

**MUNICIPAL AND INDUSTRIAL
WATER SUPPLY AND USES
IN THE
UINTAH BASIN**

(Data Collected for Calendar-Year 2003)

Prepared by

**Utah Department of Natural Resources
Division of Water Resources**

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D. Larry Anderson, Director

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EXECUTIVE SUMMARY

This document describes the municipal and industrial (M&I) water supplies and uses for Uintah Basin. Data is compiled by meeting with each public community and non-community system in the basin. The total M&I water supply and use for the basin are then tabulated by county. Portions of five counties comprise the Uintah Basin: Daggett, Duchesne, Uintah and portions of Summit and Wasatch. The results reported herein represent totals for the 2003 calendar year.

The annual maximum potable water supply for the public community water systems in the basin is 65,215 acre-feet. Of this total, springs account for approximately 35 percent, wells for 20 percent, and surface sources for 45 percent. Table I presents this data.

TABLE I
UINTAH BASIN
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

County	Springs	Wells	Surface	Totals
Daggett	580.0	2,922.0	645.2	4,147.2
Duchesne	1,471.7	7,185.8	4,480.0	13,137.5
Summit	0.0	0.0	0.0	0.0
Uintah	20,630.0	2,976.1	24,324.0	47,930.1
Wasatch	0.0	0.0	0.0	0.0
Basin Totals	22,681.7	13,083.9	29,449.2	65,214.8

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints and/or system constraints.

The basin's annual reliable potable water supply under present conditions for the public community systems is 45,604 acre-feet. The breakdown of this supply is presented in Table II on the following page.

**TABLE II
 UINTAH BASIN
 Reliable Potable Water Supply for Public Community Systems
 (Acre-Feet/Year)**

County	Springs	Wells	Surface	Totals
Daggett	270.0	1,323.0	645.2	2,238.2
Duchesne	773.4	3,669.6	4,480.0	8,923.0
Summit	0.0	0.0	0.0	0.0
Uintah	10,566.0	1,488.1	22,388.8	34,442.9
Wasatch	0.0	0.0	0.0	0.0
Basin Totals	11,609.4	6,480.7	27,514.0	45,604.1

Total M&I water use can be divided into two categories: potable (culinary) and non-potable (secondary). Potable water is delivered by, and used within, public community, public non-community, self-supplied industrial, and private domestic systems. Separate irrigation companies typically deliver non-potable (secondary) water for residential, institutional, commercial and industrial uses. Some self-supplied industries utilize both potable and non-potable water from their own sources.

Table III, on the following page, indicates the total potable and non-potable M&I water use for all system types in the Uintah Basin for the year 2003. Public community systems deliver the majority of the potable water in the basin. The table indicates that the total potable M&I water use in 2003 was 22,623 acre-feet. Total non-potable M&I water use in 2003 for the basin was 2,921 acre-feet. Therefore, total M&I water use in 2003, for the Uintah Basin, was 25,544 acre-feet.

TABLE III
 UINTAH BASIN
 Total M&I Water Use for all Categories
 (Acre-Feet/Year)

Source	Daggett County	Duchesne County	Summit County	Uintah County	Wasatch County	Total
Potable Use						
Public Community Systems	573.6	4,788.6	0.0	6,417.3	0.0	11,779.5
Public Non-Community Systems	0.1	29.5	3.0	6.8	52.8	92.3
Self-Supplied Industries	14.7	0.0	0.0	10,607.5	0.0	10,622.2
Private Domestic	6.3	101.0	0.0	22.0	0.0	129.3
Total Potable	594.7	4,919.1	3.0	17,053.7	52.8	22,623.3
Secondary Use						
Secondary Irrigation Companies	92.6	1,000.1	0.0	1,798.1	0.0	2,890.8
Public Non-Community Systems	0.0	24.0	0.0	6.0	0.0	30.0
Self-Supplied Industries	0.0	0.0	0.0	0.0	0.0	0.0
Total Secondary	92.6	1,024.1	0.0	1,804.1	0.0	2,920.8
TOTAL WATER USE	687.3	5,943.2	3.0	18,857.8	52.8	25,544.1

Table IV, on the following page, shows water use data for the potable and non-potable categories of water delivered by the public community systems within the basin. Categorically, the total water uses were 22% - residential indoor, 36% residential outdoor, 8% - commercial, 19% - institutional, and 15% - light industrial/stockwatering:

**TABLE IV
UINTAH BASIN
Water Use for Public Community Systems
(Acre-Feet/Year)**

	Daggett County	Duchesne County	Summit County	Uintah County	Wasatch County	Total
Potable Use						
Residential Indoor	75.2	1,044.3	0.0	2,121.8	0.0	3,241.3
Residential Outdoor	195.9	1,299.5	0.0	2,201.6	0.0	3,697.0
Commercial	196.6	543.0	0.0	440.2	0.0	1,179.8
Institutional	98.8	657.7	0.0	754.3	0.0	1,510.8
Industrial/Stockwater	7.1	1,244.1	0.0	899.3	0.0	2,150.6
Total Potable	573.6	4,788.6	0.0	6,417.3	0.0	11,779.5
Secondary Use						
Residential	11.6	460.9	0.0	1,196.1	0.0	1,668.6
Commercial	15.0	3.0	0.0	0.0	0.0	18.0
Institutional	66.0	536.2	0.0	602.0	0.0	1,204.2
Industrial/Stockwater	0.0	0.0	0.0	0.0	0.0	0.0
Total Secondary	92.6	1,000.1	0.0	1,798.1	0.0	2,890.8
TOTAL WATER USE	666.2	5,788.7	0.0	8,215.4	0.0	14,670.3

Out of a total population of 41,638 in 2003, 40,014 people were served by the public community systems. For these systems, residential potable per capita water use calculates to 155 gallons per capita per day (gpcd). Similarly, non-potable residential water use calculated to 37 gpcd. The resultant total per capita water use is 192 gpcd for residential purposes within the public community systems of the basin. With the addition of commercial, institutional and industrial uses, the per capita water use for public community systems was 263 gpcd for potable uses and 54 gpcd for non-potable uses for a total use of approximately 327 gpcd. In 2003, the statewide average was 267 gpcd. These values are shown in Table V, on the following page.

**TABLE V
 UINTAH BASIN
 Average Per Capita Use
 (Supplied by Public Community Systems)**

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.173	155
Residential Potable Plus Secondary Use	0.215	192
Total Potable Use	0.294	263
Total Potable Plus Secondary Use	0.367	327

Note: Total Potable categories include residential, commercial, institutional and industrial uses.

Table VI on the following page includes the “Municipal & Industrial water budget” for the basin. A water budget indicates the amount of water diverted for use within the system and the amount of water depleted from the system due to the use. Appendix E contains a table that indicates more specific details about the diversions and depletions from each individual community system within the basin.

TABLE VI
 UINTAH BASIN
Municipal & Industrial Water Budget
(Acre-Feet/Year)

County	Diversions			Depletions		
	Indoor Use	Outdoor Use	Total	Indoor Use	Outdoor Use	Total
Daggett	270.9	416.3	687.2	149.1	277.5	426.7
Duchesne	2,977.4	2,966.0	5,943.4	1,162.7	1,977.3	3,140.0
Summit	1.2	1.8	3.0	0.1	1.2	1.3
Uintah	14,049.1	4,808.8	18,857.9	12,004.9	3,205.8	15,210.8
Wasatch	16.1	36.7	52.8	1.1	24.5	25.6
Basin Totals	17,314.7	8,229.6	25,544.3	13,317.9	5,486.4	18,804.3

INTRODUCTION

Authority

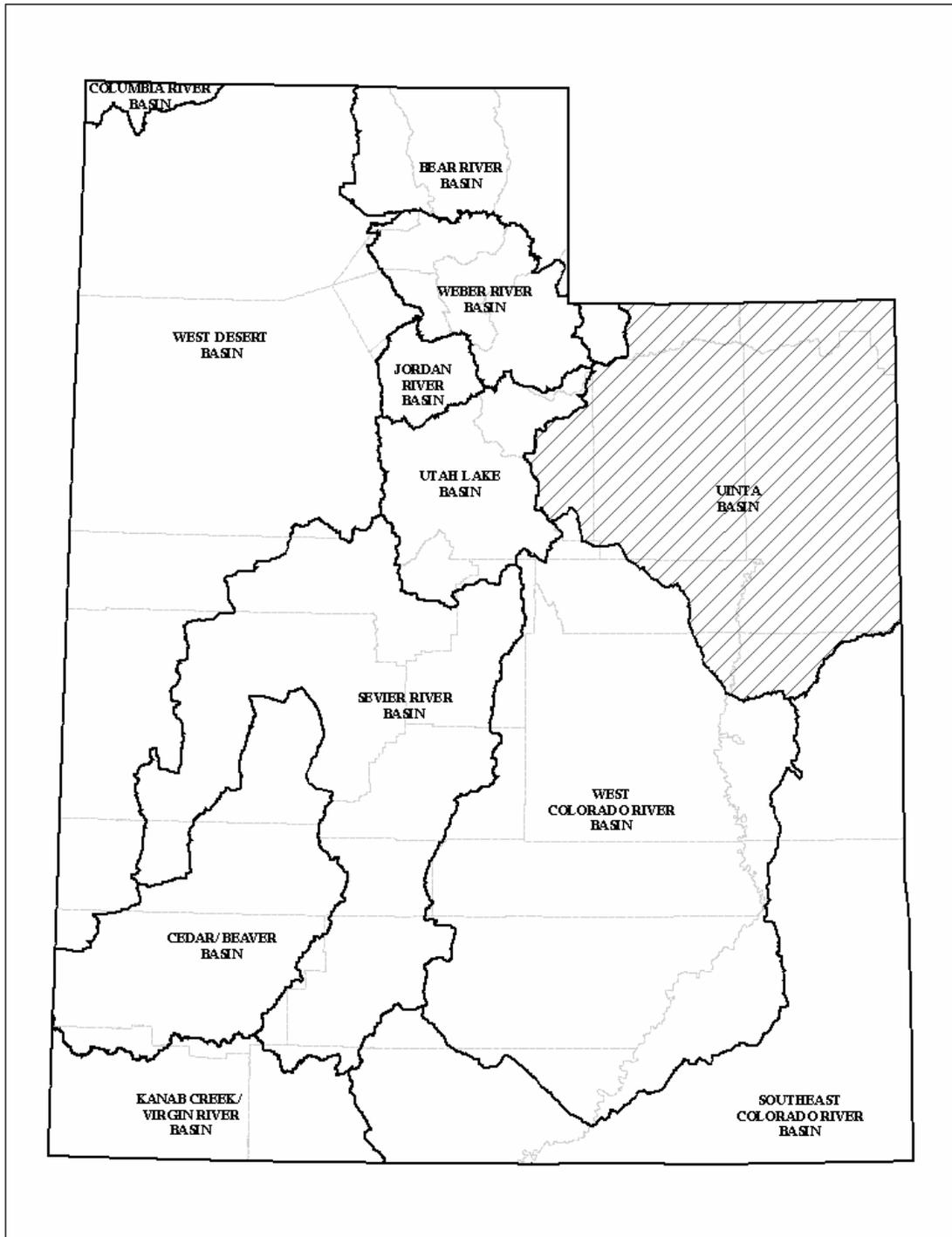
The Utah Division of Water Resources (DWRe) has the overall responsibility for completing studies, investigations, and plans to assist the responsible development and utilization of the water resources of the state of Utah. The State Water Plan, prepared and distributed in early 1990 by the division, provided the foundation and overall direction to establish and implement the state policy framework of water management. As part of the state water planning process, the division prepares detailed plans for each of the 11 hydrologic basins in the state. The Uintah Basin is one of these 11 basins. A location map of the Uintah Basin is shown in Figure 1 on the next page.

Each basin water plan identifies potential conservation and development projects and describes alternatives to efficiently satisfy the water needs of that basin. As part of this effort, background data reports are completed for each river basin. These include a Water-Related Land Use Report and a Municipal & Industrial Water Supply & Use Report.

Scope

As stated earlier, the subject of this M&I report is a determination of present M&I water supplies and uses within this basin. The data presented in this report may be used in the State Water Plan for the Uintah Basin as well as other division reports and studies. Information considered for this report also includes related investigations recently completed by the DWRe and the Utah Division of Water Rights (DWRi).

Figure 1. Location of Uintah Basin



Data Collection

This study was initiated in October 2004. The 2003 *Municipal and Industrial Water Use Forms*, distributed by the DWRi, in cooperation with the DWRe and the Utah Division of Drinking Water, were used as the basis for the study. In all counties, the data collection process is as described in the following section, *Water Supply and Use Methodology*. Water rights discussions presented herein were prepared based on information from Bob Leake, Area Engineer from the State Engineer's Office for the Uintah Basin.

General Description of the Basin

The Utah portion of the Uintah Basin includes approximately 10,890 square miles of land in the northeast corner of the state. Utah's portion of the basin extends from the Utah/Wyoming and Utah/Colorado state lines on the north and east to the Wasatch Range and the Roan Cliffs on the west and south. The basin spans all of Uintah, Duchesne and Daggett Counties as well as parts of Summit, Wasatch, Carbon and Grand counties. Five hydrologic study areas form the basin: Upper Green, Ashley-Brush, Uinta, Green River and White River Study Areas.

Elevations within the basin vary from high points of 13,528 feet at Kings Peak in the Uinta Mountains and 13,440 feet at Mount Emmons in the Uinta Mountains to a low of 4,040 feet on the Green River where it leaves the basin. Notable features of the basin include Dinosaur National Park and the High Uinta Wilderness Area. Figure 2, on page 5, is a detailed map of the basin.

The basin has 22 public community water systems and 1 unregulated Indian system. These systems serve 40,014 people (over 96% of the 41,638 total basin population). Figure 3, on page 6, shows the location of these systems. In addition, the basin has 45 public non-community systems. These systems serve National Recreation Areas, State Parks, summer home communities, campgrounds, isolated commercial establishments, and roadside rest stops and parks. The basin also has 9 self-supplied industries.

M&I water use is steadily increasing within the basin as the entire basin is currently experiencing accelerated growth. Tourism and the oil industry drive most of this growth, which is likely to continue well into the future.

Figure 2. Uinta Basin Drainage Map.

