

---

---

**Appendix I**  
**Water Supply Assessment**

---

---



May 6, 2004

City of Dixon  
600 East A Street  
Dixon, CA 95620-3697  
Attention: Warren Salmons, City Manager

Subject: Water Supply Assessment for the Northeast Quadrant

Dear Warren:

The City of Dixon requested a Water Supply Assessment (WSA) for the Dixon Downs project and the Northeast Quadrant (NEQ) in general, in a letter to Dixon-Solano Municipal Water Service (DSMWS) dated October 7, 2003. Per Section 10910(g)(1) of the California Water Code, the City Council of the City of Dixon and the Board of Directors of the Solano Irrigation District, as the governing bodies of DSMWS, have approved the WSA at regular meetings. With this letter, DSMWS hereby submits to the City the approved Water Supply Assessment for the Northeast Quadrant, Dixon, California" dated December 24, 2003.

Thank you for your assistance. Please contact me if you need further information.

Sincerely,

James S. Daniels  
DSMWS Engineer

Attachments:

- Water Supply Assessment for the Northeast Quadrant, Dixon, California, dated December 24, 2003.
- Joint Resolution (City of Dixon Resolution No. 04-065, Solano Irrigation District Resolution No. 04-09) Approving the Northeast Quadrant Water Supply Assessment

cc: Suzanne Butterfield  
Paul Fuchslin  
Brian Skaggs  
Marshall Drack  
Ken Giberson



Dixon-Solano Municipal Water Service

**Water Supply Assessment  
for the  
Northeast Quadrant,  
Dixon, California**

**December 24, 2003**

Prepared for DSMWS by:  
Solano Irrigation District  
Engineering Department



Dixon Solano Municipal Water Service  
**Water Supply Assessment for the  
Northeast Quadrant, Dixon, California**

Table of Contents

<b>Introduction</b> .....	4
<b>Project Description</b> .....	4
<b>Requirement for Water Supply Assessment</b> .....	5
<b>Summary of Water Supply and Water Rights</b> .....	5
<b>Groundwater Basin Description</b> .....	6
<b>Groundwater Supply Availability</b> .....	7
Groundwater Monitoring .....	7
Drought Impacts.....	8
<b>Historical DSMWS Groundwater Production</b> .....	8
<b>Documentation of Water Supply</b> .....	9
<b>Demand Analysis</b> .....	10
Statutory Requirements .....	10
Prior Analysis .....	10
<b>Development Rates</b> .....	11
Residential Development Rates .....	11
Commercial and Industrial Development Rates .....	12
Development beyond General Plan Buildout .....	12
<b>Water Demand Rates</b> .....	13
<b>Projected Water Demand</b> .....	13
Normal Water Demand .....	13
Dry Year Water Demand .....	14
<b>Comparison of Water Supply and Demand</b> .....	15
Projected Deliveries and Projected Demand .....	15
Conclusion: Sufficiency of Water Supply .....	15
Qualifications .....	15
<b>References</b> .....	16

## **Figures**

- A. North Central Solano County Groundwater Resources Area Map, being Plate 1 from the 1995 Groundwater Resources Report.
- B. Domestic and Agricultural Well Location Map, being Plate 4.3 of the DSMWS 2000 Water Master Plan

## **Tables**

1. Historical Annual Groundwater Production by DSMWS
2. Historical Annual Groundwater Production by Solano Irrigation District
3. Development Rate Analysis, 1994-2002
4. Non-Residential Development Rate Comparison, 1994-2002
5. Projected Water Demand for the DSMWS Service Area as Buildout
6. Annual Demand Projections
7. Summary of Annual Demand Projections

## **Attachments**

1. Appendix D, "Projected Number of Housing Units in Dixon Based on a 3 Percent Growth Rate, 1996-2030," from the City of Dixon 1993 General Plan.
2. Table 3.2, "Average Daily Demand Rates," from the DSMWS 2000 Water Master Plan
3. "Request for a Water Supply Assessment for Dixon Downs and the Northeast Quadrant (643 acres)"



## **Water Supply Assessment for the Northeast Quadrant**

### **Introduction**

The Northeast Quadrant is a developing portion of the City of Dixon. Please refer to **Figure A** following page 16 of this report. The Northeast Quadrant is located in the Dixon-Solano Municipal Water Service (DSMWS) Service Area. DSMWS received a request from the City of Dixon to provide a Water Supply Assessment pursuant to Water Code §§ 10910-10915 (see Attachment 3). An Environmental Impact Report is being prepared for the Dixon Downs Project, which is a major portion of the Northeast Quadrant, and this assessment will provide information to be used in the EIR for evaluating that project's effects on water supply.

Because DSMWS is not yet serving the amount of water or the number of connections to qualify it as a "public water system" per Water Code § 10617, an Urban Water Management Plan has not yet been prepared for DSMWS. Therefore this Water Supply Assessment must contain more information to substantiate its conclusions than it would if an UWMP were available for reference. Substantial evidence supporting the conclusions in this Water Supply Assessment will be taken from information contained in several reports applicable to DSMWS and its water supplies. References to these documents are noted in the "References" section on page 16.

### **Project Description**

The Northeast Quadrant covers about 643 acres located northeast of central Dixon. This land is currently within the Dixon city limits, but is mostly agricultural land and receives irrigation service from the Solano Irrigation District. All of the development will receive domestic water service from DSMWS.

Planning for the Northeast Quadrant area is established by the City of Dixon's Northeast Quadrant Specific Plan that was adopted in April, 1995. The area is allocated to

commercial, business-professional, industrial and ancillary uses. The Dixon Downs project, which will utilize about 260 acres of the Northeast Quadrant, will include rezoning of the entire site to land uses consistent with those designated in the City of Dixon General Plan and the Northeast Quadrant Specific Plan.

