No. B 3.01

APPENDIX II
WATER AGENCY INFORMATION SHEET

Name Spokane International Airport Agency Type Airport
Population Served 1,500 - 3,000 Number of Services 26

WATER USE STATISTICS

Average Daily Rate, MGD 0.465 Per capita, gpcd 155 - 310
Peak Daily Rate, MGD 0.648
Max. Week, Mil. Gal. 3.5 Max. Month, Mil. Gal. 16.3
Total Annual, Mil. Gal. 168

SOURCE OF SUPPLY

Groundwater X Springs ____ Surface Water ____

FACILITIES

Wells:	Well No.	Pump Cap. GPM	Standby Power
	1	450	No
	2	250	No
Total:		700	

Water Treatment: None ____, Chlorination X, Fluoridation ____,
Other ____

Storage:

Capacity, Gal.	Type	Capacity, Gal.	Type
500,000	Elevated		

Distribution System: Number of service zones 1

Pipe sizes: ____

REMARKS

Water short area. Seasonal restrictions are common.

APPENDIX III

ANNUAL DOMESTIC WATER USE
BY LOCATION

K-T No.	Agency	Well Site Location	Annual Use, Million Gallons	Map Identifier Number
A 1.01	Airway Hts.	Town	56	1
A 1.02	Cheney)			
B 2.02	EWSC)	Town	669	2
A 1.03	Deer Park	Town	128	3
A 1.04	Fairfield	Town	55	4
A 1.05	Latah	Town	19	5
A 1.06	Medical Lake)			
B 2.01	E. W. H.)	Near Espanola	423	6
A 1.07	Millwood	Town	96	7
A 1.08	Rockford	Town	16	8
A 1.09	Spangle	Town	19	9
A 1.10	Spokane	Well Elec. & Park Water	8,856	10
A 1.10	"	Baxter	394	11
A 1.10	"	Central	1,771	12
A 1.10	"	Grace & Nevada	4,920	13
A 1.10	"	Ray	2,558	14
A 1.10	"	Hoffman	1,181	15
A 1.10	"	Indian Canyon	0.1	16
A 1.11	Tekoa	Town	73	17
A 2.01	Colbert	District Well	13	18
A 2.02	E. Spokane	District Wells	99	19
A 2.03	Four Lakes	District Wells	3	20
A 2.04	Irvin	District Wells	77	21
A 2.05	Whitworth	Zone 1	103	22
A 2.05	"	Zone 2	61	23
A 2.05	"	Zone 3	219	24
A 2.05	"	Zone 4	23	25
A 2.05	"	Zone 8	32	26
A 3.01	Carnhope	Well 1	365	27

		Well Site	Dom.	Irr.	Total	
A 3.02	Consolidated	1	148	84	232	28
A 3.02	"	2	601	337	938	29
A 3.02	"	3	0	710	710	30
A 3.02	"	4	807	453	1,260	31
A 3.02	"	5	258	145	403	32
A 3.02	"	6	0	553	553	33
A 3.02	"	7	0	514	514	34
A 3.02	"	8	0	651	651	35

APPENDIX III - (continued)

K-T No.	Agency	Well Site Location	Annual Use, Million Gallons			Map Identifier Number
		Well Site	Dom.	Irr.	Total	
A 3.02	Consolidated, cont.	9	392	219	611	36
A 3.02	"	10	0	457	457	37
A 3.02	"	11	437	245	682	38
A 3.03	Hutchinson	Wells 1 & 2			96	39
A 3.04	Moab	Well 1	34.5	440	474.5	40
A 3.05	Model	Wells 1 & 4			131	41
A 3.05	"	Wells 2 & 3			79	42
A 3.06	N. Spokane	Wells 1,2,3,4			148	43
A 3.07	Orchard Ave.	Wells 1 & 2			381	44
A 3.08	Pasadena	Well 1			180	45
A 3.08	"	" 2			180	46
A 3.08	"	" 3			240	47
A 3.09	Trentwood	Wells 1,3,5			399	48
A 3.09	"	" 2 & 4			171	49
A 3.10	Vera	Wells 1,6,7	781	211	992	50
A 3.10	"	Well 2	426	150	576	51
A 3.10	"	Wells 3,4,5	1,161	431	1,592	52
B 3.01	Spokane Airport	Wells 1 & 2			170	53
B 1.61	Wellpinit	Town			4	54
B 1.01	Fairchild A.F.B.	Wells 5,6,7			545	55
B 1.01	"	Well 2			189	56
A 5.01	Balmer's Garden	Wells 1 & 2			0.2	57
A 5.02	Cedar Knolls	Well 1			0.2	58
A 5.03	Elk	Well 1			0.9	59
A 5.04	Glenrose	Well 1			1.2	60
A 5.05	Liberty Lk. Imp.	Wells 1 & 2			67	61
A 5.06	Marshall	Well 1			1.6	62
A 5.07	Waverly	Well			0.4	63
A 6.61	Bunch Estates)					
A 6.62	Feltons)					
A 6.64	Strong & Turosky)	Wells			6.6	64
A 6.66	Sunshine Shores)					
A 6.51	Camp Diamond	Well			9.5	65
A 6.10	Carmel	Well			1.1	66
A 6.81	Cayuse Cove, Dev.	Well			1.5	67
A 6.82	Conrads, Dev.)					
A 6.83	Koontz's Squaw) Canyon)	Wells			2.15	68
A 6.11	Deborah	Well			<1.0	69
A 6.08	Fairway	Wells			0.15	70

APPENDIX III - (continued)

K-T No.	Agency	Well Site Location	Annual Use, Million Gallons	Map Identifier Number
A 6.09	Glines Addition	Wells	0.44	71
A 6.01	Halfmoon Ranchos	Well	1.4	72
A 6.02	N. Glen Estates	Wells	2.0	73
A 6.03	Panorama	Wells	3	74
A 6.04	Prairie Pines	Well	0.5	75
A 6.05	Rivervale	Well	0.3	76
A 6.06	Spokane Lk. Pk.	Well	0.22	77
A 6.07	Velview Estates	Well	2	78
A 4.01	Dishman	Well	22	79
A 4.02	Greenacres	Well	19	80
A 4.61 A 6.63	Lakeridge) Stonelodge &) Stonelodge 1st)	Wells	17	81
A 4.03	Liberty Lk. Util.	Wells 1 & 2	182	82
A 4.05	Modern	Wells 1 & 5	284	83
A 4.05	"	Wells 2 & 8	134	84
A 4.05	"	Well 3	92	85
A 4.05	"	Well 4	125	86
A 4.05	"	Well 6	109	87
A 4.05	"	Wells 7 & 9	.92	88
A 4.04	Milan	Town	2.8	89
A 4.06	N. Mt. View	Well	>1.0	90
A 4.07	Pleasant Prairie	Well	5.1	91
A 4.08	Rivilla	Well	6	92
A 4.09	W.W.P.	Wells 1	136	93
A 4.09	"	Well 1-?	98	94
A 4.09	"	Wells 1-5	91	95
A 4.10	"	Wells 2-1,4	224	96
A 4.10	"	Wells 2-2,5	299	97
A 4.10	"	Well 2-7	11	98
A 4.11	"	Well 3-1	169	99
A 4.11	"	Well 3-2	139	100
A 4.12	"	Wells 3-4,4A	31	101
A 4.12	"	Well 3-5	13	102
A 4.12	"	Wells 3-6,7	82	103
A 4.13	"	Wells 3-8, 8A	30	104
A 4.14	"	Wells 3-9, 9A	19	105
A 4.15	"	Well 3-10	19	106
A 4.17	"	Well 6-1	0.2	107
A 4.62	"	Well (Beaver Cr.) 21-1	4.6	108
A 4.82	"	Little Falls	0.2	109
A 4.81	"	Long Lake	<1.0	110
A 4.18	"	Nine Mile Falls	0.5	111
A 4.19	West Shore	Well	0.1	112

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Alsco Linen Service

No. of Employees & Shift Data: 64 Employees, 8 hrs/day, 5 days/wk.

Type of Industry and Product: Commercial Laundry

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.15	0.18	1.75
Private Well	1.37	1.65	16.40
Total	1.52	1.80	18.15

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
Private Well	120	Softening

Water Usage:

25% Steam generation.
75% Wash water.

City water used for domestic purposes only.

Water Recycling:

Most of the steam condensate is recycled. Wash water is not recycled.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: American Sign & Indicator Corp.

No. of Employees & Shift Data: 200 Employees, 8-hrs/day 5-days/wk.

Type of Industry and Product: Manufacturer of Electronic Display Signs

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.052	-	0.30
Private Well	0.138	0.22	2.00
Total	0.190	0.22	2.30

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
Private Well	32	None

Water Usage:

95% Domestic
5% Irrigation (City water only)

Water Recycling:

None. Air conditioning water is not recycled, but its use is minor.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Becwar Packing Co., Inc.

No. of Employees & Shift Data: 35 Employees; 8 hrs/day, 5 days wk.

Type of Industry and Product: Meat Packing

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	1.59	2.33	19.1

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2

Water Usage:

50% Cooling
50% Washing Meat

Water Recycling:

None. This firm is considering recycling their refrigeration cooling water.

K-T No.

C 2.05

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Burlington Northern Railroad

No. of Employees & Shift Data: 1151 Employees; 24 hrs/day, 7 days/wk.

Type of Industry and Product: Railroad

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	3.56	4.9	42.7
Private Wells	18.0	22.0	216
Total	21.6	26.9	258

Water Supply:

Source	Pump Capacity, GPM	Treatment
Well 1 (Hillyard)	750	None
Well 1 (Parkwater)	40	None
Well 2 (Parkwater)	700	None
City of Spokane	-	Cl_2

Water Usage:

Washing cars & locomotives
Locomotive cooling water
Steam generation
Domestic use

Water Recycling:

Some steam condensate is recycled.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Carnation Co.

No. of Employees & Shift Data: 84, 20 hrs/day, 7 days/wk.

Type of Industry and Product: Dairy Products.

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.86	2.41	10.3

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2

Water Usage:

Makeup water for furnace & evaporators.

Water Recycling:

50% of the furnace water.

K-T No.

C 2.06

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Centennial Mills (Sprague St.)

No. of Employees & Shift Data: 10-21, 24 hrs/day, 7 days/wk.

Type of Industry and Product: Producers of Wheat Starch & Gluten

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	9.92	11.89	119.7
Private Well	4.70	4.83	56.3
Total	14.62	16.72	176.0

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
Private Well	110	None

Water Usage:

75% Process water
25% Domestic & Miscellaneous

Water Recycling:

None, but plans exist to install a thermocompression evaporator, in order to recycle all of their process water.

K-T No.
C 2.06

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Centennial Mills (Trent Ave.)

No. of Employees & Shift Data: 80 Employees, 24 hrs/day, 5.5 days/wk.

Type of Industry and Product: Wheat Flour

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.49	0.64	5.92
Private Well	0.12	0.12	1.4
Total	0.61	0.76	7.3

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
Private Well	-	None

Water Usage:

City water for domestic purposes.
Private well water for processing.

Water Recycling:

Closed steam heating system.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Central Heating (Owned by Washington Water Power)

No. of Employees & Shift Data:

Type of Industry and Product: Steam generating facilities for downtown Spokane.

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City of Spokane	7.36	11.91	88.5

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2*

* Boiler feed treated to inhibit rust and remove D.O.

Water Usage:

100% Steam generation.

Water Recycling:

Most of the steam condensate is not recycled.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Central Premix

No. of Employees & Shift Data: 110 Employees, 10 hrs/day, 5 days/wk.

Type of Industry and Product: Sand & Gravel, pre-mixed concrete, and prestressed concrete forms.

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.029	0.047	0.35
Private Wells	17.0	28.3	204
Total	17.0	28.3	204

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
Yardley Well *	800	None
Ft. Wright Well*	750	None

Water Usage:

Gravel washing & Redi-Mix operations.

Water Recycling:

Truck wash down water is recycled. Gravel wash water is recycled by dumping it into the gravel pits, where it recharges the aquifer.

*Production at Ft. Wright & Yardley are nearly identical, so their water use is assumed to be identical.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Crescent (Downtown)

No. of Employees & Shift Data:

Type of Industry and Product: Department Store

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	16.48	37.10	198

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2

Water Usage:

25% Domestic
75% Air conditioning water.

Water Recycling:

The large water use shown here is due to a "once-through" air conditioning system. Recycling is not practiced.

K-T No.

C 2.08

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Crystal Linen Supply

No. of Employees & Shift Data: 50 Employees, 8 hrs/day, 5 days/wk.

Type of Industry and Product: Commercial Laundry.

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.02	0.02	0.2
Private Well	1.64	1.89	19.7
Total	1.66	1.91	19.9

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
Private Well	250	Softening

Water Usage:

City Water for domestic use.
Private well water for washing & steam generation.

Water Recycling:

None, although rinse water might be used as wash water in the next wash cycle.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Culligan Soft Water Service

No. of Employees & Shift Data: 19 Employees, 8 hrs/day, 5 days/wk.

Type of Industry and Product: Ion Exchange Column Recharging

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.83	0.97	9.95

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
		Process water is softened and additionally chlorinated

Water Usage:

1% Domestic.
99% Column recharging.

Water Recycling:

A portion of the backwash water, after Ca & Mg ions have been elutriated, is reused to form the NaCl backwash water.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Darigold

No. of Employees & Shift Data: 140 Employees, 8 hrs/day, 7 days/wk.

Type of Industry and Product: Dairy Products

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	20.0	28.5	240

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2

Additional treatment: More Cl_2 for butter & cottage cheese process water. Acid used for pH adjustment.

Water Usage:

25% Steam Generation.
75% Cooling.

Water Recycling:

60% of steam condensate is recycled. Cooling tower being considered.

K-T No.

C 2.09

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Hillyard Processing Co. (Sullivan St.)

No. of Employees & Shift Data: 6 Employees, 24 hrs/day, 6 days/wk.

Type of Industry and Product: Aluminum Dross Recovery

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
Private Well	16.08	21.56	193*

Water Supply:

Source	Pump Capacity, GPM	Treatment
Private Well	450	None

Water Usage:

0.25% Domestic.
0.75% Wash down water.
99. % Process water.

Water Recycling:

None

*Combined water use for Sullivan & Wellesley St. plants. Most of the water use occurs at the Sullivan St. plant.

K-T No.

C 2.09

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Hillyard Processing Co. (Wellesley St.)

No. of Employees & Shift Data: 13 Employees, 24 hrs/day, 5 days/wk.

Type of Industry and Product: Aluminum Ingot Casting

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
Private Well	(See footnote, Hillyard processing Sullivan St.)		

Water Supply:

Source	Pump Capacity, GPM	Treatment
Private Well	150	None

Water Usage:

Domestic & fire.

Water Recycling:

None

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Hollister-Stier

No. of Employees & Shift Data: 95 Employees, 8 hrs/day, 5 days/wk.

Type of Industry and Product: Allergenic Extracts.

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	1.25	2.85	15.0

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
		water softening for dishwasher.

Water Usage:

50% (Steam generation.
(Cooling.

50% Process water (dishwasher).

Water Recycling:

Some water recycled in dishwasher.

K-T No.

C 2.10

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Hygrade Food Products

No. of Employees & Shift Data: 125 Employees, 24 hrs/day, 5 days/wk.

Type of Industry and Product: Meat Packing

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	2.08	2.98	25
Private Well	12.00	18.83	144
Total	14.08	21.81	169

Water Supply:

Source	Pump Capacity, GPM	Treatment
Private Well	385	Boiler feed only.
City of Spokane	-	Cl_2

Water Usage:

50% Cooling.
50% Washing meat.

Water Recycling:

None

K-T No.
C 2.12

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Inland Empire Paper Co.

No. of Employees & Shift Data: 184 Employees, 24 hrs/day, 7 days/wk.

Type of Industry and Product: Pulp & Paper

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City of Millwood	0.08	0.08	1.0
Private Wells	103.68	121.64	1,244
Total	103.70	121.70	1,245

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Millwood	-	None
4 Private Wells	2,000, 2,000, 1,500, 1,500, 750, 750	Biocide for recycled water.

Water Usage:

30% Cooling.
70% Processing.

Water Recycling:

Most of process water is recycled, cooling water is not.

K-T No.

C 2.13

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Kaiser Aluminum (Mead)

No. of Employees & Shift Data: 1,700 Employees, 24 hrs/day, 7 days/wk.

Type of Industry and Product: Aluminum Production

Water Use - Million Gallons Source	Average Mo.	Peak Mo.	Total Annual
Private Wells	136.9	206.4	1,643

Water Supply: Source	Pump Capacity, GPM	Treatment
Private Wells		

Water Usage:

0.5% Domestic.
0.4% Boiler.
94.6% Cooling.

Water Recycling:

Wet scrubbing towers only. They are to be converted to a dry process soon.

K-T No.

C 2.14

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Kaiser Aluminum (So. Mead)

No. of Employees & Shift Data: 160 Employees, 24 hrs/day, 7 days/wk.

Type of Industry and Product: Coke Production

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
Private Wells	9.49	11.6	114

Water Supply:

Source	Pump Capacity, GPM	Treatment
Private Wells		None

Water Usage:

0.3% Domestic.
99.7% Cooling.

Water Recycling:

None

K-T No.

C 2.15

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Kaiser Aluminum (Trentwood)

No. of Employees & Shift Data: 2,000 Employees, 24 hrs/day, 7 days/wk.

Type of Industry and Product: Aluminum Rolling

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
Private Well	0.125	0.125	1.5
Spokane River	730.0	821.1	8,759.
Total	730.0	821.2	8,760.

Water Supply:

Source	Pump Capacity, GPM	Treatment
Private Well	3,900	Cl_2

Water Usage:

0.02%	Domestic.
25.8%	Processing
72.9%	Cooling.
0.8%	Evaporation.
0.4%	Irrigation.

Water Recycling:

None

K-T No

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Linde-Union Carbide

No. of Employees & Shift Data: 6 Employees, 8 hrs/day, 5 days/wk.

Type of Industry and Product: Acetylene Production

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.49	1.37	5.88

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2

Linde also filters their water.

Water Usage:

Cooling.
Processing.
Hydraulic cylinder testing.

Water Recycling:

None

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Nalley's

No. of Employees & Shift Data: 55 Employees, 16 hrs/day, 5 days/wk.

Type of Industry and Product: Potato Chips

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	2.43	3.94	29.16

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2

Water Usage:

90% Process water.
10% Wash down water.

Water Recycling:

Process water is recycled. Water used to wash peeled potatoes is then used to wash raw potatoes.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Seven-Up Bottling Co.

No. of Employees & Shift Data: 55 Employees, 16 hrs/day, 5 days/wk.

Type of Industry and Product: Soft Drink Bottling

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	2.01	3.10	24.2

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
		Dealkilize water with lime, $Fe_2(SO_4)_3$ and Cl_2

Water Usage:

87% Washing (bottles).
13% In product.

Water Recycling:

None, but wash water can be recycled.

K-T No.
C 2.19

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Spokane Industrial Park

No. of Employees & Shift Data: 3,500 people

Type of Industry and Product: Industrial Park

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
Private Wells	57.83	86.75	694

Water Supply:

Source	Pump Capacity, GPM	Treatment
Well 1	750	None
Well 2	1,350	None
Well 3	1,050	None

Water Usage:

For various industries.

Water Recycling:

K-T No.

C 2.20

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Spokane Rendering

No. of Employees & Shift Data: 22 Employees, 16 hrs/day, 5 days/wk.

Type of Industry and Product: Rendering Plant.

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
Private Well	3.89	5.42	45.5

Water Supply:

Source	Pump Capacity, GPM	Treatment
Private Well	450	None

Water Usage:

80% Process.
20% Wash down.

Water Recycling:

Some recycling in contact condensers.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Spokesman Review & Spokane Chronicle

No. of Employees & Shift Data: 400-450 Employees, 16 hrs/day, 7 days/wk.

Type of Industry and Product: Newspaper Publishers.

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	4.10	4.67	49.0

Water Supply:

Source	Pump Capacity, GPM	Treatment
City	-	Cl_2 Softening for some process water

Water Usage:

50% Domestic.
30% Process water.
20% Cooling water.