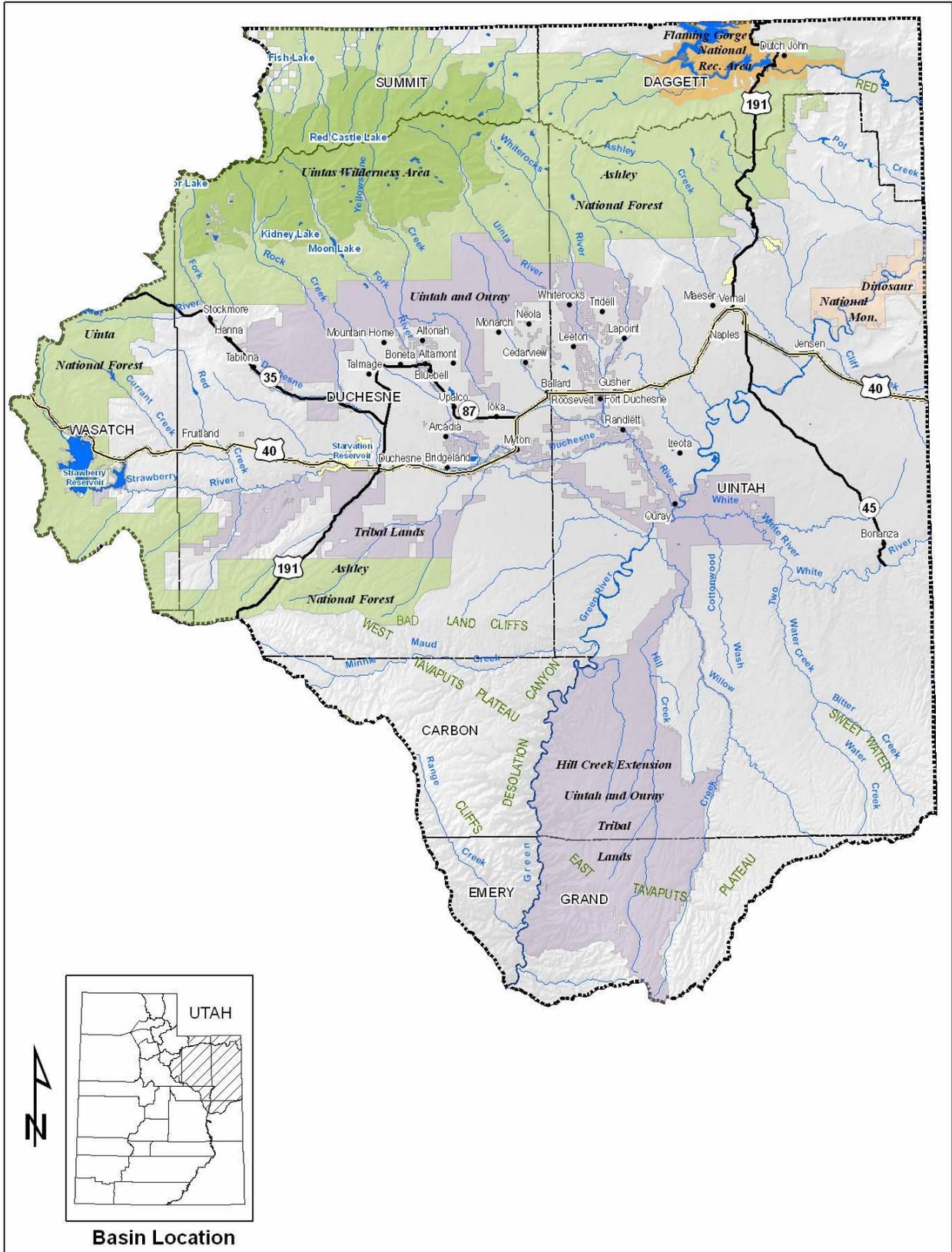
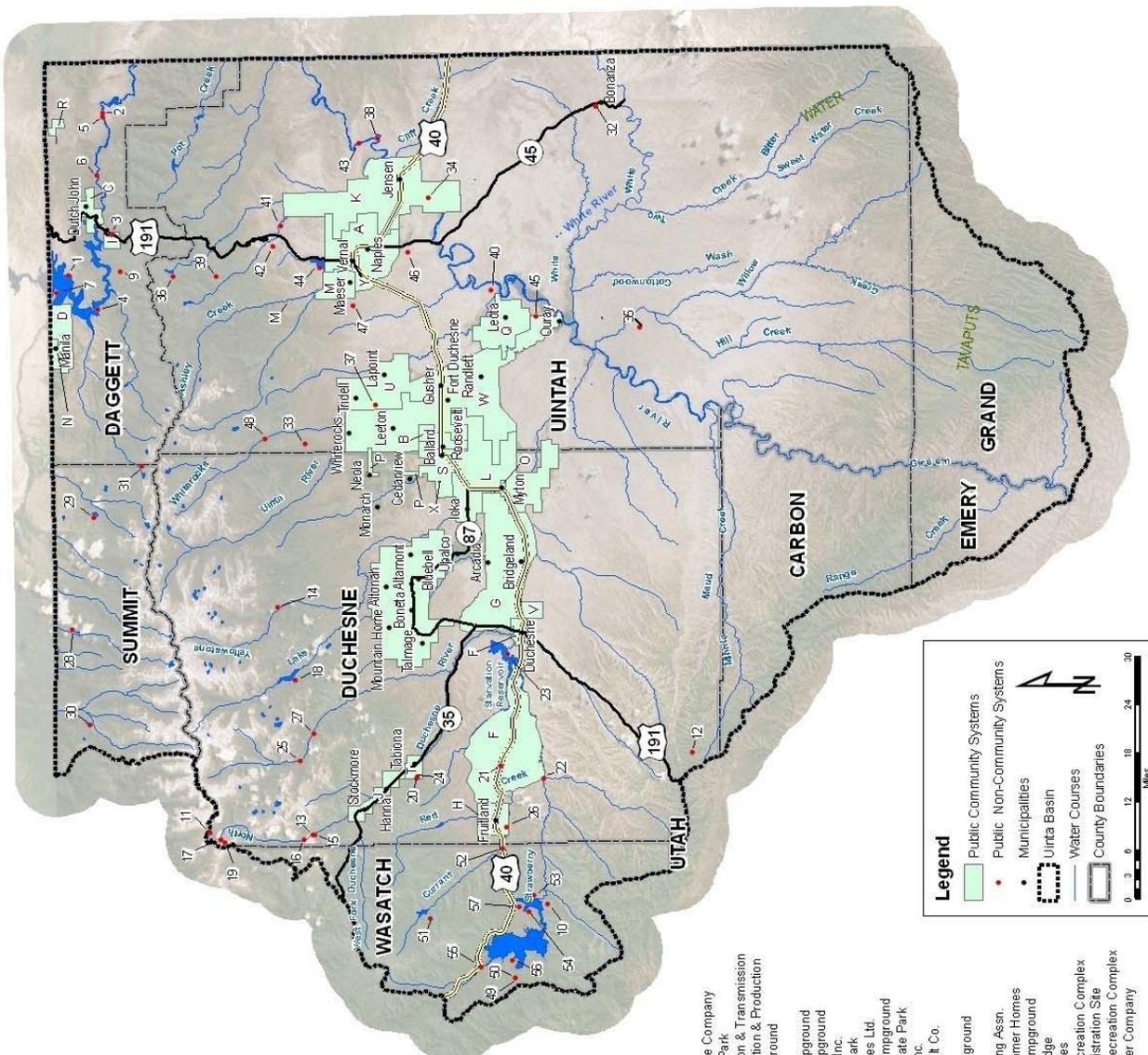


Figure 3. Location of Public Community Systems



PUBLIC COMMUNITY SYSTEMS

- A Ashley Valley Water & Sewer
- B Ballard WID
- C Bureau of Reclamation (Dutch John)
- D Daggett County Water & Sewer
- E Duchesne County Upper Country
- F Duchesne Water System
- G Duchesne Water System (Trucked)
- H East Duchesne Improvement District
- I Fruitland Water SSD
- J Greendale Water Company
- K Hanna
- L Jensen Water Improvement District
- M Johnson Water District
- N Maeser Water Improvement District
- O Manilla Municipal Water System
- P Myton Municipal Water System
- Q Neola Water District
- R Oury Park Water Improvement District
- S Guestar Pipeline Company
- T Roosevelt Municipal Water System
- U Tabiona Water System
- V Tridell/Lapoint Water Improvement District
- W Utah Mini Ranches
- X Ute Indian Tribe Water System
- Y Valley Park Trailer Court
- Z Vernal Municipal Water System

PUBLIC NON-COMMUNITY SYSTEMS

- 1 Anelogs Flat Campground
- 2 Bridge Hollow Campground
- 3 Greendale & Bootleg Campground
- 4 Holeout Canyon Campground
- 5 Jarvie Historical Site
- 6 Little Hole Boat Ramp & Campground
- 7 Lucerne Valley Campground & Marina
- 8 Red Springs/Lodgepole Campground
- 9 Ross Springs Water System
- 10 Aspen Grove Campground
- 11 Butterfly Campground & Trailhead
- 12 Camp Timberlane
- 13 Deras Dude Ranch
- 14 Grants Springs Water System
- 15 Hadas Campground
- 16 Iron Mine Campground
- 17 Mirror Lake Campground
- 18 Moon Lake Campground
- 19 Moosehorn Campground
- 20 Mount Tabby Springs Subdivision
- 21 Pinon State Hwy Rest Stop
- 22 Pinnacle Resort
- 23 Starvation Reservoir State Park
- 24 Tabby Mountain Estates
- 25 Upper Stillwater Campground
- 26 Valle Del Padres Subdivision
- 27 Yellowpine Campground
- 28 Bridger Lake Campground
- 29 Hoop Lake Campground
- 30 Little Lyman Lake Campground
- 31 Spirit Lake Lodge
- 32 American Gilsonite Company
- 33 Bacon Memorial Park
- 34 Desert Generation & Transmission
- 35 Dominion Exploration & Production
- 36 East Park Campground
- 37 Flying J, Inc.
- 38 Green River Campground
- 39 Iron Springs Campground
- 40 DEP Uinta Basin Inc.
- 41 Red Fleet State Park
- 42 Simplot Phosphates Ltd.
- 43 Split Mountain Campground
- 44 Steemaker Lake State Park
- 45 Target Trucking Inc.
- 46 The Native Asphalt Co.
- 47 WENECO Inc.
- 48 Whitebark Campground
- 49 **Wasatch County**
- 50 Bryants Fork Spring Assn.
- 51 Bryants Fork Summer Homes
- 52 Current Creek Campground
- 53 Currant Creek Lodge
- 54 Pine Hollow Estates
- 55 Soldier Creek Recreation Complex
- 56 Strawberry Administration Site
- 57 Strawberry Bay Recreation Complex
- Windy Ridge Water Company

WATER SUPPLY AND USE METHODOLOGY

Background

Over the past 45 years, the Utah Division of Water Resources (DWRe) has employed various procedures to obtain municipal and industrial water use (M&I) data. In recent years, these procedures have become more comprehensive. When the division began water planning in the 1960's, available data consisted mainly of supplies and uses for the state as a whole. At that time, Utah's agricultural water uses far exceeded M&I uses. M&I water use was calculated simply by multiplying estimated per capita water use rates by census population data.

By the early 1980's, M&I diversions made up a larger percent of all statewide water uses and the entire water community increased their focus on M&I water supplies and uses. The Utah Division of Water Rights (DWRi) launched a program to collect yearly, statewide M&I data from each public community water system. The procedure involved mailing a survey designed to query major public water suppliers about their sources of water supply. Additionally, the United States Geological Survey (USGS) began M&I water use studies. The DWRe relied on both data sources in its planning efforts by the late 1980's.

With the preparation of the State Water Plan Basin reports, and the increasing focus on water conservation, the DWRe saw the need to verify and improve the quality and quantity of the available data. The first method used included assisting the DWRi in the improvement of their M&I data collection program. Secondly, the DWRe began verifying the accuracy of the data through yearly field surveys described in the following four sections.

Present Methodology for Community Water Systems

Each year, the DWRe targets several hydrologic basins for M&I water supply and use analysis. The most recent water use information supplied by the DWRi is the basis used to begin the study. Prior to 2003, this information was submitted using a standard form by each water supplier. An example of the 2003 water use data form for the Duchesne County Upper Country WID Water System is found in Appendix D. Since 2003, the program has been updated, allowing for the water suppliers to electronically submit their data.

The DWRe staff contact the manager or operator of each community water system (as defined by the Utah Division of Drinking Water) to schedule a data collection and analysis meeting. These meetings are necessary because data often is not reported (either on the water use forms or electronically) in the detail required for a complete M&I water use study. During these meetings, staff clarifies and collects additional data as needed. Total water supply and usage of the water systems are calculated based on information gathered during these meetings. When data is not available, it is necessary to estimate a part or all of the system use.

A secondary objective of these meetings is to instruct the operator or manager on how to most accurately and effectively complete the water use data form and/or submit their information electronically. This methodology has been used since 1992.

Water Supply

Two factors define the potable water supply: maximum water supply available under present conditions and reliable water supply. The maximum water supply available under present conditions is defined as the water resource that is presently developed. It is limited by a mechanical constraint (such as pump capacity or pipe size), a hydrologic constraint (such as reliable stream flow or groundwater safe yield) or a legal constraint (such as a water right or contract). The lesser amount of water supply, due to these three constraints, is considered to be the maximum water supply

available under present conditions used in this analysis. The determination of well pump capacities, average annual spring flow estimates, treatment plant capacities, and water right information aid in the calculation of this value. It should be noted that, due to the complexity of water rights, contracts, exchanges, etc., a detailed search of water right limitations associated with each entity is not within the scope of this study.

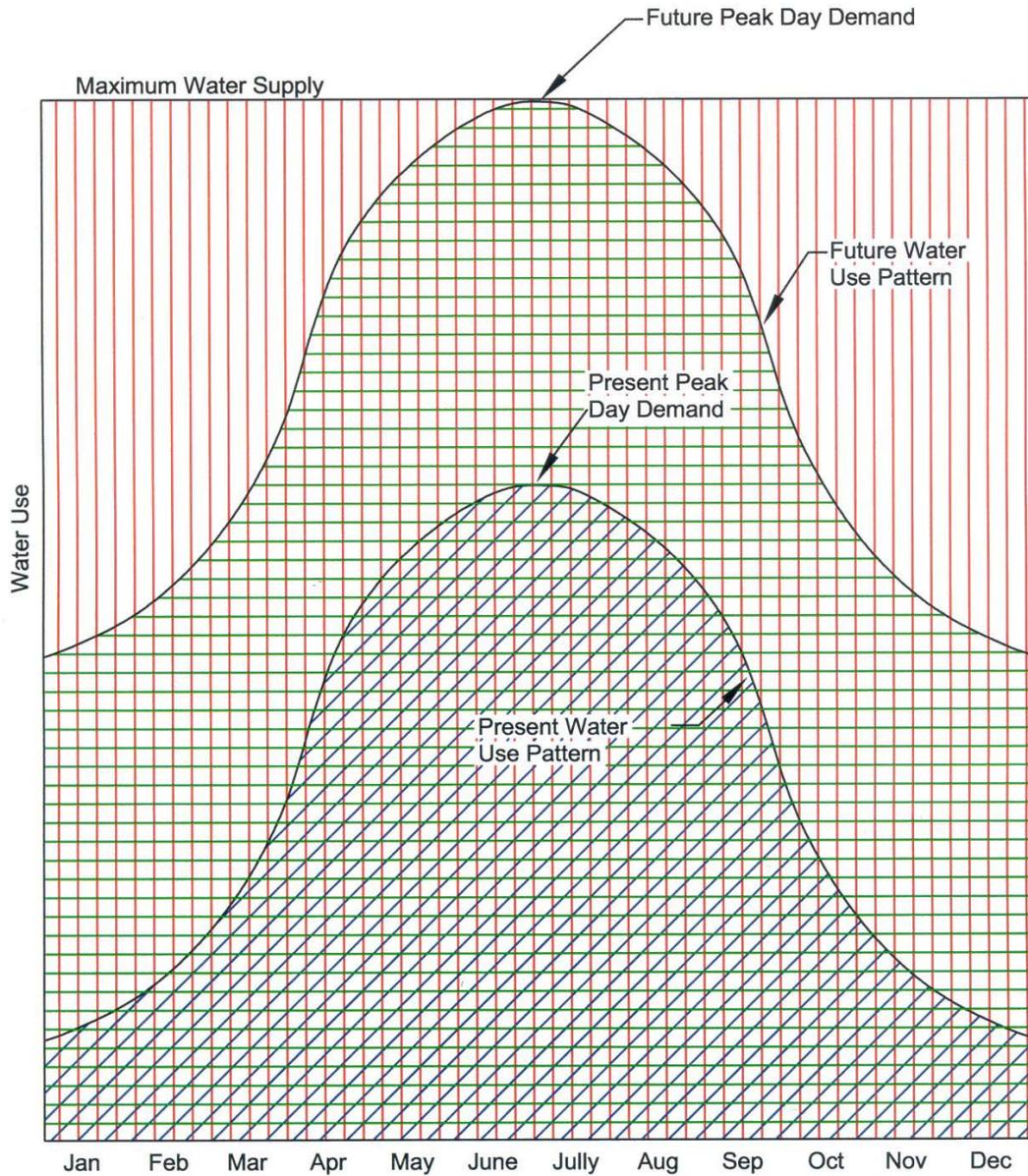
The reliable potable water supply is defined as the capacity to meet peak day demands, expressed as an annual volume. It is valuable in determining future water supply capacities of the particular community water system sources (wells, springs, etc.). The reliable potable water supply is calculated by adding together the maximum water supply capacity of surface sources, one-half of the maximum yield of wells or their pump capacities (unless otherwise indicated by the system manager), and a percentage of the average annual flow of spring sources. The percentage of the spring source flows ranges between 50% and 100%. The determination of the percentage is based on information obtained concerning the yearly fluctuations of the springs.