Water use within the Dixon Downs project is estimated to be the same as that of similar uses in the DSMWS system, with an extra demand in the area of the planned horse stables. As required by DSMWS, project developers will fund construction of new water supply facilities adequate to meet the planned water demand in the Northeast Quadrant. Per the DSMWS 2000 Water Master Plan (reference 6 listed on page 16) these will include a 1,500 gpm groundwater deepwell facility, and a facility including another 1,500 gallon deepwell, a one million gallon water storage tank, and a 2,000 gpm booster pump station. Water distribution pipelines and individual services will be constructed per improvement plans conforming to DSMWS standards and approved by DSMWS.

### **Requirement for Water Supply Assessment**

Because the Dixon Downs project is a project subject to CEQA, a Water Supply Assessment (WSA) is required per Water Code § 10910(c)(1). The Dixon Downs project is a "project" per Water Code § 10912(a)(1) because it is a mixed use project that includes elements meeting the criteria of said § 10912 that make a WSA necessary, and because it will demand an amount of water equivalent to or greater than the amount of water required by a 500 dwelling unit project. Because the Dixon Downs project occupies large portion of the Northeast Quadrant, and other major developments are planned (notably the AKT and Flying J properties) that will soon develop the majority of the area, this WSA will address the supply for the entire Northeast Quadrant.

### **Summary of Water Supply and Water Rights**

DSMWS is a joint exercise of powers by the City of Dixon and the Solano Irrigation District to jointly provide water for municipal and industrial uses within the common boundaries of the two entities. It was formed under an agreement signed in 1984 which subjected its

exercise of powers to restrictions upon the manner of exercising such powers pertaining to the District. DSMWS currently supplies and delivers only groundwater within its service area. Per Water Code § 10910(d)(1) the existing water supply entitlements, water supply rights or water service contracts relevant to the DSMWS water supply for the development within the Northeast Quadrant must be identified. A description of the quantities of water received in prior years by DSMWS under the existing water supply entitlements, water supply rights or water service contracts must be included as well.

DSMWS may extract ground water for distribution and sale within its service area under Water Code §§ 22075, 22076 and 22078. Therefore it is not relying on the landowner's rights to extract additional groundwater needed to supply the proposed development. For a description of the quantities of groundwater extracted in prior years by DSMWS, refer to the following section titled "Historical DSMWS Groundwater Production" on page 8.

### **Groundwater Basin Description**

As required by Water Code §10910(f)(2), the following narrative describes the groundwater basin from which the development in the Northeast Quadrant will be supplied. The following information is condensed from the 1988 and 1995 Groundwater Resources Reports (references 1 and 4 listed on page 16). Please refer to **Figure A**, which is Plate 1 from the 1995 Groundwater Resources Report.

The Northeast Quadrant is located northeast of a channel ridge of Putah Creek known as the Dixon Ridge. This puts the Northeast Quadrant in the hydrogeologic area known as the Putah Creek Fan. The water-bearing strata in the Putah Creek Fan underlying Dixon begin at the surface with a geologic layer of older alluvium that is 60 to 130 feet thick. These are the most permeable and productive aquifers in Solano County. Below the older alluvium lie the aquifers in the upper portion of the Tehama formation, which is up to 3,000 feet thick at Dixon. These aquifers are less permeable than the shallower ones, but are thicker and therefore also quite productive. These aquifers are interconnected as evidenced by wells drawing water from different levels having similar water levels in the spring before pumping starts. Recharge to the aquifers in the Putah Creek Fan comes from deep percolation of

precipitation and excess applied surface water on the valley floor, seepage losses from Putah Creek, and from subsurface groundwater flow from Yolo County. The Putah Creek Fan is part of the Solano Subbasin of the Sacramento Valley Groundwater Basin as described in DWR Bulletin 118, "California's Groundwater." This groundwater subbasin has not been identified as being overdrafted or projected to be overdrafted, nor has it been adjudicated.

### **Groundwater Supply Availability**

The safe annual groundwater yield for the Putah Creek Fan was estimated in USGS Water Supply Paper 1464 to be approximately 40,000 acre-feet per year before surface irrigation from the Solano Project began in 1959. This surface irrigation increased the recharge and decreased the pumping. It is reasonable to assume an additional net recharge of approximately 10,000 acre-feet per year has occurred.

Solano Irrigation District currently pumps about 6,000 acre-feet of groundwater annually, and historically has pumped as much as 14,000 acre-feet. Please see **Table 2** and Appendix A of the 1995 Groundwater Resources Report. As recommended in the 1988 Groundwater Resources Report, from 25,000 to 30,000 acre-feet should be pumped annually to augment supplies and avoid water logging of soils in the Putah Fan Area. Therefore it can be assumed that the District could extract an additional average of almost 20,000 acre-feet per year in the Putah Creek Fan.

### Groundwater Monitoring

To protect the groundwater resource in northern Solano County, Solano Irrigation District adopted an A.B. 3030 Groundwater Management Plan in February 1995 (reference 3 listed on page 16). In addition, the City of Dixon and the Solano Irrigation District, among others, participated in the preparation of the 1995 Groundwater Resources Report. The participants in the Report have agreed that groundwater levels will be monitored, and groundwater pumping modified as required to ensure preservation of the groundwater

resource. (See the Recommendations beginning on page 26 in the 1995 Groundwater Resources Report.)

### Drought Impacts

Groundwater level measurements have remained reasonably constant in the Putah Creek Fan since the Solano Project was constructed and surface water supplies delivered to the agricultural lands. There is a tremendous amount of useable water stored in the existing groundwater supply which provides the City of Dixon with a safety factor for needed water supplies during periods of drought. The average specific yield (the volume of water which will drain freely from an aquifer) is estimated at 6% for the Putah Creek Fan. The Putah Creek Fan north and west of Dixon includes an area of approximately 45 square miles. In this area each 10-foot thickness below the groundwater table represents a volume of water of approximately 17,000 acre feet. This groundwater supply is available during drought periods to meet the City of Dixon water supply needs. Groundwater levels will reduce during droughts, but following recent droughts water levels have recovered without any long term impacts.