Water Recycling:

No. Could perhaps recycle cooling water.

K-T No.

C 2.21

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Troy Laundry *

No. of Employees & Shift Data: 11 Employees, 8 hrs/day, 5 days/wk.

Type of Industry and Product: Commercial Laundry

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City	0.16	0.14	1.92
Private Well	0.45	0.54	5.4
Total	0.61	0.68	7.32

Water Supply:

Source	Pump Capacity, GPM	Treatment
Private well City of Spokane	-	Cl_2

Water Usage:

Steam generation

Water Recycling:

*This industry was not interviewed.

K-T No.

APPENDIX IV

INDUSTRIAL INFORMATION SHEET

Industry: Union Pacific Railroad

No. of Employees & Shift Data: 60 Employees, 24 hrs/day, 7 days/wk.

Type of Industry and Product: Railroad

Water Use - Million Gallons

Source	Average Mo.	Peak Mo.	Total Annual
City of	5.55	17.30	66.75

Water Supply:

Source	Pump Capacity, GPM	Treatment
City of Spokane	-	Cl_2
		Boiler feed treatment

Water Usage:

Domestic.
Cooling.
Boiler feed.
Washing.

Water Recycling:

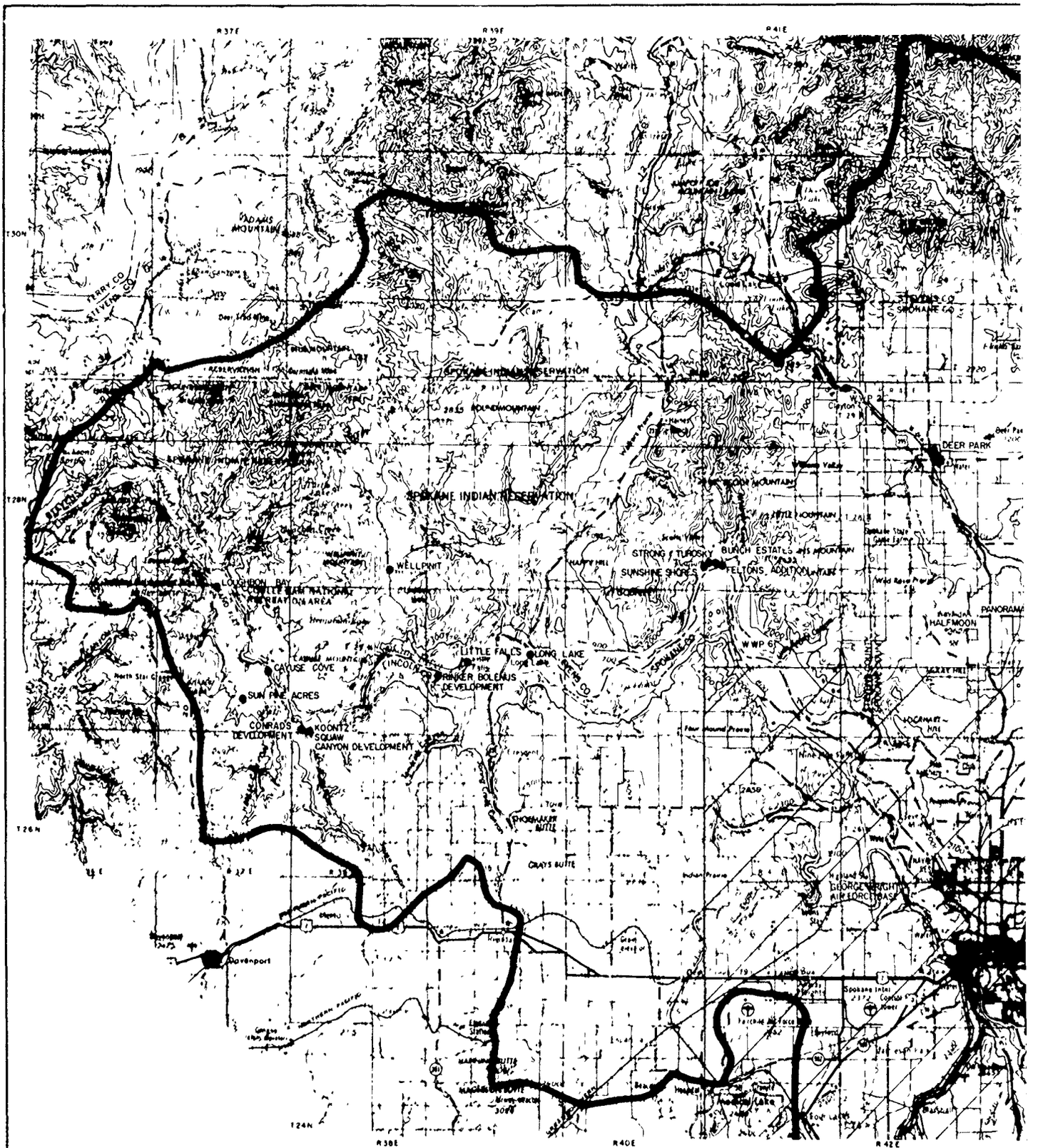
Steam is recycled; wash water and cooling water are not.

APPENDIX V

ANNUAL INDUSTRIAL WATER USE

BY LOCATION - PRIVATE WELLS

K-T No.	Industry	Private Well Site	Annual Use, Million Gal.	Map Identifier Number
C 2.03	Alsco	Industry Site	16	113
C 2.04	American Sign	Industry Site	2	114
C 2.05	Burlington Northern	Hillyard	41	115
C 2.05	Burlington Northern	Parkwater	175	116
C 2.06	Centennial Mills (Sprague)	Industry Site	56	117
C 2.06	Centennial Mills (Trent Ave.)	Industry Site	1.4	118
C 2.07	Central Premix	Yardley	102	119
C 2.07	Central Premix	Ft. Wright	102	120
C 2.08	Crystal Linen	Industry Site	20	121
C 2.09	Hillyard (Sullivan)	Industry Site	137	122
C 2.09	Hillyard (Wellesley)	Industry Site	56	123
C 2.10	Hygrade	Industry Site	144	124
C 2.12	Inland Empire Paper	Industry Site	1,244	125
C 2.13	Kaiser, Mead	Industry Site	1,643	126
C 2.14	Kaiser, So. Mead	Industry Site	2,299	127
C 2.15	Kaiser, Trentwood	Well	1.5	128
C 2.15	Kaiser, Trentwood	Spokane River	8,759	129
C 2.19	Spokane Ind. Park	Well 1	165	130
C 2.19	Spokane Ind. Park	Well 2	298	131
C 2.19	Spokane Ind. Park	Well 3	231	132
C 2.20	Spokane Rendering	Industry Site	46	133
C 2.21	Troy Laundry	Industry Site	5.4	134



MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES, OKANOGAN 1954, SANDPOINT 1958, RITZVILLE 1953, SPOKANE 1958

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GRAPHIC SCALES

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LOCATION OF SMALL WATER SYST

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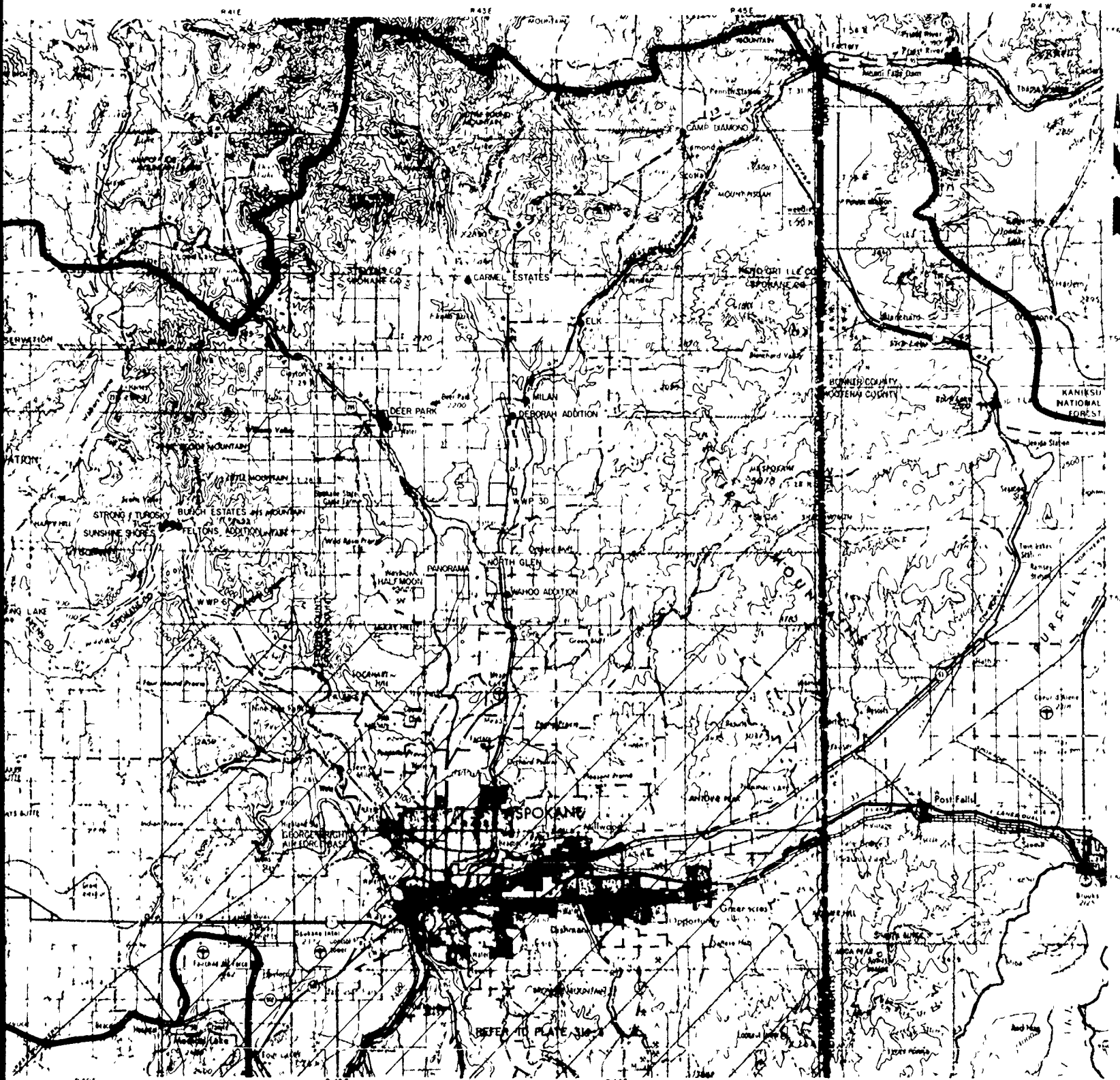

MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES, OKANOGAN 1954, SANDPOINT 1956, RITZVILLE 1953, SPOKANE 1956

LEGEND

SERVICE AREA BOUNDARY (LARGER SYSTEMS)

LOCATION OF SMALL WATER SYSTEMS

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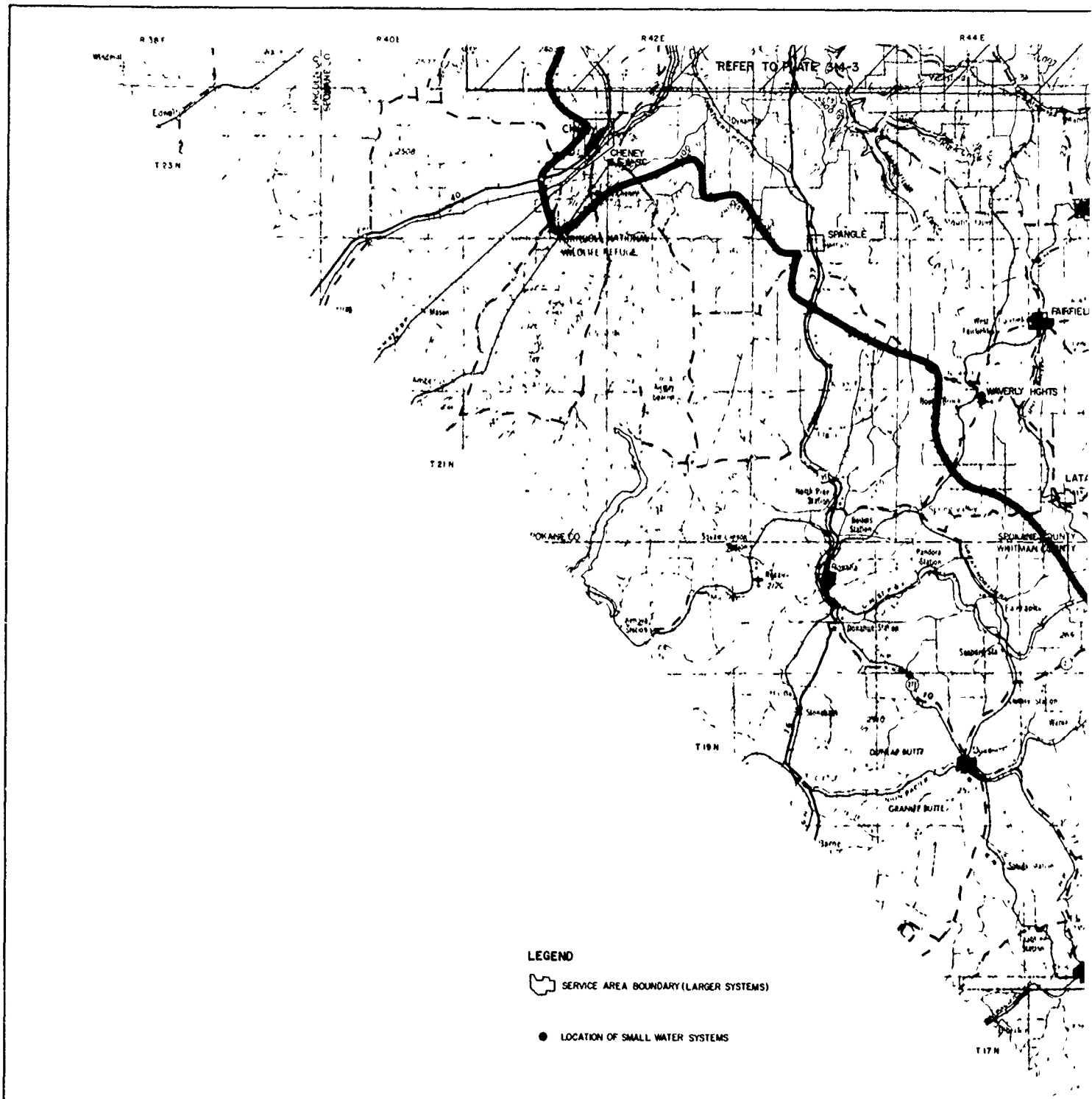
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

WATER SERVICE AREAS

NORTH PORTION OF STUDY AREA

DACW 67-73-C-0006

PLATE 314-1



GRAPHIC SCALES

REVISIONS			
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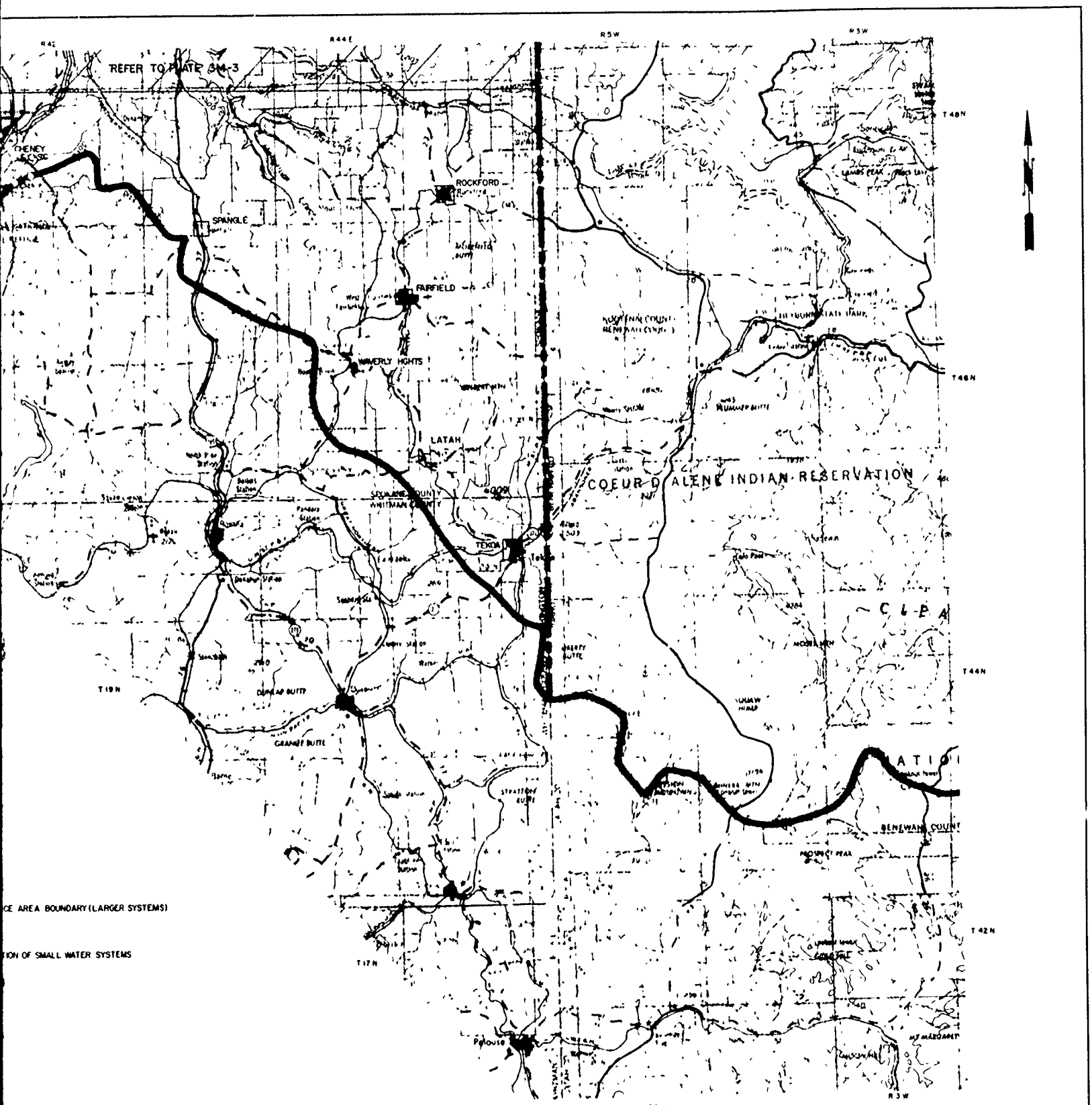

MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES, SPOKANE 1955, PULLMAN 1955

