

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

(Data Collected for Calendar-Year 2005)

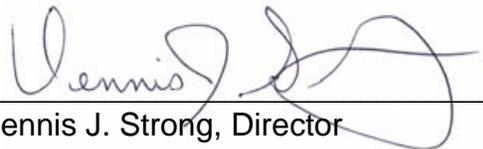
Prepared by

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

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Dennis J. Strong, Director

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EXECUTIVE SUMMARY

The purpose of this report is to document the municipal and industrial (M&I) water system supplies and uses within the Uintah Basin during the calendar year of 2005. These water systems deliver culinary (potable) and/or secondary (non-potable) water and have been separated into four categories, as defined on page 18 of this report. The four categories are public community, public non-community, self-supplied industrial and private domestic water systems. Water supplies, under the current hydrologic and each systematic condition, are evaluated for only potable water service in public community water systems.

The base data for both water supply and uses of public community water systems was provided by each of the water systems. Data for the other categories of water systems was compiled by also using various other agencies and references.

M&I water uses, for the basin, were then totaled and tabulated by county. These five counties, Daggett, Duchesne, Uintah and portions of Summit and Wasatch are contained within the Uintah Basin.

Public Community Water Systems

Of the aforementioned categories, public community systems serve about 95 percent of all residents in the State of Utah. Within the Uintah Basin, approximately 96 percent of the population is served by 23 public community water systems. Refer to **Figure 3** on page 6 for a location map of these systems, as well as the general boundaries of the basin.

For planning purposes, accurate and detailed current water use and supply information is invaluable in determining the ability of the basin to meet future water demands. The Division of Water Resources (DWRe) uses the annual reliable potable water supply, as defined on page 9, as a tool to quantify the amount of water that can be delivered by each public community water system to satisfy current and projected peak day demands with present water supply conditions.

In the Uintah Basin, it was determined that the current annual reliable potable water supply is 47,467 acre-feet. Springs account for 25 percent, wells 14 percent and surface water sources 60 percent of this supply. The breakdown of this supply is presented in the following **Table I**.

Table I
UINTAH BASIN
Reliable Potable Water Supply for Public Community Systems
(Acre-Feet/Year)

| County | Springs | Wells | Surface | Total |
|---------------------|-----------------|----------------|-----------------|-----------------|
| Daggett | 290.0 | 1,461.0 | 645.2 | 2,396.2 |
| Duchesne | 773.4 | 3,690.0 | 4,480.0 | 8,943.3 |
| Summit | 0.0 | 0.0 | 0.0 | 0.0 |
| Uintah | 10,315.0 | 1,488.1 | 24,324.0 | 36,127.0 |
| Wasatch | 0.0 | 0.0 | 0.0 | 0.0 |
| Basin Totals | 11,378.4 | 6,639.0 | 29,449.2 | 47,466.6 |

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

M&I water use, within these systems, can be subdivided by two types of water: potable (culinary) and non-potable (secondary). Potable water is delivered by the public community system itself. However, secondary water can be delivered not only by the system, but also by separate irrigation companies, exclusively in some locations.

Table II, on the following page, shows public community system water use data for both potable and non-potable categories within the Uintah Basin. Categorically, the percentage of total water use is 20% residential indoor, 40% residential outdoor, 11% commercial, 21% institutional, and 8% light industrial/stockwatering.

TABLE II
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 | 78.8 | 1,086.9 | 0.0 | 2,146.8 | 0.0 | 3,312.5 |
| Residential Outdoor | 196.4 | 1,487.7 | 0.0 | 2,826.2 | 0.0 | 4,510.3 |
| Commercial | 196.6 | 540.4 | 0.0 | 1,054.5 | 0.0 | 1,791.5 |
| Institutional | 98.8 | 617.8 | 0.0 | 1,378.9 | 0.0 | 2,095.5 |
| Industrial/Stockwater | 7.1 | 1,071.3 | 0.0 | 312.3 | 0.0 | 1,390.7 |
| Total Potable | 577.6 | 4,804.1 | 0.0 | 7,718.6 | 0.0 | 13,100.4 |
| Secondary Use | | | | | | |
| Residential | 11.6 | 480.9 | 0.0 | 1,196.1 | 0.0 | 1,688.6 |
| 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 | 1,020.1 | 0.0 | 1,798.1 | 0.0 | 2,910.8 |
| TOTAL WATER USE | 670.2 | 5,824.2 | 0.0 | 9,516.7 | 0.0 | 16,011.1 |

In general, and specifically for this report, all per capita water use figures refer to the water use within public community water systems only. Out of a total basin population of 42,330 in 2005, 40,690 people were served by the public community systems. For these systems, residential potable per capita water use calculates to 172 gallons per capita per day (gpcd). Similarly, non-potable residential water use calculated to 37 gpcd. The resultant total per capita water use is 209 gpcd for residential purposes within the public community systems of the basin. With the addition of water use in the commercial, institutional and industrial categories, the per capita water use for public community systems is 287 gpcd for potable and 64 gpcd for non-potable water, for an overall water use of approximately 351 gpcd. Comparatively, in 2005, the statewide average per capita water use was 190 gpcd potable and 70 gpcd non-potable, for a total of 260 gpcd.

Dry summer months, a long growing season and comparatively large lot sizes, in this basin, greatly increase the outside watering requirements compared with the more densely populated basins along the Wasatch Front. Additionally, secondary (non-potable) water comprises a relatively high percentage of the residential and

institutional outdoor use. Considering that secondary water is rarely metered, its use tends to far exceed outdoor watering needs. Combined, these factors all contribute to the above average per capita water use, in this basin. The per capita water use values for various combinations of categories and types of water are shown in the following **Table III**.

**TABLE III
UINTAH BASIN
Average Per Capita Use**

| CATEGORY | Average Per Capita Use (Ac-Ft/Yr) | Average Per Capita Use (GPCD) |
|----------------------------------------|-----------------------------------|-------------------------------|
| Residential Potable Use | 0.192 | 172 |
| Residential Potable Plus Secondary Use | 0.234 | 209 |
| Total Potable Use | 0.322 | 287 |
| Total Potable Plus Secondary Use | 0.393 | 351 |
| | | |

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

Total M&I Water Use

Table IV, on the following page, shows the total potable and non-potable M&I water use for all system types in the Uintah Basin for the year 2005. As can be seen, public community systems deliver the majority of the potable water used within the basin. However, as in this basin, self-supplied industries can also use significant amounts of water. The table indicates that the total potable M&I water use in 2005 was 23,944 acre-feet. Total non-potable M&I water use in 2005 for the basin was 2,941 acre-feet. Therefore, total M&I water use for all system categories and types of water in 2005, for the Uintah Basin, was 26,885 acre-feet.

**TABLE IV
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 | 577.6 | 4,804.1 | 0.0 | 7,718.6 | 0.0 | 13,100.4 |
| Public Non-Community Systems | 14.7 | 29.5 | 3.0 | 6.8 | 52.8 | 106.9 |
| Self-Supplied Industries | 0.0 | 0.0 | 0.0 | 10,607.5 | 0.0 | 10,607.5 |
| Private Domestic | 6.3 | 101.0 | 0.0 | 22.0 | 0.0 | 129.3 |
| Total Potable | 598.6 | 4,934.6 | 3.0 | 18,355.0 | 52.8 | 23,944.0 |
| Secondary Use | | | | | | |
| Secondary Irrigation Companies | 92.6 | 1,020.1 | 0.0 | 1,798.1 | 0.0 | 2,910.8 |
| 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 | 1,044.1 | 0.0 | 1,804.1 | 0.0 | 2,940.8 |
| TOTAL WATER USE | 691.2 | 5,978.7 | 3.0 | 20,159.1 | 52.8 | 26,884.8 |

M&I Water Deliveries and Depletions

On the following page, **Table V** shows both the deliveries and depletions for all the M&I water in the basin. The information contained in the table is very useful for overall water planning purposes. See pages 20 and 21 for detailed definitions of the terms used. In **Appendix A**, there is a table that contains a breakdown of all the deliveries and depletions of each public community water system, as well as all other categories of water systems, within the basin.