### **Historical DSMWS Groundwater Production**

Water Code § 10910(f)(3) requires a detailed description and analysis of the amount and location of groundwater pumped by DSMWS for the past five years from the groundwater basin from which the development in the Northeast Quadrant will be supplied. This is to be based on information that is reasonably available including, but not limited to, historic use records.

**Table 1** presents the actual annual water usage by the DSMWS system since 1986. The annual water production data is taken from the DSMWS Reports to the Public Water Supply Branch of the California Department of Health Services. Domestic supply by the two partners in DSMWS (Dixon and SID) began in 1979 but no records exist of how much water was delivered from 1979 to 1986. The DSMWS water supply is entirely from groundwater deepwells, and no surface water supply is currently used. There are four

wells currently in service, all of which are located within the DSMWS Service Area. Please refer to **Figure B**, which is Plate 4.3 of the DSMWS 2000 Water Master Plan, to see the locations of Well No. 1 (at the Industrial Park Facility), Well No. 2 (at the Watson Ranch Facility), Well No. 3 (at the School Well Facility) and Well No. 4 (at the Southpark Facility). Note that **Figure B** shows Well No. 4 as proposed; in fact this well was placed into service in December, 2003.

### **Documentation of Water Supply**

Water Code § 10910(d)(2) requires demonstration that DSMWS has the right to pump groundwater for the development in the Northeast Quadrant by providing information related to several issues, as follows:

- A. Written Proof of Entitlement: As described in the section "Summary of Water Supply and Water Rights" above, DSMWS through its partners (SID and Dixon) has the right to extract and purvey ground water under provisions of the Water Code.
- B. Capital Outlay Program: To finance the delivery of the groundwater supply, DSMWS requires that development projects must include the facilities to supply and distribute water to the new development. This may occur by building facilities or by paying connection fees calculated to pay the cost of the facilities. The terms and conditions are set forth in development agreements between the developers and the City of Dixon on behalf of DSMWS.
- C. Permits for Construction: Water production facilities are exempt from local building and zoning ordinances per Government Code § 53091(c) and (d). (Nonetheless DSMWS obtains permits for them from the City of Dixon and Solano County at no charge for record purposes.)
- D. Required Regulatory Approvals for Conveyance: Since DSMWS is supplying water in accordance with the Water Code, no further regulatory approvals are required for service within its Service Area.

## **Demand Analysis**

### Statutory Requirements

Water Code § 10910(c)(3) requires an analysis of the projected water demand of the Northeast Quadrant. Since an Urban Water Management Plan has not been prepared for DSMWS, the following discussion has been included in this Water Supply Assessment.

The discussion must address several issues:

- A. This discussion must not only address the demand from the Northeast Quadrant, but demands of the existing DSMWS customers, planned future uses, and agricultural and manufacturing uses as well.
- B. This demand analysis must consider the projected 20-year water demand in 5-year increments in order to verify that a sufficient water supply is available for the planned development throughout the whole DSMWS Service Area.
- C. Water use must be segregated into the water use sectors required by the Urban Water Management Planning Act, Water Code § 10631(e)(1).

In the interest of brevity, some information that might be included in an Urban Water Management Plan is not included here. This includes climatological data, population projections and numbers of connections.

### Prior Analysis

The DSMWS 2000 Water Master Plan water demand analysis is based on land uses defined in the City of Dixon 1993 General Plan. Specifically the number of units or acres and historic water usage for each land use is collected and analyzed to determine rates of water usage and development. The General Plan land uses correspond well to the "water use sectors" required by Water Code § 10910(e)(1). Therefore the following data is presented in the same format used in the DSMWS 2000 Water Master Plan.

An annual projection of development and water use was included in the 1995 DSMWS Water Master Plan (reference 5 listed on page 16). While the projection was updated for the 2000 Water Master Plan, it was not included since the updated Plan was to address Buildout conditions only. For this demand analysis, elements of the annual development and water use projections have been updated and condensed to meet the requirements of the Water Code.

## **Development Rates**

To determine the rates at which the General Plan land uses develop, a detailed inventory of existing parcels in the Service Area was prepared. A summary of the information gathered through 1998 is presented as Section 7, "Service Area Inventory," in the 2000 DSMWS Water Master Plan. For this Water Supply Assessment, a summary of the annual increase in development, sorted by land use, and updated to include every parcel in the DSMWS Service Area as of December, 2002, is presented in **Table 3**, "Development Rate Analysis, 1994-2002." The dates on DSMWS meter installation work orders were used to establish when parcels changed from "undeveloped" to "developed." Further analysis has been done as follows.

### Residential Development Rates

Measure "B," passed by voters on April 8, 1986, limits the number of new dwelling units to 3% or less of the number of existing units in the entire city at the end of the previous calendar year. Appendix D of the 1993 General Plan is a projection of the number of housing units in Dixon until 2030, based upon this 3% growth rate. **Attachment 1** to this report is a copy of Appendix D of the 1993 General Plan. The "New Units" column is used verbatim in the "Residential Allocation" row (row 8) of **Table 6** to model the increase in residential units.

The numbers of residential units added each year to the three housing densities (LD, MDL and MDH) are assumed to be in the same proportion as the number of units of each type in



1998. Therefore, of the 147 new units to be added in 1999, 109 are assumed to be Low Density units, 24 are assumed to be Medium Density - Low units, and 15 are assumed to be Medium Density - High units. (See Note 2 on **Table 6** for a small table demonstrating this calculation.)