Figure 4, on page 11, graphically presents the relationship between the maximum water supply and the reliable potable water supply of a system. By quantifying the maximum and the reliable potable water supply of a system, the population that a system can potentially support can be determined. The current total yearly water use is the volume under the lower curve (*Present Water Use Pattern*). The future total yearly water use is the volume under the upper curve (*Future Water Use Pattern*). This total is equivalent to the reliable potable water supply.

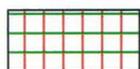
The maximum water supply under present conditions is the volume under the upper line (Maximum Water Supply) in Figure 4. Because this amount is a yearly volume based upon a maximum daily flow rate (limited by the water right or system capacity), the line passes through the peak day demand point on the future water use curve (Future Peak Day Demand). Due to this, and the fact that most culinary water system storage tanks are designed to store only about one day's water demand, not all of the total maximum water supply is available to meet future water needs.

Therefore, the reliable potable water supply, rather than the maximum water supply, is the limiting factor in determining when future water demand equals current supplies.

Figure 4. Water Supply and Use Hydrograph



Present Yearly Water Use (Volume under curve)



Present Reliable Water Supply/Future Water Use (Volume under Curve)
When this volume is divided by annual per capita water use, this yields the population that can be reliably served.



Maximum Water Supply Available Under Present Conditions (Volume under line)

Reliable secondary water supply is defined to be equal to the secondary use determined for each community system. The methodology for calculating secondary use is explained below under *Residential Use*.

Water Use

Present water use, as defined herein, is the developed water supply that is actually diverted into the distribution system from surface or subsurface sources. Water use is divided into four categories: residential, commercial, institutional and industrial. For comparative purposes, the DWRe chose these categories to correlate with the USGS categories of domestic, commercial, industrial, and mining.

The DWRe's residential category is equivalent to the USGS domestic category and includes water used for both indoor and outdoor purposes at residences. The USGS commercial category is equivalent to the DWRe's combined commercial and institutional categories. The DWRe's commercial category includes water use for retail establishments and businesses. The DWRe's institutional category includes water use for government facilities, military facilities, schools, hospitals, churches, parks, cemeteries, golf courses, etc. The DWRe's industrial category is equivalent to the combined USGS categories of industrial and mining that includes a wide variety of water uses associated with businesses that produce a specific product (including stockwatering).

Residential Use

The staff collects data about the number of residential connections and the amount of water used by those connections from a water system representative. Water use in this category is divided into three subcategories: culinary-outdoor, culinary-indoor, and secondary-outdoor. While most systems will meter the total residential water use, these subcategories are rarely metered separately. Therefore, the division usually estimates these subcategory totals.

Typically, culinary indoor use will be estimated first. One method to estimate the indoor use is to review residential meter reading totals for the system from the winter months, if available. It can be assumed that the water used in winter months is for indoor use only, since outdoor watering does not typically occur during the winter months. This estimated indoor water use is then used to determine the total yearly indoor use.

When the above method does not yield a reasonable value for indoor use, the indoor use per capita water use for a system can be estimated by using an equation that was developed in a detailed residential study, "Identifying Residential Water Use", completed by the DWRe in 2001. The mathematical equation that was developed for per capita indoor water use is as follows:

$$\text{GPCD}_{\text{Indoor}} = 90.3 / P_{\text{PH}} + 42.3$$

Where:

$\text{GPCD}_{\text{Indoor}}$ = Gallons per Capita Day (per capita indoor water use)

P_{PH} = Persons per Household (US Census Bureau)

The total yearly indoor water use is then calculated for the system by multiplying the result of the above equation by the current population. Outdoor culinary water use can then be estimated by subtracting the total yearly indoor water use from the given total residential culinary water use.

Because very few entities meter secondary outdoor water use, the DWRe staff estimates the outdoor secondary water use by using the average lot size, percent irrigated, percent of residences that are supplied by separate secondary (pressurized and ditch) irrigation systems, water right-duty rates (volume of water required for turf growth) in the area, and other related information for each system. In determining residential secondary use, care is taken to not include irrigation water use for small pastures or farm fields that can often be found adjacent to residences, particularly in rural communities.

Commercial Use

For most systems, the system operator can separate metered commercial water use data from the total water use. In cases where this data is not available or is extremely difficult to obtain, the DWRe staff attempts to estimate commercial water use by inventorying commercial businesses in the area and using published commercial water use estimates. The Utah Division of Drinking Water and the Utah State Water Lab, among others, publish these estimates. In some rural communities where there are a relatively small number of commercial connections, the businesses are visited individually by DWRe staff and asked about their water use.

Some commercial facilities use secondary water to irrigate outside landscapes. This is especially typical for commercial golf courses. As in these cases many times, secondary water is not metered. The DWRe staff estimates this use by multiplying the size of the irrigated area by a water right-duty rate or the evapotranspiration rate (ET). The ET indicates the amount of water, in inches, necessary for turf growth.

Institutional Use

Institutional water use is water used for city, county, state and federal government facilities, parks, municipal golf courses, schools, hospitals, churches, military facilities, as well as fire hydrant testing and other municipal losses in the water system. Because this water use is often not metered, the process to acquire this data is difficult. Again, the system operator is asked to provide information about city facilities such as the number and size (irrigated acreage) of parks, schools, churches, and municipal golf courses. Water right-duty rates (and/or the ET) are used to calculate the amount of water used to irrigate these areas. Estimates of leakage and water use for testing of water system facilities and are also included in this category.

Industrial Use

Industrial water use is defined as water used in the production of a product. Therefore, such commercial establishments as dairies, mink farms, and greenhouses, as well as stockwatering, are included in this category, provided a community water system serves them. Industrial water use within community water systems is acquired with the same process used to obtain commercial water use data discussed earlier.

Present Methodology for Non-Community Water Systems

DWRe staff attempts to contact each non-community system and/or make a personal visit to these systems. Non-community systems rarely meter their water use, so DWRe staff estimate their annual water use. Questions are asked to determine the type of facility, population served, water source information, irrigation of outside areas, etc. This data, along with information found in water-related publications, is used to determine water use. The maximum and reliable water supplies for these systems are often not available and are not in the scope of this study.

Present Methodology for Self-Supplied Industrial Water Systems

Although self-supplied industries are included in the Non-Community Water Systems category as defined by the Utah Division of Drinking Water, DWRe has separated them into their own category due to their importance. The category is equivalent to the Utah Division of Drinking Water's (DWRi's) Non-Community, Non-Transient category.

Water use is acquired for self-supplied industries by using data from the DWRi's Industrial Water Use Form and/or electronically submitted data. DWRi collects annual water use data from most of the major self-supplied industrial water users in the state. This data is confidential. Therefore, the data presented in this M&I study is only given as county totals. As with other non-community systems, the maximum

and reliable water supplies are often not available and are not in the scope of this study.

Present Methodology for Private Domestic Water Systems

Private domestic systems are residences that are not connected to any public community or non-community water system. They are usually supplied by individual wells. To determine the water use data for this category, the population of those served by private domestic systems is estimated. This population is estimated by subtracting the population served by community water systems from the county population data acquired from the Governor's Office of Planning and Budget (GOPB).

The remainder is assumed to be the population that is served by private domestic systems. The per capita water use rate for this category is assumed to be the same as the per capita water use rate for the public community system residential category for that county. To determine the total water use by private domestic systems, the estimated population is then multiplied by this rate. Again, the maximum and reliable water supplies for private wells are not in the scope of this study.

DEFINITIONS OF WATER TERMS

Water Supply Terms

Water is supplied by a variety of systems for many users. The general term supply is defined as the amount of water available. Municipalities own most of the individual water supply systems. However, in some cases the owner/operator is a private company or a state or federal agency. Thus, a "public" water supply may be either publicly or privately owned. Also, systems may supply treated or untreated water. Following are definitions of some terms used in this study:

Maximum Potable Water Supply - The annual volume of potable (culinary) water which is the lesser of the hydrologic capacity of the water source, the physical capacity of the water system, or the amount allowed by the collective water rights.

Reliable Potable Water Supply - The annual quantity of the maximum water supply that is available to meet peak demands. This is generally calculated as 100% of the maximum supply from surface water sources, 50% of the maximum yield of wells, and between 50% and 100% of the average annual spring flows. When this number is divided by the average per capita usage, the resulting number represents the theoretical maximum population that the water source can serve.

Municipal and Industrial Water Supply - Includes all water (potable and non-potable) supplied for residential, commercial, institutional, light industry, and self-supplied industries. This supply is delivered by public community systems, public non-community (transient and non-transient) systems, self-supplied industrial systems, unregulated Indian water systems and private wells.

Potable Water Supply – Includes water meeting all applicable safe drinking water requirements for residential, commercial, institutional and industrial uses. It is sometimes referred to as culinary, or municipal, water supply.

Public Community Water Supply - Includes potable and non-potable water supplied by either privately or publicly owned community systems which serve at least 15 service connections or 25 individuals year round. Water from public community supplies may be used for both indoor and outdoor uses for residential, commercial, institutional, and industrial purposes.

Public Non-Community Water Supply - Includes potable and non-potable water supplied by either privately or publicly owned systems of two types: transient and non-transient. Transient systems are systems that do not serve 25 of the same non-resident persons per day for more than six months per year. Examples include campgrounds, RV parks, restaurants, convenience stores, etc. Non-transient systems are systems that regularly serve 25 of the same non-resident persons per day for more than six months per year. Examples include churches, schools and industries. This report lists the industrial non-transient systems as self-supplied industries.

Secondary Water Supply – Includes water not meeting safe drinking water requirements. Sometimes referred to as non-potable (non-culinary) water supply. This water is usually delivered by pressurized or open ditch water supply systems for irrigation of privately and publicly owned landscapes, gardens, parks, cemeteries, golf courses and other open areas. These systems, sometimes called "dual" water systems, are installed to provide an alternative to irrigating with culinary water for these outdoor areas. Irrigation companies often provide this water. However, some public community water systems may deliver this water as well. Self-supplied industries may also use secondary water for industrial processes.

Self-Supplied Industrial Supply - Includes potable and non-potable water supplied by individual privately owned industries (usually from their own wells or springs). This category is the equivalent of the Utah Division of Drinking Water's Non-Community, Non-Transient systems category.

Water Use Terms

Water is used in a variety of ways and for many purposes. It is often said that water is "used" when it is diverted, demanded, withdrawn, depleted or consumed. But it is also "used" in place for such things as fish and wildlife habitat, recreation and hydropower production. **Water use in this report is defined as “diverted” water.** However, a table that includes the basin’s municipal and industrial water depletions is provided in Appendix E.

In most of the previous water supply terms the word “use” can be inserted where the word “supply” is written to define the current demand associated with those definitions. Some additional water use terms are as follows:

Commercial Use - Use normally associated with small business operations that may include drinking water, food preparation, personal sanitation, facility cleaning and maintenance and irrigation of facility landscapes. Examples include retail businesses, restaurants and hotels.

Industrial Use - Use associated with the manufacturing or production of products. The volume of water used by industrial businesses can be considerably greater than water used by commercial businesses. Examples include manufacturing plants, oil and gas producers, mining companies, mink farms and dairies.

Institutional Use - Use normally associated with general operation of various public agencies and institutions (i.e. schools, municipal buildings, churches) including drinking water, personal sanitation, facility cleaning and maintenance and irrigation of parks, cemeteries, playgrounds, recreational areas, golf courses, and other facilities. The amount of water used by cities for outside irrigation of public areas typically is not metered.

Municipal and Industrial (M&I) Use - Use includes all residential, commercial, institutional, and industrial uses. It includes total uses (potable and non-potable) supplied by public water systems (community and non-community), self-supplied industries, private domestic systems, and secondary irrigation companies.

Private Domestic Use – Use includes water from private wells or springs for use in individual homes, usually in rural areas not accessible to public community water systems.

Residential Use - Use associated with residential cooking, drinking water, washing clothes, miscellaneous cleaning, personal grooming and sanitation, irrigation of lawns, gardens and landscapes, and washing automobiles, driveways and other outside residential facilities. Examples include single-family homes, apartments, duplexes and condominiums.

Other Water Terms

Consumption - Water evaporated, transpired or irreversibly bound in either a physical, chemical or biological process. Consumed water results in a loss of the original water supplied.

Consumptive Use - Losses of water brought about by human endeavors when used for residential, commercial, institutional, industrial, agricultural, power generation, and recreation. Naturally occurring vegetation and fish and wildlife also consumptively use water.

Depletion - Water consumed and made unavailable for return to a given designated area, river system or basin. It is intended to represent the net loss to a system. The terms consumption and depletion are often used interchangeably but are not the same. For example, water exported from a basin is depletion from the basin system but is not consumed in the basin. The exported water is available for use

(consumption) in another basin or system. Water diverted to irrigate crops in a given system, but not returned for later use, is depletion. Precipitation that falls on irrigated crops is not considered a part of the supply like surface water and groundwater diversions. For this reason, precipitation falling on and consumed by irrigated crops is not considered as being depletion from the system.

Diversion - Water diverted from supply sources such as streams, lakes, reservoirs or groundwater for a variety of purposes including cropland irrigation, as well as residential, commercial, institutional and industrial uses.

Withdrawal - Water withdrawn from supply sources such as lakes, streams, reservoirs or groundwater. This term is normally used in association with groundwater withdrawal. The terms *diversion* and *withdrawal* are often used interchangeably. **Water use as presented in this report deals with diversions.**

WATER RIGHTS IN UINTAH BASIN

Although a detailed analysis of water rights is not part of this report, a water supply and use study would not be complete without at least a discussion on the current water right regulations in the area. The following discussion was obtained from the Division of Water Rights (DWRi). It explains the current general water right regulations in the Uintah Basin with regards to M&I uses.

Upper Green Study Area

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications filed on owned or acquired existing rights. Changes between surface and underground sources are reviewed to indicate hydrologic connection, that underlying rights are not enlarged or that there is no potential for interference with existing water rights. However, groundwater for residential (1 acre and 10 head of livestock) applications will be allowed on an individual basis.

Ashley-Brush Study Area

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications filed on owned or acquired existing rights. Changes between surface and underground sources are reviewed to indicate hydrologic connection, that underlying rights are not enlarged or that there is no potential for interference with existing water rights. However, groundwater for residential (1 acre and 10 head of livestock) applications will be allowed on an individual basis.

Uinta Study Area

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications filed on owned or acquired existing rights. Changes between surface and underground sources are reviewed to indicate hydrologic connection, that underlying rights are not enlarged or that there is no potential for interference with existing water rights. However, groundwater for residential (1/4 acre and 10 head of livestock) applications will be allowed on an individual basis.

Green (River) Study Area

Surface and ground waters are considered to be fully appropriated at this time. However, some “limited time” (usually not to exceed 10 years) surface diversions may be allowed from the Green River. New diversions and uses must be accomplished by change applications filed on owned or acquired existing rights. Changes between surface and underground sources are reviewed to indicate hydrologic connection, that underlying rights are not enlarged or that there is no potential for interference with existing water rights. However, groundwater for residential (1 acre and 10 head of livestock) applications will be allowed on an individual basis.

White (River) Study Area

Surface and ground waters are considered to be fully appropriated at this time. However, some “limited time” (usually not to exceed 10 years) surface diversions may be allowed from the White River. New diversions and uses must be accomplished by change applications filed on owned or acquired existing rights. However, groundwater for residential (1 acre and 10 head of livestock) applications will be allowed on an individual basis.

DAGGETT COUNTY M&I WATER SUPPLIES AND USES

Daggett County includes the incorporated communities of Dutch John and Manila. Within this area are 5 public community systems and 9 public non-community systems. Locations of public community systems are shown in figure 3.

Table 1 shows that the maximum annual water supply for public community systems in this portion of Daggett County is 4147.2 acre-feet; 580.0 acre-feet from springs, 2,922.0 acre-feet from wells and 645.2 acre feet (Dutch John treatment plant capacity) from Flaming Gorge Reservoir.