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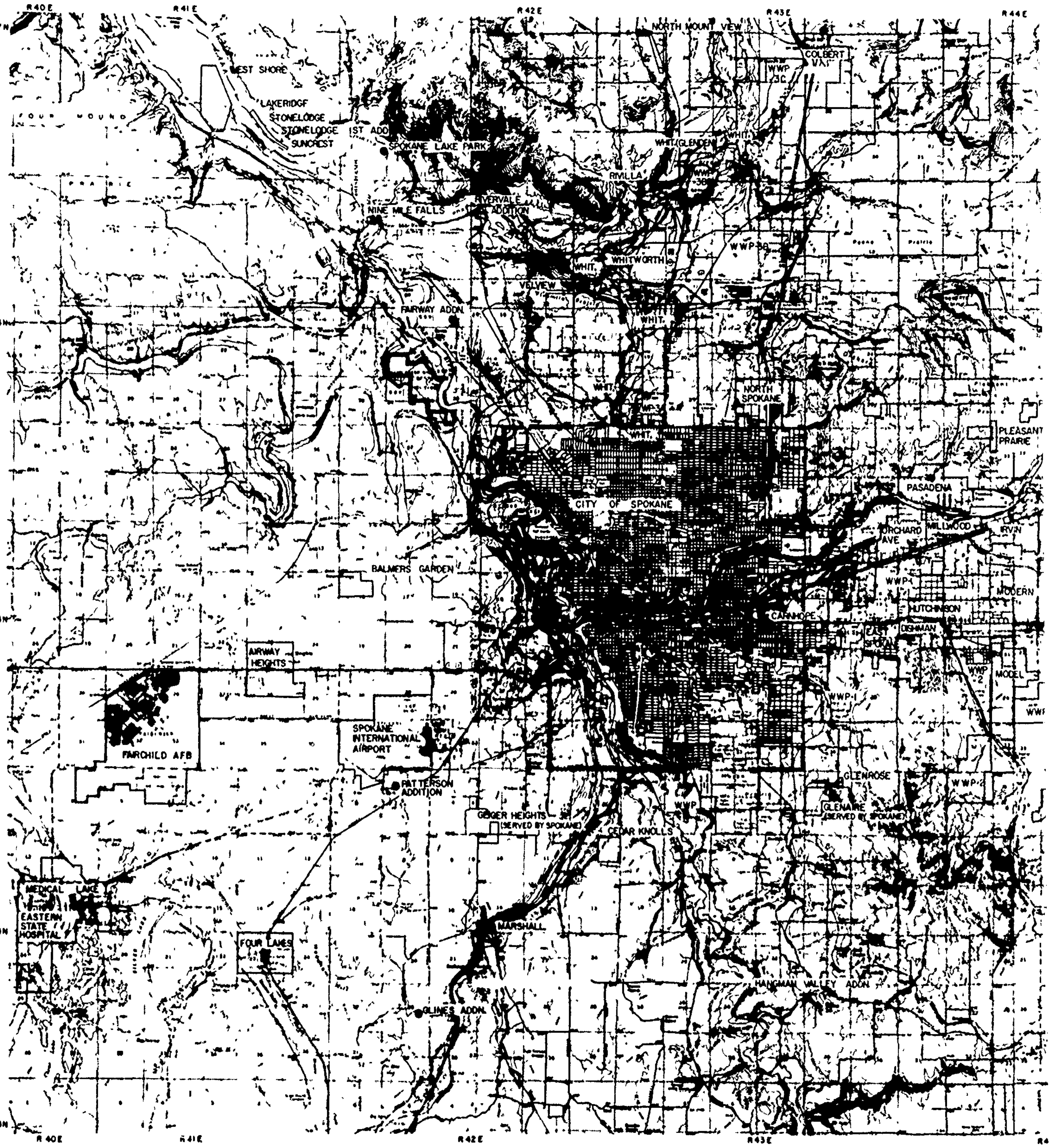
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

WATER SERVICE AREAS
SOUTH PORTION OF STUDY AREA

		PLATE 314-2
DACW67 73-C-0096		



MAP SOURCE: USGS 15 MINUTE QUADRANGLE SERIES, CLAYTON WASH 1960, DEER PARK WASH 1949, MT SPOKANE WAS[H] MEDICAL LAKE WASH 1964, SPOKANE WASH 1960, GREENACRES WASH-IDAHO 1949

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3000 0 3000 9000 15000 21000 FEET

GRAPHIC SCALES

LEGEND

SERVICE AREA BOUNDARY (LARGER SYSTEMS)

● LOCATION OF SMALL WATER SYSTEMS

– SPOKANE CITY BOUNDARY

REVISIONS

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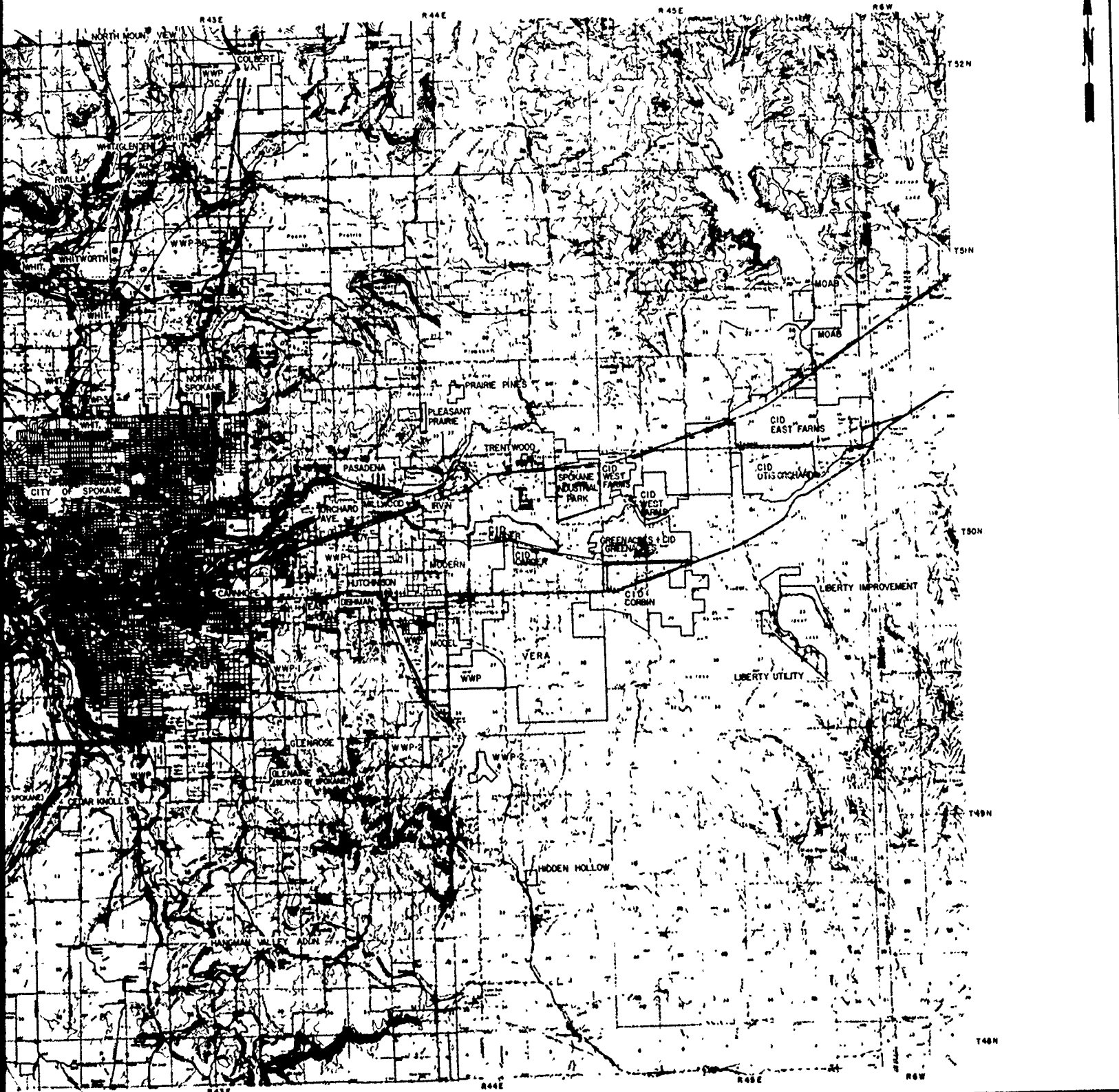
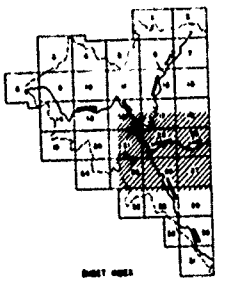


URCE: USGS 15 MINUTE QUADRANGLE SERIES, CLAYTON WASH 1960, DEER PARK WASH 1949, MT SPOKANE WASH-IDAHO 1950, MEDICAL LAKE WASH 1954, SPOKANE WASH. 1950, GREENACRES WASH-IDAHO 1949

LEGEND

- SERVICE AREA BOUNDARY (LARGER SYSTEMS)
- LOCATION OF SMALL WATER SYSTEMS
- ..... SPOKANE CITY BOUNDARY



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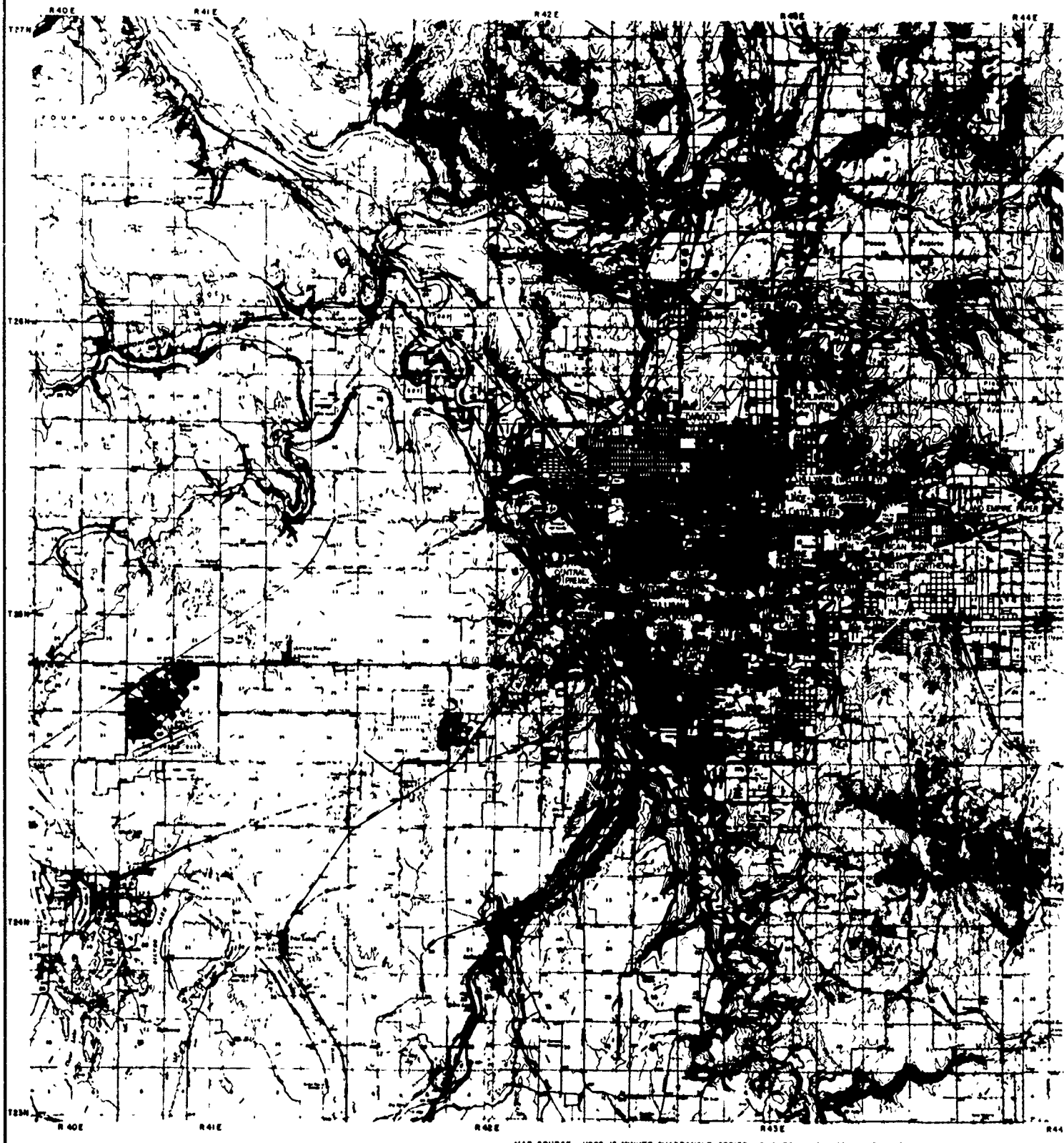
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

WATER SERVICE AREAS
URBAN PLANNING AREA

DACW67-73-C-0096

PLATE
314-3

2



MAP SOURCE: USGS 15 MINUTE QUADRANGLE SERIES, CLAYTON WASH 1950, DEER PARK WASH 1949, MT SPOKANE WASH
MEDICAL LAKE WASH 1964, SPOKANE WASH 1960, GREENACRES WASH-IDAHO 1949

GRAPHIC SCALES

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LEGEND

WATER SOURCE

- ● MUNICIPAL
- ⊕ MUNICIPL & PRIVATE WELLS
- △ PRIVATE WELLS

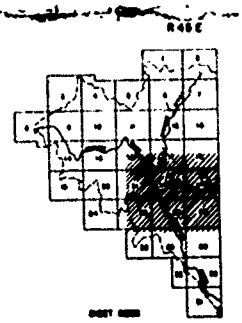
REVISIONS			
NUMBER	DESCRIPTION	DATE	BY

USGS 15 MINUTE QUADRANGLE SERIES, CLAYTON WASH 1960, DEER PARK WASH 1949, MT SPOKANE WASH-IDAHO 1950, MEDICAL LAKE WASH 1964, SPOKANE WASH 1960, GREENACRES WASH-IDAHO 1949

LEGEND

WATER SOURCE

- ● MUNICIPAL
- ⊙ MUNICIPAL & PRIVATE WELLS
- △ PRIVATE WELLS



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WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

MAJOR INDUSTRIAL WATER USERS

DRAWN	APPROVED	PLATE 314-4
CONTRACT NUMBER DACW67-73-C-0016	FILE NUMBER	

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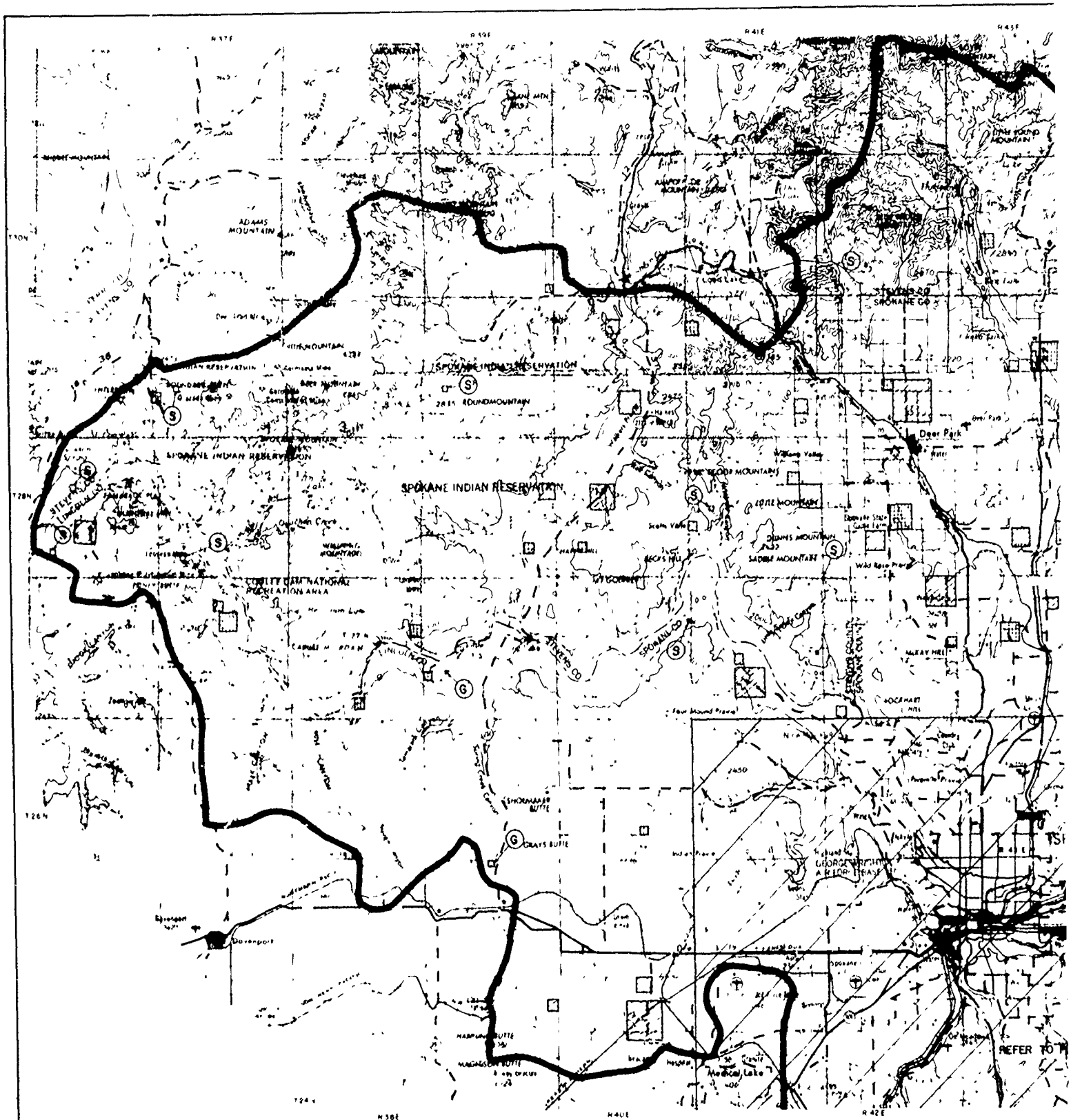

MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES, OKANOGAN 1954, SANDPOINT 1958, RITZVILLE 1953 SPOKANE 1958

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GRAPHIC SCALES

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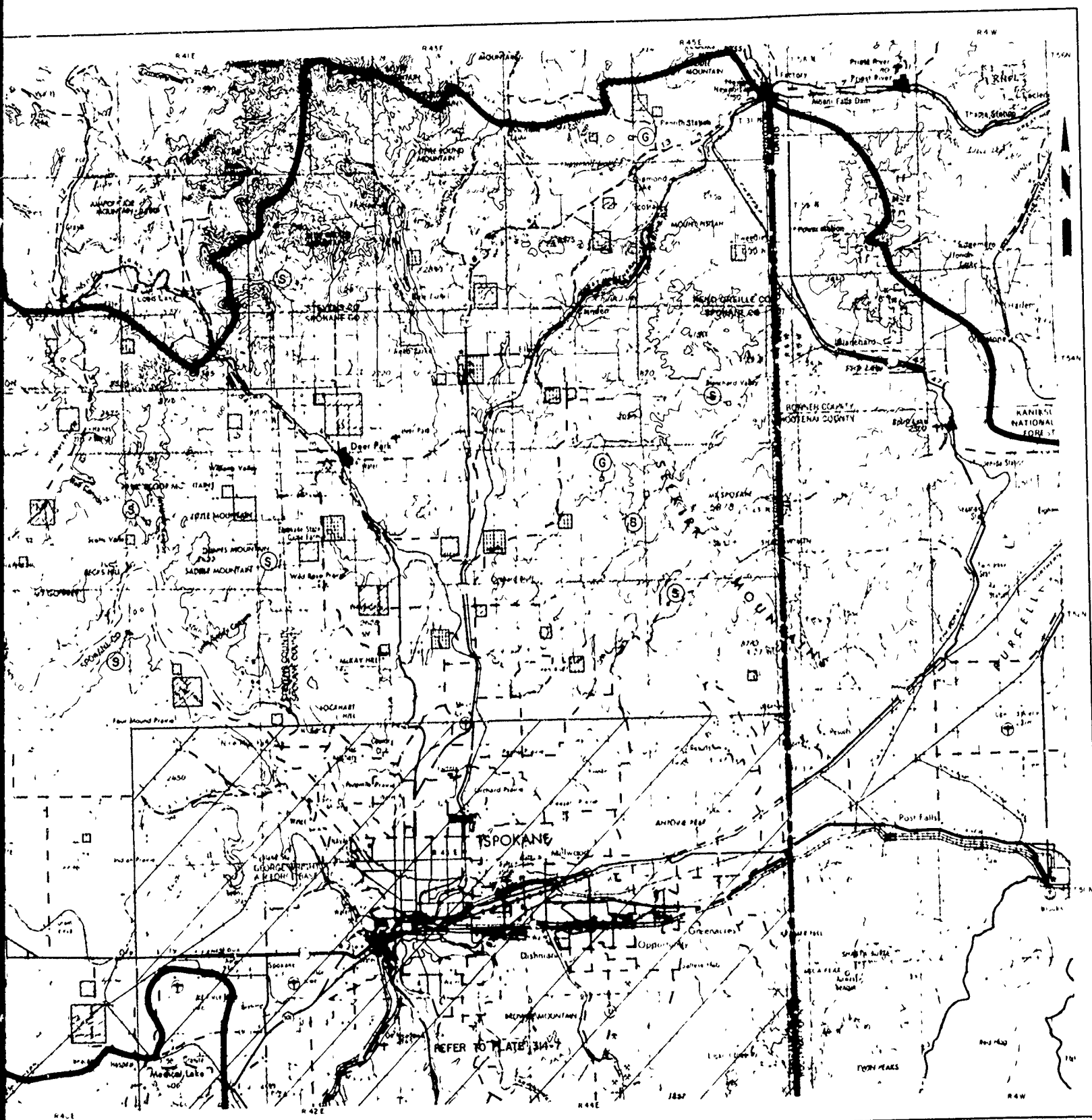

MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES OKANOGAN 1954, SANDPOINT 1958, RITZVILLE 1955, SPOKANE 1958

DATA SOURCE PRINTOUT OF RECORDED WATER RIGHTS DOE

LEGEND

(G) IRRIGATED AGRICULTURE ACTUAL REPORTED W/ GROUND WATER PER TOWNSHIP

(S) IRRIGATED AGRICULTURE W/ SURFACE WATER PER TWP*

* ACCORDING TO WATER RIGHTS RECORDS

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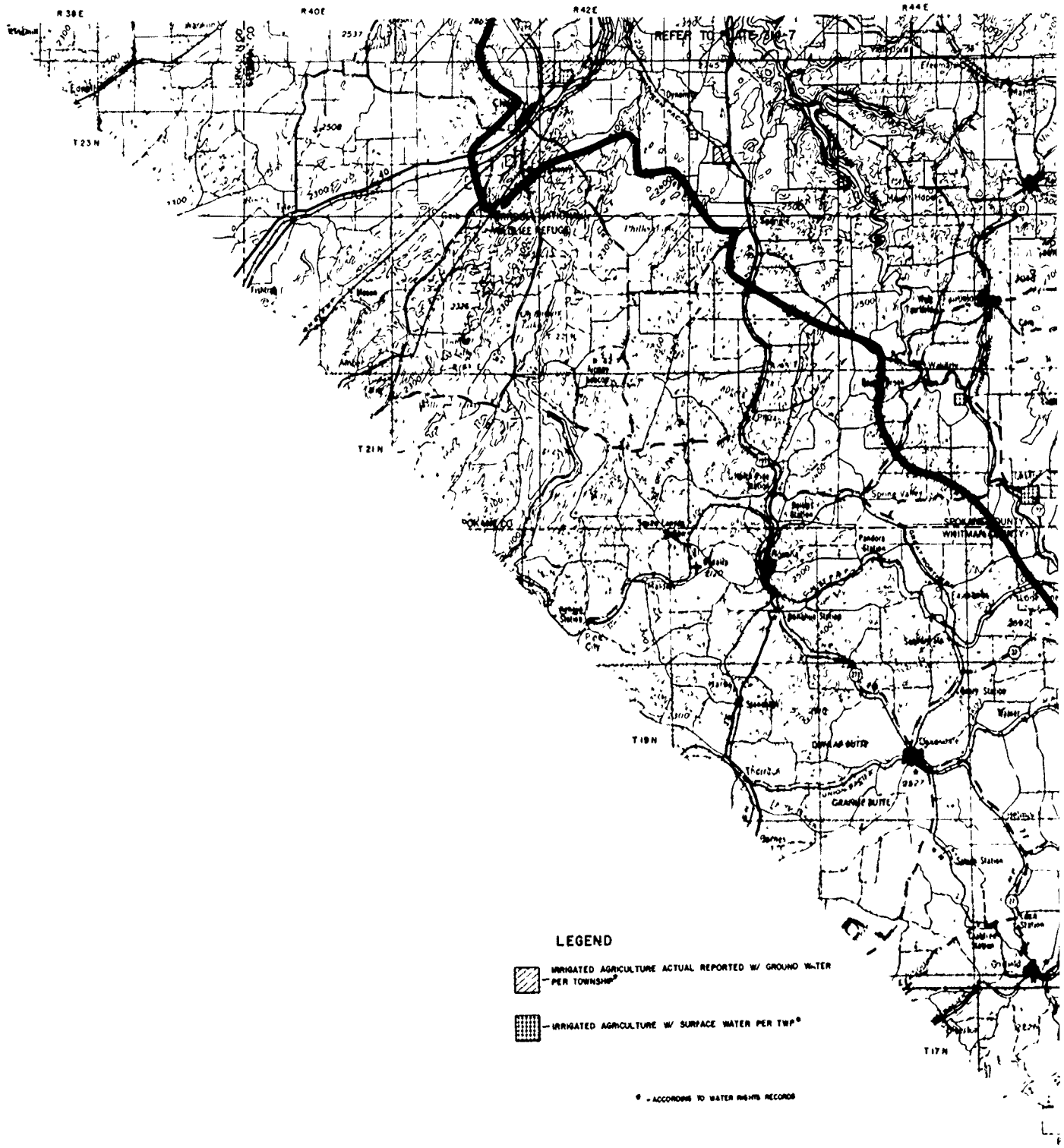
SEATTLE WASHINGTON

WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

IRRIGATED AGRICULTURE
NORTH PORTION OF STUDY AREA

DACW67 73 C 0096

PLATE 314-5



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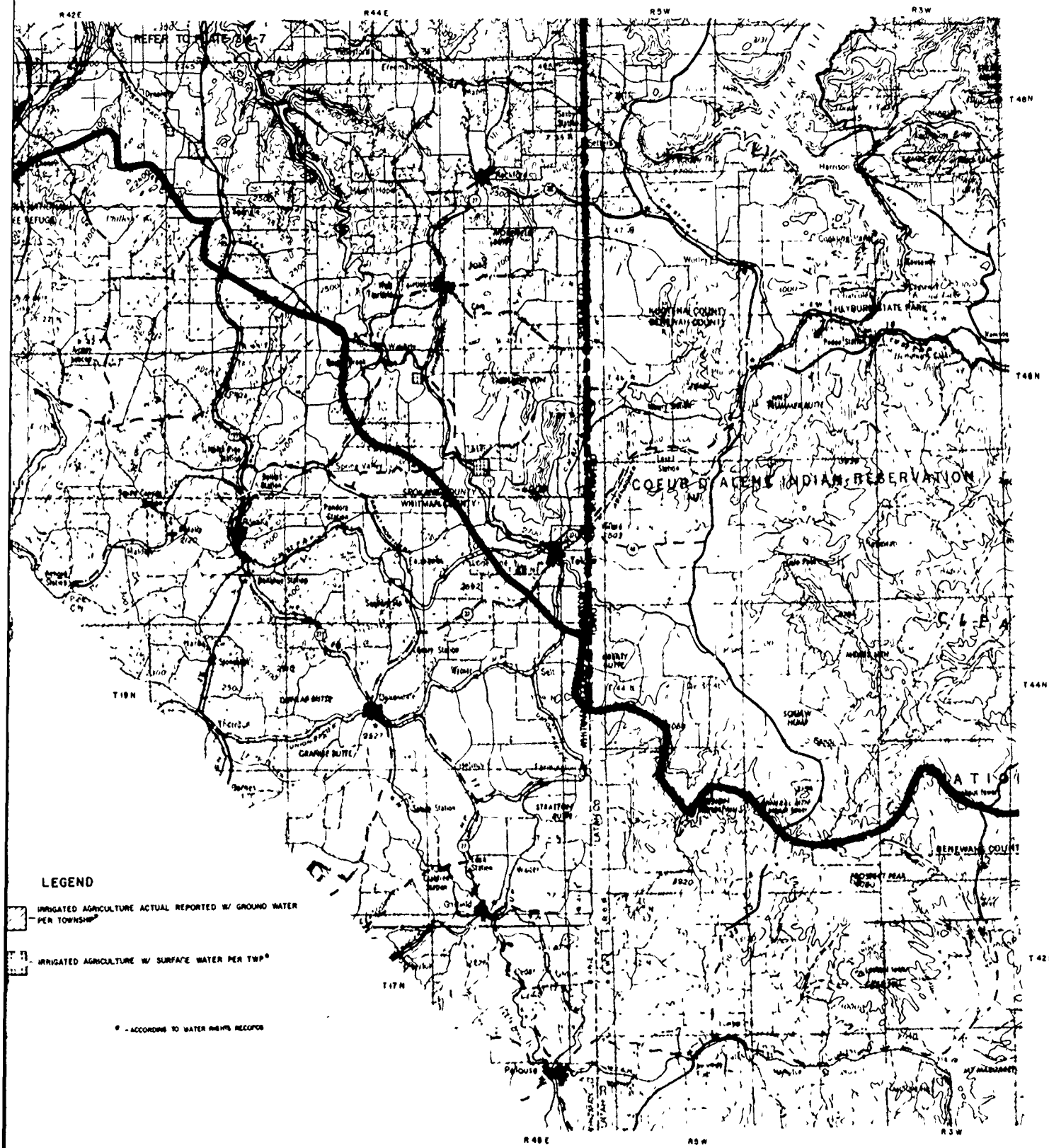

MAP SOURCE: PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES; SPOKANE 1956, PULLMAN 1968
DATA SOURCE PRINTOUT OF RECORDED WATER RIGHTS DOE

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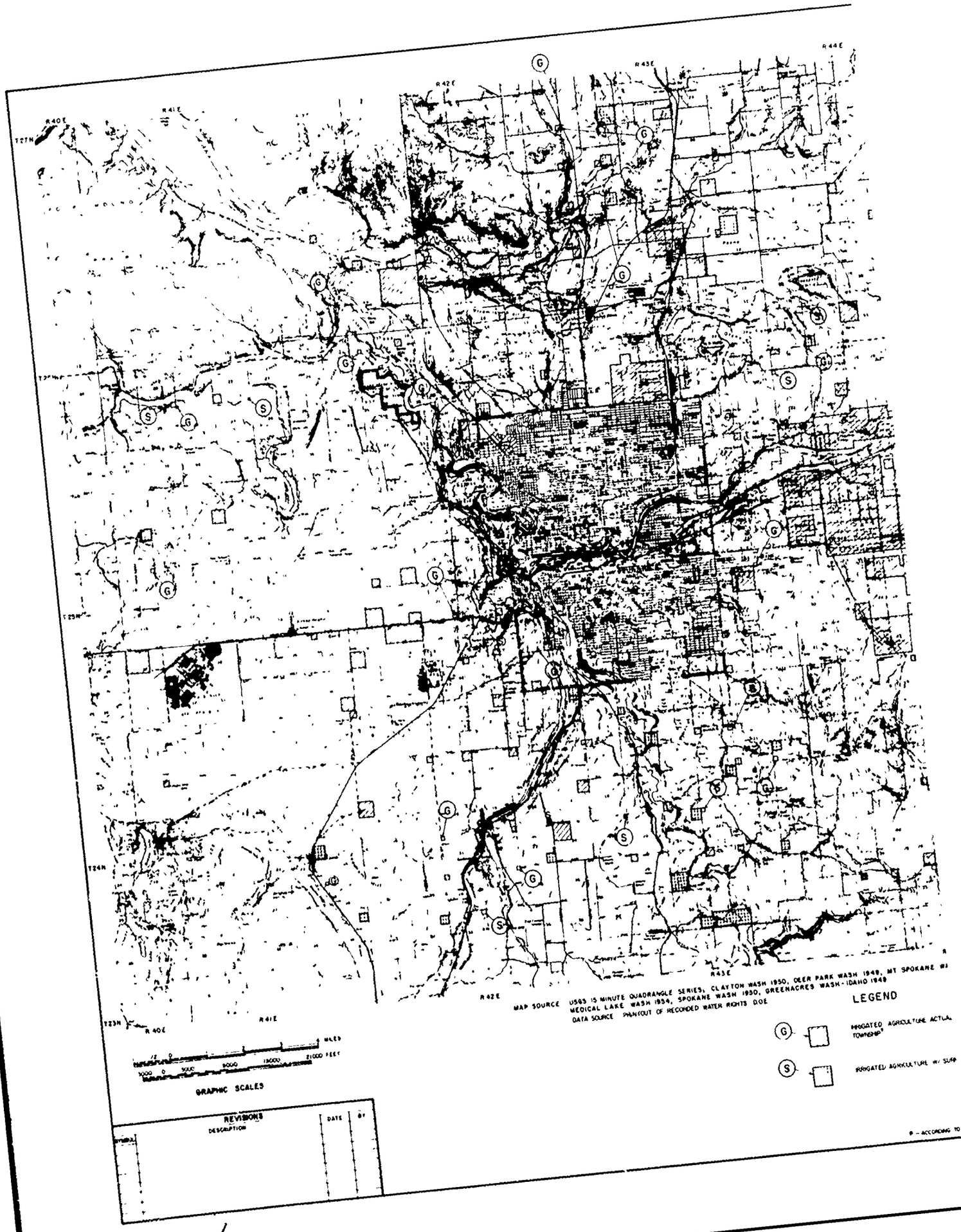
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

IRRIGATED AGRICULTURE

SOUTH PORTION OF STUDY AREA

DACW67 72-C-0090

PLATE 314-6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R42E
R43E
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T23N
MAP SOURCE USGS 15 MINUTE QUADRANGLE SERIES, CLAYTON WASH 1950, DEER PARK WASH 1949, MT SPOKANE WA
MEDICAL LAKE WASH 1954, SPOKANE WASH 1950, GREENACRES WASH-IDAHO 1949
DATA SOURCE PRINTOUT OF RECORDED WATER RIGHTS DOE
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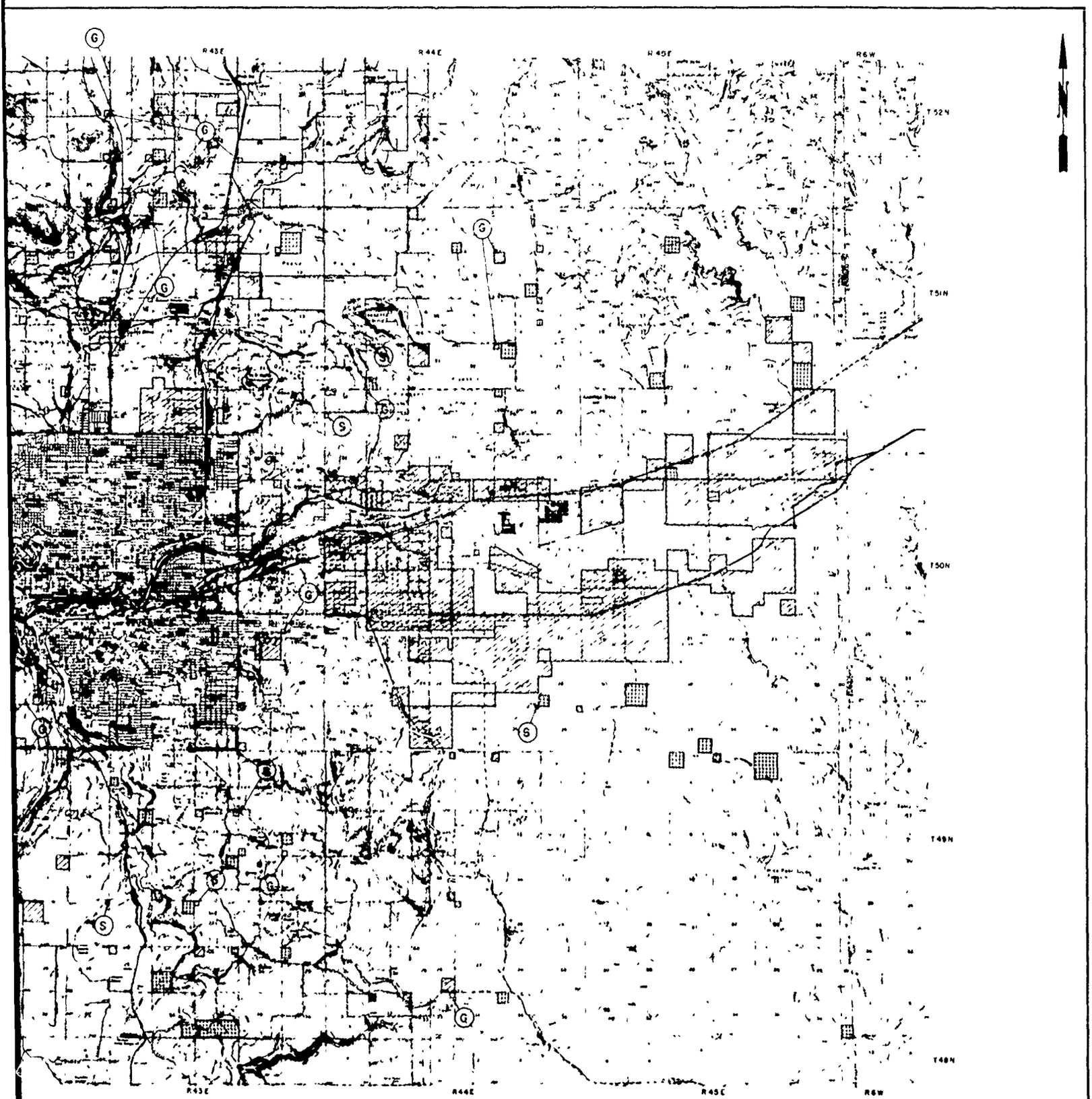

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DATA SOURCE PRINTOUT OF RECORDED WATER RIGHTS DOE

LEGEND

(G) IRRIGATED AGRICULTURE ACTUAL REPORTED W/ GROUND WATER PER TOWNSHIP*

(S) IRRIGATED AGRICULTURE W/ SURFACE WATER PER TOWNSHIP*

* ACCORDING TO WATER RIGHTS RECORDS

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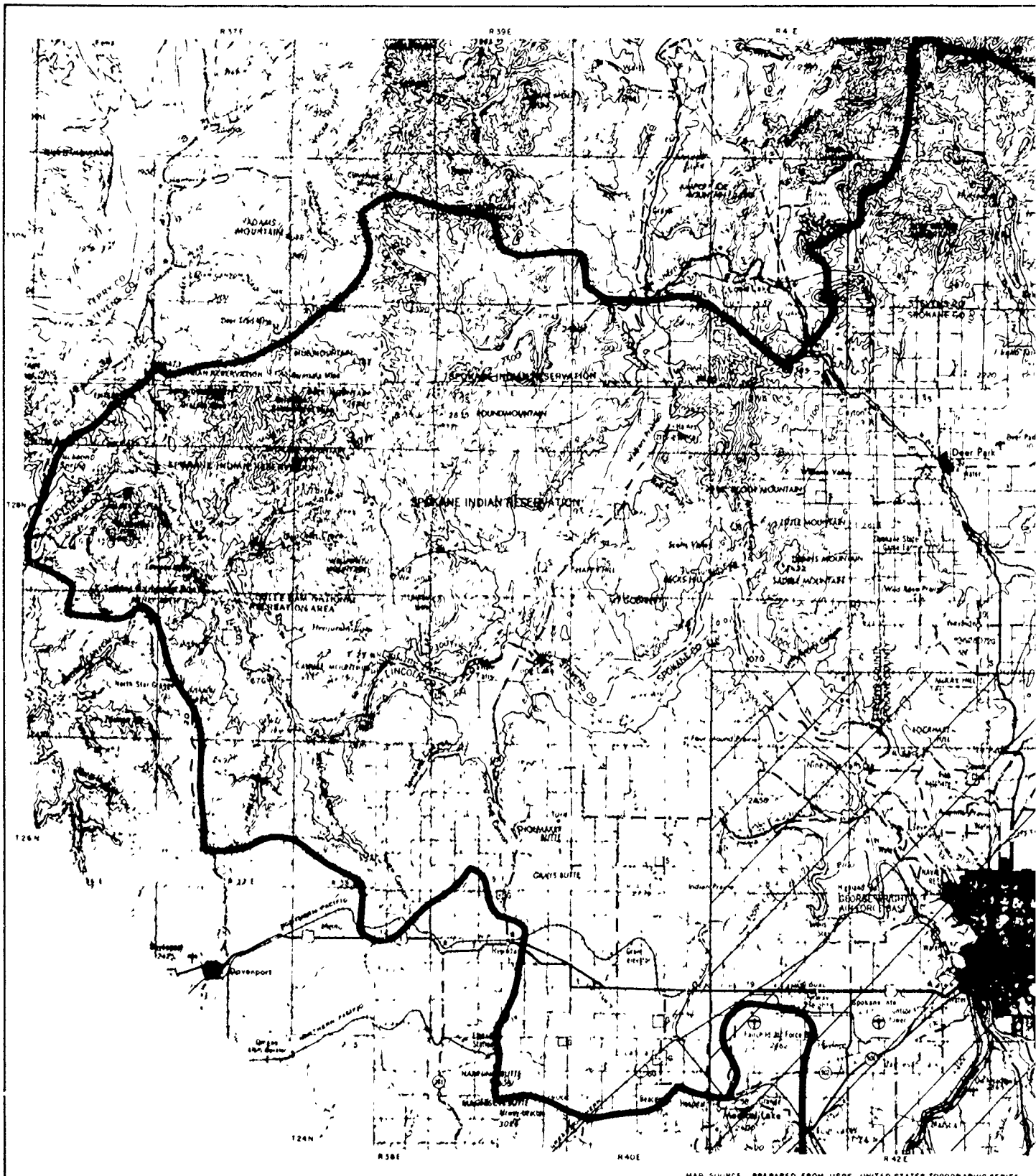
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