### Commercial and Industrial Development Rates

**Table 3**, "Development Rate Analysis, 1994-2002," shows the average development rates for the General Plan land uses over the last nine years. These rates are compared with several others in **Table 4**, "Non-Residential Development Rate Comparison, 1994-2002." These other rates include:

- Rates used for the Facility Development Analysis in the DSMWS 1995 Water Master Plan;
- Projections in the City of Dixon 1995 Wastewater Treatment and Disposal Facilities Plan, the 1996 Development Fee Plan and the 1998 Traffic Model; and
- Projections by the City of Dixon Community Development Department.

**Table 4** also lists the non-residential development rates used in **Table 6** of this report. A combination of the growth rates for various commercial and industrial land uses has been used. These rates are six (6) commercial acres per year, fifteen (15) industrial acres per year, and five (5) "other" acres per year. These rates were established in the DSMWS 1995 Water Master Plan (Reference 6) as a reasonable maximum rate, and is close to the high rates from the several City plans and models shown in **Table 4**.

### Development beyond General Plan Buildout

The annual demand projections include all areas within the 1993 General Plan, including the Northeast Quadrant. At the development rates used, several of the General Plan's land uses will be fully developed ("built out") within the General Plan area within the 20-year period of this analysis. For example, the planned residential units will all be built out by approximately 2011 if the maximum number of units allowed by Measure "B" is constructed each year. It is assumed that new areas will be added to the General Plan and annexed to

the City of Dixon, and that development of both residential and non-residential uses will continue in the DSMWS Service Area at the same rates projected for development in the General Plan area. This appears to be a reasonable assumption.

The reader should understand that this implies water demand exceeding the capacity of water supply facilities (wells, tanks and booster pumps) currently planned. When planning for such additional development areas, additional water supply facilities will be required to meet the additional demand. These will be planned in accordance with DSMWS standards and constructed in a timely fashion to meet the increasing water demand. This Water Supply Assessment compares water demand by developed areas with water supply (i.e. groundwater supply), not with the capacity of planned water supply facilities.

### **Water Demand Rates**

Water demand rates in the DSMWS Service Area were established by studying annual water usage records of over 400 water services. This study is presented in Section 3, "Water Demand" and Section 8, "Water Usage Study" in the DSMWS 2000 Water Master Plan. Average usage rates were calculated, and design rates were selected for the several land uses into which the DSMWS Service Area was divided. These rates, called "Average Daily Demand Rates," were summarized in Table 3.2 of the DSMWS 2000 Water Master Plan. Table 3.2 is included in this report as **Attachment 2**. No major changes have occurred in the planned land uses within the DSMWS Service Area that would affect these water demand rates prepared in 1995 and updated in 2000.

### **Projected Water Demand**

#### Normal Water Demand

The water demand projection for the current planned development is based on the analysis of water demand for the General Plan area at buildout that is presented in Table 3.4 of the DSMWS 2000 Water Master Plan. Table 3.4 has been updated in preparation for several demand analyses in connection with planning for service to new developments in Dixon,

including the Northeast Quadrant. A summary of this updated information is presented in **Table 5**, "Projected Water Demand for the DSMWS Service Area at Buildout." However, as noted above in the section titled "Development beyond General Plan Buildout," this Assessment assumes development will continue beyond, and after the buildout of, the General Plan area. Therefore water demands in excess of that of the current General Plan area have been estimated as presented in **Table 6**, "Annual Demand Projections," to comply with the Water Code requirement to analyze for a projected 20-year period.

**Table 6** shows this projected analysis in greater detail, and combines the development and water demand rates to estimate the amount of water needed to serve actual, projected and assumed future development within the DSMWS Service Area through 2024. Lines 4 through 18 in **Table 6** tabulate the annual increase in the number of units demanding water. From the Pre-1994 columns through <sup>April</sup> 2003, actual numbers are used.<sup>1</sup> From 2004 through 2024 the increase in the number of units is based on the development rates described previously. The water demand figures are the normal demand averaged over a one year period stated in acre-feet per year for each land use. Peak demands, as addressed in the DSMWS 2000 Water Master Plan, are not pertinent to this Assessment.

### Dry Year Water Demand

Demand during "dry" years is conservatively assumed to be the same as during normal years. Review of the DSMWS historical water usage implies that this has happened in the past. Variations in demand due to climate are assumed to be accounted for in the averaging of water usage when calculating the Average Daily Demand Rates shown in **Attachment 2**.

The water demand figures of **Table 6**, in 5-year increments to conform to the Urban Water Management Planning Act format, are presented in **Table 7**, "Summary of Annual Demand Projections."

---

<sup>1</sup> Actual development data through April, 2003 are shown in Table 6 in the First Draft. Data through the end of 2003 will be shown in the Final Draft. The difference is probably negligible for the purposes of this report.

## Comparison of Water Supply and Demand

### Projected Deliveries vs. Projected Demand

All present and future deliveries, as presented in **Tables 6** and **7**, may be provided from the groundwater resource. Per **Tables 6** and **7**, by 2024 the water demand is estimated to be approximately 7,500 acre-feet per year. Annual production of groundwater from the basins underlying the planned and future DSMWS Service Area may be increased by approximately 10,000 to 15,000 acre-feet. Assuming that new water supply facilities (wells, etc.) are constructed as development occurs, there is sufficient groundwater available to meet the water demands of new development.

### Conclusion: Sufficiency of Water Supply

The groundwater basin used by DSMWS is in no apparent overdraft condition and can provide enough water without exceeding its safe yield to serve the development proposed for the remainder of the DSMWS service area outlined in the DSMWS Water Master Plan. This includes the Northeast Quadrant.

Based on the analysis above, we conclude that there is a sufficient water supply to meet the demands of the Northeast Quadrant as well as the other proposed and assumed future developments and other water users within the DSMWS Service Area for the next 20 years and more.