TABLE V
 UINTAH BASIN
 M&I Deliveries and Depletions
 (Acre-Feet/Year)

| County | Deliveries | | | Depletions | | |
|---------------------|-----------------|----------------|-----------------|-----------------|----------------|-----------------|
| | Indoor Use | Outdoor Use | Total | Indoor Use | Outdoor Use | Total |
| Daggett | 270.2 | 421.0 | 691.2 | 160.0 | 280.7 | 440.7 |
| Duchesne | 2,773.0 | 3,205.7 | 5,978.7 | 1,772.3 | 2,137.1 | 3,909.4 |
| Summit | 1.2 | 1.8 | 3.0 | 0.1 | 1.2 | 1.3 |
| Uintah | 14,033.4 | 6,125.8 | 20,159.2 | 11,028.8 | 4,083.9 | 15,112.7 |
| Wasatch | 14.8 | 38.0 | 52.8 | 1.0 | 25.4 | 26.4 |
| Basin Totals | 17,092.5 | 9,792.4 | 26,884.9 | 12,962.2 | 6,528.2 | 19,490.4 |

INTRODUCTION

Authority

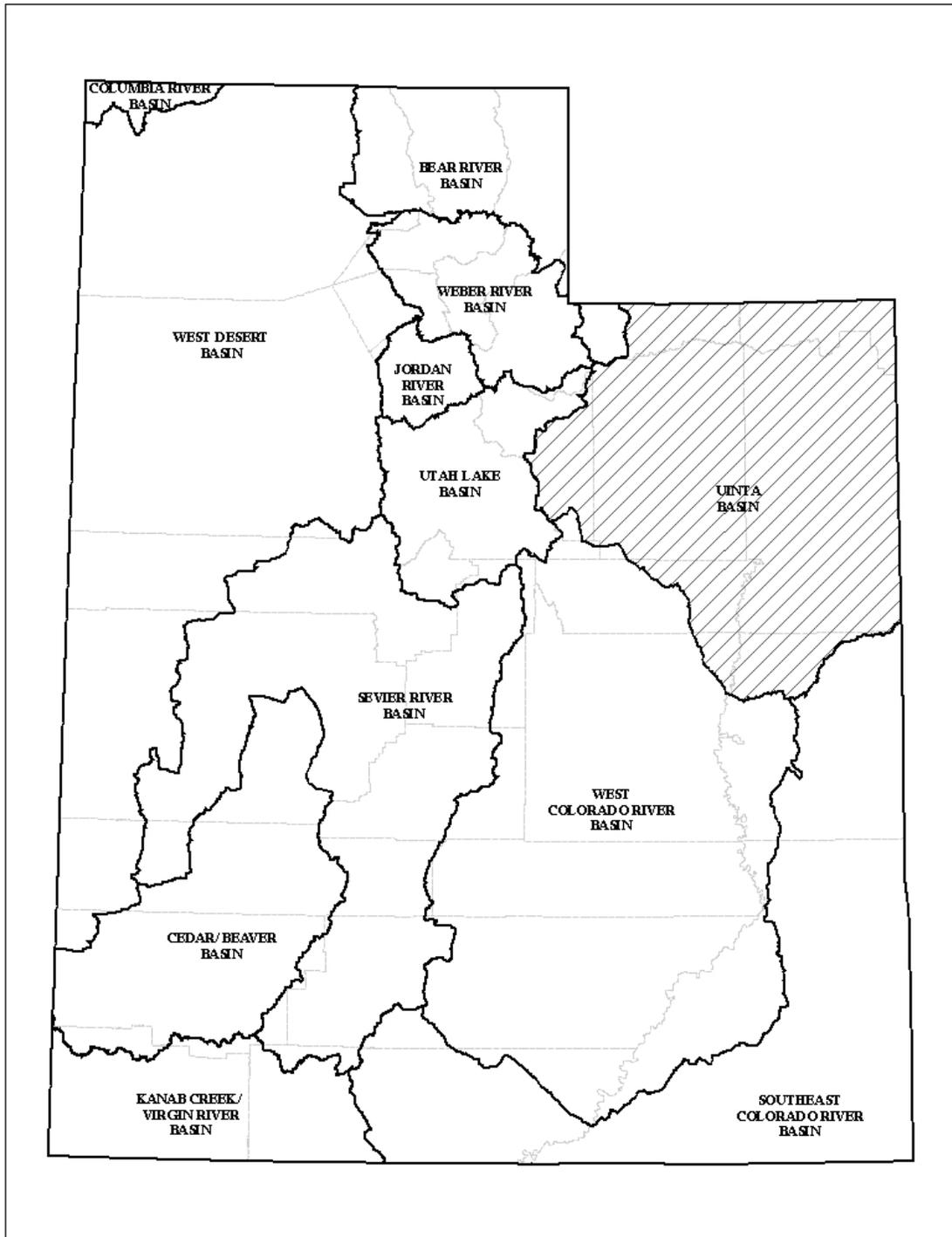
The Utah Division of Water Resources (DWRe) has the overall responsibility for completing studies, investigations, and plans to assist the responsible development and utilization of the water resources of the state of Utah. The State Water Plan, prepared and distributed in early 1990 by the division, 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 2007. The 2005 *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 40,690 people (over 96% of the 42,330 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.