IRRIGATED AGRICULTURE
URBAN PLANNING AREA

		PLATE 314-7
DACW 67-73-C-0096		



MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES, OKANOGAN 1954, SANDPOINT 1958, RITZVILLE 1953, SPOKANE 1958

5 4 3 2 1 0 5 MILES

5 0 5,000 10,000 25,000 35,000 FEET

GRAPHIC SCALES

REVISIONS			
SYMBOL	DESCRIPTION	DATE	BY

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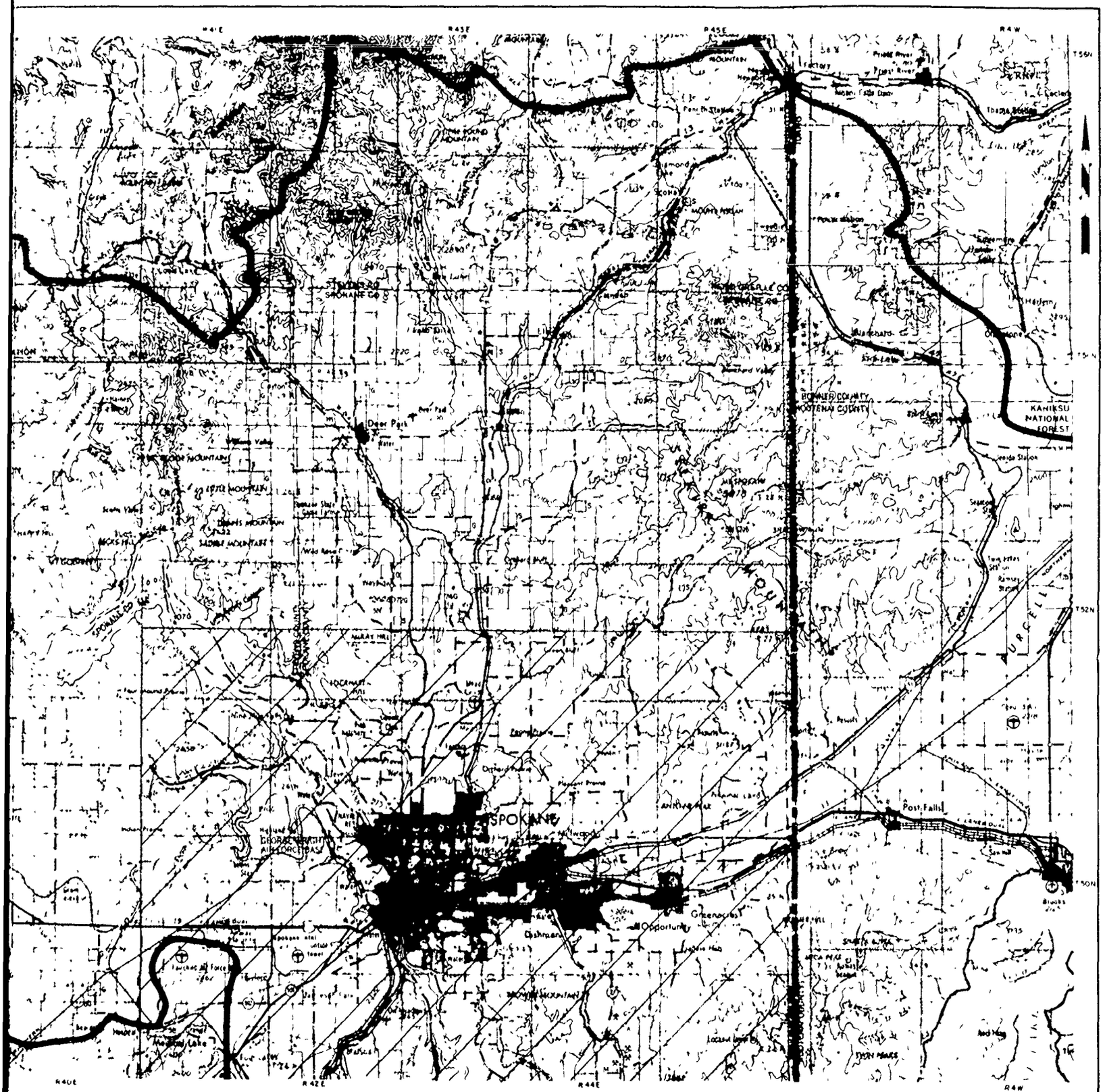

MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES, OF ANOGAN 1954, SANDPOINT 1958, RITZVILLE 1953 SPOKANE 1958

SEE PLATE 314 9 FOR LEGEND

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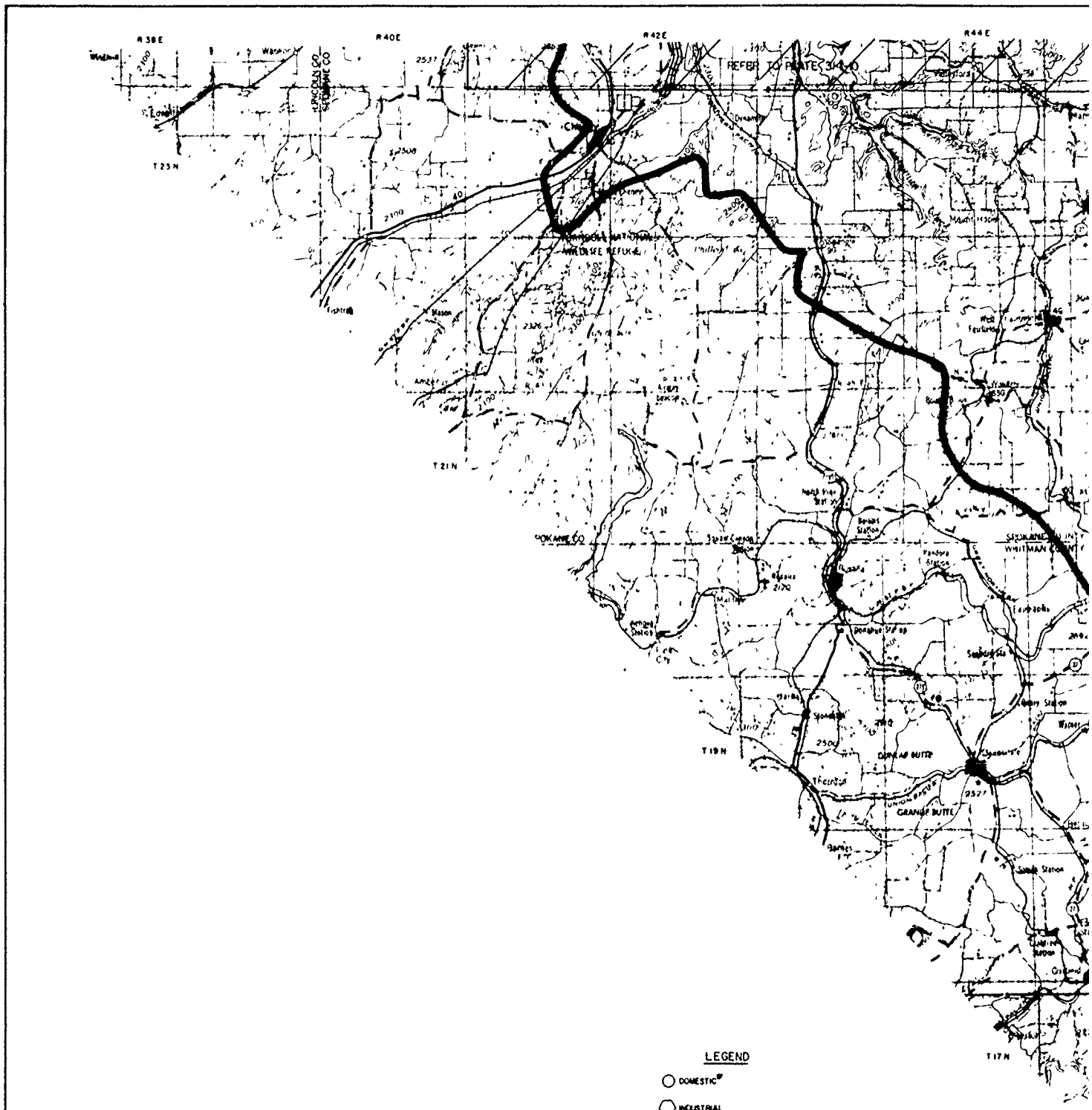
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

WATER UTILIZATION
NORTH PORTION OF STUDY AREA

DACW67 73-C-0096

PLATE 314 8



LEGEND

- ○ DOMESTIC**
- ⬡ INDUSTRIAL
- □ AGRICULTURAL IRRIGATION**
- G GROUND WATER SOURCE
- S SURFACE WATER SOURCE

IDENTIFICATION NUMBERS ARE ASSOCIATED WITH THE VARIOUS USERS - REFER TO APPENDIX 3H

ANNUAL WATER USE - MILLION GAL

- 0-1
- 1-5
- 5-10
- 10-50
- 50-100
- 100-500
- 500-1,000
- 1,000-5,000
- 5,000-10,000

* SOME DOMESTIC WATER WITHDRAWN FROM THE SPOKANE VALLEY IS USED FOR AGRICULTURAL PURPOSES

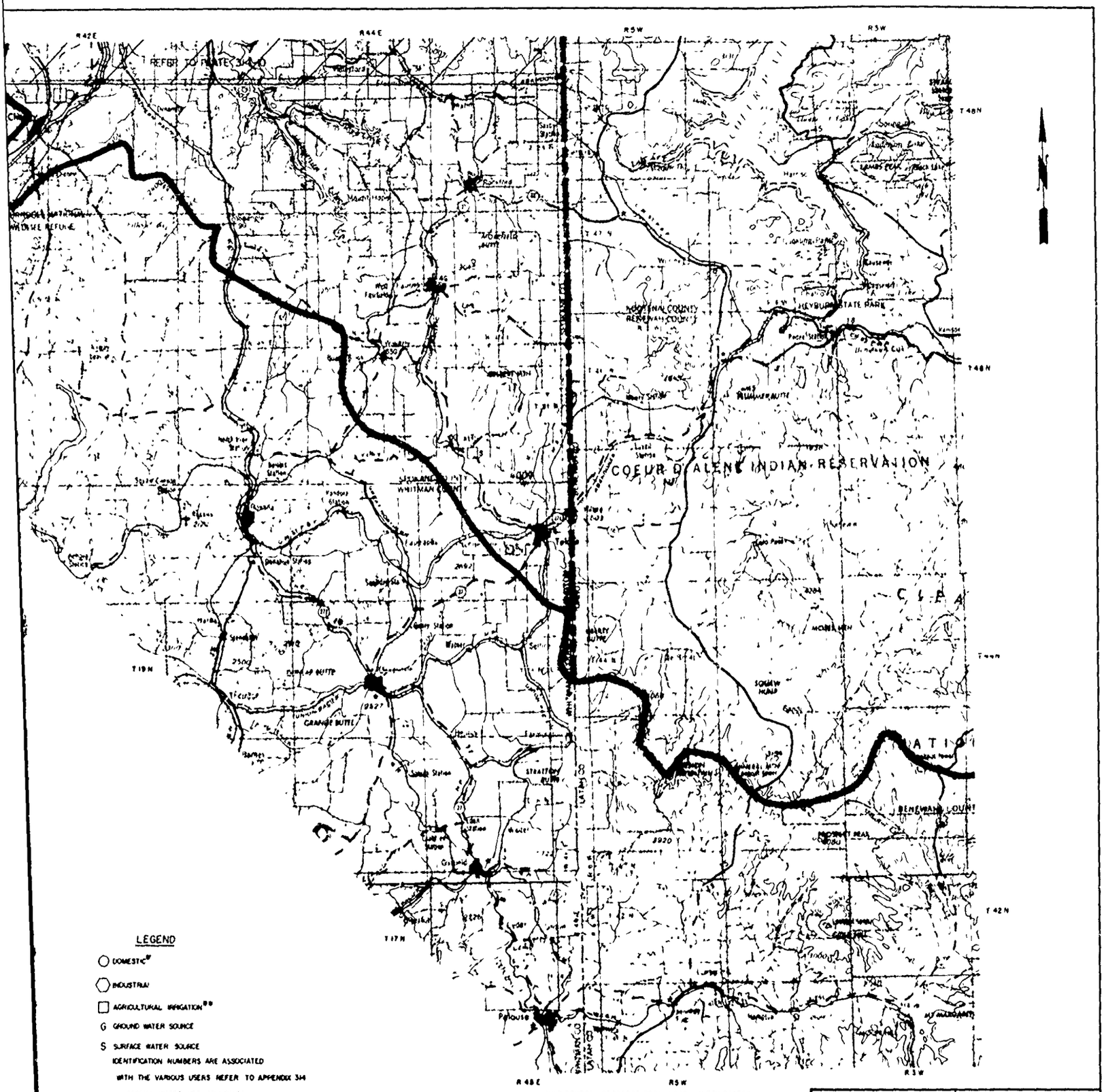
** ESTIMATED FROM D O E RECORDS

5 4 3 2 1 0 5 MILES

5,000 0 5,000 15,000 25,000 35,000 FEET

GRAPHIC SCALES

REVISIONS			
SYMBOL	DESCRIPTION	DATE	BY


R42E
R44E
R5W
REFER TO PLATE 314-10
T48N
T47N
T46N
T19N
T17N
T42N
R48E
R5W
COEUR D'ALENE INDIAN RESERVATION
HEYBURN STATE PARK
KOOTENAI COUNTY
BENEWAH COUNTY
WHITMAN COUNTY
GRANGE BUTTE
LEGEND
DOMESTIC*
INDUSTRIAL
AGRICULTURAL IRRIGATION**
G GROUND WATER SOURCE
S SURFACE WATER SOURCE
IDENTIFICATION NUMBERS ARE ASSOCIATED WITH THE VARIOUS USERS REFER TO APPENDIX 314
ANNUAL WATER USE - MILLION GAL
0-1
1-5
5-10
10-50
50-100
100-500
500-1,000
1,000-5,000
5,000-10,000
* SOME DOMESTIC WATER WITHDRAWN FROM THE SPOKANE VALLEY IS USED FOR AGRICULTURAL PURPOSES
** ESTIMATED FROM D O E RECORDS
MAP SOURCE PREPARED FROM USGS, UNITED STATES TOPOGRAPHIC SERIES, SPOKANE 1956, PULLMAN 1955
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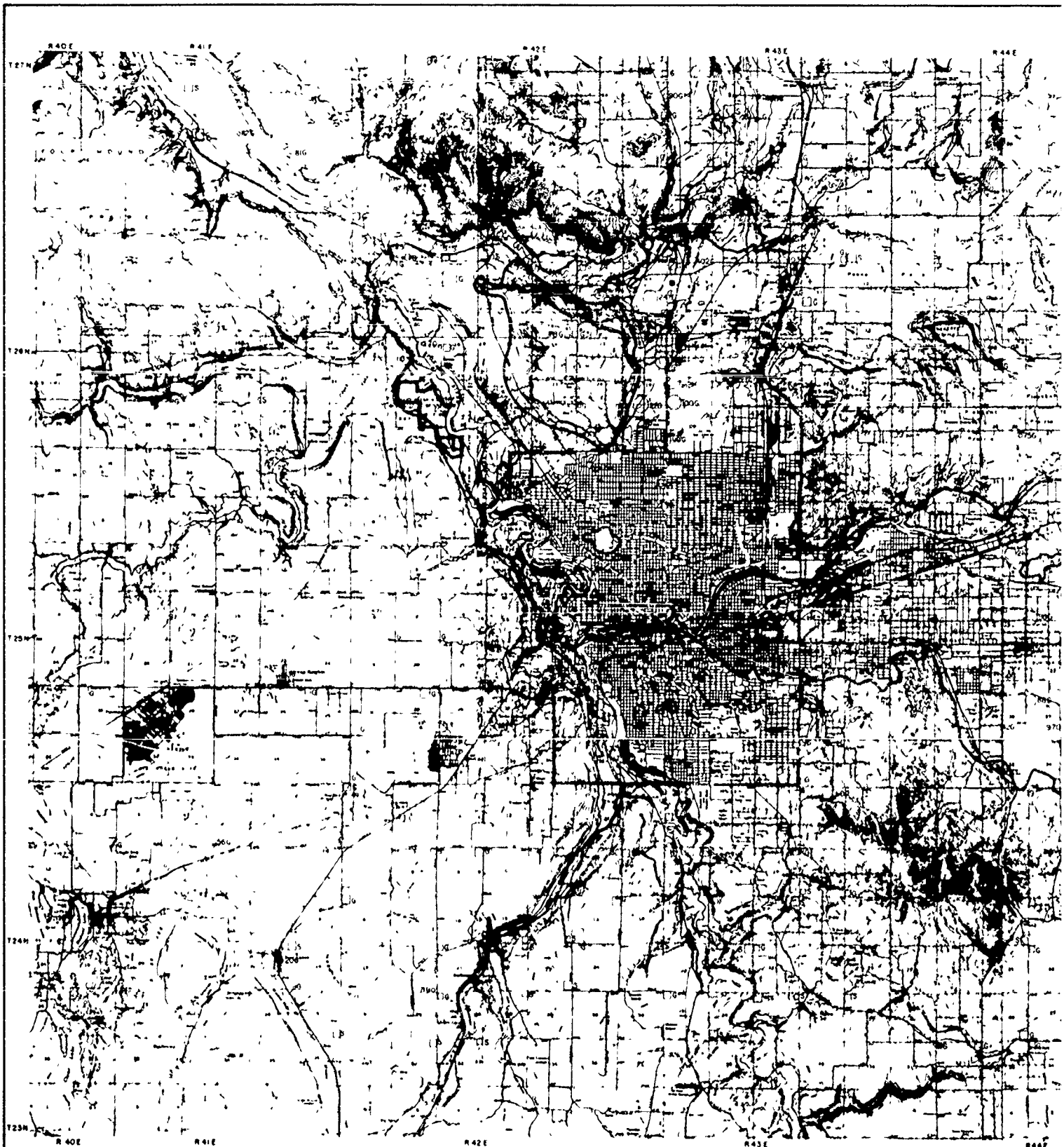
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION
WATER UTILIZATION
SOUTH PORTION OF STUDY AREA
DACW67-73-C-0099
PLATE 314-9