### Qualifications

This Water Supply Assessment is prepared solely for the purpose of complying with Water Code §§ 10910-10915. Pursuant to Water Code § 10914, nothing herein shall be construed to create a right or entitlement to water service or any specific level of water service, nor to impose, expand or limit any duty concerning the obligation of DSMWS to provide certain service to its existing customers or to any future potential customers, or to modify or otherwise change existing law with respect to projects which are not subject to

Water Code §§ 10910-10915. Provision of water service by DSMWS will be based on compliance with development requirements, terms and conditions established by DSMWS.

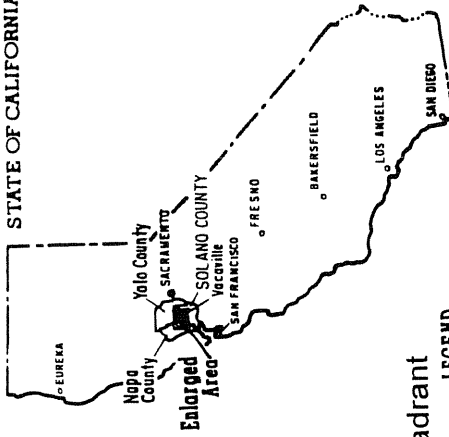
## References

1. Summers Engineering, Inc., Groundwater Resources, June, 1988, prepared for the Solano Irrigation District. This report is referred to herein as the 1988 Groundwater Resources Report.
2. Summers Engineering, Inc., An Updated Plan for the Improvement of the Irrigation Distribution Works, February, 1993, prepared for the Solano Irrigation District. This report is referred to herein as the 1993 R&B Plan.
3. Summers Engineering, Inc., A.B. 3030 Groundwater Management Plan, February, 1995, prepared for the Solano Irrigation District.
4. Summers Engineering, Inc., North Central Solano County Groundwater Resources Report, dated May 16, 1995; prepared for the Solano Water Authority; known herein as the 1995 Groundwater Resources Report.
5. Dixon-Solano Municipal Water Service, Master Plan for the Water Supply and Delivery System through the Year 2010, October, 1995. This report is referred to herein as the DSMWS 1995 Water Master Plan.
6. Dixon-Solano Municipal Water Service, Master Plan for the Water Supply and Delivery System through Buildout, January, 2000. This report is referred to herein as the DSMWS 2000 Water Master Plan.

(Figures, Tables and Attachments follow.)



STATE OF CALIFORNIA



Northeast Quadrant

- LEGEND**
- Solano Irrigation District Boundary
  - County Line
  - Land Grant Boundary
  - Township Line
  - Section Line
  - Interstate Highway
  - State Highway
  - Railroad
  - Airport
  - City
  - Creek, Slough, Canal
  - Hilly and Mountainous Area