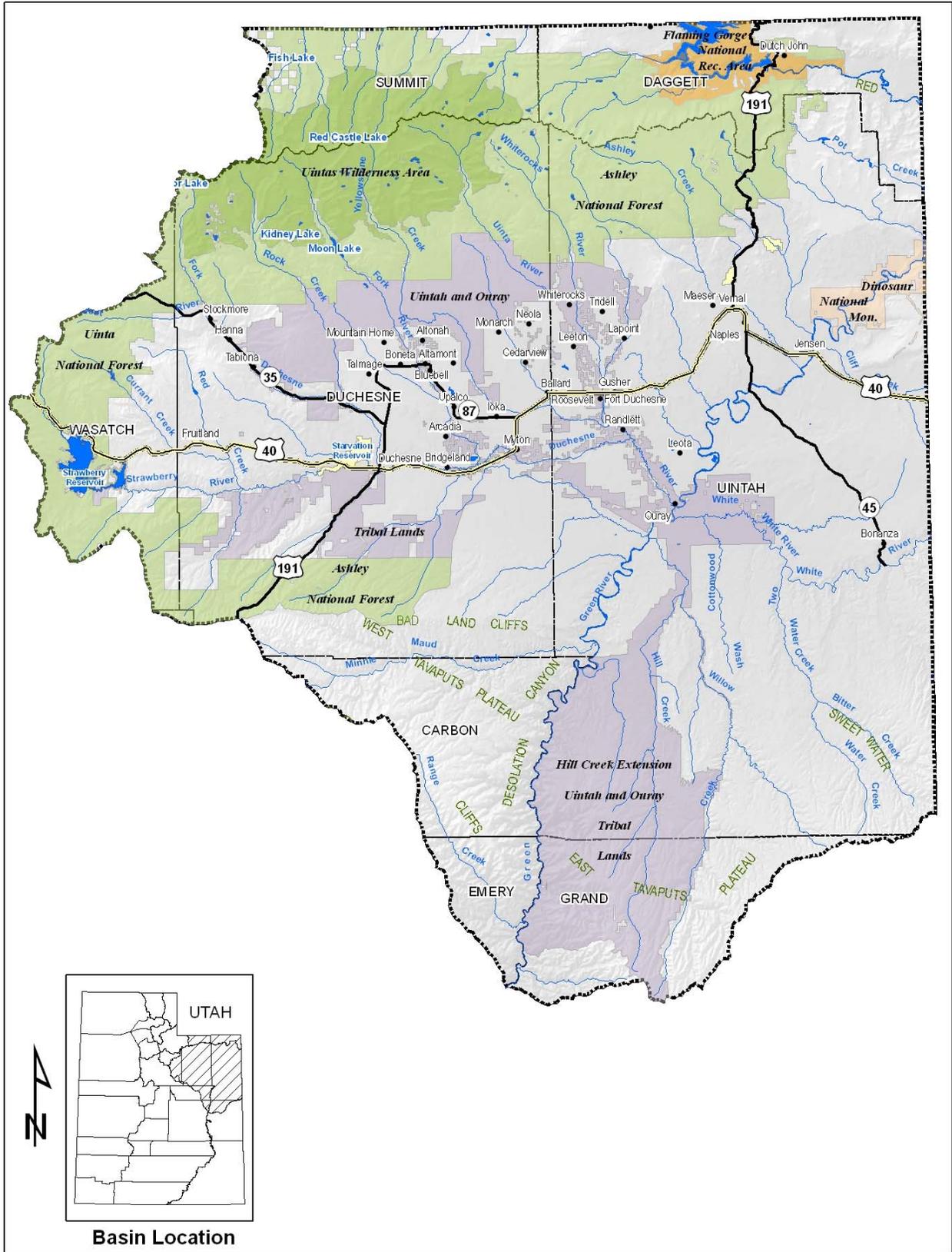
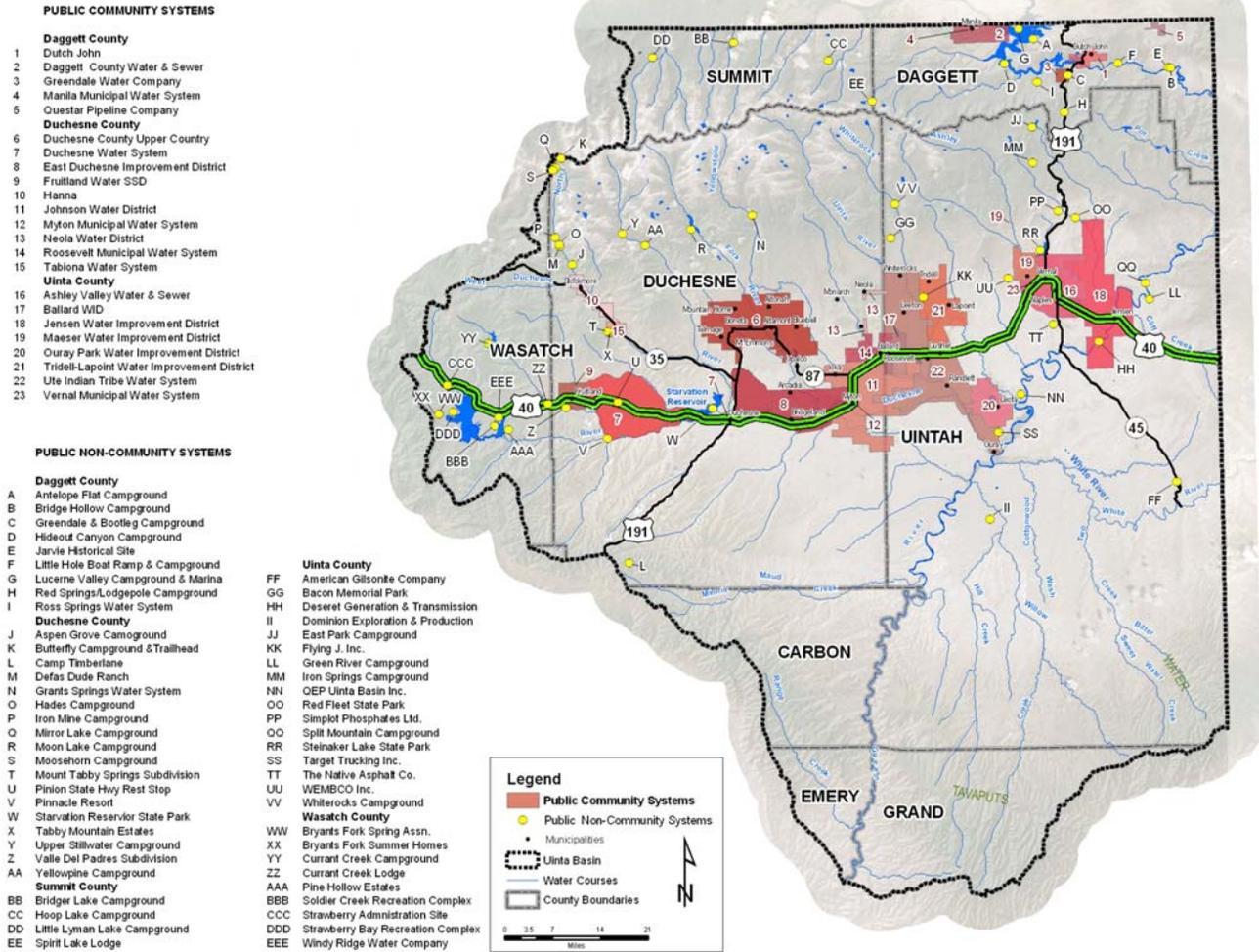


Figure 3. Location of Public Community Systems



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.

Data Collection Methodology for Public 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. 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 developed potable water supply available under present conditions and reliable potable water supply. The maximum developed potable water supply available under present conditions is defined as the water resource that is presently being utilized. 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 legal 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 developed 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 provided by the water supplier.

On page 11, **Figure 4**, 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 total population that a system may 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*). The latter volume is equivalent to the reliable developed potable water supply.

The maximum developed water supply under present conditions is the volume under the upper line (Maximum Water Supply) in **Figure 4**. This amount is a yearly theoretical annual volume based upon a maximum daily flow rate (limited by the water right or system capacity). Consequently, the peak day demand point on the future water use curve (*Future Peak Day Demand*) cannot exceed this upper limit. Due to the fluctuating nature of some sources (particularly springs), and the fact that

most culinary water system storage tanks are designed to store only about one day of water demand, not all of the total maximum developed potable water supply is available to meet future water needs.

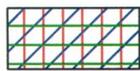
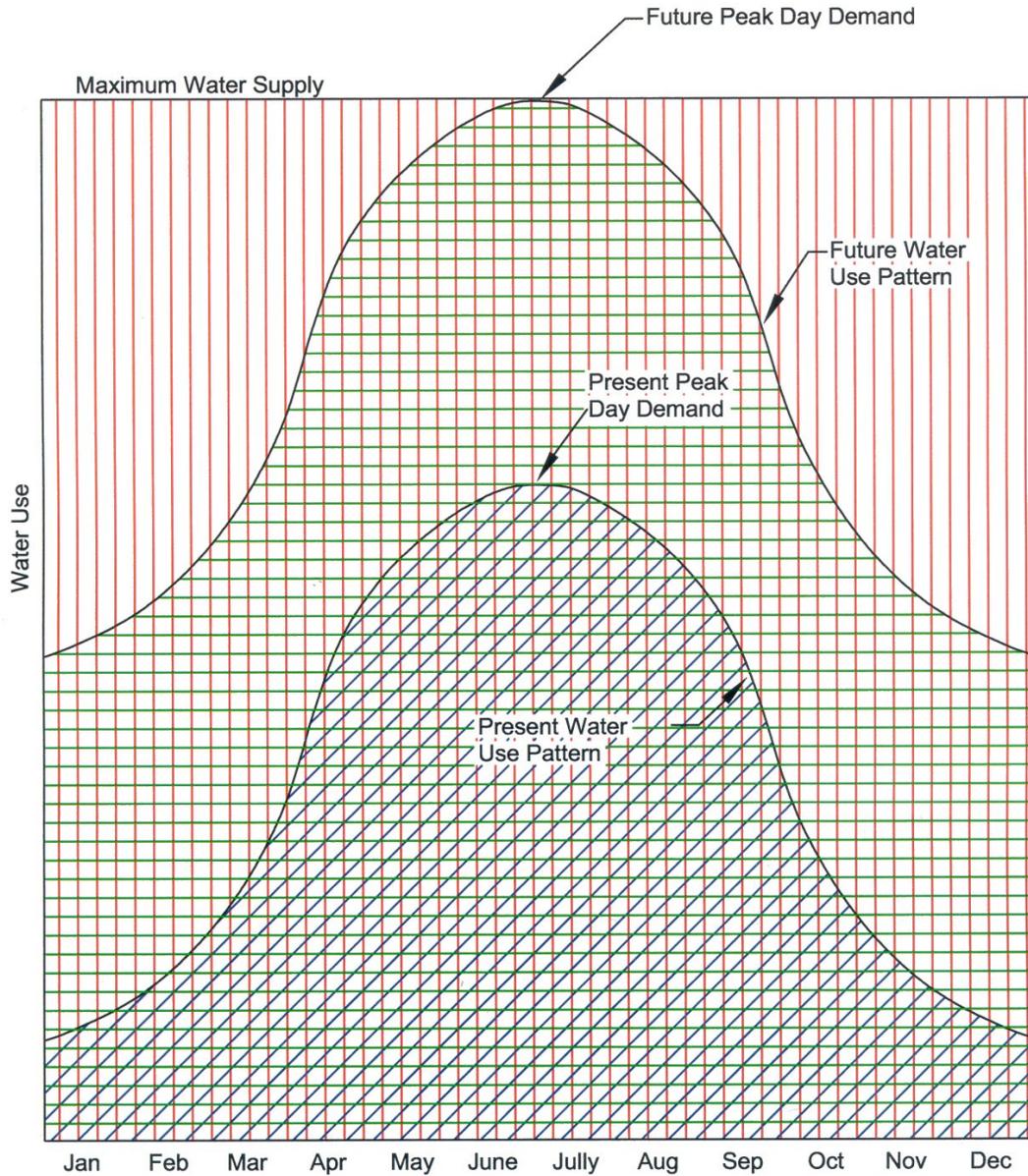
It is important to note that the reliable potable water supply is a theoretical annual volume based upon the current daily peak demand flow rate of any one system, under its current demand conditions. Additional supply may be made available by lowering and/or increasing the size of existing well pumps, pumping existing wells for longer durations, increasing storage capacity and/or distribution pipe sizes. However, being based only on current conditions, these systematic changes may cause operational problems during times of peak demand. Therefore, the DWR uses the reliable potable water supply only as a reference tool to quantify the annual amount of water that can be delivered by each community water system.