**TABLE 1
DAGGETT COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Springs (Ac-Ft/Yr)	Wells (Ac-Ft/Yr)	Surface (Ac-Ft/Yr)	Total (Ac-Ft/Yr)
Dutch John Plant, Daggett County	0.0	0.0	645.2	645.2
Daggett County Water and Sewer	400.0	614.0	0.0	1,014.0
Greendale Water Company	116.0	0.0	0.0	116.0
Manila Municipal Water System	60.0	2,214.0	0.0	2,274.0
Questar Pipeline Company (Clay Basin)	4.0	94.0	0.0	98.0
DAGGETT COUNTY TOTALS	580.0	2,922.0	645.2	4,147.2

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

The reliable potable water supply for public community systems in the Daggett County portion of the Uintah Basin is 2,396 acre-feet. The reliable supply is 57% of the maximum supply. The breakdown of this supply is presented in Table 2 on the following page.

TABLE 2
DAGGETT COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	SPRINGS	WELLS	SURFACE	CONTRACT PURCHASES	TOTAL
	(Ac-Ft/Yr)	(Ac-Ft/Yr)	(Ac-Ft/Yr)	(Ac-Ft/Yr)	(Ac-Ft/Yr)
Dutch John Plant, Daggett County	0.0	0.0	645.2	0.0	645.2
Daggett County Water and Sewer	200.0	307.0	0.0	0.0	507.0
Greendale Water Company	58.0	0.0	0.0	0.0	58.0
Manila Municipal Water System	30.0	1,107.0	0.0	0.0	1,137.0
Questar Pipeline Company (Clay Basin)	2.0	47.0	0.0	0.0	49.0
DAGGETT COUNTY TOTALS	290.0	1,461.0	645.2	0.0	2,396.2

* Wells are limited to 50% of their "maximum" capacity for reliable supply when well/pump capacity is the limiting factor. Springs are limited to 50% of their maximum supply. Surface water supplies are equal to their respective "maximum" capacities.

Table 3 shows the breakdown of potable water use for each public community system. This table indicates that for Daggett County, the current annual use of 574 acre-feet of water (within the public community systems) is about 24% of the reliable supply of 2,396 acre-feet of water.

TABLE 3
DAGGETT COUNTY
Water Use for Public Community Systems

WATER SUPPLIER	POTABLE USAGE						POTABLE PER CAPITA USAGE		
	Residential Indoor Use (Ac-Ft/Yr)	Residential Outdoor Use (Ac-Ft/Yr)	Commercial Outdoor Use (Ac-Ft/Yr)	Institutional Indoor and Outdoor Use (Ac-Ft/Yr)	Industrial/ Stockwater Indoor and Outdoor Use (Ac-Ft/Yr)	Total Potable M & I Use (Ac-Ft/Yr)	Population (2.46 PPHH)	Average Per Capita Water Use (Ac-Ft/Yr)	Average Per Capita Water Use (GPCPD)
Dutch John Treatment Plant	11.5	34.6	15.0	54.9	0.0	116.0	130	0.893	796.7
Daggett County Water and Sewer	22.1	72.4	8.5	13.0	4.9	120.9	250	0.483	431.5
Greendale Water Company	7.1	17.4	31.7	0.0	0.0	56.2	80	0.702	626.7
Manila Municipal Water System	33.6	70.3	141.4	20.1	0.0	265.4	380	0.698	623.5
Questar Pipeline Company (Clay Basin)	0.9	1.1	0.0	10.8	2.3	15.1	10	1.509	1,347.0
Totals	75.2	195.9	196.6	98.8	7.1	573.6	850	0.675	602.4
A	B	C	D	E	F	G	H	I	J

A, B, C, D, E, F, H, and K
G=B+C+D+E+F
H
I=G/H
J=I*892.682

These values are all input data.
This value represents only Potable M&I Water Use.
This value represents 2000 census data adjusted to reflect 2003 population.
Average per capita potable water use.
Converts from Ac-Ft/Yr to GPD

Secondary water is another important aspect of total M&I use. Table 4 presents the amount of secondary water used for various categories within the boundaries of the Daggett County public community systems. Separate irrigation companies, deliver secondary water to customers in Manila and Greendale. Total secondary water use is 93 acre-feet.

**TABLE 4
DAGGETT COUNTY
Secondary (Non-Potable) Water Use Within Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Secondary Use (Ac-Ft/Yr)
Dutch John Plant, Daggett County	0.0	0.0	0.0	0.0	0.0
Daggett County Water and Sewer	0.0	0.0	0.0	0.0	0.0
Greendale Water Company	11.6	15.0	21.0	0.0	47.6
Manila Municipal Water System	0.0	0.0	45.0	0.0	45.0
Questar Pipeline Company (Clay Basin)	0.0	0.0	0.0	0.0	0.0
DAGGETT COUNTY TOTALS	11.6	15.0	66.0	0.0	92.6

Note: Separate irrigation companies provide secondary water to the water supplier unless indicated by an ***.

Table 5, on the following page presents various per capita rates for the public community system in the Daggett County portion of the Uintah Basin.

**TABLE 5
DAGGETT COUNTY
Average Per Capita Water Use
For Public Community Systems**

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.319	285
Residential Potable Plus Secondary Use	0.333	297
Total Potable Use	0.675	602
Total Potable Plus Secondary Use	0.784	700

Note: Total Potable categories include residential, commercial, institutional and industrial uses.

Table 6 on the next page indicates water use for public non-community and private domestic systems in this portion of the Uintah Basin. There are no self-supplied industries and only a small number of private domestic wells. All of these uses amount to about 21 acre-feet of potable water.

**TABLE 6
DAGGETT COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries and Domestic Systems
(Acre-Feet/Year)**

Non-Community System	POTABLE USAGE					Total Secondary Water Use (Ac-Ft/Yr)
	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Potable Use (Ac-Ft/Yr)	
Flaming Gorge N.R.A Systems						
Antelope Flat Campground	0.0	0.0	0.1	0.0	0.1	0.0
Greendale and Bootleg Campgrounds	0.0	0.0	3.0	0.0	3.0	0.0
Hideout Canyon Campground	0.0	0.0	0.6	0.0	0.6	0.0
Red Springs/Lodgepole Campground	0.0	0.0	0.1	0.0	0.1	0.0
Forest Service Systems						
Lucerne Valley Campground/Marina	1.3	0.0	3.4	0.0	4.6	0.0
Ross Springs Water System	0.4	1.4	0.2	0.0	2.0	0.0
Little Hole Boat Ramp	0.0	0.0	3.9	0.0	3.9	0.0
BLM Systems						
Bridge Hollow Campground	0.0	0.0	0.1	0.0	0.1	0.0
Jarvie Historical Site	0.0	0.0	0.1	0.0	0.1	0.0
Total Non-Community Use	1.7	1.4	11.6	0.0	14.7	0.0
SELF SUPPLIED INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0
PRIVATE DOMESTIC SYSTEMS	6.3	0.0	0.0	0.0	6.3	0.0
DAGGETT COUNTY TOTALS	8.0	1.4	11.6	0.0	21.0	0.0

Collectively, the total potable M&I water use from all systems in this portion of the Uintah Basin is about 595 acre-feet, while secondary use is 93 acre-feet; giving a total M&I water use of 687 acre-feet. The data for the public community systems in Daggett County presented in the previous tables is included in Appendix A.

DUCHESNE COUNTY M&I WATER SUPPLIES AND USES

Duchesne County includes the incorporated communities of Dutch John and Manila. Within this area are 10 public community systems, 16 public non-community systems and no self-supplied industry. Locations of public community systems are shown back in figure 3.

Table 7 shows that the maximum annual water supply for public community systems in this portion of Duchesne County is 13,137.5 acre-feet; 1,471.7 acre-feet from springs, 7,185.8 acre-feet from wells and 4,480 acre feet from Starvation Reservoir.

**TABLE 7
DUCHESNE COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Springs (Ac-Ft/Yr)	Wells (Ac-Ft/Yr)	Surface (Ac-Ft/Yr)	Total (Ac-Ft/Yr)
Central Utah Water Conservancy District	0.0	0.0	4,480.0	4,480.0
Starvation Water Users Association	0.0	0.0	0.0	0.0
Duchesne Water System	0.0	0.0	0.0	0.0
Myton Municipal Water System	0.0	0.0	0.0	0.0
Johnson Water District	0.0	968.0	0.0	968.0
East Duchesne Improvement District	0.0	0.0	0.0	0.0
Duchesne County Upper County WID	1,128.7	0.0	0.0	1,128.7
Fruitland Water Special Service District	150.0	0.0	0.0	150.0
Roosevelt Municipal Water Systems	0.0	6,064.4	0.0	6,064.4
Neola Water District	0.0	153.4	0.0	153.4
Tabiona Water System	193.0	0.0	0.0	193.0
DUCHESNE COUNTY TOTALS	1,471.7	7,185.8	4,480.0	13,137.5

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

The reliable potable water supply for public community systems in the Duchesne County portion of the Uintah Basin is 8,885.5 acre-feet. The reliable supply is 68% of the maximum supply. The breakdown of this supply is presented in Table 8.

**TABLE 8
DUCHESNE COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	SPRINGS (Ac-Ft/Yr)	WELLS (Ac-Ft/Yr)	SURFACE (Ac-Ft/Yr)	TOTAL (Ac-Ft/Yr)
Central Utah Water Conservancy District	0.0	0.0	4,480.0	4,480.0
Starvation Water Users Association	0.0	0.0	0.0	0.0
Duchesne Water System	0.0	0.0	0.0	0.0
Myton Municipal Water System	0.0	0.0	0.0	0.0
Johnson Water District	0.0	484.0	0.0	484.0
East Duchesne Improvement District	0.0	0.0	0.0	0.0
Duchesne County Upper County WID	564.4	0.0	0.0	564.4
Fruitland Water Special Service District	112.5	0.0	0.0	112.5
Roosevelt Municipal Water Systems	0.0	3,032.2	0.0	3,032.2
Neola Water District	0.0	153.4	0.0	153.4
Tabiona Water System	96.5	0.0	0.0	96.5
DUCHESNE COUNTY TOTALS	773.4	3,669.6	4,480.0	8,923.0

* Wells are limited to 50% of their "maximum" capacity for reliable supply when well/pump capacity is the limiting factor. Springs are limited to 50% (Fruitland 75%) of their maximum supply. Surface water supplies are equal to their respective "maximum" capacities.

Table 9 shows the breakdown of potable water use for each public community system. This table indicates that for Duchesne County, the current annual use of 4,788.6 acre-feet of water (within the public community systems) is about 54% of the reliable supply of 8,885.5 acre-feet of water.

**TABLE 9
DUCHESNE COUNTY
Water Use for Public Community Systems**

WATER SUPPLIER	POTABLE USAGE						POTABLE PER CAPITA USAGE		
	Residential Indoor Use (Ac-Ft/Yr)	Residential Outdoor Use (Ac-Ft/Yr)	Commercial Indoor and Outdoor Use (Ac-Ft/Yr)	Institutional Indoor and Outdoor Use (Ac-Ft/Yr)	Industrial/ Stockwater Indoor and Outdoor Use (Ac-Ft/Yr)	Total Potable M & I Use (Ac-Ft/Yr)	Population (3.2 PPHH)	Average Per Capita Water Use (Ac-Ft/Yr)	Average Per Capita Water Use (GPCPD)
Central Utah Water Conservancy District									
Starvation Water Users									
Duchesne Water System	146.1	113.8	60.9	14.3	0.6	335.8	1,850	0.182	162.0
Myton Municipal Water System	46.6	40.7	16.5	0.0	0.0	103.8	590	0.176	157.1
Johnson Water District	108.2	186.2	62.0	1.2	974.5	1,332.1	1,370	0.972	868.0
East Duchesne Improvement District	64.0	42.5	115.1	2.3	101.1	324.9	810	0.401	358.1
Duchesne County Upper Country WID	148.5	88.4	14.2	18.6	37.1	306.8	1,880	0.163	145.7
Fruitland Water Special Service District	18.2	73.1	1.9	0.6	1.4	95.1	230	0.414	369.2
Roosevelt Municipal Water Systems**	424.2	754.8	255.8	580.0	124.9	2,139.6	5,370	0.398	355.7
Neola Water District	62.4	0.0	9.6	17.8	4.5	94.2	790	0.119	106.5
Tabiona Water System	26.1	0.0	7.1	23.0	0.0	56.2	330	0.170	151.9
DUCHESNE COUNTY TOTALS	1,044.3	1,299.5	543.0	657.7	1,244.1	4,788.6	13,220	0.362	323.4
A	B	C	D	E	F	G	H	I	J

A, B, C, D, E, F, H, and K
G=B+C+D+E+F
H
I=G/H
J=I*892.682
**

These values are all input data.
This value represents only Potable M&I Water Use.
This value represents 2000 census data adjusted to reflect 2003 population.
Average per capita potable water use.
Converts from Ac-Ft/Yr to GPD
Serves a small portion of Uinta County

Secondary water is another important aspect of total M&I use. Table 10 presents the amount of secondary water used for various categories within the boundaries of the Duchesne County public community systems. Various irrigation companies deliver secondary water to customers. Total secondary water use is 1,000.1 acre-feet.

**TABLE 10
DUCHESNE COUNTY
Secondary (Non-Potable) Water Use Within Public Community Systems**

WATER SUPPLIER	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Secondary Use (Ac-Ft/Yr)
Central Utah Water Conservancy District					
Duchesne Water System	76.2	3.0	12.2	0.0	91.4
Myton Municipal Water System (BIA)	15.0	0.0	0.0	0.0	15.0
Johnson Water District	41.1	0.0	0.0	0.0	41.1
East Duchesne Improvement District	42.5	0.0	0.0	0.0	42.5
Duchesne County Upper County WID	121.8	0.0	132.0	0.0	253.8
Fruitland Water Special Service District	0.0	0.0	0.0	0.0	0.0
Roosevelt Municipal Water Systems	0.0	0.0	360.0	0.0	360.0
Neola Water District	81.0	0.0	20.0	0.0	101.0
Tabiona Water System	83.3	0.0	12.0	0.0	95.3
DUCHESNE COUNTY TOTALS	460.9	3.0	536.2	0.0	1,000.1

Note: Separate irrigation companies provide secondary water to the water supplier unless indicated by an '*'.

Table 11 presents various per capita rates for the public community system in the Duchesne County portion of the Uintah Basin.

**TABLE 11
DUCHESNE COUNTY
Average Per Capita Use
For Public Community Systems**

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.177	158
Residential Potable Plus Secondary Use	0.212	189
Total Potable Use	0.362	323
Total Potable Plus Secondary Use	0.438	391

Note: Total Potable categories include residential, commercial, institutional and industrial uses.

Table 12 indicates water use for public non-community and private domestic systems in this portion of the Uintah Basin. There are no self-supplied industries and only a small number of private domestic wells. All of these uses amount to about 130.5 acre-feet of potable water and about 24 acre-feet of non-potable water.