SOLANO WATER AUTHORITY  
CALIFORNIA  
WACAVILLE

North Central Solano County Grandwater Re-layout

AREA MAP

SUMMERS ENGINEERING, INC.  
Consulting Engineers  
HANFORD  
CALIFORNIA

FEBRUARY 1995

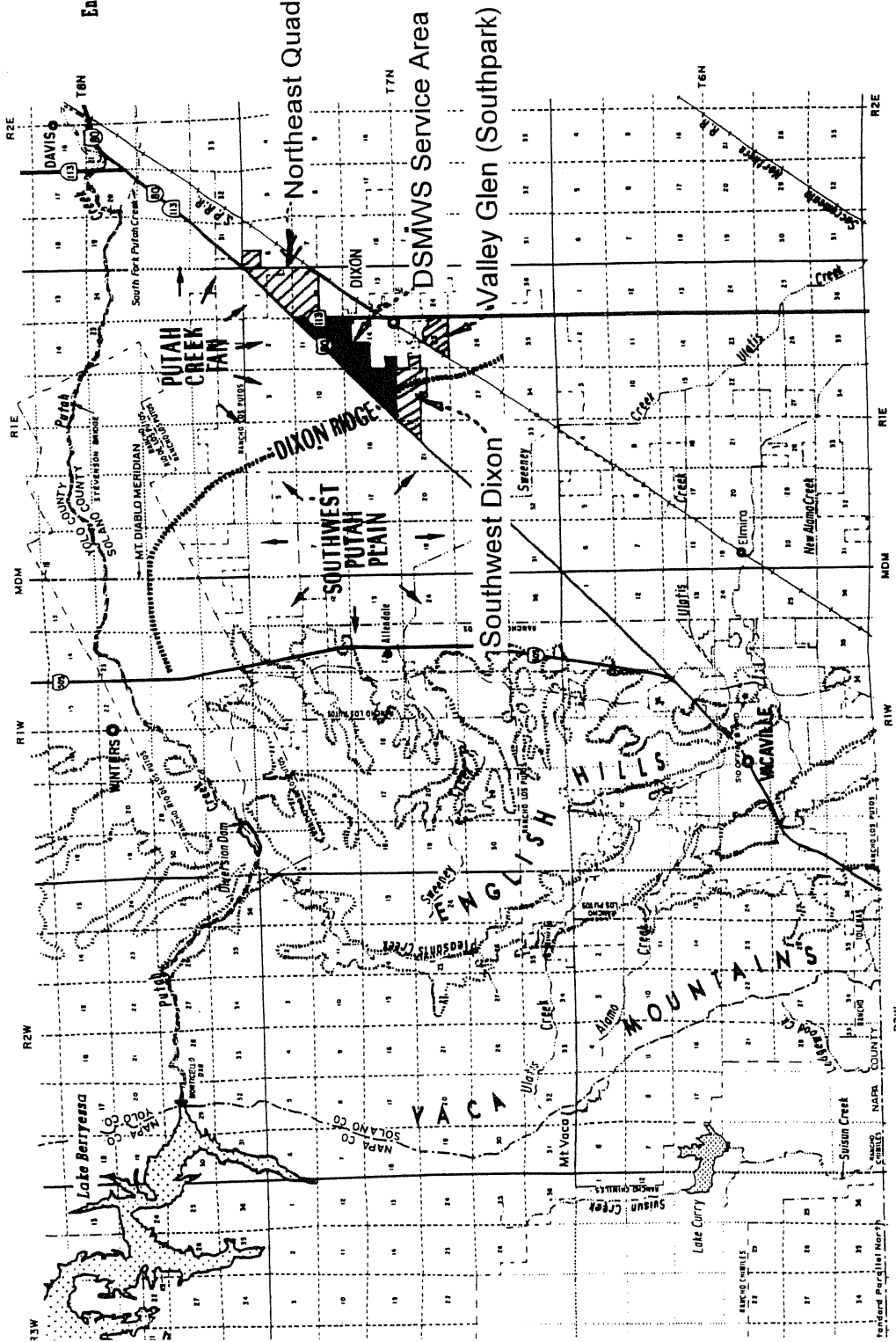


Figure A





DSMWS 2000 Water Master Plan  
DOMESTIC & AGRICULTURAL WELL LOCATION MAP



- DIXON CITY LIMITS
- CALIFORNIA WATER SERVICE AREA
- ▨ NORTH ZONE
- ▩ CORE ZONE
- ▧ SOUTH ZONE
- FUTURE DEVELOPMENT AREAS
- (NS) SERVICE NOT INCLUDED IN 2000 WATER MASTER PLAN
- EXISTING AND PROPOSED DSMWS WELLS
- EXISTING CALIFORNIA WATER SERVICE WELLS
- ▲ EXISTING & PROPOSED SID AGRICULTURAL WELLS

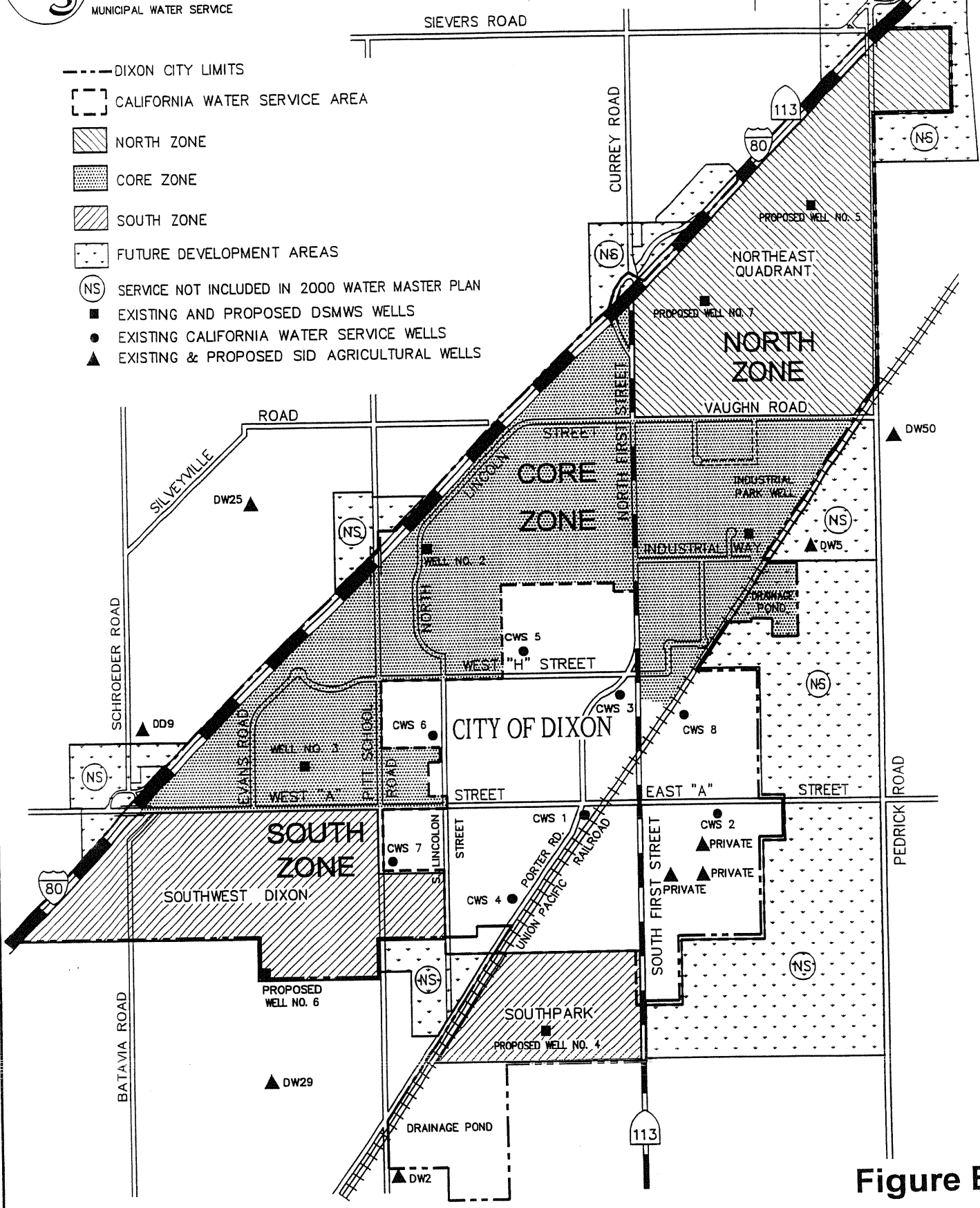


Figure B



**Dixon-Solano Municipal Water Service  
Northeast Quadrant Water Supply Assessment**

**Table 1  
Historical Annual Groundwater Production by DSMWS**

Year	Production	
	Millions of Gallons	Acre-Feet
1979	*	*
1980	*	*
1981	*	*
1982	*	*
1983	*	*
1984	*	*
1985	*	*
1986	*	*
1987	146.03	448
1988	153.03	470
1989	162.92	500
1990	217.26	667
1991	220.31	676
1992	250.00	767
1993	265.10	814
1994	302.29	928
1995	328.82	1,009
1996	376.32	1,155
1997	454.57	1,395
1998	433.09	1,329
1999	541.42	1,662
2000	554.57	1,702
2001	586.82	1,801
2002	600.89	1,844

\* Information for these years is unavailable.