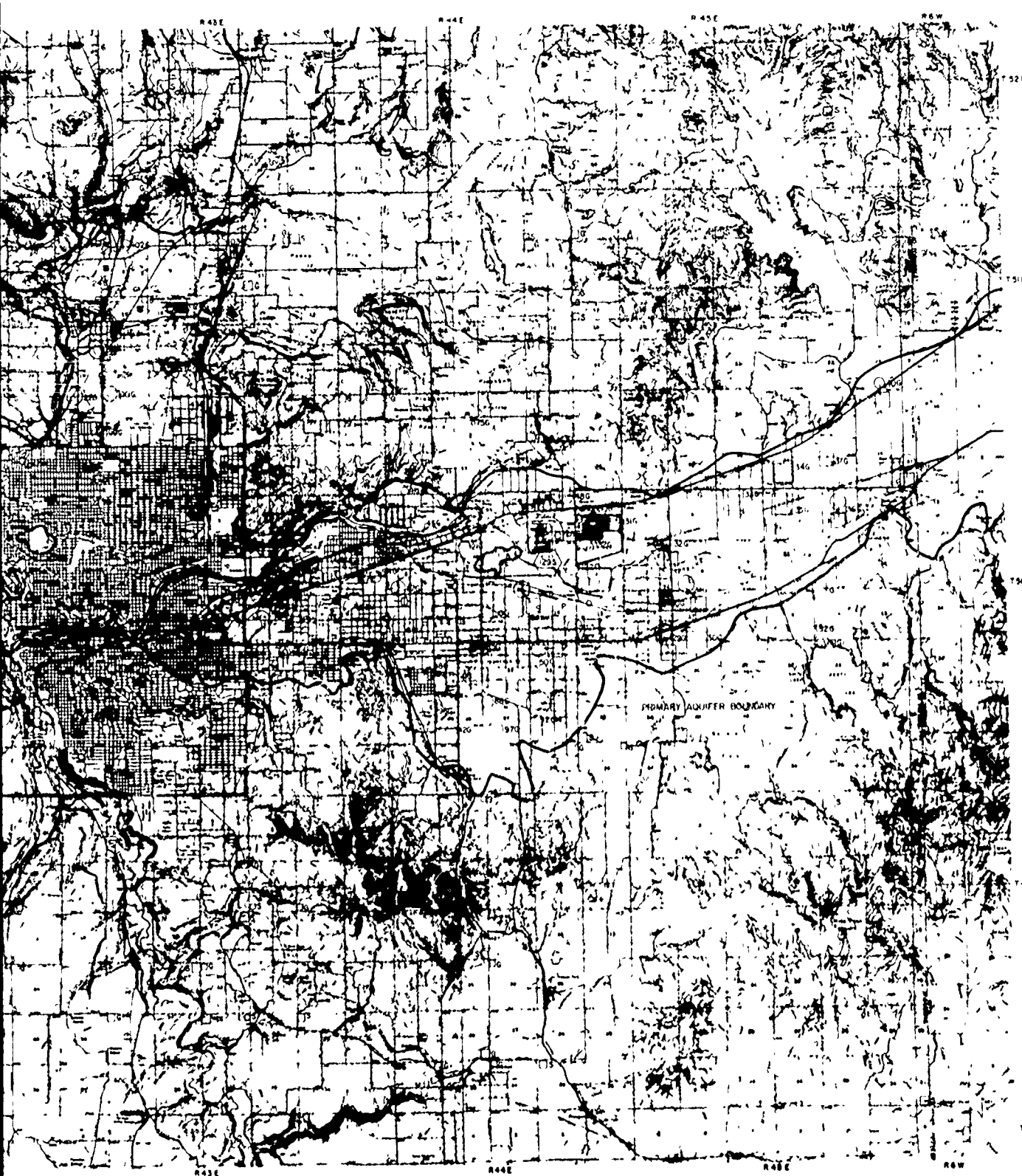
MAP SOURCE USGS 15 MINUTE QUADRANGLE SERIES, CLAYTON WASH 1950, DEER PARK WASH 1949, MT SPOKANE WASH-ID
MEDICAL LAKE WASH 1954, SPOKANE WASH 1950, GREENACRES WASH-IDAHO 1949

MILES
1000 0 3000 8000 16000 21000 FEET

GRAPHIC SCALES

REVISIONS			
SYMBOL	DESCRIPTION	DATE	BY

SEE PLATE 3.14



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SEE PLATE 314 9 FOR LEGEND

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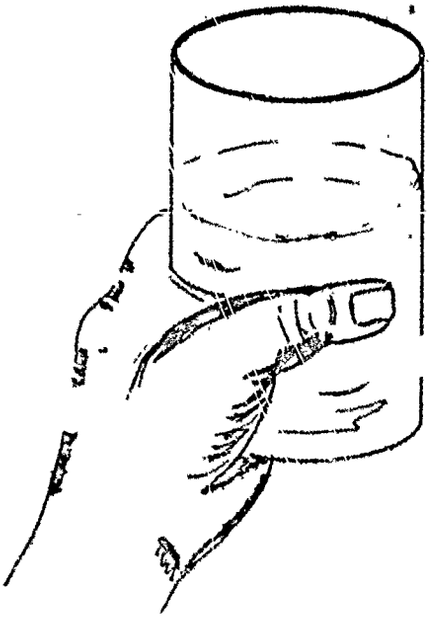
WATER RESOURCES STUDY
METROPOLITAN SPOKANE REGION

WATER UTILIZATION
URBAN PLANNING AREA

		PLATE 314-10
DACW67-73-C-0096		



SECTION 407

PROJECTED WATER USE

WATER RESOURCES STUDY

METROPOLITAN SPOKANE REGION

SECTION 407

PROJECTED WATER USE

8 November 1974

Department of the Army, Seattle District
Corps of Engineers
Kennedy-Tudor Consulting Engineers

INDEX

TABLE INDEX

APPENDICES INDEX

SECTION 407

PROJECTED WATER USE

Scope and Objectives:

The purpose of this section of the report is to forecast the water demand for the following regions and categories of water use in the study area:

I Urban Planning Area

A. Domestic and commercial use

B. Industrial Use

C. Agricultural use

II Non-Urban Planning Area

A. Domestic and Commercial Use

B. Industrial Use

C. Agricultural Use

Water demand for each of these regions and use categories is forecast from 1980 to 2000 in 5-year intervals and for the year 2020. Average daily and total annual water demand rates for each of these categories are developed.

Urban Planning Area

General. Water use forecasts are developed for the planning units within the urban planning area delineated in Section 602. This puts the

water use forecast on the same planning unit basis used for wastewater forecasts in Section 406.2. Refer to Plate 602-1 for delineation of planning units and for population forecasts compiled by planning units.

Municipal Water Use. Included in municipal water use are the total demand of residential and commercial customers. Residential customer use includes not only the component usually classed as domestic but also the use for residential landscape irrigation, a significant component of residential use throughout the urban planning area. Industrial consumers are not included in municipal use.

The general method used in forecasting municipal use is based on the present per capita use which is evaluated, planning unit by planning unit, to arrive at forecast per capita use. The forecast total use is the product of the forecast per capita demands and the forecast population.

Factors which are reflected in the present levels of water use are the type of residential development, lot size, soil characteristics, water rates, presence of commercial development, the socio-economic character of the neighborhood and the availability of water. Forecast trends in water use are selected to reflect anticipated changes in these factors.

Overall consideration is given to national trends which are toward reduced rate in growth of water use and concern for conservation of this resource. Increasing costs of water and wastewater treatment are also expected to exert pressure against continued high growth in rate of use.

Present water use is developed in Sections 313 - 14. The average per capita use for consumers served by water from the primary aquifer is

306 gpcd. This high average rate of consumption is a consequence of the abundant supply, ready availability and low cost of production from the primary aquifer.

City Planning Unit. The City Planning Unit is here defined as the presently sewered area of the City of Spokane plus the Moran Prairie and Southwest units. Tne water service of the city already extends to the Glenaire section of Moran Prairie and to the Geiger Heights military housing southwest of the Southwest unit. It is assumed that this trend in the expansion of the City service area will continue into the future so that it is logical to include Moran Prairie and Southwest with the City as is also done for wastewater load forecasting. The City water service also extends into areas northwest and north of the City that are outside the present sewered area. These areas are not included in the City unit as here defined for consistency with the wastewater planning units.

The present level of per capita water consumption in the City is 290 gpcd including all components of use, domestic, landscape irrigation and commercial. The breakdown by components is estimated to be 30 percent to domestic household use, 50 percent to all forms of landscape irrigation, and 20 percent to commercial. The overall trend in per capita water consumption for the past 10 years appears to be of the order of 10 percent. Future trends are estimated by consideration of the forces at work on the components of the total use. It is expected that there will be a continued increase in the domestic household per capita use due to continued increase in the use of water consuming appliances but that, working against this trend,

will be the national trend and pressure to decrease water consumption. The net effect is estimated to be a decreasing rate of increase such that there will be a 5 percent increase to the year 2000 after which there would be no increase. The continued absolute growth of commercial use is expected to cause a 20 percent increase in the per capita demand attributable to that component by year 2000. It is expected that much of the increase in population in the City from now on will be in multiple unit housing rather than single family dwellings. This will tend to decrease the landscape irrigation component expressed on a per capita basis. Assuming that the total landscaped area will remain substantially at today's level, while the population increases by 5 percent to the year 2000, the net per capita use for landscape irrigation would appear to be a decrease of 5 percent. Only in the Moran Prairie and Southwest portions where single family housing will probably still predominate will the area subject to landscape irrigation have a substantial increase. These two areas, however, are only about 7 percent of the total City population at year 2000 so that the per capita effect is negligible. These evaluated trends are applied to the components on a weighted basis as shown below:

Component	Component as Percent of Total	Evaluated Trend to year 2000 Percent	Weighted Trend, Percent
Household Domestic	30	+ 10	+ 3
Commercial	20	+ 20	+ 4
Landscape Irrigation	50	- 5	- 2.5
	100		+ 4.5

The weighted per capita increase in demand, rounded to 5 percent, is selected as the basis for total change to 2000, allocated to the intervening years on a linear basis. No change in per capita demand is selected for the period 2000 to 2020. The selected per capita flows on this basis are shown in Table 1 and the projected use in Table 2. Refer to Appendix 1 herein which is a reproduction of Table 1 of Section 602 for the population forecasts used to develop projected use from per capita use.

Spokane Valley. The per capita water use in the Spokane Valley is, in general, the highest in the study area. This extremely high rate of use is due to the combination of being situated over the primary aquifer with its readily available supply of inexpensive high quality water, the development in large lot sizes and the combination of climate and soil that requires large quantities for landscape and pasture irrigation.

The Spokane Valley forecast is developed in terms of the ten subunits selected for wastewater management, designated SV-1 through SV-10. Table 1 shows the per capita use for each of these units as developed from the records of the various agencies serving the area. Refer to Section 313-14 for details of water agencies and use.

Since the use of water in the Spokane Valley is dominated by landscape irrigation and pasture irrigation, changes in density of land use will have an important effect on per capita use. As the density increases, the per capita use can be expected to decrease. As fill-in and subdivision take place, some land now irrigated as private pasture will become a number of smaller parcels with landscape irrigation. There will also be undeveloped

or agricultural land converted to residential use. For these reasons, the forecast population densities expressed in terms of both the gross area and of the developed area are of concern in evaluation of forecast per capita use.

Subunit SV-1. This zone currently has a large per capita demand, 770 gpcd. This is largely due to the water use of the Pasadena Park Irrigation District. The homes served in this district are relatively large and new. Lot sizes are large also. These factors combine to produce the large per capita demand. As seen in Appendix 1, the population is expected to more than double by the year 2020. Despite the doubling of population, the lot sizes are forecast to remain large on the average and the character of development to be substantially unchanged. Therefore, it is assumed that the water consumption per developed residential acre will remain at today's level to the year 2020. Based on the forecast land development and a continuation of the present water use per developed acre, the per capita use at the year 2020 is forecast to be 536 gpcd.

Subunit SV-2. Urbanization is already well advanced in this subunit. The developed portions are already at densities comparable to City-wide averages. The rate of water use in SV-2 is the lowest in the Spokane Valley at 217 gpcd, twenty-five percent below the City average. Landscape irrigation is evidently not as significant in SV-2 as in other subunits. The forecast population growth is approximately 45 percent bo the year 2020. Due to the lower proportion devoted to landscape irrigation and to the greater importance of the domestic and commercial components and using the same trend criteria as for the City, a growth in per capita use

of 15 percent to 2000 is selected, with a continued rise to 2020. This will make the per capita use at 2020 about 95 percent of present city use.

Subunits SV-3 and SV-4. These two zones, along with SV-2, are the most highly urbanized parts of the valley. The two zones are considered together since the present and forecast densities are similar and their percent per capita use is almost idential at 292 and 293 gpcd respectively, also equal to the City average of 290 gpcd. At present, the breakdown by use categories is probably not the same as the City, being less for commercial and more for landscape and some pasture irrigation. SV-3 with much less undeveloped land left is forecast to experience a 58 percent growth to 2020 whereas SV-4, with significant undeveloped area, is forecast to increase by more than a factor of three. The densities by 2020 in both subunits are expected to be comparable to City-wide averages. Therefore, the per capita trend is selected at 5% to year 2000, and unchanged beyond 2000.

Subunit SV-5 has a relatively small present population, approximately 1900, and a relatively small forecast increase to approximately 3300 in 2020. Most of this increase is expected to be in the form of filling in the present medium density development. The present rate of water use at 875 gpcd is very high reflecting high irrigation use. With the general area of development remaining substantially unchanged, the total irrigation volume is expected to be of the same order and consequently to represent a smaller per capita demand based on forecast population. The resultant

increase in population density can also be expected to reduce the water use per developed acre. To achieve a net reduced rate of use per developed acre a decreased per capita use of 45 percent by year 2020 is forecast.

Subunit SV-6. This subunit is sparsely populated as a whole, with a small concentration only at its east end. The present population is approximately 1100 persons and the forecast population at 2020 is only 1500. Hence, the character of this subunit will remain substantially unchanged as far as housing density and land use is concerned. The little growth that is forecast is expected to be in smaller parcels than at present. To hold the total use per developed acre at present levels would indicate a decrease in per capita use of 5 percent to 2020, dropping use from 387 gpcd at present to 368 gpcd at 2020.

Subunit SV-7. This subunit is essentially rural in character, except for the development around Liberty Lake and is forecast to remain so. Present demand is very high at 657 gpcd due to the heavy domestic irrigation of large lots and non-commercial pasture. The forecast population increase is from approximately 1600 at present to approximately 3600 at 2020. A large part of this increase is expected to be concentrated in the vicinity of Liberty Lake and in smaller lots than the present subunit average. To obtain a slight decrease in rate of use per developed acre, a 10 percent decrease in per capita use is anticipated to the year 2020.

Subunit SV-8. Subunit SV-8 is similar to SV-7 in being an essentially rural area with a population concentration at a lake, Newman Lake in this case. The present per capita use in SV-8 at 1066 gpcd is the

highest in the valley. The population growth is forecast to increase from approximately 1500 at present to 5,200 by 2020. This large increase is expected to result in smaller holdings. Again, as for SV-7, a slight decrease in rate of use per developed acre is to be expected, and to achieve this a decrease in per capita use of 40 percent is forecast, reducing use to 649 gpcd by 2020.

Subunit SV-9 is largely a heavy industrial area with an adjoining non-industrial area containing a small present population of about 1000 in scattered groups of development. The forecast population at 2020 is only 2800. Present per capita water use at 891 gpcd is very high. The population density, growth and present per capita use are very similar to SV-5. For the same reasons developed under SV-5, a forecast decrease in per capita use of 45 percent to year 2020 is selected.

Subunit SV-10 has a moderate density of development uniformly over the valley floor. The forecast population growth is from about 2000 at present to about 3600 at year 2020 with substantially double the overall density. The present rate of water use at 456 gpcd indicates a level of irrigation use midway between the truly urbanized areas and the semi-rural areas. A moderate reduction in irrigation use per developed acres is therefore anticipated. To achieve this a 20 percent decrease in per capita use is forecast to 2020.

North Spokane. As with the Spokane Valley, the North Spokane Unit is made up of smaller planning subunits, NS-1 through NS-9. The North Spokane area is typified by residential tracts and high forecast population

growth, especially adjacent to the north City limits. Water availability is also high here, but residential lot sizes are generally smaller than in the Spokane Valley. Whereas the Spokane Valley still has aspects of its original rural nature with large lots and pastures, the North Spokane area is a generally newer typically suburban type community. Water use in North Spokane lacks the large irrigation component typical of the Spokane Valley. The level of use is more comparable to that of the City of Spokane, but is less than the City due to the absence at present of a significant commercial component. Population projections are shown in Appendix 1 for each North Spokane Subunit.

Subunit NS-1. Currently, the City is providing most of the water used in this subunit, which is forecast to experience a 14 fold population growth by year 2020. Like the City, a 5% increase in the per capita demand is forecast by the year 2000 with, however, the trend continuing to 2020 to account for probable increase in the commercial component over the present level.

Subunit NS-2 encompasses all of Five Mile Prairie. Currently, this area has a low per capita demand of 127 gpcd caused by lack of availability of water. The forecast population growth of 10 fold to the year 2020 presupposes an adequate water supply which can be achieved only by importation and pumping. The high pump lift to this area should make water more costly than adjoining areas. For this reason, the per capita use will probably never reach the present City-wide level, even with large lot development. An ultimate use of 187 gpcd at 2020, equal to 65 percent of

the City use, is forecast. This low selected use also reflects the probability that the commercial component will be small.

Subunit NS-3 is currently similar to the City in its residential land use. A more than 2 fold population growth is forecast. Most of the homes are on typical suburban lots, well kept, and are quite modern. Current rates of water use at 174 gpcd are much lower than the City-wide average. Here, the growth will probably be more in single family dwellings rather than multiple as in the City. Therefore, a decrease in the landscape irrigation component is not anticipated and an increase in rate of use of 10 percent to 2000 is forecast, continuing at this rate to 2020. This produces a per capita use at 2020 of 202 gpcd, about 66% of the present City-wide average.

Subunit NS-4 , unlike most of the North Spokane unit, is forecast to have only a moderate population growth of 20 percent to year 2020. Therefore, there will not be a significant change in density. The current level of use is 256 gpcd which reflects a significant irrigation component. Since the area is substantially filled at its present low density, the population growth is not expected to increase the total domestic irrigation per developed acre. A reduction in per capita use of 33 gpcd at year 2020 is forecast to maintain the irrigation use per developed acre at substantially the present level.

Subunit NS-5 contains the industrial plants of Kaiser Mead and Kaiser South-Mead. The present population is very low and is forecast to remain low with a population of only 1400 at the year 2020. The present

rate of use is 233 gpcd. An increase in the commercial component is forecast, offsetting any decrease in per capita irrigation component for a net increase of 10 percent to the year 2020. The population increase is expected in small groups rather than in large lot low density development.

Subunit NS-6 is sparsely settled at present but is forecast to have a ten fold increase to 12,700 persons by 2020. The development is expected to be in suburban type units similar to that which has taken place in NS-3 and that which is expected in NS-1. The present rate of use at 150 gpcd, due to the present low level of development, is not representative of future conditions. A final value between that forecast for NS-1 and NS-3, but weighted toward NS-1, is selected at 272 gpcd at year 2020.

Subunit NS-7 is practically unoccupied at present and the forecast population at year 2020 is less than 400 persons. The present level of use at 90 gpcd reflects private water supplies. The anticipated pattern of growth is to remain scattered with the probability of continued private supply. A 25 percent increase in per capita use to 112 gpcd by 2020 is forecast.

Subunit NS-8 has a population of approximately 300 and is forecast to increase to 900 by 2020. This area on the north side of the Little Spokane River is low density residential and forecast to remain so. Present rate of water use is 150 gpcd. The commercial component is expected to remain negligible. As development proceeds, the present low per capita use is expected to more closely approach that in the area south

of the river. An increase of 20 percent to the year 2020 is selected bringing the rate to 180 gpcd.

Subunit NS-9 contains most of the town of Mead which represents the present concentration of population and water use. The forecast growth is modest, being a little more than double to year 2020, leaving the area as a whole lightly developed. The present level of water use at 218 gpcd is expected to remain unchanged reflecting a slight increase in the commercial component being offset by a decrease in the landscape irrigation component.