TABLE 12
DUCHESNE COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries and Domestic Systems
(Acre-Feet/Year)

Non-Community System	POTABLE USAGE					Total Secondary Water Use (Ac-Ft/Yr)
	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Potable Use (Ac-Ft/Yr)	
Forest Service Systems						
Aspen Grove Campground	0.0	0.0	0.1	0.0	0.1	0.0
Butterfly CG & Highline Trailhead	0.0	0.0	0.0	0.0	0.0	0.0
Grants Springs Campground	0.0	0.0	0.1	0.0	0.1	0.0
Hades Campground	0.0	0.0	0.0	0.0	0.0	0.0
Iron Mine Campground	0.0	0.0	0.0	0.0	0.0	0.0
Mirror Lake Campground	0.0	0.0	0.1	0.0	0.1	0.0
Moon Lake Campground	0.0	0.0	0.9	0.0	0.9	0.0
Moosehorn Campground	0.0	0.0	0.1	0.0	0.1	0.0
Upper Stillwater Campground	0.5	0.6	0.1	0.0	1.2	0.0
Yellowpine Campground	0.0	0.0	0.7	0.0	0.7	0.0
State Park Systems						
Starvation Reservoir State Park	1.0	0.0	3.0	0.0	4.0	0.0
Pinnacle Resort	0.1	0.0	1.4	0.0	1.5	24.0
Camp Timberlane	0.0	0.0	0.2	0.0	0.2	0.0
Defas Dude Ranch	0.2	2.9	0.0	0.0	3.1	0.0
Tabby Mountain Estates	3.0	0.0	0.0	0.0	3.0	0.0
Mount Tabby Springs Subdivision	10.8	0.0	0.0	0.0	10.8	0.0
Pinion State Highway Rest Stop	0.0	0.0	2.0	0.0	2.0	0.0
Valle Del Padres Subdivision	2.0	0.0	0.0	0.0	2.0	0.0
Total Non-Community Use	17.6	3.5	8.5	0.0	29.5	24.0
SELF SUPPLIED INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0
PRIVATE DOMESTIC SYSTEMS	101.0	0.0	0.0	0.0	101.0	0.0
DUCHESNE COUNTY TOTALS	118.5	3.5	8.5	0.0	130.5	24.0

Collectively, the total potable M&I water use from all systems in this portion of the Uintah Basin is about 4,919 acre-feet, while secondary use is 1,024 acre-feet; giving a total M&I water use of 5,943 acre-feet. The data for the public community systems in Duchesne County presented in the previous tables is included in Appendix B.

UINTAH COUNTY M&I WATER SUPPLIES AND USES

The Uintah County portion of the Uintah Basin includes the incorporated communities of Ballard, Jensen, Maeser, Vernal and Tridell-Lapoint. Within this area, there are 7 public community systems, 1 unregulated Indian system, 8 public non-community systems, and 8 self-supplied industries. Locations of the public community systems are shown in Figure 3. The Central Utah WCD wholesales water to Vernal and has the capability to serve Jensen and Maeser as well. The CUWCD treatment plant takes spring water from Ashley Springs and surface water from Red Fleet Reservoir and Steinaker Reservoir. “Ashley Valley Water and Sewer Improvement District” sells water to Jensen, Maeser and the rural area surrounding Vernal, from its Ashley Creek treatment plant. The Ute Indian Tribe Water System delivers water to Ballard and the Ute Indian Reservation through 3 separate unregulated water systems.

As shown in Table 13, the maximum annual water supply for public community systems in Uintah County is 47,930 acre-feet; about 43% from springs, 6% from wells and 51% from surface water.

**TABLE 13
UINTAH COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Springs (Ac-Ft/Yr)	Wells (Ac-Ft/Yr)	Surface (Ac-Ft/Yr)	Total (Ac-Ft/Yr)
Ashley Valley Water & Sewer Impr. District	1,566.0	580.7	6,800.0	8,946.7
Jensen Water Improvement District	0.0	0.0	0.0	0.0
Maeser Water Improvement District	0.0	2,395.4	0.0	2,395.4
Central Utah Water Conservancy District	0.0	0.0	16,800.0	16,800.0
Vernal Municipal Water System	0.0	0.0	0.0	0.0
Tridell-Lapoint Water Improvement District	0.0	0.0	724.0	724.0
Ute Indian Tribe Water System	19,064.0	0.0	0.0	19,064.0
Ballard Water Improvement District	0.0	0.0	0.0	0.0
Ourray Park Water Improvement District	0.0	0.0	0.0	0.0
				0.0
UINTAH COUNTY TOTALS	20,630.0	2,976.1	24,324.0	47,930.1

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

The reliable potable water supply for public community systems in the Uintah County portion of the Uintah Basin is 36,127 acre-feet. The reliable supply is about 75% of the maximum supply. The breakdown of this supply is presented in Table 14.

**TABLE 14
UINTAH COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	SPRINGS (Ac-Ft/Yr)	WELLS (Ac-Ft/Yr)	SURFACE (Ac-Ft/Yr)	TOTAL (Ac-Ft/Yr)
Ashley Valley Water & Sewer Impr. District	783.0	290.3	6,800.0	7,873.4
Jensen Water Improvement District	0.0	0.0	0.0	0.0
Maeser Water Improvement District	0.0	1,197.7	0.0	1,197.7
Central Utah Water Conservancy District	0.0	0.0	16,800.0	16,800.0
Vernal Municipal Water System	0.0	0.0	0.0	0.0
Tridell-Lapoint Water Improvement District	0.0	0.0	724.0	724.0
Ute Indian Tribe Water System	9,532.0	0.0	0.0	9,532.0
Ballard Water Improvement District	0.0	0.0	0.0	0.0
Ouray Park Water Improvement District	0.0	0.0	0.0	0.0
				0.0
UINTAH COUNTY TOTALS	10,315.0	1,488.1	24,324.0	36,127.0

* Wells are limited to 50% of their "maximum" capacity for reliable supply when well/pump capacity is the limiting factor. Springs are limited to 50% of their maximum supply. Surface water supplies are equal to their respective "maximum" capacities.

Table 15, on the following page, presents the breakdown of the potable water use for each public community system. These tables indicate that the current annual potable use of 6,418 acre-feet of water is about 17% of the reliable potable water supply of water in Uintah County.

**TABLE 15
UINTAH COUNTY
Water Use for Public Community Systems**

WATER SUPPLIER	POTABLE USAGE					POTABLE PER CAPITA USAGE			
	Residential Indoor Use (Ac-Ft/Yr)	Residential Outdoor Use (Ac-Ft/Yr)	Commercial Indoor and Outdoor Use (Ac-Ft/Yr)	Institutional Indoor and Outdoor Use (Ac-Ft/Yr)	Industrial/ Stockwater Indoor and Outdoor Use (Ac-Ft/Yr)	Total Potable M & I Use (Ac-Ft/Yr)	Population (2.96 PPHH)	Average Per Capita Water Use (Ac-Ft/Yr)	Average Per Capita Water Use (GPCPD)
Ashley Valley Water & Sewer Impr. District	820.4	705.0	149.2	0.0	511.8	2,186.4	10,060	0.217	194.0
Jensen Water Improvement District	81.6	129.7	41.5	0.0	70.2	323.0	1,000	0.323	288.3
Maeser Water Improvement District	227.5	237.9	19.7	44.8	18.0	547.9	2,790	0.196	175.3
Central Utah Water Conservancy District	0.0	0.0	0.0	0.0	0.0	0.0	0	0.000	0.0
Vernal Municipal Water System	576.6	582.9	137.6	300.0	220.0	1,817.1	7,070	0.257	229.4
Tridell-Lapoint Water Improvement District	84.0	204.8	23.1	29.0	56.0	396.9	1,030	0.385	344.0
Ute Indian Tribe Water System	264.9	180.0	11.8	372.8	0.0	829.5	2,970	0.279	249.3
Ballard Water Improvement District	51.4	138.6	57.3	7.7	13.0	268.0	630	0.425	379.7
Ouray Park Water Improvement District	15.5	22.7	0.0	0.0	10.3	48.5	190	0.255	227.8
UINTAH COUNTY TOTALS	2,121.8	2,201.6	440.2	754.3	899.3	6,417.3	25,740.0	0.249	222.6
A	B	C	D	E	F	G	H	I	J

A, B, C, D, E, F, H, and K
G=B+C+D+E+F
I=G/H
J=I*892.682

These values are all input data.
This value represents only Potable M&I Water Use.
Average per capita potable water use.
Converts from Ac-Ft/Yr to GPD

Secondary water is another important aspect of total M&I use. Table 16 presents the annual amount of secondary water used for various categories within the boundaries of the public community systems. In Uintah County, within the public community systems, separate irrigation companies deliver secondary water. Total secondary use is estimated to be about 1,798 acre-feet.

**TABLE 16
UINTAH COUNTY
Secondary (Non-Potable) Water Use Within Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Total Secondary Use
Ashley Valley Water & Sewer Impr. District	500.0	0.0	352.0	0.0	852.0
Jensen Water Improvement District	0.0	0.0	0.0	0.0	0.0
Maeser Water Improvement District	289.7	0.0	0.0	0.0	289.7
Central Utah Water Conservancy District	0.0	0.0	0.0	0.0	0.0
Vernal Municipal Water System	309.1	0.0	250.0	0.0	559.1
Tridell-Lapoint Water Improvement District	0.0	0.0	0.0	0.0	0.0
Ute Indian Tribe Water System	0.0	0.0	0.0	0.0	0.0
Ballard Water Improvement District	78.8	0.0	0.0	0.0	78.8
Ouray Park Water Improvement District	18.6	0.0	0.0	0.0	18.6
UINTAH COUNTY TOTALS	1,196.1	0.0	602.0	0.0	1,798.1

Note: Separate irrigation companies provide secondary water to the water supplier unless indicated by an **.

Various per capita rates for public community systems in the Uintah County portion of the Uintah Basin are given in Table 17.

**TABLE 17
UINTAH COUNTY
Average Per Capita Water Use
For Public Community Systems**

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.168	150
Residential Potable Plus Secondary Use	0.214	191
Total Potable Use	0.249	223
Total Potable Plus Secondary Use	0.319	285

Note: Total Potable categories include residential, commercial, institutional and industrial uses.

Table 18, on the following page, indicates annual water use for public non-community systems, self-supplied industries, and private domestic systems in this portion of the Uintah Basin. Dinosaur National Monument, Red Fleet State Park and Steinaker State Park are among the 8 listed non-community systems. American Gilsonite Co., Deseret Generation & Transmission Cooperative, Dominion Exploration & Production Inc., Flying J, Inc., QEP Uinta Basin Inc., Simplot Phosphates Limited Company, Target Trucking Inc., The Native Asphalt Co. and WEMBCO Inc. are the listed self-supplied industries. There are numerous residences using their own wells. All of these uses amount to 10,636.4 acre-feet of potable water and 6.0 acre-feet of secondary water.

TABLE 18
UINTAH COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries and Domestic Systems
(Acre-Feet/Year)

Non-Community System	POTABLE USAGE					Total Secondary Water Use (Ac-Ft/Yr)
	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Potable Use (Ac-Ft/Yr)	
Dinosaur National Monument Systems						
Green River Campground	0.2	0.0	0.3	0.0	0.5	0.0
Split Mountain Campground	0.0	0.0	0.1	0.0	0.1	0.0
Forest Service Systems						
East Park Campground	0.0	0.0	0.0	0.0	0.0	0.0
Iron Springs Campground	0.0	0.0	0.1	0.0	0.1	0.0
Whiterocks Campground	0.0	0.0	0.0	0.0	0.0	0.0
Boy Scouts of America						
Bacon Memorial Park	0.0	0.0	0.0	0.0	0.0	0.0
State Park Systems						
Red Fleet State Park	0.6	0.0	3.7	0.0	4.2	6.0
Steinaker Lake State Park	0.0	0.0	1.8	0.0	1.8	0.0
Total Non-Community Use	0.8	0.0	6.1	0.0	6.8	6.0
SELF SUPPLIED INDUSTRIES*	272.0	0.0	0.0	10,335.5	10,607.5	0.0
PRIVATE DOMESTIC SYSTEMS	22.0	0.0	0.0	0.0	22.0	0.0
UINTAH COUNTY TOTALS	294.8	0.0	6.1	10,335.5	10,636.4	6.0

*SELF SUPPLIED INDUSTRIES: American Gilsonite Co., Deseret Generation and Transmission Cooperative, Dominion Exploration & Production Inc., Flying J. Inc., QEP Uinta Basin Inc., Simplot Phosphates Limited Company, Target Trucking Inc., The Native Asphalt Co., WEMBCO Incorporated

Collectively, the total potable M&I water diversion of all systems in this portion of the Uintah Basin is 17,054 acre-feet, while secondary diversions are 1,804 acre-feet; giving a total M&I water diversion of 18,858 acre-feet. The data for each public community system in Uintah County that is presented in the previous tables is included in Appendix C.

WASATCH COUNTY M&I WATER SUPPLIES AND USES

The Wasatch County portion of the Uintah Basin has no incorporated communities. Within this area, there are 9 public non-community systems. The Strawberry Reservoir area contains 3 of these systems. There are no self-supplied industries and no private domestic wells.

As shown in Table 19, the maximum annual water supply for public non-community systems in Wasatch County is 53 acre-feet.

**TABLE 19
WASATCH COUNTY
Water Use for Public Non-Community Systems,
Self Supplied Industries and Domestic Systems
(Acre-Feet/Year)**

Non-Community System	POTABLE USAGE					Total Secondary Water Use (Ac-Ft/Yr)
	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Potable Use (Ac-Ft/Yr)	
Forest Service Systems						
Currant Creek Campground	0.0	0.0	3.0	0.0	3.0	0.0
Soldier Creek Recreation Complex	0.0	0.0	3.8	0.0	3.8	0.0
Strawberry Administration Site	1.1	0.0	2.0	0.0	3.1	0.0
Strawberry Bay Recreation Complex	0.0	0.0	37.0	0.0	37.0	0.0
Bryants Fork Spring Association	0.2	0.0	0.0	0.0	0.2	0.0
Bryants Fork Summer Homes	0.2	0.0	0.0	0.0	0.2	0.0
Currant Creek Lodge	2.5	0.5	0.0	0.0	3.0	0.0
Pine Hollow Estates	1.0	0.0	0.0	0.0	1.0	0.0
Windy Ridge Water Company	1.5	0.0	0.0	0.0	1.5	0.0
Total Non-Commercial Use	6.5	0.5	45.8	0.0	52.8	0.0
SELF SUPPLIED INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0
PRIVATE DOMESTIC SYSTEMS	0.0	0.0	0.0	0.0	0.0	0.0
WASATCH COUNTY TOTALS	6.5	0.5	45.8	0.0	52.8	0.0

SUMMIT COUNTY M&I WATER SUPPLIES AND USES

The Summit County portion of the Uintah Basin has no recognized M&I water use.

APPENDIX A
DAGGETT COUNTY
COMMUNITY WATER SYSTEMS

BUREAU OF RECLAMATION (DUTCH JOHN)

Population = 130

Total Number of connections = 85

Residential connections = 71

Commercial connections = 9

Institutional connections = 5

Industrial/Stockwater connections = 0

Average number of people per residential connection = 2.46

Average lot size = 0.30 acre (From city plat)

Percent lot irrigated = 83%

Domestic Waste Water = Treatment and ponds (100%)

A. Water Supply:

- 1. Source Capacity:** Springs = None
Wells = None
Surface = 400 gpm or 645 ac-ft/yr
- 2. Water Rights:** Surface = 1200 ac-ft/yr
- 3. Maximum Potable Water Supply:** 645 ac-ft/yr
- 4. Reliable Potable Water Supply:** 645 ac-ft/yr

B. Primary Water Use:

- 1. Residential Indoor:** $(130 \text{ people})(79 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 11.5 \text{ ac-ft (estimate)}$
- 2. Residential Outdoor:** $(71 \text{ conn})(0.3 \text{ ac/conn})(83 \% \text{ irrigated})(3.0 \text{ ac-ft/ac}) = 34.6 \text{ ac-ft. (estimate)}$
- 3. Institutional Indoor and Outdoor:** Estimate using the following: 3 Forest Service campgrounds = 4,014,735 gal; 6 metered connections = 3,992,100 gal; 4 un-metered connections estimated to be 9,882,384 gal. $(4,014,735 \text{ gal} + 3,992,100 \text{ gal} + 9,882,384 \text{ gal})(1 \text{ ac-ft}/325851 \text{ gal}) = 54.9 \text{ ac-ft.}$
- 4. Commercial Indoor and Outdoor:** $(4,887,765)(1 \text{ ac-ft}/325851 \text{ gal}) = 15.0 \text{ ac-ft. (estimate)}$
- 5. Industrial Indoor and Outdoor:** None

C. Secondary Water Use:

- 1. Residential:** None
- 2. Institutional:** None
- 3. Commercial:** None
- 4. Industrial:** None

DAGGETT COUNTY WATER & SEWER

Population = 250

Total No. of connections = 282

Residential connections = 273

Commercial connections = 1

Institutional connections = 0

Industrial/Stockwater connections = 6

Average number of people per residential connection = 2.46

Average Lot Size = 0.25 acre

Percent lot irrigated = 50%

Domestic Waste Water = Treatment and ponds 80%
Septic Systems 20%

A. Water Supply:

- 1. Source Capacity:** Springs = 57 gpm or 90 ac-ft/yr
Wells = 105 gpm or 169 ac-ft/yr
Surface = None
- 2. Water Rights:** 1,016 ac-ft/yr
- 3. Maximum Potable Water Supply:** 90 ac-ft/yr (Springs) + 169 ac-ft/yr (Wells) = 259 ac-ft/yr
- 4. Reliable Potable Water Supply:** 45 ac-ft/yr (Springs) + 85 ac-ft/yr (Wells) = 130 ac-ft/yr

B. Primary Water Use:

- 1. Residential Indoor:** $(250 \text{ people})(79 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 22.1 \text{ ac-ft}$ (estimate)
- 2. Residential Outdoor:** $(68 \text{ full-time conn})(.125 \text{ ac/conn})(3.0 \text{ ac-ft/ac}) = 25.5 \text{ ac-ft}$; $(205 \text{ part-time conn})(60 \%) (.125 \text{ ac/conn})(3.0 \text{ ac-ft/ac}) = 46.9 \text{ ac-ft}$. $(25.5 \text{ ac-ft}) + (46.9 \text{ ac-ft}) = 72.4 \text{ ac-ft}$. (estimate)
- 3. Institutional Indoor and Outdoor:** 4,226,635 gallons or 13.0 ac-ft (given by Daggett County Water & Sewer for county jail)
- 4. Commercial Indoor and Outdoor:** 0.5 ac-ft (given by Daggett County Water & Sewer) + 8.0 ac-ft from part-time residential = 8.5 ac-ft.
- 5. Industrial Indoor and Outdoor:** Estimate as follows: $(5 \text{ stock conn})(26,385 \text{ gal/conn-month})(12 \text{ month})(1 \text{ ac-ft}/325851 \text{ gal.}) = 4.86 \text{ ac-ft}$.