For planning purposes, the reliable potable water supply is essential for estimating what population base each system can theoretically support with current demand patterns. It is also a guideline to help predict the approximate timing of future system improvements in order to meet any increase in demand.

Secondary Water

Deliveries of non-potable (secondary) water are an important component of the water use within the boundaries of public community water systems. However, quantifying the available supply of this water is difficult. In Utah, many of the secondary water systems are part of a larger agricultural irrigation system. Hence, the theoretical supply includes both agricultural and M&I water. Currently, separating M&I secondary from agricultural water is mostly estimated, due to the lack of and/or absence of metering, particularly at the level of individual property connections.

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)

With secondary water use becoming more prevalent for outdoor landscaping, estimating the available supply of this water is becoming increasingly more important. **For planning purposes, the DWRe assumes that the supply for M&I secondary irrigation is simply equal to the current 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.

Residential

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 culinary residential water use, indoor and outdoor use are rarely metered separately. Secondary water use is rarely metered. Therefore, the DWRe 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. Since outdoor watering typically does not occur during the winter months, it can be assumed that the water used in winter months is for indoor use only. The winter 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 per capita indoor 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 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

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 DDW 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 the 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. Again, it is typical that 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 (ET) rate with assumed application efficiency percentage. The ET used is indicative of the amount of water, in inches, necessary for turf growth.

Institutional

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. 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, with appropriate efficiencies, are used to calculate the amount of water that is needed to irrigate these areas. Estimates of leakage and water use for testing of system facilities are also included in this category.

Industrial

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 calculated with the same process used to calculate commercial water use data discussed earlier.

Data Collection Methodology for Public Non-Community Water Systems

The 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 the DWRe staff estimate the annual water use. Questions are asked to determine the types of facilities on the system, 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 relatively small, often not available and are therefore not included in this study. However, for planning purposes, the DWRe assumes that the water supply for these systems is equal to their water use.

Data Collection Methodology for Self-Supplied Industrial Water Systems

Although self-supplied industries are included in the Non-Community Water Systems category as defined by the DDW, the DWRe has divided them into a separate category due to their importance. The category is equivalent to the DDW'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. The 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 presented 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. For planning purposes, the DWRe assumes that the water supply for these systems is equal to their water use.

Data Collection 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 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, being relatively small, are not in the scope of this study. Similarly, for planning purposes, the DWRe assumes that the water supply for these systems is equal to their water use.

DEFINITIONS OF WATER TERMS

Water is supplied by a variety of systems for many types of 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, state or federal agency. Thus, a "public" water supply may be either publicly or privately owned and supply treated and/or untreated water.

Water Supply Terms

Maximum Developed 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. (See pages 8-10 for a more detailed explanation)

Reliable Potable Water Supply - The annual volume within the maximum developed 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. (See pages 8-10 for a more detailed explanation)

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.

Types of Water

Potable Water – Includes water meeting all applicable Federal, State, and Local drinking water requirements for residential, commercial, institutional and industrial uses. It is also referred to as culinary water supply.

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

Water System Categories

Public Community Water System - Provides potable and/or non-potable water by either a privately or publicly owned water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. Water from the public community water supplies may be used in both indoor and outdoor applications for residential, commercial, institutional, and industrial purposes.

Public Non-Community Water System - Provides potable and/or non-potable water by either a privately or publicly owned water system of one 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 categorizes industrial non-transient systems as self-supplied industries.

Self-Supplied Industrial System - Provides potable and/or non-potable water for use by individual privately owned industries (usually from their own wells or springs).

Private Domestic System – Provides potable and/or non-potable water from privately owned wells and/or springs for use by individual homes.

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 “delivered” water.**

A table that shows the basin’s M&I water deliveries and depletions is provided in **Appendix B.**

In the previous water supply section, the word “use” can be interchanged with the word “supply” 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.

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, fish and wildlife also consumptively use water.

Deliveries - Water already within a system that is being provided to an individual connection, whether potable or non-potable and/or metered or not. The connection can be for residential, commercial, institutional, and/or industrial uses. **For the purpose of this report, the delivered water amount is equivalent to water use.**

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.

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** on page 6.

As shown in the following **Table 1**, the maximum annual water supply for public community systems in this portion of Daggett County is 4,147 acre-feet: about 14 percent from springs, 70 percent from wells and 16 percent from surface sources in Flaming Gorge Reservoir (Dutch John treatment plant capacity).

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 | 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 (Ac-Ft/Yr) | WELLS (Ac-Ft/Yr) | SURFACE (Ac-Ft/Yr) | CONTRACT PURCHASES (Ac-Ft/Yr) | TOTAL (Ac-Ft/Yr) |
|---------------------------------------|-----------------------|---------------------|-----------------------|-------------------------------------|---------------------|
| Dutch John | 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 579 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 (Ac-Ft/Yr) | | | | | | Service Population | Average Per Capita Water Use (GPCPD) |
|---------------------------------------|--------------------------|---------------------|------------------|---------------------|------------------|--------------|--------------------|--------------------------------------|
| | Residential Indoor | Residential Outdoor | Commercial Total | Institutional Total | Industrial Total | Total M&I | | |
| Dutch John | 12.4 | 34.6 | 15.0 | 54.9 | 0.0 | 116.9 | 140 | 745.5 |
| Daggett County Water and Sewer | 23.0 | 72.4 | 8.5 | 13.0 | 4.9 | 121.7 | 260 | 418.0 |
| Greendale Water Company | 7.1 | 17.9 | 31.7 | 0.0 | 0.0 | 56.7 | 80 | 632.3 |
| Manila Municipal Water System | 35.4 | 70.3 | 141.4 | 20.1 | 0.0 | 267.2 | 400 | 596.3 |
| Questar Pipeline Company (Clay Basin) | 0.9 | 1.1 | 0.0 | 10.8 | 2.3 | 15.1 | 10 | 1,347.1 |
| Totals | 78.8 | 196.4 | 196.6 | 98.8 | 7.1 | 577.6 | 890 | 579.4 |
| A | B | C | D | E | F | G | H | I |

A, B, C, D, E, F, H
G=B+C+D+E+F
J=G*(325,851 gallons per acre-foot)/(365 days per year)/H

Input data.
Potable M&I Water Use.
Average gallons per capita day potable water use

Table 4, below, presents the annual amount of secondary water used for various categories within the boundaries of the public community systems. In Daggett County, both the municipalities and separate irrigation companies deliver secondary water within the boundaries of Daggett County public community systems. Total secondary use is estimated to be about 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 | 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 |

Table 5, below, presents various per capita rates for the public community systems in the Daggett County portion of the Uintah Basin.