Orchard Prairie. The character of this planning unit is forecast to remain substantially unchanged as a semi-rural area of low density with no significant concentrations of development. The present population at approximately 500 is forecast to increase to only 900 to 1000 by 2020, corresponding to a gross density of 0.11 persons per acre. The present rate of water use is actually unknown due to lack of data specific to the area. The estimate rate is 152 gpcd which is expected to remain unchanged.

West Plateau. The West Plateau planning unit is part of a larger area west and southwest of the City of Spokane that presently has an inadequate water supply. The present low rate of use in the West Plateau area at 113 gpcd is caused by this problem. The communities which make up the large area suffering from inadequte supply have joined to sponsor a study for improvement of this condition. This study by Black and Veatch (1973) forecasts a rate of water use of 167 gpcd by year 2000 if

an adequate supply is provided.

The population is forecast to double from approximately 2400 at present to 5000 at 2020, indicating relatively little change in the character of development which is primarily the concentration centered on Airways Heights. The two adjoining major airports cause some developmental constraints which are expected to endure.

The present rate of use is assumed to continue to 1980, with the effect of a potential improved supply beginning in 1985, rising to 165 gpcd at 2000, as indicated by Black and Veatch, and continuing to increase to 2020, but at a decreasing rate, to 190 gpcd. A possible increase in the commercial component is the basis for the continued increase.

Fairchild AFB is forecast to be a stable military installation throughout the study period. Although geographically located in the West Plateau area it is considered separately since it has an adequate water supply developed from imported water. Since it has had an adequate supply for some time, the rate of use is assumed to have stabilized at the maximum consistent with the character of the community. A constant rate and amount of water use are selected throughout the study period.

Summary. The forecasts of per capita municipal water use in urban planning areas as discussed above are summarized in Table 1 and are developed into forecasts of average daily use in Table 2, using the population forecast as shown in Appendix 1. The average daily use is forecast to increase from approximately 80 million gallons per day (mgd)

at present to 123 mgd at the year 2020, while the service population increases from 273,000 to 405,000, respectively.

Industrial Water Use, Urban Planning Area

A forecast of industrial wastewater flows is developed in Section 406.1. The amount of water intake by industries that does not appear in the wastewater flows due to being converted to water vapor or being incorporated in the product is negligible. Therefore, the water use and wastewater flows are substantially equal. Table 3 herein, showing summarized forecasts of industrial water use, is based on Table 7 of Section 406.1. For detail of the development of the forecast based on forecast industrial employment refer to Section 406.1.

There are no present or forecast industrial water uses in the Orchard Prairie planning unit or at Fairchild AFB. There is a minor present industrial use in the West Plateau that is assumed to continue unchanged through the study period.

In development of per capita wastewater flows, the small industrial component shown in Table 7 of Section 406.1 was incorporated into the per capita component for municipal flow since this component of industrial waste is expected to be served by the municipal wastewater facilities. For water use forecasting, the small industrial component is not incorporated into the per capita flows developed in Table 2. For water use forecasting, all of both industrial components are reported in Table 3.

The Kaiser Trentwood cooling water diversion from the Spokane River, which presently averages 17.5 mgd, is set out separately from the rest of the industrial use in the Spokane Valley in Table 3. This large use is the only significant surface water use in the urban planning area, all other being supplied from groundwater. It is assumed that this use will remain unchanged throughout the study period based on Kaiser's statement that there are no plans for change.

Agricultural Water Use in the Urban Planning Area.

Substantially all of the commercial irrigated agriculture in the Urban Planning Area is in the Spokane Valley. At present approximately 7,900 acres out of the 25,500 acres devoted to agriculture in the Spokane Valley are under irrigation. Approximately 5,100 acres are served by irrigation districts and the remainder by private sources. The forecast land use data developed in Section 403 indicate that urban development will reduce the total acreage devoted to agriculture to 22,200 acres by 2020. The present proportion of irrigated land is 31 percent. It is estimated that as the amount available for agriculture is reduced there will be increased pressure for the increased production and crop value provided by irrigation. This is recognized by selection of 40 percent as the irrigated portion in 2020, bringing the total irrigated acreage to 8,900, about 1,000 acres more than at present. The allocation of present and forecast agricultural land among the subunits in the Spokane Valley is based on the data developed in Section 403 and is summarized

in Table 4. The present average application rate for the Spokane Valley at 2.8 feet per year, as developed in Section 313 - 14, is assumed to apply throughout the study period and is applied to the areas shown in Table 4 to calculate the forecast annual use shown in Table 5.

Summary, Water Use in the Urban Planning Area.

The results of Table 2, 3, and 5 are combined to yield the projected Urban Planning Area water use shown in Table 6. Here, annual water demands are shown for each major planning unit, broken down into domestic-commercial, industrial, and agricultural uses. The changes in the total water usages by categories are calculated below:

Use Category	Percent Change from 1970 to 2020
Domestic	+ 60%
Industrial(1)	+ 37%
Agricultural	+ 12%
Total(1)	+ 46%

The continued growth of urbanization and municipal water use as compared with industry and agriculture is apparent in the foregoing and also below in the shift in the share of total use.

Use Category	Percent of Use	
	1970	2020
Domestic	58.0%	63.2%
Industrial(1)	27.2	25.4
Agricultural	14.8	11.4
Total(1)	100.0	100.0

(1) Excluding Kaiser Trentwood's non-consumptive cooling water use.

Non-urban Planning Area

General. The non-urban portion of the study area is considered for water use forecasting subdivided in accordance with Water Resource Inventory Areas (WRIA). Refer to Figure A of Section 406.1. Each WRIA is further subdivided into small communities and the rural component in accordance with the population projections developed in Section 402.1. These population projections which are the basis for domestic water use forecasts are reproduced herein as Appendix 2.

Domestic Water Use. The available data for the present level of domestic water use outside the urban planning area is restricted to communities which are large enough to have a community water system. No data are available for the rate of domestic water use in rural areas served by individual water supplies. Levels of use for rural areas must be inferred from a combination of known community use in the same area and knowledge of the availability of water. Present and forecast per capita uses are shown in Table 7 and the total use as developed from forecast population is shown in Table 8.

WRIA 54 Lower Spokane. There are four kinds of development in this area: (1) the community of Medical Lake including Eastern Washington State Hospital; (2) the suburban type developments along the banks of Long Lake; (3) the development around Wellpinit in the Spokane Indian Reservation and (4) the truly rural component. Relatively little

population growth is forecast for WRIA 54 as a whole and, for Medical Lake, a static condition is forecast.

Medical Lake has at present an inadequate water supply and is one of the participants in the West Plains study which seeks to develop an improved supply. The forecast level of use for Medical Lake is based on the forecast presented in the study, Black and Veatch (1973). A growth in per capita use from the present level of 166 gpcd to 223 gpcd at 2020 is forecast, based on an improved water supply becoming available.

For the remainder of WRIA 54, the present use is based on the available data for small developments along the banks of Long Lake. The existing level is 111 gpcd. This level is estimated to apply to not more than 25 percent of the rural use, the remainder estimated to be at a level of 78 gpcd. The weighted present level is selected at 86 gpcd. The water supply at Long Lake and in the Indian Reservation is evaluated as adequate. With an adequate supply for a portion of the area, a growth in level of use is forecast to 100 gpcd at 2020.

WRIA 55 Little Spokane. Deer Park is the principal community in this area and has about 14 percent of the population. The present level of use is 261 gpcd and adequate groundwater supplies are available. A growth in level of use to 290 gpcd at 2020 is forecast to reflect an increase of about 10 percent anticipating an increased commercial component as the community grows.

The combination of generally adequate water supply and a significant

component of cluster development in the rural area of WRIA 55 is the basis for selection of 110 gpcd as representative of present use. An increase to 150 gpcd at 2020 is forecast to reflect increased landscape irrigation use as the future growth is expected to have a higher proportion of non-farm rural residents than at present.

WRIA 56 Hangman Creek. The communities of this area are considered in two elements, Cheney and all of the other towns together. Cheney, with a permanent 1970 population of 6,358, is the largest community outside the urban planning area. Cheney also has a significant seasonal student population and commuting daytime population that brings the full time equivalent population to 8,500. The present level of use is 288 gpcd based on the permanent population. This relatively high per capita value includes the water use for both Cheney and E.W.S.C., but allotting it solely to Cheney's permanent population. This was done since only the permanent population of Cheney was forecast. The current student to resident ratio is assumed to be constant to the year 2020. Cheney is another participant in the West Plains study for an improved water supply. The forecast increase in per capita use to 381 gpcd at 2020 is based on forecasts for improved water supply conditions by Black and Veatch (1973).

The other six communities in this area have a combined present population of 2,000. These communities have a high rate of water use, weighted average 240 gpcd, despite a generally inadequate supply. Since relatively small growth is forecast for these communities, the supply should support

the general trend to increase, selected at 10 percent to 2020.

For the remainder of WRIA 56 of truly rural character, a low level of present use at 78 gpcd is selected with growth to 93 gpcd at 2020 forecast in keeping with the generally low availability of water in this area for individual supplies.

WRIA 57 Upper Spokane. This area has no significant communities, the development being generally scattered on the more rugged topography which borders the Urban Planning Area. A significant proportion of the residents are non-farm rural residents. Water availability for private supplies is generally unfavorable. A present level of use is selected at 100 gpcd, 10 percent below the suburban level for WRIA 54 where water supply is better. A forecast increase to 120 at 2020 is forecast as the nearness to the Urban Planning Area creates more suburban but scattered development.

Industrial Water Demand. There are only three present industrial water users outside the Urban Planning Area: Dawn Mining in WRIA 54, Northwest Tungsten in WRIA 55, and Rockford Grain Growers in WRIA 56. Only Dawn Mining is of significant enough volume to list as a water user. With this condition, the location of a single new industry with significant water use would make a forecast based on present use meaningless.

The total industrial process use in the Urban Planning Area is equal to about 85 gpcd. Note that Dawn Mining use is about equal to 71 gpcd

based on WRIA 54 population. To make some reasonable allowance for potential industrial location in the non-urban area, an amount equal to 10 gpcd is designated industrial for all WRIAs beginning in 1985. This is equal to assuming industrial development at about an eighth the intensity in proportion to population as the urban area. The Dawn Mining use in WRIA 54 is held constant. Forecast industrial water use in the non-urban areas is shown in Table 9.

Agricultural Water Use. The present level of agricultural water use in the non-urban area is developed from the data shown in Table 26 of Section 313-14 which is reproduced herein in Appendix 3. It is necessary to adjust the total for WRIA 57 by the amount accounted for under the Urban Planning Area in the Spokane Valley. The forecast use is shown on Table 10 based on the following analysis.

WRIA 54 Lower Spokane

The Lincoln and Spokane County portions of this area are predominantly dry farmed and the available water supply is very limited. Without import of water, the irrigated area in these counties in WRIA 54 is assumed to remain unchanged. There is some potential water supply in the Chamokane River Valley for increased irrigation in the Stevens County portion. A 10 percent increase to the year 2020 is selected based on available water but limited suitable land.

WRIA 55 Little Spokane

The general agriculture in this area is oriented toward pasture and

similar activities in support of dairies and cattle. There is already a significant amount of irrigated agricultural land. The utilization of surface waters appears to have reached its limit in the present DOE moratorium on further surface water rights on the Little Spokane. However, there should be some remaining groundwater potential which with present trends in food needs, will probably be utilized to further increase irrigation in this basin. A 10 percent increase to 2020 is forecast.

WRIA 56 Hangman Creek

This is predominantly dry farmed Palouse country with no surface water supply. It is assumed that irrigation level will remain unchanged.

WRIA 57 Upper Spokane

There is both little suitable land and no available surplus water in the areas outside the Spokane Valley. No change in irrigation is forecast.

Total Water Demand Non-Urban Planning Area.

The results of Tables 8, 9, and 10 are summarized in Table 11 to show the forecast domestic, industrial, and agricultural demands for each Non-urban Area Planning Unit.

Use Category	% Change from 1970 to 2020
Domestic	+ 105%
Industrial	+ 100%
Agricultural	+ 6%
Total	+ 37%

The domestic water use is increasing faster than the corresponding increase in the Urban Planning Area, although the overall increase is about one-tenth as much. The domestic use of water, although smaller than the agricultural use, is becoming more significant.

Use Category	Percent of Use 1970	2020
Domestic	28.5	42.5
Industrial	3.1	4.5
Agricultural	68.4	53.0
Total	100.0	100.0

This indicates that, although there are trends toward urbanization, the remote areas are still predominantly agricultural with respect to water use.

Study Area Summary

The overall study area water demand forecast is shown in Table 12. It is forecast that by the year 2020, approximately 86 billion gallons of water will be used annually, a 40% increase from the 61 billion gallons used currently. Most of the present use and most of the future use will occur in the Urban Planning Area. The domestic component is seen to be increasing faster than the other components for the entire study area. This is especially true for the Non-Urban Planning Area. Agricultural water use shows the smallest increase. As expected, the Urban Planning Area is forecast to consume most of the water used in the Study Area. Currently, the Urban Planning Area utilizes 88% of the Study Area's

water needs and is forecast to utilize 89% by the year 2020. Over half of water demand for the Study Area is due to the domestic demand of the Urban Planning Area.

TABLE 1
PROJECTED PER CAPITA WATER DEMANDS
URBAN PLANNING AREA

Planning Element		Projected Use, Gallons per capita per day (gpcd) 1970	1980	1985	1990	1995	2000	2020
City of Spokane plus Moran Prairie and Southwest		290	295	297	300	302	304	304
Spokane Valley Units	SV-1	770	723	700	676	653	630	536
	SV-2	217	228	234	240	245	250	275
	SV-3	292	297	299	302	304	307	307
	SV-4	293	298	300	303	305	308	308
	SV-5	875	796	757	717	678	639	481
	SV-6	387	383	381	379	377	375	368
	SV-7	657	644	638	632	626	620	591
	SV-8	1066	983	941	899	858	816	649
	SV-9	891	808	766	725	684	642	476
	SV-10	456	438	429	420	412	404	365
North Spokane Units	NS-1	279	281	284	286	288	293	302
	NS-2	127	127	134	142	150	157	187
	NS-3	174	180	183	185	188	191	202
	NS-4	256	249	246	243	240	236	223
	NS-5	233	237	239	241	243	245	253
	NS-6	150	174	187	199	211	223	272
	NS-7	90	94	97	99	101	103	112
	NS-8	150	156	159	162	165	168	180
	NS-9	218	218	218	218	218	218	218
Orchard Prairie		152	152	152	152	152	152	152
West Plateau		113	113	126	139	152	165	190
Fairchild AFB		313	313	313	313	313	313	313

TABLE 2
PROJECTED MUNICIPAL WATER USE
URBAN PLANNING AREA

Planning Element		Projected Average Daily Use Millions of Gallons (mgd) 1970	1980	1985	1990	1995	2000	2020
City		48.57	52.41	53.19	54.19	55.06	55.96	58.66
Moran Prairie		1.04	1.63	1.90	2.20	2.51	2.83	3.94
Southwest		0.85	0.91	1.05	1.21	1.34	1.47	1.98
Subtotal		50.46	54.95	56.14	57.60	58.91	60.26	64.58
Spokane Valley	SV-1	1.66	1.76	1.94	2.12	2.22	2.32	2.72
	SV-2	1.72	1.99	2.13	2.28	2.39	2.51	3.16
	SV-3	8.09	9.79	10.24	10.75	11.20	11.71	13.46
	SV-4	2.66	3.93	4.65	5.41	6.23	7.03	9.53
	SV-5	1.64	1.94	1.92	1.88	1.84	1.79	1.57
	SV-6	0.41	0.43	0.44	0.44	0.46	0.48	0.58
	SV-7	1.06	1.26	1.41	1.55	1.65	1.74	2.10
	SV-8	1.56	2.48	2.64	2.79	2.94	3.06	3.37
	SV-9	0.86	1.27	1.31	1.35	1.38	1.40	1.35
	SV-10	0.88	1.04	1.08	1.12	1.19	1.25	1.31
Subtotal		20.54	25.89	27.76	20.69	31.50	33.29	39.15
North Spokane	NS-1	0.29	0.42	0.88	1.36	1.84	2.34	4.20
	NS-2	0.10	0.11	0.22	0.35	0.49	0.64	1.34
	NS-3	1.93	2.62	2.98	3.34	3.70	4.08	5.07
	NS-4	0.66	0.69	0.69	0.68	0.69	0.69	0.70
	NS-5	0.04	0.27	0.28	0.28	0.30	0.31	0.36
	NS-6	0.18	0.48	0.82	1.23	1.67	2.16	3.45
	NS-7	0.01	0.02	0.02	0.02	0.02	0.03	0.04
	NS-8	0.04	0.05	0.06	0.07	0.08	0.10	0.16
	NS-9	0.33	0.46	0.50	0.54	0.59	0.63	0.81
Subtotal		3.58	5.12	6.45	7.87	9.38	10.98	16.13
Orchard Prairie		0.07	0.10	0.10	0.11	0.11	0.12	0.14
West Plateau		0.29	0.29	0.36	0.43	0.51	0.60	0.97
Fairchild AFB		2.10	2.10	2.10	2.10	2.10	2.10	2.10
TOTAL URBAN PLANNING AREA		77.04	88.45	92.91	97.80	102.51	107.35	123.07

TABLE 3
PROJECTED INDUSTRIAL WATER USE
URBAN PLANNING AREA

WATER USE - MILLIONS OF GALLONS PER DAY

Planning Unit	1970 Process	1970 Cooling	1970 Total	1980 Process	1980 Cooling	1980 Total	1985 Process	1985 Cooling	1985 Total	1990 Process	1990 Cooling	1990 Total	1995 Process	1995 Cooling	1995 Total	2000 Process	2000 Cooling	2000 Total	2020 Process	2020 Cooling	2020 Total
City of Spokane[1]																					
All	2.63	.87	3.50	2.93	.98	3.91	3.20	1.06	4.26	3.48	1.16	4.64	3.80	1.27	5.07	3.98	1.32	5.30	4.46	1.49	5.95
Spokane Valley[2]																					
Heavy	18.10	9.74	27.84	18.55	9.99	28.54	19.21	10.34	29.55	19.87	10.79	30.67	20.54	11.06	31.60	21.22	11.43	32.65	23.00	12.42	35.42
Light	.58	.19	.77	.62	.21	.83	.49	.23	.72	.78	.26	1.04	.89	.29	1.18	.96	.32	1.28	1.17	.39	1.56
Subtotal	18.68	9.93	28.61	19.17	10.20	29.37	19.95	10.57	30.47	20.65	10.96	31.61	21.43	11.35	32.78	22.18	11.75	33.93	24.25	12.81	37.06
North Spokane																					
Heavy	.349	3.139	3.488	.375	3.327	3.697	.387	3.481	3.868	.418	3.759	4.177	.443	3.983	4.426	.481	4.327	4.808	.562	5.056	5.618
Light	.185	.062	.247	.216	.072	.288	.236	.079	.315	.260	.086	.346	.287	.095	.382	.306	.101	.409	.355	.118	.473
Subtotal	.534	3.201	3.735	.585	3.399	3.985	.623	3.560	4.183	.678	3.845	4.523	.730	4.078	4.808	.785	4.428	5.213	.917	5.174	6.091
West Plateau																					
Heavy	.279		.279	.279		.279	.279		.279	.279		.279	.279		.279	.279		.279	.279		.279
Light	.005	.002	.007	.006	.002	.008	.007	.002	.009	.008	.002	.010	.008	.002	.010	.008	.002	.010	.008	.002	.010
Subtotal	.284	.002	.286	.285	.002	.287	.286	.002	.288	.287	.002	.289	.287	.002	.289	.287	.002	.289	.287	.002	.289
Orchard Prairie																					
Light	.004	.001	.005	.004	.002	.006	.007	.002	.009	.007	.002	.009	.009	.003	.012	.011	.004	.015	.012	.004	.016
Total[2]	22.13	14.00	36.13	22.98	14.58	37.56	24.02	15.19	39.21	25.11	15.96	41.07	26.26	16.76	42.96	27.23	17.51	44.74	29.93	19.48	49.41
Kaiser Trentwood River Diversion[3]	----	17.5	17.5	----	17.5	17.5	----	17.5	17.5	----	17.5	17.5	----	17.5	17.5	----	17.5	17.5	----	17.5	17.5
GRAND TOTAL, URBAN PLANNING AREA	22.13	31.50	53.63	22.98	32.08	55.06	24.02	32.69	56.71	25.11	33.46	58.57	26.26	34.26	60.46	27.23	35.01	62.24	29.93	36.98	66.91