Dixon-Solano Municipal Water Service  
Northeast Quadrant Water Supply Assessment

**Table 2**

Historical Annual Groundwater Production  
by Solano Irrigation District, in acre-feet

Well Number	Irrigation Season			3-Year Averages
	2000	2001	2002	
<b><i>Wells in the Putah Creek Fan</i></b>				
DD 1	0	0	0	
DW 2	439	387	780	
DW 5	184	133	0	
DW 6	0	0	0	
DW 8	383	371	183	
DW 9	346	330	319	
DW 10	0	0	0	
DW 11	0	0	0	
DW 12	158	115	671	
DW 15	201	146	192	
DW 20	739	553	509	
DW 21	8	0	0	
DW 22	164	232	451	
DW 26	512	487	416	
DW 45	361	559	364	
DW 49-A	280	198	455	
DW 49-B	283	271	354	
DW 50	0	970	837	
DW 51	0	0	0	
<b>PCF Subtotals</b>	<b>4,058</b>	<b>4,752</b>	<b>5,531</b>	<b>4,780</b>
<b><i>Wells in the Southwest Putah Plain</i></b>				
DD 2	0	0	0	
DD 3	0	0	0	
DD 4	0	0	0	
DD 5	145	46	15	
DD 6	0	0	0	
DD 7	270	127	148	
DD 8	0	0	0	
DD 9	0	0	0	
DD 10	0	0	0	
DD 11	0	0	0	
DW 1	342	167	568	
DW 27	385	138	200	
DW 29	494	0	392	
DW 35	86	0	13	
DW 36	0	0	0	
DW 39	2	2	2	
<b>SWPP Subtotals</b>	<b>1,724</b>	<b>480</b>	<b>1,338</b>	<b>1,181</b>
<b>Totals</b>	<b>5,782</b>	<b>5,232</b>	<b>6,869</b>	<b>5,961</b>

Dixon-Solano Municipal Water Service  
Northeast Quadrant Water Supply Assessment

**Table 3**  
**Development Rate Analysis**  
**1994-2002**

Data presented below is collected from DSMWS meter installation workorders and Solano County Assessor's Maps.

**RESIDENTIAL, in units**

Land Use:	LD + VLD		MDH		MDL		Total	
	#units	%incr	#units	%incr	#units	%incr	#units	%incr
<b>Planned</b>		3.00%		3.00%		3.00%		3.00%
<b>Actual</b>								
pre-1994	716		101		172		989	
1994	862	20.39%	101	0.00%	197	14.53%	1,160	17.29%
1995	937	8.70%	101	0.00%	286	45.18%	1,324	14.14%
1996	1,095	16.86%	101	0.00%	397	38.81%	1,593	20.32%
1997	1,159	5.84%	101	0.00%	438	10.33%	1,698	6.59%
1998	1,273	9.84%	101	0.00%	457	4.34%	1,831	7.83%
1999	1,273	0.00%	101	0.00%	457	0.00%	1,831	0.00%
2000	1,273	0.00%	101	0.00%	457	0.00%	1,831	0.00%
2001	1,284	0.86%	101	0.00%	457	0.00%	1,842	0.60%
2002	1,333	3.82%	101	0.00%	457	0.00%	1,891	2.66%

**COMMERCIAL, in acres & acres per year**

Land Use:	HC		CC, NC, O		SC	
	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr
<b>Planned</b>		2.5		1.5		2
<b>Actual</b>						
pre-1994	31.09		15.60		6.61	
1994	33.37	2.28	15.60	0.00	6.61	0.00
1995	34.28	0.91	15.60	0.00	6.61	0.00
1996	35.22	0.94	15.60	0.00	11.00	4.39
1997	38.57	3.35	15.60	0.00	12.29	1.29
1998	42.27	3.70	15.60	0.00	12.29	0.00
1999	47.56	5.29	15.60	0.00	12.29	0.00
2000	55.94	8.38	17.45	1.85	12.29	0.00
2001	55.94	0.00	17.45	0.00	12.29	0.00
2002	63.87	7.93	17.45	0.00	12.29	0.00
<b>9 years</b>	<b>32.78</b>	<b>3.64</b>	<b>1.85</b>	<b>0.21</b>	<b>5.68</b>	<b>0.63</b>

**INDUSTRIAL & OTHER, in acres & acres per year**

Land Use:	Industrial		G		P		S		L/S	
	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr	Acres	Ac/yr
<b>Planned</b>		15		0.5		1.5		2		1
<b>Actual</b>										
pre-1994	92.57		4.66		28.87		4.30		3.53	
1994	92.57	0.00	4.66	0.00	28.87	0.00	4.30	0.00	3.53	0.00
1995	95.01	2.44	4.66	0.00	28.87	0.00	4.30	0.00	3.53	0.00
1996	95.01	0.00	4.66	0.00	28.87	0.00	4.30	0.00	3.53	0.00
1997	120.52	25.51	4.66	0.00	32.47	3.60	4.30	0.00	9.09	5.56
1998	120.52	0.00	4.66	0.00	40.95	8.48	4.30	0.00	9.09	0.00
1999	136.35	15.83	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
2000	158.91	22.56	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
2001	224.65	65.74	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
2002	227.88	3.23	4.66	0.00	40.95	0.00	4.30	0.00	9.09	0.00
<b>9 years</b>	<b>135.31</b>	<b>15.03</b>	<b>0.00</b>	<b>0.00</b>	<b>12.08</b>	<b>1.34</b>	<b>0.00</b>	<b>0.00</b>	<b>5.56</b>	<b>0.62</b>