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

| Water Supplier | Service Population | Residential Water Use | | | CII Water Use* | | | TOTAL WATER USE | | |
|---------------------------------------|---------------------------|------------------------------|--------------------|------------------|-----------------------|--------------------|------------------|------------------------|--------------------|--------------|
| | | Potable | Non-Potable | Sub Total | Potable | Non-Potable | Sub Total | Potable | Non-Potable | TOTAL |
| Dutch John | 140 | 300 | 0 | 300 | 446 | 0 | 446 | 746 | 0 | 746 |
| Daggett County Water and Sewer | 260 | 328 | 0 | 328 | 90 | 0 | 90 | 418 | 0 | 418 |
| Greendale Water Company | 80 | 279 | 130 | 408 | 354 | 36 | 390 | 632 | 166 | 798 |
| Manila Municipal Water System | 400 | 236 | 0 | 236 | 360 | 45 | 405 | 596 | 45 | 641 |
| Questar Pipeline Company (Clay Basin) | 10 | 181 | 0 | 181 | 1,166 | 0 | 1,166 | 1,347 | 0 | 1,347 |
| DAGGETT COUNTY TOTALS | 890 | 276 | 12 | 288 | 303 | 81 | 385 | 579 | 93 | 672 |

*Commercial, Institutional, and Industrial

The following, **Table 6** indicates water use for public non-community, self-supplied industries 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 Private 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 598 acre-feet, while secondary use is 93 acre-feet; resulting in a total M&I water use of 691 acre-feet.

DUCHESNE COUNTY M&I WATER SUPPLIES AND USES

Duchesne County includes the incorporated communities of Duchesne, Myton, Fruitland, Roosevelt and Tabiona. Within this area are 11 public community systems, 16 public non-community systems and no self-supplied industry. Central Utah Water Conservancy District wholesales water to Starvation Water Users Association which then further distributes the water to the retail user systems of Duchesne, East Duchesne, Myton and Johnson. Roosevelt Municipal Water System wholesales water to Neola Water District as well as providing for its own retail service. Locations of public community systems are shown in **Figure 3** on page 6.

As shown in **Table 7**, the maximum annual potable water supply for public community systems in this portion of Duchesne County is 13,178 acre-feet: 11 percent from springs, 55 percent from wells and 34 percent from surface sources in 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 |
| Hanna W&SID | 0.0 | 40.8 | 0.0 | 40.8 |
| 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 | 7,226.6 | 4,480.0 | 13,178.3 |

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 8,943 acre-feet. The reliable supply is 68% of the maximum supply. A breakdown of this supply is shown below 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 |
| Hanna W&SID | 0.0 | 20.4 | 0.0 | 20.4 |
| 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 | 3,690.0 | 4,480.0 | 8,943.3 |

* 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.

Table 9, on the following page, shows the breakdown of potable water use for each public community system. This table indicates that for Duchesne County, the current annual use of 4,804 acre-feet of water (within the public community systems) is about 54% of the reliable supply.

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

| DUCHESNE COUNTY WATER SUPPLIER | POTABLE USAGE (Ac-Ft/Yr) | | | | | | Service | Gallons |
|------------------------------------------|--------------------------|------------------------|---------------------|------------------------|---------------------|----------------|---------------|-----------------------|
| | Residential Indoor | Residential Outdoor | Commercial Total | Institutional Total | Industrial Total | TOTAL M&I | Population | Per Capita Per Day |
| Central Utah Water Conservancy District | | | | | | | | |
| Starvation Water Users | | | | | | | | |
| Duchesne Water System | 148.5 | 48.5 | 117.0 | 12.0 | 0.0 | 326.0 | 1,880 | 154.8 |
| Myton Municipal Water System | 46.6 | 61.7 | 12.0 | 0.0 | 0.0 | 120.3 | 590 | 182.1 |
| Johnson Water District | 113.0 | 414.1 | 8.2 | 0.2 | 819.1 | 1,354.5 | 1,430 | 845.6 |
| East Duchesne Improvement District | 67.1 | 39.4 | 115.1 | 2.3 | 101.1 | 324.9 | 850 | 341.3 |
| Duchesne County Upper Country WID | 154.8 | 63.0 | 14.5 | 22.8 | 24.7 | 279.9 | 1,960 | 127.5 |
| Hanna W&SID | 16.6 | 1.4 | 0.0 | 0.0 | 0.0 | 18.0 | 210 | 76.5 |
| Fruitland Water Special Service District | 19.0 | 72.3 | 1.9 | 0.6 | 1.4 | 95.1 | 240 | 353.8 |
| Roosevelt Municipal Water Systems** | 430.5 | 748.5 | 255.8 | 580.0 | 124.9 | 2,139.6 | 5,450 | 350.5 |
| Neola Water District | 64.8 | 15.9 | 9.0 | 0.0 | 0.0 | 89.7 | 820 | 97.6 |
| Tabiona Water System | 26.1 | 23.0 | 7.1 | 0.0 | 0.0 | 56.2 | 330 | 151.9 |
| DUCHESNE COUNTY TOTALS | 1,086.9 | 1,487.7 | 540.4 | 617.8 | 1,071.3 | 4,804.1 | 13,760 | 311.7 |
| A | B | C | D | E | F | G | H | I |

A, B, C, D, E, F, H

G=B+C+D+E+F

I=G*(325851 gallons per acre foot)/(365 days per year)/H

**

input data.

Potable M&I Water Use.

Average gallons per capita day potable water use.

Serves a small portion of Uinta County

The following **Table 10** presents the amount of secondary water used in the Duchesne County portion of the Uintah Basin. Various irrigation companies deliver secondary water to customers. Total secondary water use in this area is 1,020 acre-feet.

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

| WATER SUPPLIER | Residential Use | Commercial Use | Institutional Use | Industrial/ Stockwater Use | Public Total Secondary Use |
|------------------------------------------|--------------------|-------------------|----------------------|----------------------------------|-------------------------------------|
| 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 |
| Hanna W&SID | 20.0 | 0.0 | 0.0 | 0.0 | 20.0 |
| 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 | 480.9 | 3.0 | 536.2 | 0.0 | 1,020.1 |

Below in **Table 11** is presented the 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**

| Water Supplier | Service Population | Residential Water Use | | | CII Water Use* | | | TOTAL WATER USE | | |
|------------------------------------------|--------------------|-----------------------|-------------|------------|----------------|-------------|------------|-----------------|-------------|------------|
| | | Potable | Non-Potable | Sub Total | Potable | Non-Potable | Sub Total | Potable | Non-Potable | TOTAL |
| Central Utah Water Conservancy District | | | | | | | | | | |
| Starvation Water Users | | | | | | | | | | |
| Duchesne Water System | 1,880 | 94 | 36 | 130 | 61 | 15 | 76 | 155 | 51 | 206 |
| Myton Municipal Water System | 590 | 164 | 23 | 187 | 18 | 0 | 18 | 182 | 23 | 205 |
| Johnson Water District | 1,430 | 329 | 26 | 355 | 517 | 0 | 517 | 846 | 26 | 871 |
| East Duchesne Improvement District | 850 | 112 | 45 | 156 | 229 | 0 | 229 | 341 | 45 | 386 |
| Duchesne County Upper Country WID | 1,960 | 99 | 55 | 155 | 28 | 132 | 160 | 127 | 187 | 315 |
| Hanna W&SID | 210 | 76 | 85 | 162 | 0 | 0 | 0 | 76 | 85 | 162 |
| Fruitland Water Special Service District | 240 | 339 | 0 | 339 | 14 | 0 | 14 | 354 | 0 | 354 |
| Roosevelt Municipal Water Systems | 5,450 | 193 | 0 | 193 | 157 | 360 | 517 | 350 | 360 | 710 |
| Neola Water District | 820 | 88 | 88 | 176 | 10 | 20 | 30 | 98 | 108 | 206 |
| Tabiona Water System | 330 | 133 | 225 | 358 | 19 | 12 | 31 | 152 | 237 | 389 |
| DUCHESNE COUNTY TOTALS | 13,760 | 167 | 31 | 198 | 145 | 35 | 180 | 312 | 66 | 378 |

Table 12 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. There are no self-supplied industries and only a small number of private domestic wells. All of these uses amount to about 130 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 | | | | | | |
| 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 4,935 acre-feet, while secondary use is 1,044 acre-feet; giving a total M&I water use of 5,978 acre-feet.