(1) Includes Otis Orchards and Southwest
(2) Includes 17.5 mgd Kaiser Trentwood river diversion for cooling use listed separately below
(3) Assumed unchanged throughout the study period

TABLE 4
PROJECTED AGRICULTURAL LAND USE IN
SPOKANE VALLEY PLANNING UNIT

Projected Land Use, Acres

	1970		1980		1985		1990		1995		2000		2020	
Subunit	Total	Irrigated	Total	Irrigated	Total	Irrigated	Total	Irrigated	Total	Irrigated	Total	Irrigated	Total	Irrigated
SV-1	852	264	816	269	798	271	776	272	755	272	733	264	641	256
SV-2	224	69	187	62	169	57	161	56	153	55	145	52	104	42
SV-3	706	219	642	212	610	207	560	196	511	184	461	166	294	118
SV-4	2,480	769	2,419	798	2,388	812	2,280	798	2,172	782	2,064	743	1,550	620
SV-5	2,431	754	2,394	790	2,375	808	2,361	826	2,348	845	2,334	840	2,313	925
SV-6	1,148	356	1,143	377	1,140	388	1,034	362	927	334	821	296	785	314
SV-7	7,270	2,254	7,183	2,370	7,140	2,428	7,114	2,490	7,087	2,551	7,061	2,542	7,023	2,809
SV-8	7,292	2,261	7,188	2,372	7,136	2,426	7,094	2,483	7,051	2,538	7,009	2,523	6,863	2,745
SV-9	2,302	71	2,270	749	2,254	766	2,233	782	2,211	796	2,190	788	2,099	840
SV-10	798	247	759	250	739	251	711	249	682	246	654	235	538	215
TOTAL	25,503	7,907	25,001	8,249	24,749	8,414	24,324	8,514	23,897	8,603	23,472	8,449	22,210	8,884

TABLE 5

PROJECTED AGRICULTURAL WATER USE

IN THE SPOKANE VALLEY#

Unit	Annual Water Use* - Acre Feet						
	1970	1980	1985	1990	1995	2000	2020
SV - 1	739	753	759	762	762	739	717
SV - 2	193	174	160	157	154	146	118
SV - 3	613	594	580	549	515	465	330
SV - 4	2153	2234	2274	2234	2190	2080	1736
SV - 5	2111	2212	2262	2313	2366	2352	2590
SV - 6	997	1056	1086	1014	935	829	879
SV - 7	6311	6636	6798	6972	7143	7118	7865
SV - 8	6331	6642	6793	6952	7106	7064	7686
SV - 9	1999	2097	2145	2190	2229	2206	2352
SV - 10	692	700	703	697	689	658	602
TOTAL	22,139	23,098	23,560	23,840	24,089	23,657	24,875
Peak Rate July Mean, cfs	100	104	106	107	108	106	112

* Based on application rate of 2.8 feet per year

\# The irrigated agriculture of the Spokane Valley accounts for essentially all the agricultural water use in the Urban Planning Area

TABLE 6

SUMMARY, PROJECTED WATER USE,
URBAN PLANNING AREA

Unit	Use	Annual Water Use - Millions of Gallons 1970	1980	1985	1990	1995	2000	2020
City[1]	Municipal[2]	18,418	20,057	20,491	21,024	21,502	21,995	23,572
	Industrial	1,278	1,427	1,555	1,694	1,851	1,934	2,172
	Agricultural							
	Subtotal	19,696	21,484	22,046	22,718	23,353	23,929	25,744
Spokane Valley	Municipal[2]	7,497	9,450	10,132	10,837	11,498	12,151	14,290
	Industrial[3]	10,443	10,720	11,122	11,538	11,965	12,384	13,527
	Agricultural	7,215	7,528	7,678	7,769	7,851	7,710	8,107
	Subtotal	25,155	27,698	28,932	30,144	31,314	32,245	35,924
North Spokane	Municipal[2]	1,307	1,869	2,354	2,873	3,424	4,008	5,887
	Industrial	1,363	1,455	1,527	1,651	1,755	1,903	2,223
	Agricultural							
	Subtotal	2,670	3,324	3,881	4,524	5,179	5,911	8,110
Orchard Prairie	Municipal[2]	26	36	36	40	40	44	51
	Industrial	2	2	3	3	4	5	6
	Agricultural							
	Subtotal	28	38	39	43	44	49	57
West Plateau	Municipal[2]	106	106	131	157	186	219	354
	Industrial	104	105	105	105	105	105	106
	Agricultural							
	Subtotal	210	211	236	262	291	324	460
Fairchild A.F.B.	Municipal[2]	766	766	766	766	766	766	766
	Industrial							
	Agricultural							
	Subtotal	766	766	766	766	766	766	766
Total Urban								
Planning Area	Municipal[2]	28,120	32,284	33,910	35,697	37,416	39,183	44,920
	Industrial	13,190	13,709	14,312	14,991	15,680	16,331	18,034
	Agricultural	7,215	7,528	7,678	7,769	7,851	7,710	8,107
	Total[3]	48,525	53,521	55,900	58,457	60,947	63,224	71,061
Kaiser Trentwood								
River Diversion	Industrial	6,388	6,388	6,388	6,388	6,388	6,388	6,388
Total Urban								
Planning Area	Municipal[2]	28,120	32,284	33,910	35,697	37,416	39,183	44,920
	Industrial	19,578	20,097	20,520	21,379	22,068	22,719	24,442
	Agricultural	7,215	7,528	7,678	7,769	7,851	7,710	8,107
	GRAND TOTAL[4]	54,913	59,909	62,288	64,845	67,335	69,612	77,449
Total as Acre-Ft/Yr		168,473	183,801	191,100	198,944	206,584	213,570	237,614
" " Avg. MGD		151	165	172	179	186	192	213
" " " CFS		234	255	265	276	286	296	329

(1) Including Moran Prairie & Southwest Units
(2) Including Commercial
(3) Excluding Kaiser Trentwood's Non Consumptive Cooling Water Use
(4) Including Kaiser Trentwood's Non Consumptive Cooling Water Use

TABLE 7

PROJECTED PER CAPITA DOMESTIC WATER DEMANDS
NON-URBAN PLANNING AREAS

	Per Capita Demand Gallons per Capita per Day (gpcd)						
Unit	1970	1980	1985	1990	1995	2000	2020
WRIA 54							
Medical Lake & E.W.S.H.	166	177	183	189	194	200	223
Rural	86	89	90	92	93	94	100
WRIA 55							
Incorporated Towns	261	267	270	273	276	278	290
Rural	110	118	122	126	130	134	150
WRIA 56							
Cheney(1)	288	307	316	325	334	344	381
Incorporated Towns	240	245	248	250	253	256	266
Rural	78	83	86	88	90	92	93
WRIA 57							
Rural	100	104	106	108	110	112	120

(1) Per capita demand is based on the water use of Cheney and E.W.S.C., divided solely by Cheney's permanent resident population.

TABLE 8

PROJECTED DOMESTIC* WATER USE

NON-URBAN PLANNING AREA

UNIT	Average Daily Water Demand - MGD 1970	1980	1985	1990	1995	2000	2020
WRIA 54							
Medical Lake & E.W.S.H.	0.59	0.62	0.64	0.66	0.68	0.70	0.78
Rural	0.36	0.38	0.39	0.41	0.43	0.44	0.50
Subtotal	0.95	1.00	1.03	1.07	1.11	1.14	1.28
WRIA 55							
Deer Park	0.34	0.42	0.44	0.46	0.48	0.51	0.62
Rural	0.83	0.96	1.03	1.10	1.18	1.25	1.52
Subtotal	1.17	1.38	1.47	1.56	1.66	1.76	2.14
WRIA 56							
Cheney	1.83	2.25	2.48	2.73	3.01	3.33	4.88
Incorporated Towns	0.48	0.54	0.56	0.58	0.60	0.63	0.75
Rural	0.33	0.39	0.42	0.45	0.48	0.52	0.59
Subtotal	2.64	3.18	3.46	3.76	4.09	4.48	6.22
WRIA 57							
Rural	0.37	0.47	0.51	0.56	0.62	0.67	0.88
Non-urban Planning Area - TOTAL	5.13	6.03	6.47	6.95	7.48	8.05	10.52

* Includes commercial

TABLE 9

PROJECTED INDUSTRIAL WATER USE

NON-URBAN PLANNING AREA

Average Daily Demand - MGD

WRIA	1970	1980	1985	1990	1995	2000	2020
54	0.55	0.55	0.64	0.64	0.66	0.66	0.69
55			0.10	0.10	0.11	0.11	0.12
56			0.15	0.16	0.17	0.18	0.22
57	———	———	0.05	0.05	0.06	0.06	0.07
TOTAL	0.55	0.55	0.94	0.95	1.00	1.01	1.10

TABLE 10

PROJECTED AGRICULTURAL WATER USE

NON-URBAN PLANNING AREA

	Annual Demand - Acre Ft.						
WRIA	1970	1980	1985	1990	1995	2000	2020
54	5653	5701	5724	5748	5772	5796	5891
55	6491	6621	6686	6751	6816	6880	7140
56	1474	1474	1474	1474	1474	1474	1474
57	174	174	174	174	174	174	174
TOTAL	13,792	13,970	14,058	14,147	14,236	14,324	14,679

TABLE 11

SUMMARY OF FORECAST WATER USE
NON-URBAN PLANNING AREA

UNIT	USE	Annual Water Use - Millions of Gallons 1970	1980	1985	1990	1995	2000	2020
WRIA 54	Municipal[1]	347	365	376	391	405	416	467
Lower Spokane	Industrial	201	201	234	234	241	241	252
	Agricultural	1,842	1,858	1,865	1,873	1,881	1,889	1,920
	SubTotal	2,390	2,424	2,475	2,498	2,527	2,546	2,639
WRIA 55	Municipal[1]	427	504	537	569	606	642	781
Little Spokane	Industrial			36	36	40	40	44
	Agricultural	2,115	2,158	2,179	2,200	2,221	2,242	2,327
	SubTotal	2,542	2,662	2,752	2,805	2,867	2,924	3,152
WRIA 56	Municipal[1]	964	1,161	1,263	1,372	1,493	1,635	2,270
Hangman Creek	Industrial			55	58	62	66	80
	Agricultural	480	480	480	480	480	480	480
	SubTotal	1,440	1,641	1,798	1,910	2,035	2,181	2,830
WRIA 57	Municipal[1]	135	172	186	204	226	245	321
Upper Spokane	Industrial			18	18	22	22	26
	Agricultural	57	57	57	57	57	57	57
	SubTotal	192	229	261	279	305	324	404
Total Non-Urban	Municipal[1]	1,873	2,202	2,362	2,536	2,730	2,938	3,839
Planning Area	Industrial	201	201	343	346	365	369	402
	Agricultural	4,494	4,553	4,581	4,610	4,635	4,668	4,784
	Grand Total	6,568	6,956	7,286	7,492	7,730	7,975	9,025
Total as Acre-Ft/Yr		20,151	21,341	22,353	22,985	23,728	24,467	27,689
" " Avg. MGD		18	19	20	21	21	22	25
" " " CFS		28	30	31	32	33	34	38

(1) Including commercial

TABLE 12

SUMMARY OF FORECAST WATER USE
ENTIRE STUDY AREA

Annual Water Use - Millions of Gallons

UNIT	USE	1970	1980	1985	1990	1995	2000	2020
Urban Planning Area[2]	Municipal[1]	28,120	32,284	33,910	35,697	37,416	39,183	44,420
	Industrial[2]	13,190	13,709	14,312	14,991	15,680	16,331	18,034
	Agricultural	7,215	7,528	7,678	7,769	7,851	7,710	8,107
	Total	48,525	53,521	55,900	58,457	60,947	63,224	71,061
Non-Urban Planning Area	Municipal[1]	1,873	2,202	2,362	2,536	2,730	2,938	3,839
	Industrial	201	201	343	346	365	369	402
	Agricultural	4,494	4,553	4,581	4,610	4,635	4,668	4,784
	Total	6,568	6,956	7,286	7,492	7,730	7,975	9,025
Study Area Sub-total	Municipal[1]	29,993	34,486	36,272	38,233	40,146	42,121	48,759
	Industrial[2]	13,391	13,910	14,655	15,337	16,045	16,700	18,436
	Agricultural	11,709	12,081	12,259	12,379	12,486	12,378	12,891
	Total	55,093	60,477	63,186	65,949	68,677	71,199	80,086
Kaiser Trentwood River Diversion	Industrial	6,388	6,388	6,388	6,388	6,388	6,388	6,388
Study Area Total	Municipal[1]	29,993	34,486	36,272	36,233	40,146	42,121	48,759
	Industrial	19,779	20,298	21,043	21,725	22,433	23,088	24,824
	Agricultural	11,709	12,081	12,259	12,379	12,486	12,378	12,891
	Total	61,481	66,865	69,574	72,337	75,065	77,587	86,474
Total as Acre-Ft/Yr		188,624	205,142	213,453	221,930	233,367	238,037	265,302
" " Avg. MGD		169	184	192	199	207	214	238
" " " CFS		261	284	296	308	319	330	368

(1) Includes commercial
(2) Excludes Kaiser Trentwood's non-consumptive cooling water use
(3) Includes " " " " " " "

APPENDIX 1
POPULATION FORECASTS BY PLANNING UNITS
URBAN PLANNING AREA

Planning Unit	Subunit	Forecast Population By Years						
		1970	1980	1985	1990	1995	2000	2020
NORTH SPOKANE	NS-1	1,031	1,507	3,093	4,759	6,375	8,000	13,922
	NS-2	759	896	1,666	2,474	3,282	4,097	7,189
	NS-3	11,090	14,555	16,257	18,044	19,693	21,358	25,120
	NS-4	2,596	2,754	2,785	2,818	2,863	2,910	3,146
	NS-5	169	1,139	1,156	1,174	1,216	1,261	1,437
	NS-6	1,205	2,730	4,411	6,177	7,919	9,670	12,669
	NS-7	114	165	187	209	243	277	397
	NS-8	276	312	374	441	509	579	887
	NS-9	1,522	2,113	2,286	2,465	2,686	2,910	3,718
Subtotal		18,762	26,171	32,215	38,561	44,786	51,062	68,485
SPOKANE VALLEY	SV-1	2,160	2,431	2,774	3,136	3,406	3,677	5,082
	SV-2	7,929	8,742	9,102	9,479	9,754	10,034	11,500
	SV-3	27,713	32,947	34,237	35,604	36,852	38,129	43,830
	SV-4	9,070	13,198	15,510	17,864	20,429	22,818	30,929
	SV-5	1,877	2,440	2,530	2,625	2,714	2,806	3,267
	SV-6	1,072	1,113	1,142	1,173	1,228	1,286	1,575
	SV-7	1,621	1,963	2,205	2,459	2,631	2,808	3,560
	SV-8	1,468	2,523	2,805	3,102	3,421	3,745	5,190
	SV-9	968	1,574	1,716	1,864	2,022	2,182	2,837
	SV-10	1,928	2,373	2,512	2,657	2,877	3,100	3,586
Subtotal		55,806	69,304	74,533	79,963	85,334	90,585	111,356
CITY OF SPOKANE(1)		167,495	177,660	179,101	180,639	182,328	184,073	192,962
MORAN PRAIRIE		3,575	5,530	6,404	7,320	8,307	9,298	12,949
SOUTHWEST		2,920	3,088	3,547	4,029	4,433	4,839	6,504
Subtotal		173,990	186,278	189,052	191,988	195,068	198,210	212,415
FAIRCHILD AFB		6,700	6,700	6,700	6,700	6,700	6,700	6,700
WEST PLATEAU		2,358	2,608	2,833	3,074	3,364	3,657	5,084
Subtotal		9,058	9,308	9,533	9,774	10,064	10,357	11,784
ORCHARD PRAIRIE		486	645	674	707	747	787	940
TOTAL URBAN PLANNING AREA		258,102	291,706	306,007	320,993	335,999	351,001	404,980

(1) Geographical area of present sewage collection system

APPENDIX 2
POPULATION FORECASTS OF
NON-URBAN PLANNING UNITS

WRIA	Units	Forecast Population By Years 1970	1980	1985	1990	1995	2000	2020
54	LOWER SPOKANE							
	Medical Lake	3,529	3,500	3,500	3,500	3,500	3,500	3,500
	Rural	4,153	4,292	4,374	4,489	4,595	4,700	4,998
	Subtotal	7,682	7,792	7,874	7,989	8,095	8,200	8,498
55	LITTLE SPOKANE							
	Deer Park	1,295	1,559	1,622	1,687	1,754	1,824	2,134
	Rural	7,583	8,104	8,415	8,754	9,070	9,360	10,147
	Subtotal	8,878	9,663	10,037	10,441	10,824	11,184	12,281
56	HANGMAN CREEK							
	Fairfield	469	547	605	668	738	816	1,216
	Latah	169	148	138	129	121	113	86
	Rockford	327	367	367	367	367	367	367
	Spangle	179	200	200	200	200	200	200
	Waverly	48	61	61	61	61	61	61
	Tekoa	808	900	900	900	900	900	900
	Subtotal	2,000	2,223	2,271	2,325	2,387	2,457	2,830
	Cheney	6,358	7,313	7,844	8,412	9,022	9,676	12,302
	Rural	4,232	4,660	4,880	5,121	5,357	5,614	6,295
	Subtotal	12,590	14,196	14,995	15,858	16,766	17,747	21,927
57	UPPER SPOKANE							
	Rural	3,681	4,473	4,833	5,218	5,627	6,016	7,327
	TOTAL NON-URBAN	32,831	36,124	37,739	39,506	41,312	43,147	50,033

APPENDIX 3
ESTIMATION OF ANNUAL WATER USE FOR AGRICULTURAL IRRIGATION

ANNUAL WATER USE, ACRE-FEET

County	WATER RESOURCE INVENTORY AREAS 54 G.W.*	54 S.W.*	54 Tot.*	55 G.W.	55 S.W.	55 Tot.	56 G.W.	56 S.W.	56 Tot.	57 G.W.	57 S.W.	57 Tot.	STUDY AREA TOTAL G.W.	STUDY AREA TOTAL S.W.	STUDY AREA TOTAL Tot.
Lincoln (1)	858	589	1,447	-	-	-	-	-	-	-	-	-	858	589	1,447
Pend Oreille (2)	-	-	-	655	498	1,153	-	-	-	-	174	174	655	672	1,327
Spokane I.D. (3)	-	-	-	0	-	0	-	-	-	15,300(4)	-	15,300	15,300	-	15,300
" w/o I.D. (3)	1,714	108	1 822	2,546	1,733	4,279	778	696	1,474	6,309(4)	561	6,870	11,347	3,098	14,445
Spokane (Total)	1,714	108	1,822	2,546	1,733	4,279	778	696	1,474	21,609	561	22,170	26,647	3,098	29,745
Stevens (5)	1,521	863	2,384	801	258	1,059	-	-	-	-	-	-	2,322	1,121	3,443
Whitman	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	4,093	1,560	5,653	4,002	2,489	6,491	778	696	1,474	21,609	735	22,344	30,482	5,480	35,962

* G.W. - Ground Water. S.W. - Surface Water. Tot. - Total G.W. & S.W.

(1) Based on 1.58 ft/yr
(2) Based on 1.05 ft/yr
(3) Based on 0.80 ft/yr
(4) Based on 3.00 ft/yr
(5) Based on 1.44 ft/yr