C. Secondary Water Use:

- 1. Residential:** None
- 2. Institutional:** None
- 3. Commercial:** None
- 4. Industrial:** None

GREENDALE WATER COMPANY

Population = 80

Total No. of connections = 155

Residential connections = 152

Commercial connections = 3

Institutional connections = 0

Industrial/Stockwater connections = 0

Average number of people per residential connection = 2.46

Average lot size = 0.25 (House and irrigated area)

Percent lot irrigated = 15%

Domestic Waste Water = Treatment and ponds 50%
Septic Systems 50%

A. Water Supply:

- 1. Source Capacity:** Springs = 72 gpm or 116 ac-ft/yr
Wells = None
Surface = None
- 2. Water Rights:** NA
- 3. Maximum Potable Water Supply:** 116 ac-ft/yr (Springs)
- 4. Reliable Potable Water Supply:** 58 ac-ft/yr (Springs)

B. Primary Water Use:

- 1. Residential Indoor:** $(80 \text{ people})(79 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 7.1 \text{ ac-ft}$ (estimate)
- 2. Residential Outdoor:** 24.5 ac-ft (Total residential use of all systems served by Greendale Water Company) – 7.1 ac-ft (residential indoor use) = 17.4 ac-ft.
- 3. Institutional Indoor and Outdoor:** None
- 4. Commercial Indoor and Outdoor:** $(10,000,000 \text{ gal})(1 \text{ ac-ft.}/325851 \text{ gal}) = 30.69 \text{ ac-ft.}$ (metered)
- 5. Industrial Indoor and Outdoor:** None

C. Secondary Water Use:

- 1. Residential:** 11.6 ac-ft (estimated)
- 2. Institutional:** 21.0 ac-ft (estimated)
- 3. Commercial:** 15.0 ac-ft (estimated)
- 4. Industrial:** None

MANILA MUNICIPAL WATER SYSTEM

Population = 380

Total No. of connections = 446

Residential connections = 403

Commercial connections = 39

Institutional connections = 4

Industrial/Stockwater connections = 0

Average number of people per residential connection = 2.46

Average lot size = 0.25 acre

Percent lot irrigated = 23%

Domestic Waste Water = Treatment and ponds 100%

A. Water Supply:

1. **Source Capacity:** Springs = 60 ac-ft/yr
Wells = 2,214 ac-ft/yr
Surface = None
2. **Water Rights:** Springs = 60 ac-ft/yr
Wells = 2,214 ac-ft/yr
3. **Maximum Potable Water Supply:** 60 ac-ft/yr (Springs) + 2,214 ac-ft/yr (Wells) = 2,274 ac-ft/yr
4. **Reliable Potable Water Supply:** 30 ac-ft/yr (Springs) + 1,107 ac-ft/yr (Wells) = 1,137 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** 103.9 ac-ft (Reported total residential water use) - 70.3 ac-ft (Residential Outdoor) = 33.6 ac-ft.
2. **Residential Outdoor:** (403 conn)(1/4 ac/conn)(23 % irrigated)(3.0 ac-ft/ac) = 70.3 ac-ft. (estimated)
3. **Institutional Indoor and Outdoor:** 20.1 ac-ft
4. **Commercial Indoor and Outdoor:** 141.4 ac-ft (includes summer uses by transient population).
5. **Industrial Indoor and Outdoor:** None

C. Secondary Water Use:

1. **Residential:** None.
2. **Institutional:** (7.0 ac. (Park) + 3.0 ac. + 2.0 ac. (2 schools) + 3.0 ac. (cemetery))
*(3.0 ac-ft/ac) = 45.0 ac-ft.
3. **Commercial:** None
4. **Industrial:** None

QUESTAR PIPELINE CO. (CLAY BASIN)

Population = 12

Total No. of connections = 29

Residential connections = 18

Commercial connections = 0

Institutional connections = 0

Industrial/Stockwater connections = 11

Average number of people per residential connection = 2.46

Average lot size = 0.1 acre

Percent lot irrigated = 21%

Domestic Waste Water = Septic Systems 100%

A. Water Supply:

1. **Source Capacity:** Springs = 4.0 ac-ft/yr
Wells = 94.0 ac-ft/yr
Surface = None
2. **Water Rights:** Springs = 4.0 ac-ft/yr
Wells = 94.0 ac-ft/yr
3. **Maximum Potable Water Supply:** 4.0 ac-ft/yr (Springs) + 94.0 ac-ft/yr (Wells) = 98.0 ac-ft/yr
4. **Reliable Potable Water Supply:** 2.0 ac-ft/yr (Springs) + 47.0 ac-ft/yr (Wells) = 49.0 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** $(12 \text{ people})(70 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gals}) = 0.9 \text{ ac-ft/yr}$ (estimated)
2. **Residential Outdoor:** $(0.38 \text{ acres})(3.0 \text{ ac-ft/ac}) = 1.1 \text{ ac-ft/yr}$
3. **Institutional Indoor and Outdoor:** System losses and/or poor meter function may account for up to 11 ac-ft per year.
4. **Commercial Indoor and Outdoor:** None
5. **Industrial Indoor and Outdoor:** 2.3 ac-ft (given by Clay Basin)

C. Secondary Water Use:

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial:** None

APPENDIX B

**DUCHESNE COUNTY
COMMUNITY WATER SYSTEMS**

DUCHESNE COUNTY UPPER COUNTRY WID

Population = 1,884

Total No. of connections = 666

Residential connections = 560

Commercial connections = 17

Institutional connections = 15

Industrial/Stockwater connections = 23

Average number of people per active residential connection = 3.2

Average lot size = 0.25

Percent lot irrigated = 50%

Domestic Waste Water = Septic Systems 100%

A. Water Supply:

1. **Source Capacity:** Springs = 700 gpm or 1,128 ac-ft/yr
Wells = None
Surface = None
2. **Water Rights:** Springs = 12.022 cfs or 8,704 ac-ft/yr
3. **Maximum Potable Water Supply:** 1,128 ac-ft/yr (Springs)
4. **Reliable Potable Water Supply:** 564 ac-ft/yr (Springs)

B. Primary Water Use:

1. **Residential Indoor:** $(1,880 \text{ people})(70.5 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325,851 \text{ gals}) = 148.50 \text{ ac-ft. (estimated)}$
2. **Residential Outdoor:** $(236.89 \text{ ac-ft Total residential use given by Upper County}) - (148.5 \text{ ac-ft residential indoor use}) = 88.39 \text{ ac-ft.}$
3. **Institutional Indoor and Outdoor:** 18.6 ac-ft (given by Upper County)
4. **Commercial Indoor and Outdoor:** 14.2 ac-ft (given by Upper County)
5. **Industrial/Stockwater Indoor and Outdoor:** 37.1 ac-ft (given by Upper County)

C. Secondary Water Use:

1. **Residential:** $(560 \text{ conn})(58\% \text{ use sec})(0.25 \text{ ac/conn})(50\% \text{ irr ac/ac})(3.0 \text{ ac-ft/ac}) = 121.8 \text{ ac-ft. (estimated)}$
2. **Institutional:** $(58.5 \text{ ac-ft, 5 cemeteries}) + (18.0 \text{ ac-ft, 2 parks}) + (8.10 \text{ ac-ft, Moon Lake Ward}) + (47.44 \text{ ac-ft, 2 schools use}) = 132 \text{ ac-ft. (estimated)}$
3. **Commercial:** None
4. **Industrial/Stockwater:** None

DUCHESNE WATER SYSTEM

Population = 1,851

Total No. of connections = 711

Residential connections = 618

Commercial connections = 74

Institutional connections = 11

Industrial/Stockwater connections = 8

Average number of people per active residential connection = 3.2

Average lot size = 0.25 acre

Percent lot irrigated = 50%

Domestic Waste Water = Treatment and ponds 90%
Septic Systems 10%

A. Water Supply:

1. **Source Capacity:** Springs = None
Wells = None
Surface = 2,548 ac-ft/yr (Contract with CUWCD)
2. **Water Rights:** NA
3. **Maximum Potable Water Supply:** 2,548 ac-ft/yr (Surface)
4. **Reliable Potable Water supply:** 2,548 ac-ft/yr (Surface)

B. Primary Water Use:

1. **Residential Indoor:** $(1,850 \text{ people})(70.52 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 146.1 \text{ ac-ft}$ (estimated)
2. **Residential Outdoor:** Total residential (given) = 250 ac-ft. Residential outdoor = 250 ac-ft (total res.) – 146.1 ac-ft (res. In) = 113.80 ac-ft. (estimated)
3. **Institutional Indoor and Outdoor:** 14.3 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 60.9 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** 0.6 ac-ft (given)

C. Secondary Water Use:

1. **Residential:** $(508 \text{ conn.})(0.40 \text{ use sec.})(1/4 \text{ ac/conn})(50\% \text{ irr ac/ac})(3 \text{ ac-ft/ac}) = 76.2 \text{ ac-ft. (estimated)}$
2. **Institutional:** $((0.5 \text{ ac. Church}) + (0.34 \text{ ac. Seminary}) + (3.0 \text{ ac. School}) + (0.25 \text{ ac. Fairgrounds}))(3 \text{ ac-ft/ac}) = 12.2 \text{ ac-ft. (estimated)}$
3. **Commercial:** $(1 \text{ ac.})(3.0 \text{ ac-ft./ac.}) = 3 \text{ ac-ft. (estimated)}$
4. **Industrial/Stockwater:** None

EAST DUCHESNE IMPROVEMENT DISTRICT

Population = 813

Total No. of connections = 251

Residential connections = 228

Commercial connections = 20

Institutional connections = 2

Industrial/Stockwater connections = 1

Average number of people per active residential connection = 3.2

Average lot size = 0.25 acre

Percent lot irrigated = 50%

Domestic Waste Water = Septic Systems 100%

A. Water Supply:

1. **Source Capacity:** Springs = None
Wells = None
Surface = 582 ac-ft/yr (Contract with CUWCD)
2. **Water Rights:** NA
3. **Maximum Potable Water Supply:** 582 ac-ft/yr
4. **Reliable Potable Water Supply:** 582 ac-ft/yr.

B. Primary Water Use:

1. **Residential Indoor:** $(810 \text{ people})(70.52 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 64.0 \text{ ac-ft. (estimated)}$
2. **Residential Outdoor:** Total residential (given) = 106.5 ac-ft. Residential outdoor = $106.5 \text{ ac-ft (total res.)} - 64 \text{ ac-ft (res. In)} = 42.5 \text{ ac-ft. (estimated)}$
3. **Institutional Indoor and Outdoor:** 2.25 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 115.06 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** 101.13 ac-ft (given)

C. Secondary Water Use:

1. **Residential:** $(228 \text{ conn.})(50\% \text{ use sec.})(1/4 \text{ ac}/\text{conn})(50\% \text{ irr ac}/\text{ac})(3.0 \text{ ac-ft}/\text{ac}) = 42.5 \text{ ac-ft. (estimated)}$
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

FRUITLAND WATER SSD

Population = 230

Total No. of connections = 322 (many active only in summer)

Residential connections = 313

Commercial connections = 4

Institutional connections = 1

Industrial/Stockwater connections = 4

Average number of people per active residential connection = 3.2

Average lot size = 0.25 acre

Percent lot irrigated = 50%

Domestic Waste Water = Septic Systems 100%

A. Water Supply:

1. **Source Capacity:** Springs = 180 gpm or 290 ac-ft/yr
Wells = None
Surface = None
2. **Water Rights:** 150 ac-ft/yr (Springs)
3. **Maximum Potable Water Supply:** 150 ac-ft/yr (Springs)
4. **Reliable Potable Water Supply:** 112.5 ac-ft/yr (Springs)

B. Primary Water Use:

1. **Residential Indoor:** $(230 \text{ people})(70.52 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 18.2 \text{ ac-ft}$ (estimated)
2. **Residential Outdoor:** $(195 \text{ conn.})(50\% \text{ irr.})(1/4 \text{ ac/conn})(3.0 \text{ ac-ft/ac}) = 73.1 \text{ ac-ft}$.
3. **Institutional Indoor and Outdoor:** 0.60 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 1.90 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** 1.40 ac-ft (given)

C. Secondary Water Use:

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

JOHNSON WATER DISTRICT

Population = 1,372

Total No. of connections = 644

Residential connections = 609

Commercial connections = 0

Institutional connections = 1

Industrial/Stockwater connections = 31

Average number of people per active residential connection = 3.2

Average lot size = 0.25 acre

Percent lot irrigated = 50%

Domestic Waste Water = Treatment and ponds 70%
Septic Systems 30%

A. Water Supply:

1. **Source Capacity:** Springs = None
Wells = 600 gpm or 968 ac-ft
Surface = 1200 ac-ft (CUWCD contract)
2. **Water Rights:** Springs = None
Wells = 968 ac-ft/yr
Surface = 1,200 ac-ft/yr
3. **Maximum Potable Water Supply:** 968 ac-ft/yr (Wells) + 1,200 ac-ft (Surface) = 2,168 ac-ft/yr
4. **Reliable Potable Water Supply:** 484 ac-ft/yr (Wells) + 1,200 ac-ft (Surface) = 1,684 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** (1,370 people)(70.52 gpcd)(365 days/yr)(1 ac-ft/325851 gal) = 108.21 ac-ft. (estimated)
2. **Residential Outdoor:** Total residential (given) = 294.42 ac-ft. Residential outdoor = 294.42 (total res.) – 108.21 ac-ft (res. in) = 186.21 ac-ft. (estimated)
3. **Institutional Indoor and Outdoor:** 1.2 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 62.0 ac-ft. (given)
5. **Industrial/Stockwater Indoor and Outdoor:** 974.5 ac-ft (given)

C. Secondary Water Use:

1. **Residential:** (609 conn.)(18% use sec)(1/4 ac/conn)(50% irr ac/ac)(3 ac-ft/ac) = 41.1 ac-ft. (Estimated)
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