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 DWRi. It explains the current general water right regulations in the Uintah Basin with regards to M&I uses. For more details on these areas, please refer: <http://www.waterrights.utah.gov/wrinfo/policy/wrareas/default.asp>.

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.

SUMMIT COUNTY M&I WATER SUPPLIES AND USES

The Summit County portion of the Uintah Basin has no has no incorporated communities, self-supplied industries or private domestic wells. Within this area, there are 4 public non-community systems. The locations of the public non-community systems are shown in **Figure 3** on page 6.

Table 13, below, shows the annual water use for public non-community systems in this portion of the Uintah Basin. This water use amounts to 3 acre-feet of potable water.

**TABLE 13
SUMMIT 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 | | | | | | |
| Bridger Lake Campground | 0.0 | 0.0 | 0.7 | 0.0 | 0.7 | 0.0 |
| Hoop Lake Campground | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 | 0.0 |
| Little Lyman Lake Campground | 0.0 | 0.0 | 1.1 | 0.0 | 1.1 | 0.0 |
| Spirit Lake Lodge | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Total Non-Community Use | 0.0 | 1.0 | 2.0 | 0.0 | 3.0 | 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 |
| SUMMIT COUNTY TOTALS | 0.0 | 1.0 | 2.0 | 0.0 | 3.0 | 0.0 |

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** on page 6. 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 14**, below, the maximum annual water supply for public community systems in this portion of the Uintah Basin is 47,930 acre-feet; about 43% from springs, 6% from wells and 51% from surface water.

**TABLE 14
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 |
| Ouray 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 15**.

TABLE 15
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 16, on the following page, presents the breakdown of the potable water use for each public community system. This table indicates that for Uintah County, the current annual use of 7,719 acre-feet of water (within the public community systems) is about 21% of the reliable water supply.

**TABLE 16
UINTAH COUNTY
Water Use for Public Community Systems**

| UINTAH COUNTY WATER SUPPLIER | POTABLE USAGE | | | | | | Service Population | Gallons Per Capita Per day |
|--------------------------------------------|-----------------------|------------------------|---------------------|------------------------|---------------------|----------------|-----------------------|----------------------------------|
| | Residential Indoor | Residential Outdoor | Commercial Total | Institutional Total | Industrial Total | TOTAL M&I | | |
| Ashley Valley Water & Sewer Impr. District | 835.1 | 799.5 | 157.7 | 932.6 | 20.8 | 2,745.6 | 10,240 | 239.4 |
| Jensen Water Improvement District | 83.2 | 207.1 | 47.3 | 0.0 | 177.2 | 514.8 | 1,020 | 450.5 |
| Maeser Water Improvement District | 231.6 | 208.0 | 12.9 | 26.5 | 9.4 | 488.4 | 2,840 | 153.5 |
| Central Utah Water Conservancy District | | | | | | | | |
| Vernal Municipal Water System | 574.1 | 968.1 | 805.8 | 0.0 | 0.0 | 2,348.0 | 7,040 | 297.7 |
| Tridell-Lapoint Water Improvement District | 85.6 | 189.0 | 0.7 | 40.6 | 71.5 | 387.4 | 1,050 | 329.4 |
| Ute Indian Tribe Water System | 270.2 | 229.8 | 11.8 | 372.8 | 0.0 | 884.6 | 3,030 | 260.6 |
| Ballard Water Improvement District | 51.4 | 191.1 | 18.4 | 6.4 | 21.5 | 288.8 | 630 | 409.2 |
| Ouray Park Water Improvement District | 15.5 | 33.6 | 0.0 | 0.0 | 11.9 | 61.0 | 190 | 286.8 |
| UINTAH COUNTY TOTALS | 2,146.8 | 2,826.2 | 1,054.5 | 1,378.9 | 312.3 | 7,718.6 | 26,040.0 | 264.6 |
| A | B | C | D | E | F | G | H | I |

A, B, C, D, E, F, H

G=B+C+D+E+F

I=G*(325,851gallons per acre-foot)/(365 days per year)/H

input data.

Potable M&I Water Use.

Average gallons per capita day potable water use.

The following **Table 17** presents the annual amount of secondary water used in the Uintah County portion of the Uintah Basin. Total secondary water use in this area of the basin is estimated to be about 1,798 acre-feet.

**TABLE 17
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 '*1'.

Below in **Table 18** is presented the various per capita rates for the public community systems in the Uintah County portion of the Uintah Basin.

**TABLE 18
UINTAH COUNTY
Average Per Capita Water Use
For Public Community Systems**

| Water Supplier | Service Population | Residential Water Use | | | CII Water Use* | | | TOTAL WATER USE | | |
|--------------------------------------------|--------------------|-----------------------|-------------|------------|----------------|-------------|------------|-----------------|-------------|------------|
| | | Potable | Non-Potable | Sub Total | Potable | Non-Potable | Sub Total | Potable | Non-Potable | TOTAL |
| Ashley Valley Water & Sewer Impr. District | 10,240 | 143 | 44 | 186 | 97 | 31 | 128 | 239 | 74 | 314 |
| Jensen Water Improvement District | 1,020 | 254 | 0 | 254 | 196 | 0 | 196 | 451 | 0 | 451 |
| Maeser Water Improvement District | 2,840 | 138 | 91 | 229 | 15 | 0 | 15 | 154 | 91 | 245 |
| Central Utah Water Conservancy District | | | | | | | | | | |
| Vernal Municipal Water System | 7,040 | 196 | 39 | 235 | 102 | 32 | 134 | 298 | 71 | 369 |
| Tridell-Lapoint Water Improvement District | 1,050 | 234 | 0 | 234 | 96 | 0 | 96 | 329 | 0 | 329 |
| Ute Indian Tribe Water System | 3,030 | 147 | 0 | 147 | 113 | 0 | 113 | 261 | 0 | 261 |
| Ballard Water Improvement District | 630 | 344 | 112 | 455 | 66 | 0 | 66 | 409 | 112 | 521 |
| Ouray Park Water Improvement District | 190 | 231 | 87 | 318 | 56 | 0 | 56 | 287 | 87 | 374 |
| UINTAH COUNTY TOTALS | 26,040 | 170 | 41 | 211 | 94 | 21 | 115 | 265 | 62 | 326 |

*Commercial, Institutional, and Industrial

Table 19, 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 acre-feet of potable water and 6 acre-feet of secondary water.

**TABLE 19
 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 deliveries of all systems in this portion of the Uintah Basin is 18,355 acre-feet, while secondary deliveries are 1,804 acre-feet; giving a total M&I water diversion of 20,159 acre-feet.

WASATCH COUNTY M&I WATER SUPPLIES AND USES

The Wasatch County portion of the Uintah Basin includes no incorporated communities. Within this area, there are no public community systems, self supplied industries or private domestic wells. There are 9 public non-community systems. The Strawberry Reservoir area contains 3 of these systems. The locations of the public non-community systems are shown in **Figure 3** on page 6.

Table 20, below, shows the annual water use for public non-community systems in Wasatch County portion of the Uintah Basin. This water use amounts to about 53 acre-feet of potable water.

**TABLE 20
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 |

APPENDIX A

**2005 UINTAH BASIN
M&I DELIVERIES AND DEPLETIONS**

2005 Uintah Basin M&I Deliveries and Depletions Table (Acre-Feet/Year)

| WATER SUPPLIER | Potable Residential Indoor Use | Potable Residential Outdoor Use | Potable Commercial Use | Potable Institutional Use | Potable Industrial/Stockwater Use | Total Potable Use | Total Secondary Water Use | Total Indoor Use | Total Outdoor Use | Residential Indoor Return Flow | Commercial Indoor Return Flow | Institutional Indoor Return Flow | Industrial/Stockwater Return Flow | Total Indoor to Treatment Facility | Pond Evaporation | Facility outflow (Indoor Return Flow) | Outdoor Return Flow | Total Return Flow | Total Deliveries | Total Depletions |
|--------------------------------------------|--------------------------------|---------------------------------|------------------------|---------------------------|-----------------------------------|-------------------|---------------------------|------------------|-------------------|--------------------------------|-------------------------------|----------------------------------|-----------------------------------|------------------------------------|------------------|---------------------------------------|---------------------|-------------------|------------------|------------------|
| DAGGETT COUNTY | | | | | | | | | | | | | | | | | | | | |
| Dutch John Treatment Plant | 12.4 | 34.6 | 15.0 | 54.9 | 0.0 | 116.9 | 0.0 | 35.4 | 81.5 | 12.1 | 11.8 | 10.8 | 0.0 | 34.7 | 34.7 | 0.0 | 27.2 | 27.2 | 116.9 | 89.7 |
| Daggett County Water and Sewer | 23.0 | 72.4 | 8.5 | 13.0 | 4.9 | 121.7 | 0.0 | 37.2 | 84.5 | 22.5 | 6.6 | 2.5 | 0.0 | 31.7 | 26.5 | 3.6 | 28.2 | 31.8 | 121.7 | 90.0 |
| Greendale Water Company | 7.1 | 17.9 | 31.7 | 0.0 | 0.0 | 56.7 | 47.6 | 32.4 | 71.9 | 6.9 | 24.8 | 0.0 | 0.0 | 31.8 | 0.0 | 30.2 | 24.0 | 54.1 | 104.3 | 50.1 |
| Manila Municipal Water System | 35.4 | 70.3 | 141.4 | 20.1 | 0.0 | 267.2 | 45.0 | 152.5 | 159.7 | 34.7 | 110.9 | 3.9 | 0.0 | 149.5 | 75.2 | 66.8 | 53.2 | 120.0 | 312.2 | 192.2 |
| Questar Pipeline Company (Clay Basin) | 0.9 | 1.1 | 0.0 | 10.8 | 2.3 | 15.1 | 0.0 | 5.3 | 9.8 | 0.9 | 0.0 | 2.1 | 0.0 | 3.0 | 0.0 | 2.8 | 3.3 | 6.1 | 15.1 | 9.0 |
| Total Community Systems | 78.8 | 196.4 | 196.6 | 98.8 | 7.1 | 577.6 | 92.6 | 262.9 | 407.3 | 77.2 | 154.1 | 19.4 | 0.0 | 250.6 | 136.5 | 103.4 | 135.8 | 239.2 | 670.2 | 431.0 |
| Non-community Systems | 1.4 | 0.3 | 1.4 | 11.6 | 0.0 | 14.7 | 0.0 | 4.6 | 9.9 | 1.3 | 1.1 | 2.3 | 0.0 | 4.7 | 0.0 | 4.5 | 3.3 | 7.8 | 14.7 | 6.9 |
| Self Supplied Industries | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Private Domestic Systems | 2.5 | 3.8 | 0.0 | 0.0 | 0.0 | 6.3 | 0.0 | 2.5 | 3.8 | 2.5 | 0.0 | 0.0 | 0.0 | 2.5 | 0.0 | 2.3 | 1.3 | 3.6 | 6.3 | 2.7 |
| COUNTY TOTALS | 82.6 | 200.5 | 198.0 | 110.4 | 7.1 | 598.6 | 92.6 | 270.2 | 421.0 | 81.0 | 155.2 | 21.6 | 0.0 | 257.8 | 136.5 | 110.2 | 140.3 | 250.6 | 691.2 | 440.7 |
| DUCHESNE COUNTY | | | | | | | | | | | | | | | | | | | | |
| Central Utah Water Conservancy District | | | | | | | | | | | | | | | | | | | | |
| Starvation Water Users | | | | | | | | | | | | | | | | | | | | |
| Duchesne Water System | 148.5 | 48.5 | 117.0 | 12.0 | 0.0 | 326.0 | 91.4 | 244.5 | 172.9 | 145.5 | 91.7 | 2.4 | 0.0 | 239.6 | 67.2 | 160.5 | 57.8 | 218.1 | 417.4 | 199.3 |
| Myton Municipal Water System | 46.6 | 61.7 | 12.0 | 0.0 | 0.0 | 120.3 | 15.0 | 56.2 | 79.1 | 45.7 | 9.4 | 0.0 | 0.0 | 55.1 | 49.0 | 3.3 | 26.4 | 29.7 | 135.3 | 105.6 |
| Johnson Water District | 113.0 | 414.1 | 8.2 | 0.2 | 819.1 | 1,354.5 | 41.1 | 938.6 | 456.9 | 110.7 | 6.4 | 0.0 | 0.0 | 117.1 | 0.0 | 111.3 | 152.3 | 263.6 | 1,395.6 | 1,132.0 |
| East Duchesne Improvement District | 67.1 | 39.4 | 115.1 | 2.3 | 101.1 | 324.9 | 42.5 | 260.8 | 106.7 | 65.8 | 90.2 | 0.4 | 0.0 | 156.4 | 0.0 | 148.6 | 35.6 | 184.2 | 367.4 | 183.3 |
| Duchesne County Upper Country WID | 154.8 | 63.0 | 14.5 | 22.8 | 24.7 | 279.9 | 253.8 | 195.7 | 338.0 | 151.7 | 11.3 | 4.5 | 0.0 | 167.5 | 0.0 | 159.2 | 112.7 | 271.8 | 533.7 | 261.8 |
| Hanna W&SID | 16.6 | 1.4 | 0.0 | 0.0 | 0.0 | 18.0 | 20.0 | 16.6 | 21.4 | 16.3 | 0.0 | 0.0 | 0.0 | 16.3 | 0.0 | 15.4 | 7.1 | 22.6 | 38.0 | 15.4 |
| Fruitland Water Special Service District | 19.0 | 72.3 | 1.9 | 0.6 | 1.4 | 95.1 | 0.0 | 22.0 | 73.1 | 18.6 | 1.5 | 0.1 | 0.0 | 20.2 | 0.0 | 19.1 | 24.4 | 43.5 | 95.1 | 51.6 |
| Roosevelt Municipal Water Systems** | 430.5 | 748.5 | 255.8 | 580.0 | 124.9 | 2,139.6 | 360.0 | 876.0 | 1,623.6 | 421.9 | 200.5 | 113.7 | 0.0 | 736.1 | 384.2 | 315.1 | 541.2 | 856.3 | 2,499.6 | 1,643.3 |
| Neola Water District | 64.8 | 15.9 | 9.0 | 0.0 | 0.0 | 89.7 | 101.0 | 72.0 | 118.7 | 63.5 | 7.1 | 0.0 | 0.0 | 70.5 | 65.1 | 2.0 | 39.6 | 41.5 | 190.7 | 149.1 |