MYTON MUNICIPAL WATER SYSTEM

Population = 585

Total No. of connections = 203

Residential connections = 197

Commercial connections = 6

Institutional connections = 0

Industrial/Stockwater connections = 0

Average number of people per active residential connection = 3.2

Average lot size = 0.0625 acre

Percent lot irrigated = 51.5%

Domestic Waste Water = Septic Systems 100%

A. Water Supply:

1. **Source Capacity:** Springs = None
Wells = None
Surface = 150.0 ac-ft/yr (Contract with CUWCD)
2. **Water Rights:** NA
3. **Maximum Potable Water Supply:** 150.0 ac-ft/yr (Surface)
4. **Reliable Potable Water Supply:** 150.0 ac-ft/yr (Surface)

B. Primary Water Use:

1. **Residential Indoor:** $(585 \text{ people})(70.52 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 46.6 \text{ ac-ft.}$
2. **Residential Outdoor:** Total residential (given) = 87.3 ac-ft. Residential outdoor = $87.3 \text{ ac-ft (total res.)} - 46.6 \text{ ac-ft (res.in)} = 40.7 \text{ ac-ft}$
3. **Institutional Indoor and Outdoor:** 0 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 16.5 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** None

C. Secondary Water Use:

1. **Residential:** $(39 \text{ conn})(1/4 \text{ ac/conn})(51.3 \% \text{ irr ac/ac})(3.0 \text{ ac-ft/ac}) = 15 \text{ ac-ft.}$
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

NEOLA WATER DISTRICT

Population = 785

Total No. of connections = 228

Residential connections = 216

Commercial connections = 1

Institutional connections = 3

Unmetered connections = 8

Average number of people per active residential connection = 3.2

Average lot size = 0.25 acre

Percent lot irrigated = 50%

Domestic Waste Water = Treatment and ponds 90%
Septic Systems 10%

A. Water Supply:

1. **Source Capacity:** Springs = None
Wells = 153.4 ac-ft/yr (Contract with Roosevelt)
Surface = None
2. **Water Rights:** NA
3. **Maximum Potable Water Supply:** 153.4 ac-ft/yr
4. **Reliable Potable Water Supply:** 153.4 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** $(785 \text{ people})(70.52 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 62.4 \text{ ac-ft. (estimated)}$
2. **Residential Outdoor:** None
3. **Institutional Indoor and Outdoor:** 17.77 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 9.55 ac-ft (given)
5. **Industrial/Stockwater/Unmetered:** 4.51 ac-ft. (given)

C. Secondary Water Use:

1. **Residential:** $(216 \text{ conn})(1/4 \text{ ac/conn})(50 \% \text{ irr ac/ac})(3.0 \text{ ac-ft/ac}) = 81 \text{ ac-ft.}$
2. **Institutional:** 20.00 ac-ft (estimated by Neola)
3. **Commercial:** None
4. **Industrial/Stockwater:** None

ROOSEVELT MUNICIPAL WATER SYSTEMS

Population = 5,368

Total No. of connections = 2,040

Residential connections = 1,668

Commercial connections = 350

Institutional connections = 9

Industrial/Stockwater connections = 13

Average number of people per active residential connection = 3.2

Average lot size = 0.333 acre

Percent lot irrigated = 47.9%

Domestic Waste Water = Treatment and ponds 100%

A. Water Supply:

1. **Source Capacity:** Springs = None
Wells = 6,064 ac-ft/yr
Surface = None
2. **Water Rights:** 6,064 ac-ft/yr
3. **Maximum Potable Water Supply:** 6,064 ac-ft/yr
4. **Reliable Potable Water Supply:** 3,032 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** $(5,368 \text{ people})(70.52 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 424.16 \text{ ac-ft}$ (estimated)
2. **Residential Outdoor:** Total residential (given) = 1,187.97 ac-ft. Residential outdoor = $1,187.97 \text{ ac-ft (total res.)} - 424.16 \text{ ac-ft (res.in)} = 754.81 \text{ ac-ft}$. (estimated)
3. **Institutional Indoor and Outdoor:** 580 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 350 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** 124.88 ac-ft (given)

C. Secondary Water Use:

1. **Residential:** None
2. **Institutional:** Roosevelt Golf Course: 360 ac-ft (given by Roosevelt city)
3. **Commercial:** None
4. **Industrial/Stockwater:** None

TABIONA WATER SYSTEM

Population = 326

Total No. of connections = 127

Residential connections = 111

Commercial connections = 11

Institutional connections = 4

Industrial/Stockwater connections = 1

Average number of people per active residential connection = 3.2

Average lot size = 0.333 acre

Percent lot irrigated = 75%

Domestic Waste Water = Septic Systems 100%

A. Water Supply:

1. **Source Capacity:** Springs = 120 gpm or 193.0 ac-ft/yr
Wells = None
Surface = None
2. **Water Rights:** 0.71 cfs or 514 ac-ft/yr
3. **Maximum Potable Water Supply:** 193 ac-ft/yr
4. **Reliable Potable Water Supply:** 96.5 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** $(326 \text{ people})(70.52 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 26.1 \text{ ac-ft}$ (estimated)
2. **Residential Outdoor:** None.
3. **Institutional Indoor and Outdoor:** 23 ac-ft (estimated)
4. **Commercial Indoor and Outdoor:** 7.1 ac-ft (estimated)
5. **Industrial/Stockwater Indoor and Outdoor:** None

C. Secondary Water Use:

1. **Residential:** $(111 \text{ conn})(1/3 \text{ ac/conn})(75 \% \text{ irr ac/ac})(3.0 \text{ ac-ft/ac}) = 83.25 \text{ ac-ft}$.
2. **Institutional:** 12.00 ac-ft (estimated)
3. **Commercial:** None
4. **Industrial/Stockwater:** None

APPENDIX C
UINTAH COUNTY
COMMUNITY WATER SYSTEMS

ASHLEY VALLEY WATER & SEWER IMPROVEMENT DISTRICT

Population = 10,062

Total No. of connections = 3,030

Residential connections = 2,730

Commercial connections = 168

Institutional connections = 12

Industrial/Stockwater connections = 120

Average number of people per residential connection = 2.96

Average lot size = 0.25 acre culinary, 0.40 acre secondary

Percent lot irrigated = 50% culinary, 49% secondary

Domestic Waste Water = Treatment and ponds 85%
Septic Systems 15%

A. Water Supply:

1. **Source Capacity:** Springs = 1566.03 ac-ft/yr
Wells = 580.68 ac-ft/yr (Maeser Hollinger Well)
Surface = 6,800 ac-ft/yr (Agreement with CUWCD)
2. **Water Rights:** 2,146.71 ac-ft/yr (In addition to CUWCD agreement)
3. **Maximum Potable Water Supply:** 1,566 ac-ft/yr (springs) + 580.7 ac-ft/yr (wells) + 6,800 ac-ft/yr (CUWCD) = 8,946.7 ac-ft/yr
4. **Reliable Potable Water Supply:** 783 ac-ft/yr (springs) + 290.4 ac-ft/yr (wells) + 6,800 ac-ft/yr Surface = 7,873.4 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** (10,062 people)(72.81 gpcd)(365 days/yr)(1 ac-ft/325851 gal) = 820.4 ac-ft (estimated)
2. **Residential Outdoor:** Total residential (given) = 1,525.4 ac-ft. Residential outdoor = 1,525.4 ac-ft (total res.) – 820.4 ac-ft (res.in) = 705 ac-ft. (estimated)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** 149.2 ac-ft (given)
5. **Industrial Indoor and Outdoor:** 511.8 ac-ft (given)

C. Secondary Water Use:

1. **Residential:** $(850 \text{ conn.})(0.40 \text{ ac/conn.})(49\% \text{ irr ac/ac})(3.0 \text{ ac-ft/ac}) = 500 \text{ ac-ft.}$
2. **Institutional:** $((92 \text{ ac golf course}) + (20 \text{ ac parks}) + (5 \text{ ac cemetery}) + (1/3 \text{ ac church}))(3 \text{ ac-ft/ac}) = 352 \text{ ac-ft.}$
3. **Commercial:** None
4. **Industrial:** None

BALLARD WATER IMPROVEMENT DISTRICT

Population = 625

Total No. of connections = 318

Residential connections = 290

Commercial connections = 20

Institutional connections = 1

Industrial/Stockwater connections = 7

Average number of people per residential connection = 2.96

Average lot size = 1.0 acre

Percent lot irrigated = 25%

Domestic Waste Water = Treatment and ponds 90%
Septic Systems 10%

A. Water Supply: Note: Ballard receives ALL its water from the Ute Indian Tribe unregulated system.

1. Source Capacity: NA

2. Water Rights: NA

3. Maximum Potable Water Supply: NA

4. Reliable Potable Water Supply: NA

B. Primary Water Use:

1. Residential Indoor: $(625 \text{ people})(72.81 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 51.4 \text{ ac-ft}$ (estimated)

2. Residential Outdoor: Total residential (given) = 190 ac-ft. Residential outdoor = 190 ac-ft (total res.) – 51.4 ac-ft (res.in) = 138.6 ac-ft . (estimated)

3. Institutional Indoor and Outdoor: 5.0 ac-ft (given)

4. Commercial Indoor and Outdoor: 60.0 ac-ft (given)

5. Industrial Indoor and Outdoor: 13.0 ac-ft (given)

C. Secondary Water Use:

1. Residential: $(105 \text{ conn.})(1.0 \text{ ac/conn.})(25\% \text{ irr ac/ac})(3.0 \text{ ac-ft/ac}) = 78.75 \text{ ac-ft}$.

2. Institutional: None

3. Commercial: None

4. Industrial: None

JENSEN WATER IMPROVEMENT DISTRICT

Population = 1,001

Total No. of connections = 509

Residential connections = 475

Commercial connections = 7

Institutional connections = 5

Industrial/Stockwater connections = 22

Average number of people per residential connection = 2.96

Average lot size = 0.25 acre

Percent lot irrigated = 36.4%

Domestic Waste Water = Treatment and ponds 90%
Septic Systems 10%

A. Water Supply: Note: Jensen receives ALL its water from Ashley Valley

1. Source Capacity: NA

2. Water Rights: NA

**3. Maximum Potable
Water Supply:** NA

**4. Reliable Potable
Water Supply:** NA

B. Primary Water Use:

1. Residential Indoor: (1,001 people)(72.81 gpcd)(365 days/yr)(1 ac-ft/325851 gal)
= 81.6 ac-ft (estimated)

2. Residential Outdoor: Total residential (given) = 211.3 ac-ft. Residential outdoor
= 211.3 ac-ft (total res.) – 81.6 ac-ft (res.in) = 129.7 ac-ft. (estimated)

3. Institutional Indoor and Outdoor: Included in Commercial

4. Commercial Indoor and Outdoor: 41.5 ac-ft (Given)

5. Industrial Indoor and Outdoor: 70.2 (Given)

C. Secondary Water Use:

1. Residential: None

2. Institutional: None

3. Commercial: None

4. Industrial: None

MAESER WATER IMPROVEMENT DISTRICT

Population = 2,793

Total No. of connections = 942

Residential connections = 876

Commercial connections = 19

Institutional connections = 6

Industrial/Stockwater connections = 41

Average number of people per residential connection = 2.96

Average lot size = 0.50 acre

Percent lot irrigated = 50%

Domestic Waste Water = Treatment and ponds 90%
Septic Systems 10%

A. Water Supply:

1. **Source Capacity:** Springs = NA
Wells = 2,395.44 ac-ft/yr
Surface = NA
2. **Water Rights:** 2,395.44 ac-ft/yr
3. **Maximum Potable Water Supply:** 2,395.44 ac-ft/yr
4. **Reliable Potable Water Supply:** 1,197.7 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** $(2,793 \text{ people})(72.81 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 227.5 \text{ ac-ft}$ (estimated)
2. **Residential Outdoor:** Total residential (given) = 465.35 ac-ft. Residential outdoor = 465.35 ac-ft (total res.) – 227.5 ac-ft (res.in) = 237.9 ac-ft. (estimated)
3. **Institutional Indoor and Outdoor:** 44.81 ac-ft (given)
4. **Commercial Indoor and Outdoor:** 19.69 ac-ft (given)
5. **Industrial Indoor and Outdoor:** 18.01 ac-ft (given)

C. Secondary Water Use:

1. **Residential:** $(559 \text{ con.})(34.5\% \text{ irr ac/ac})(0.50 \text{ ac/conn.})(3.0 \text{ ac-ft/ac}) = 289.7 \text{ ac-ft}$.
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial:** None

OURAY PARK WATER IMPROVEMENT DISTRICT

Population = 190

Total No. of connections = 120

Residential connections = 110

Commercial connections = 0

Institutional connections = 0

Industrial/Stockwater connections = 10

Average number of people per residential connection = 2.96

Average lot size = 0.50 acre

Percent lot irrigated = 25%

Domestic Waste Water = Septic Systems 100%

A. Water Supply: Note: Ouray Park receives ALL its water from the unregulated Ute Indian Tribe system.

- 1. Source Capacity:** NA
- 2. Water Rights:** 150 ac-ft/yr
- 3. Maximum Potable Water Supply:** 150 ac-ft/yr
- 4. Reliable Potable Water Supply** NA

B. Primary Water Use:

- 1. Residential Indoor:** $(190 \text{ people})(72.81 \text{ gpcd})(365 \text{ days/yr})(1 \text{ ac-ft}/325851 \text{ gal}) = 15.5 \text{ ac-ft}$ (estimated)
- 2. Residential Outdoor:** $(110 \text{ lots})(55\% \text{ use pot.})(1/2 \text{ ac/lot})(25\% \text{ irr ac/ac})(3 \text{ ac-ft/ac}) = 22.7 \text{ ac-ft}$.
- 3. Institutional Indoor and Outdoor:** None
- 4. Commercial Indoor and Outdoor:** None
- 5. Industrial Indoor and Outdoor:** 10.3 ac-ft (given)

C. Secondary Water Use:

- 1. Residential:** $(110 \text{ conn.})(0.50 \text{ ac/conn.})(25\% \text{ irr ac/ac})(3.0 \text{ ac-ft/ac})(0.45) = 18.56 \text{ ac-ft}$.
- 2. Institutional:** None
- 3. Commercial:** None
- 4. Industrial:** None

TRIDELL-LAPOINT WATER IMPROVEMENT DISTRICT

Population = 1,029

Total No. of connections = 422

Residential connections = 398

Commercial connections = 4

Institutional connections = 8

Industrial/Stockwater connections = 12

Average number of people per residential connection = 2.96

Average lot size = 2.0 acres

Percent lot irrigated = 8.57%

Domestic Waste Water = Septic Systems 100%

A. Water Supply:

1. Source Capacity: Springs = None
Wells = None
Surface = 723.97 ac-ft/yr

2. Water Rights: 723.97 ac-ft/yr

3. Maximum Potable Water Supply: 723.97 ac-ft/yr (surface)

4. Reliable Potable Water Supply: 723.97 ac-ft/yr

B. Primary Water Use:

1. Residential Indoor: (1,029 people)(72.81 gpcd)(365 days/yr)(1 ac-ft/325851 gal)
= 84 ac-ft (estimated)

2. Residential Outdoor: Total residential (given) = 288.76 ac-ft. Residential outdoor
= 288.76 ac-ft (total res.) – 84 ac-ft (res.in) = 204.76 ac-ft. (estimated)

3. Institutional Indoor and Outdoor: 29.0 ac-ft (estimate)

4. Commercial Indoor and Outdoor: 23.1 ac-ft (given)

5. Industrial Indoor and Outdoor: 56.0 ac-ft (estimate)

C. Secondary Water Use:

1. Residential: None

2. Institutional: None

3. Commercial: None

4. Industrial: None

UTE INDIAN TRIBE WATER SYSTEM

Population = 2,974

Total No. of connections = 1,229

Residential connections = 1,200

Commercial connections = 11

Institutional connections = 18

Industrial/Stockwater connections = 0

Average number of people per residential connection = 2.96

Average lot size = 0.333 acre

Percent lot irrigated = 75.3%

Domestic Waste Water = Treatment and ponds 90%
Septic Systems 10%

A. Water Supply:

1. **Source Capacity:** Springs = 19,064 ac-ft/yr
Wells = NA
Surface = None
2. **Water Rights:** NA
3. **Maximum Potable Water Supply:** 19,064 ac-ft/yr
4. **Reliable Potable Water Supply:** 9,532 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** (2,974 people)(72.81 gpcd)(365 days/yr)(1 ac-ft/325851 gal) = 242.2 ac-ft (estimated)
4. **Residential Outdoor:** Total residential (estimated) = 1,146 ac-ft. Residential outdoor = 1,146 ac-ft (total res.) – 242.2 ac-ft (res.in) = 903.8 ac-ft. (estimated)
3. **Institutional Indoor and Outdoor:** 1,100 ac-ft (estimated)
4. **Commercial Indoor and Outdoor:** 11.8 ac-ft (estimated)
5. **Industrial Indoor and Outdoor:** None