| Tabiona Water System | 26.1 | 23.0 | 7.1 | 0.0 | 0.0 | 56.2 | 95.3 | 31.7 | 119.7 | 25.5 | 5.5 | 0.0 | 0.0 | 31.1 | 18.1 | 11.4 | 39.9 | 51.3 | 151.4 | 100.1 |
| Total Community Systems | 1,086.9 | 1,487.7 | 540.4 | 617.8 | 1,071.3 | 4,804.1 | 1,020.1 | 2,714.1 | 3,110.1 | 1,065.2 | 423.7 | 121.1 | 0.0 | 1,610.0 | 583.6 | 945.9 | 1,036.7 | 1,982.6 | 5,824.2 | 3,841.6 |
| Non-community Systems | 14.0 | 3.5 | 3.5 | 8.5 | 0.0 | 29.5 | 24.0 | 18.5 | 35.0 | 13.8 | 2.7 | 1.7 | 0.0 | 18.1 | 0.0 | 17.2 | 11.7 | 28.8 | 53.5 | 24.6 |
| Self Supplied Industries | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Private Domestic Systems | 40.4 | 60.6 | 0.0 | 0.0 | 0.0 | 101.0 | 0.0 | 49.4 | 60.6 | 39.6 | 0.0 | 0.0 | 0.0 | 39.6 | 0.0 | 37.6 | 20.2 | 57.8 | 101.0 | 43.2 |
| COUNTY TOTALS | 1,141.3 | 1,551.8 | 543.9 | 626.3 | 1,071.3 | 4,934.6 | 1,044.1 | 2,773.0 | 3,205.7 | 1,118.5 | 426.4 | 122.8 | 0.0 | 1,667.7 | 583.6 | 1,000.7 | 1,068.6 | 2,069.3 | 5,978.7 | 3,909.4 |
| SUMMIT COUNTY | | | | | | | | | | | | | | | | | | | | |
| Non-community Systems | 0.0 | 0.0 | 1.0 | 2.0 | 0.0 | 3.0 | 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 |
| Self Supplied Industries | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| COUNTY TOTALS | 0.0 | 0.0 | 1.0 | 2.0 | 0.0 | 3.0 | 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 |
| UINTAH COUNTY | | | | | | | | | | | | | | | | | | | | |
| Ashley Valley Water & Sewer Impr. District | 835.1 | 799.5 | 157.7 | 932.6 | 20.8 | 2,745.6 | 852.0 | 1,168.6 | 2,429.0 | 818.4 | 123.6 | 182.8 | 0.0 | 1,124.8 | 0.0 | 1,068.6 | 809.7 | 1,878.3 | 3,597.6 | 1,719.3 |
| Jensen Water Improvement District | 83.2 | 207.1 | 47.3 | 0.0 | 177.2 | 514.8 | 0.0 | 298.2 | 216.5 | 81.5 | 37.1 | 0.0 | 0.0 | 118.6 | 0.0 | 112.7 | 72.2 | 184.8 | 514.8 | 329.9 |
| Maeser Water Improvement District | 231.6 | 208.0 | 12.9 | 26.5 | 9.4 | 488.4 | 289.7 | 256.6 | 521.5 | 227.0 | 10.1 | 5.2 | 0.0 | 242.3 | 0.0 | 230.2 | 173.8 | 404.0 | 778.1 | 374.1 |
| Central Utah Water Conservancy District | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Vernal Municipal Water System | 574.1 | 968.1 | 805.8 | 0.0 | 0.0 | 2,348.0 | 559.1 | 1,218.8 | 1,688.3 | 562.7 | 631.7 | 0.0 | 0.0 | 1,194.4 | 0.0 | 1,134.7 | 562.8 | 1,697.4 | 2,907.1 | 1,209.7 |
| Tridell-Lapoint Water Improvement District | 85.6 | 189.0 | 0.7 | 40.6 | 71.5 | 387.4 | 0.0 | 165.8 | 221.6 | 83.9 | 0.5 | 7.9 | 0.0 | 92.4 | 0.0 | 87.8 | 73.9 | 161.6 | 387.4 | 225.8 |
| Ute Indian Tribe Water System | 270.2 | 229.8 | 11.8 | 372.8 | 0.0 | 884.6 | 0.0 | 354.2 | 530.4 | 264.8 | 9.3 | 73.1 | 0.0 | 347.1 | 90.0 | 239.8 | 176.8 | 416.6 | 884.6 | 468.0 |
| Ballard Water Improvement District | 51.4 | 191.1 | 18.4 | 6.4 | 21.5 | 288.8 | 78.8 | 88.9 | 278.7 | 50.4 | 14.4 | 1.3 | 0.0 | 66.0 | 57.4 | 5.3 | 92.9 | 98.2 | 367.5 | 269.3 |
| Ouray Park Water Improvement District | 15.5 | 33.6 | 0.0 | 0.0 | 11.9 | 61.0 | 18.6 | 27.4 | 52.2 | 15.2 | 0.0 | 0.0 | 0.0 | 15.2 | 0.0 | 14.4 | 17.4 | 31.8 | 79.6 | 47.8 |
| Total Community Systems | 2,146.8 | 2,826.2 | 1,054.5 | 1,378.9 | 312.3 | 7,718.6 | 1,798.1 | 3,578.4 | 5,938.3 | 2,103.8 | 826.7 | 270.3 | 0.0 | 3,200.8 | 147.4 | 2,893.4 | 1,979.4 | 4,872.8 | 9,516.7 | 4,643.9 |
| Non-community Systems | 0.6 | 0.2 | 0.0 | 6.1 | 0.0 | 6.9 | 0.0 | 1.8 | 11.1 | 0.6 | 0.0 | 1.2 | 0.0 | 1.8 | 0.0 | 1.7 | 3.7 | 5.4 | 12.9 | 7.5 |
| Self Supplied Industries | 108.8 | 163.2 | 0.0 | 0.0 | 10,335.5 | 10,607.5 | 0.0 | 10,444.3 | 163.2 | 106.6 | 0.0 | 0.0 | 0.0 | 106.6 | 0.0 | 101.3 | 54.4 | 155.7 | 10,607.5 | 10,451.8 |
| Private Domestic Systems | 8.8 | 13.2 | 0.0 | 0.0 | 0.0 | 22.0 | 0.0 | 8.8 | 13.2 | 8.6 | 0.0 | 0.0 | 0.0 | 8.6 | 0.0 | 8.2 | 4.4 | 12.6 | 22.0 | 9.4 |
| COUNTY TOTALS | 2,265.0 | 3,002.8 | 1,054.5 | 1,385.0 | 10,647.8 | 18,355.1 | 1,804.1 | 14,033.4 | 6,125.8 | 2,219.7 | 826.7 | 271.5 | 0.0 | 3,317.9 | 147.4 | 3,004.6 | 2,041.9 | 5,046.5 | 20,159.2 | 15,112.7 |
| WASATCH COUNTY | | | | | | | | | | | | | | | | | | | | |
| Non-community Systems | 5.2 | 1.3 | 0.5 | 45.8 | 0.0 | 52.8 | 0.0 | 14.8 | 38.0 | 5.1 | 0.4 | 9.0 | 0.0 | 14.5 | 0.0 | 13.7 | 12.7 | 26.4 | 52.8 | 26.4 |
| Self Supplied Industries | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| COUNTY TOTALS | 5.2 | 1.3 | 0.5 | 45.8 | 0.0 | 52.8 | 0.0 | 14.8 | 38.0 | 5.1 | 0.4 | 9.0 | 0.0 | 14.5 | 0.0 | 13.7 | 12.7 | 26.4 | 52.8 | 26.4 |
| Basin Community Systems | 3,312.5 | 4,510.3 | 1,791.5 | 2,095.5 | 1,390.7 | 13,100.4 | 2,910.8 | 6,555.4 | 9,455.7 | 3,246.2 | 1,404.5 | 410.7 | 0.0 | 5,061.4 | 867.4 | 3,942.7 | 3,151.9 | 7,094.6 | 16,011.1 | 8,916.6 |
| Total Non-Community Systems | 21.2 | 5.4 | 6.4 | 74.1 | 0.0 | 107.0 | 0.0 | 41.1 | 95.9 | 20.8 | 5.0 | 14.5 | 0.0 | 40.3 | 0.0 | 38.3 | 32.0 | 70.2 | 137.0 | 66.8 |
| Self Supplied Industries | 108.8 | 163.2 | 0.0 | 0.0 | 10,335.5 | 10,607 | | | | | | | | | | | | | | |