C. Secondary Water Use:

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial:** None

VERNAL MUNICIPAL WATER SYSTEM

Population = 7074

Total No. of connections = 2,646

Residential connections = 2,172

Commercial connections = 352

Institutional connections = 72

Industrial/Stockwater connections = 50

Average number of people per residential connection = 2.96

Average lot size = 0.25 acre

Percent lot irrigated = 50%

Domestic Waste Water = Treatment and ponds 100%

A. Water Supply:

1. **Source Capacity:** Springs = None
Wells = None
Surface = 15 MGD or 16,800 ac-ft/yr (CUWCD contract)
2. **Water Rights:** NA
3. **Maximum Potable Water Supply:** 16,800 ac-ft/yr
4. **Reliable Potable Water Supply:** 16,800 ac-ft/yr

B. Primary Water Use:

1. **Residential Indoor:** (7,074 people)(72.81 gpcd)(365 days/yr)(1 ac-ft/325851 gal) = 576.6 ac-ft (estimated)
2. **Residential Outdoor:** Total residential (given) = 1,159.5 ac-ft. Residential outdoor = 1,159.5 ac-ft (total res.) – 576.6 ac-ft (res.in) = 582.9 ac-ft. (estimated)
3. **Institutional Indoor and Outdoor:** 300 ac-ft (Estimated)
4. **Commercial Indoor and Outdoor:** 137.6 ac-ft (Estimated)
5. **Industrial Indoor and Outdoor:** 220 ac-ft (Estimated)

C. Secondary Water Use:

1. **Residential:** (2,172 conn.)(50% irr ac/ac)(1/3 ac/conn.)(3.0 ac-ft/ac)(28.44% use sec) = 309.1 ac-ft. (estimated)
2. **Institutional:** (83.333 ac)(3.0 ac-ft/ac) = 250 ac-ft.
3. **Commercial:** None
4. **Industrial:** None

APPENDIX D
DUCHESNE COUNTY
WATER USE DATA FORM

AR: 1 3/29/04 S

Return completed form to:
Utah Division of Water Rights
PO Box 146300
Salt Lake City, UT 84114-6300

**UTAH WATER USE DATA FORM
DATA FOR 2003**

Information jointly requested by:
Utah Division of Water Resources, 538-7264
Utah Division of Drinking Water, 536-4200; and
Utah Division of Water Rights, 538-7392.

System Name: Duchesne County Upper Country WID
Address: PO Box 406
Altamont, UT 84001

Population Served: Est 1750 DEQ#: 07059
County: Duchesne
E-Mail Address:

Phone Number: (435) 454-3513
Phone Number:

Contact Person: Kirk Christensen
Form filled out by: Kirk Christensen / Ilene D. Jensen

Phone Number: (435) 454-3513
Phone Number:

RECEIVED
MAR 26 2004
**WATER RIGHTS
SALT LAKE**

I. STORAGE INVENTORY: Total treated storage capacity: 1.3 million in gallons. Number of Tanks: 5

II. SOURCE INVENTORY:

1 Source Name: Cow Canyon Spring Nr. 2 Type: Spring Location: Sec 15, T2N, R1W, US&M WR Number: 43-3030 43-1645
Method of Measurement: Master Meter, Estimate, Other
Units of Measurement: 1,000
Are there any spills/overflow? Yes, No If yes, estimate annual quantity _____ . Where is source measured? Before overflow, After overflow
When do spills/overflow occur? _____ Are spills/overflow included in the quantities reported? Yes No

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
5,376	5,273	5,140	4,230	8,707	10,707	15,670	12,169	10,679	8,281	4,754	4,827	97,813

2 Source Name: Johnson Water District Type: Spring Location: Sec 15, T2N, R1W, US&M WR Number: 43-3030 43-3030
Method of Measurement: Master Meter, Estimate, Other total combined w/spring # 1
Units of Measurement: _____
Are there any spills/overflow? Yes, No If yes, estimate annual quantity _____ . Where is source measured? Before overflow, After overflow
When do spills/overflow occur? _____ Are spills/overflow included in the quantities reported? Yes No

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL

3 Source Name: _____ Type: _____ Location: Sec , T, R, B&M WR Number: _____
Method of Measurement: Master Meter, Estimate, Other _____
Units of Measurement: _____

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL

III. WATER USE BREAKDOWN: (Please use sum of the readings from individual meters, not master meter readings at source. If quantities are not known, please estimate. See instructions for definition of uses shown in bold).

Units of Measurement: 1,000 gallons

Residential: Annual quantity of water delivered for residential purposes 77,184. Total number of residential connections 560
 Meter readings at individual connections ; or Estimated
 Number of connections serving multiple units (apartments) from a single connection _____ Units per connection (avg) 3
Commercial: Annual quantity of water delivered for commercial purposes 4631. Total number of commercial connections 17
 Meter readings at individual connections ; or Estimated
Industrial: Annual quantity of water delivered for industrial purposes 7438. Total number of industrial connections 23
 Meter readings at individual connections ; or Estimated
Institutional: Annual quantity of water delivered for institutional purposes 6074. Total number of institutional connections 15
 Meter readings at individual connections ; or Estimated
Stockwatering: Annual quantity of water delivered for stockwatering purposes 3723. Total number of stockwatering connections 40
 Meter readings at individual connections ; or Estimated
Wholesale: Annual quantity of water delivered for wholesale purposes -. Please attach a listing of those supplied.
 Meter readings at individual connections ; or Estimated
Other Uses: Annual quantity of water delivered for other purposes 928. Total number of other connections 11
 Meter readings at individual connections ; or Estimated
 Describe other uses Bulk Sales @ Load Stations UTE TRIBE Stock
Unmetered: Annual estimate of water delivered by unmetered connections _____ Total number of unmetered connections _____
 Unmetered connections used for _____

Total annual quantity of water delivered for all purposes 99,978. **Total number of all connections** 666
 Of this total, how many connections are active? 613

IV. IRRIGATION SYSTEM (Separate lawn and garden irrigation system, whether controlled by the drinking water supplier or not)

Is any of your area served by a separate ditch or pipe fed irrigation water system? Yes, No If yes, please provide the following information:
 What percent of your customers are served by a separate irrigation system? _____ Information concerning irrigation systems not known. Provided by separate entities.
 Of these customers, what percent are served by ditch? _____
 What percent are served by pressurized pipe? _____

Do you operate and maintain the separate lawn and garden irrigation water system? Yes, No

If the separate irrigation system is operated by other entities, please give name of companies, contact person & phone number:

MOON Lake Water Users
Box 265
Roosevelt, UT 84066
UTE TRIBE
Box 190
Fort Duchesne, UT 84026

APPENDIX E

**2003 Uintah Basin
M&I Depletions**

System	County	Residential Indoor	Residential Outdoor	Commercial	Institutional	Industrial/ Stockwater	Self- Supplied Industries	Secondary Water Use	Total Indoor Use	Total Outdoor Use	Res. Indoor Return Flow	Commercial Indoor Return Flow	Institutional Indoor Return Flow	Industrial/ Stockwater Indoor Return Flow	Total Indoor Return Flow	Pond Evaporation	Plant- septic Outflow	Outdoor Return Flow	Total Return Flow	Total Diversions	Total Depletion
Dutch John	Daggett	11.5	34.6	15.0	54.9	0.0	0.0	0.0	34.5	81.5	11.3	11.8	10.8	0.0	33.8	16.8	15.3	27.2	42.5	116.0	73.5
Daggett Co. Wat. & Sew.	Daggett	22.1	72.4	8.5	13.0	4.9	0.0	0.0	36.4	84.5	21.7	6.7	2.5	2.5	33.3	14.9	16.8	28.2	44.9	120.9	76.0
Greendale Water Company	Daggett	7.1	17.4	31.7	0.0	0.0	0.0	47.6	32.5	71.3	7.0	24.9	0.0	0.0	31.8	3.8	26.4	23.8	50.2	103.8	53.6
Manilla Municipal Wat. Sys.	Daggett	33.6	70.3	141.4	20.1	0.0	0.0	45.0	150.7	159.7	32.9	110.9	3.9	0.0	147.7	92.0	48.3	53.2	101.5	310.4	208.9
Questar Pipeline Company	Daggett	0.9	1.1	0.0	10.8	2.3	0.0	0.0	5.4	9.7	0.9	0.0	2.1	1.2	4.1	0.0	3.9	3.2	7.2	15.1	7.9
Non-community systems, etc.	Daggett	8.0	0.0	1.4	11.6	0.0	0.0	0.0	11.4	9.6	7.8	1.1	2.3	0.0	11.2	0.0	11.0	3.2	14.2	21.0	6.8
COUNTY SUBTOTAL	Daggett	83.2	195.8	198.0	110.4	7.2	0.0	92.6	270.9	416.3	81.5	155.2	21.6	3.6	262.0	127.5	121.7	138.8	260.5	687.2	426.7
Duchesne Water System	Duchesne	146.1	113.8	60.9	14.3	0.6	0.0	91.4	198.3	228.8	143.2	47.7	2.8	0.3	194.0	67.2	117.2	76.3	193.4	427.1	233.7
Myton Municipal Water System	Duchesne	46.6	40.7	16.5	0.0	0.0	0.0	15.0	59.8	59.0	45.7	12.9	0.0	0.0	58.6	49.0	8.4	19.7	28.1	118.8	90.7
Johnson Water District	Duchesne	108.2	186.2	62.0	1.2	974.5	0.0	41.1	1,132.5	240.7	106.0	48.6	0.2	487.3	642.1	0.0	629.3	80.2	709.5	1,373.2	663.7
East Duchesne Imp. Dist.	Duchesne	64.0	42.5	115.1	2.3	101.1	0.0	42.5	257.6	109.9	62.7	90.2	0.5	50.6	204.0	0.0	199.9	36.6	236.5	367.5	131.0
Duchesne Co. Upper Country WID	Duchesne	148.5	88.4	14.2	18.6	37.1	0.0	253.8	200.7	359.9	145.5	11.1	3.6	18.6	178.9	0.0	175.3	120.0	295.3	560.6	265.3
Fruitland Water Spl. Serv. Dist.	Duchesne	18.2	73.1	1.9	0.6	1.4	0.0	0.0	21.2	74.0	17.8	1.5	0.1	0.7	20.1	0.0	19.7	24.7	44.4	95.2	50.8
Roosevelt Municipal Water syst.	Duchesne	424.2	754.8	255.8	580.0	124.9	0.0	360.0	869.7	1,630.0	415.7	200.5	113.7	62.5	792.4	250.7	525.8	543.3	1,069.1	2,499.7	1,430.6
Neola Water District	Duchesne	62.4	0.0	9.6	17.8	4.5	0.0	101.0	78.1	117.2	61.2	7.5	3.5	2.3	74.4	65.1	7.9	39.1	46.9	195.3	148.4
Tabiona Water System	Duchesne	26.1	0.0	7.1	23.0	0.0	0.0	95.3	36.4	115.1	25.6	5.6	4.5	0.0	35.7	18.1	16.8	38.4	55.2	151.5	96.3
Non-community systems, etc.	Duchesne	118.5	0.0	3.5	8.5	0.0	0.0	24.0	123.0	31.5	116.1	2.7	1.7	0.0	120.5	0.0	114.5	10.5	125.0	154.5	29.5
COUNTY SUBTOTAL	Duchesne	1,162.8	1,299.5	546.6	666.3	1,244.1	0.0	1,024.1	2,977.4	2,966.0	1,139.5	428.5	130.6	622.1	2,320.7	450.1	1,814.8	988.7	2,803.4	5,943.4	3,140.0
Non-community systems, etc.	Summit	0.0	0.0	1.0	2.0	0.0	0.0	0.0	1.2	1.8	0.0	0.8	0.4	0.0	1.2	0.0	1.1	0.6	1.7	3.0	1.3
COUNTY SUBTOTAL	Summit	0.0	0.0	1.0	2.0	0.0	0.0	0.0	1.2	1.8	0.0	0.8	0.4	0.0	1.2	0.0	1.1	0.6	1.7	3.0	1.3
Vernal Municipal Water System	Uintah	576.6	582.9	137.6	300.0	220.0	0.0	559.1	966.7	1,409.5	565.1	107.9	58.8	110.0	841.7	0.0	799.7	469.8	1,269.5	2,376.2	1,106.7
Ashley Valley Improvement Dist.	Uintah	820.4	705.0	149.2	0.0	511.8	0.0	852.0	1,451.6	1,586.8	804.0	117.0	0.0	255.9	1,176.9	681.5	436.5	528.9	965.5	3,038.4	2,072.9
Jensen Water Improvement Dist.	Uintah	81.6	129.7	41.5	0.0	70.2	0.0	0.0	185.0	138.0	80.0	32.5	0.0	35.1	147.6	0.0	140.2	46.0	186.2	323.0	136.8
Maeser Water Improvement Dist.	Uintah	227.5	237.9	19.7	44.8	18.0	0.0	289.7	270.2	567.4	223.0	15.4	8.8	9.0	256.2	0.0	243.4	189.1	432.5	837.6	405.1
Tridell-Lapointe Water Imp. Dist.	Uintah	84.0	204.8	23.1	29.0	56.0	0.0	0.0	164.3	232.6	82.3	18.1	5.7	28.0	134.1	0.0	127.4	77.5	204.9	396.9	192.0
Ute Indian Tribe Water System	Uintah	264.9	180.0	11.8	372.8	0.0	0.0	0.0	348.9	480.6	259.6	9.3	73.1	0.0	341.9	66.3	258.5	160.2	418.7	829.5	410.8
Ballard Water Improvement Dist.	Uintah	51.4	138.6	57.3	7.7	13.0	0.0	78.8	111.8	235.0	50.4	44.9	1.5	6.5	103.3	148.5	0.0	78.3	78.3	346.8	268.5
Ouray Park Water Imp. Dist.	Uintah	15.5	22.7	0.0	0.0	10.3	0.0	18.6	25.8	41.3	15.2	0.0	0.0	5.2	20.3	0.0	19.3	13.8	33.1	67.1	34.0
Non-community systems, etc.	Uintah	188.2	106.6	0.0	6.1	0.0	10,335.5	6.0	10,524.9	117.5	184.4	0.0	1.2	0.0	185.6	0.0	19.2	39.2	58.4	10,642.4	10,584.0
COUNTY SUBTOTAL	Uintah	2,310.1	2,308.2	440.2	760.4	899.3	10,335.5	1,804.2	14,049.1	4,808.8	2,263.9	345.1	149.0	449.7	3,207.7	896.3	2,044.2	1,602.9	3,647.1	18,857.9	15,210.8
Non-community systems, etc.	Wasatch	6.5	0.0	0.5	45.8	0.0	0.0	0.0	16.1	36.7	6.4	0.4	9.0	0.0	15.7	0.0	15.0	12.2	27.2	52.8	25.6
COUNTY SUBTOTAL	Wasatch	6.5	0.0	0.5	45.8	0.0	0.0	0.0	16.1	36.7	6.4	0.4	9.0	0.0	15.7	0.0	15.0	12.2	27.2	52.8	25.6
Total 2003		3,562.6	3,803.5	1,186.3	1,584.9	2,150.6	10,335.5	2,920.9	17,314.7	8,229.6	3,491.3	930.1	310.6	1,075.3	5,807.3	1,473.9	3,996.8	2,743.2	6,740.0	25,544.3	18,804.3