Dixon-Solano Municipal Water Service  
Northeast Quadrant Water Supply Assessment

**Table 4**  
**Non-Residential Development Rate Comparison**  
**1994-2002**

Line	Information Source	Land Use								
		Commercial				Ind. ML, MH, GI	Other			
		CH	CN, PD, PAO	CS	Total		G	P	L/S	S
1	DSMWS									
2	Assumed development rate	2.50	1.50	2.00	6.00	15.00	0.50	1.50	1.00	2.00
3	1995 Water Master Plan									
4	Low development rate	1.00	0.50	1.50	3.00	2.00	0.20	0.50	0.50	1.00
5	High development rate	2.00	1.50	1.50	5.00	15.00	0.50	1.50	1.00	2.00
6	1994-2002 Average (see Table 2)	3.64	0.21	0.63	4.48	15.03	0.00	1.34	0.62	0.00
7	City of Dixon Data									
8	Planning Department									
9	12-year Historical Growth Rate				4.00	6.00				
10	Average-Growth Estimate				7.00	11.00				
11	Aggressive-Growth Estimate				12.00	15.00				
12	Wastewater Treatment Facilities Plan (1995)									
13	Low growth rate				2.00	2.00				
14	Average growth rate				3.50	8.50				
15	High growth rate				5.00	15.00				
16	Development Fee Plan (1996)									
17	30% coverage ratio				5.00					
18	40% coverage ratio					17.80				
19	Traffic Model (1998)									
20	30% coverage ratio				5.00					
21	40% coverage ratio					17.80				

Notes

(1) Only non-residential rates are compared. Residential development is limited per Measure B.

**Dixon-Solano Municipal Water Service  
Northeast Quadrant Water Supply Assessment**

**Table 5  
Projected Water Demand  
for the DSMWS Service Area at Buildout**

Service Area Zone	Annual Average Demand	
	gallons per minute	acre-feet
Core Zone	1,886	3,042
South Zone		
Southpark (Valley Glen)	238	384
Additional Area	3	5
Southwest Dixon	648	1,045
North Zone	1,306	2,107
<b>Total</b>	<b>4,081</b>	<b>6,583</b>

This table is based on Table 3.4 in the DSMWS 2000 Water Master Plan. It includes updated unit, acreage and water demand data from the developers of Valley Glen, Southwest Dixon and Dixon Downs.

**Dixon-Solano Municipal Water Service  
Northeast Quadrant Water Supply Assessment**

**Table 6  
Annual Demand Projections**

**General Notes**

- (1) The existing number of Dwelling Units (DU) and acres of each land use designation (LUD) through 1998 are tabulated in Water Master Plan Section 7, Table 7.1. This data has been updated through 2002 in this table. These figures have been updated in 2003 for the Core Zone Demand Analysis and the Water Supply Assessments for Southwest Dixon and the Northeast Quadrant.
- (2) The number of new Dwelling Units (DU) is given in projections from the City of Dixon Planning Department. They are based on the Measure "B" 3% Annual Growth Limitation. All growth is assumed to occur in the DSMWS Service Area. The allocation of these yearly figures to each of the three residential land uses is proportional to the number of existing units in each LUD in 1998. For example:

L.U.D.	1998 Data		# UNITS 1999	# UNITS 2000
	No. of Units	Proportion		
LD + VLD	1223	73.94%	109	112
MDL	267	16.14%	24	24
MDH	164	9.92%	15	15
<b>TOTAL</b>	<b>1,654</b>	<b>100.00%</b>	<b>147</b>	<b>151</b>

The proportion of residential land uses is virtually unchanged from 1994. This relationship holds true until buildout of any of the three land uses occur. Thereafter, the entire allocation is allotted to the remaining residential land uses within the area covered by the 2000 Water Master Plan only, until full buildout occurs

- (3) Development rates of non-residential areas, in acres/year, are assumed to be as follows. They are from Table 4, Line 2.

<b>Commercial</b>	
CH	2.5
CN, PD, PAO	1.5
CS	2.0
<b>Total Commercial:</b>	<b>6.0</b>
<b>INDUSTRIAL</b>	<b>15.0</b>
<b>Other</b>	
GOVERNMENTAL/INSTITUTIONAL	0.5
PARKS	1.5
SCHOOLS	2.0
LANDSCAPING	1.0
<b>Total Other:</b>	<b>5.0</b>
<b>Grand Total:</b>	<b>26.0</b>

- (4) Annual Average Demand, AAD, in acre-feet = (Total DU or acres) x (ADD Demand rate in gpd/DU or gpd/acre per 2000 Water Master Plan Table 3.2) x (365 days/year) / (325,851 gallons per acre/foot).



**Table 6**  
**Annual Demand Projections**

Calendar Year	Pre-1994			1994			1995		
	Exist. (1)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)
1									
2									
3									
4	<b>Residential</b>								
5	LD + VLD	736	736	146	882	593	75	957	643
6	MDL	171	171	25	196	105	89	285	153
7	MDH	166	166	0	166	74	0	166	74
8	<i>Residential Allocation</i>	1,073	1,073	171	1,244		164	1,408	
9	<b>Non-Residential</b>								
10	CH	1473	1473	228	1701	91	0.91	1792	96
11	CN, PD, PAO	1377	1377	0.00	1377	44	0.00	1377	44
12	CS	519	519	0.00	519	17	0.00	519	17
13	Industrial (ML, MH, GI)	8774	8774	0.00	8774	142	244	9018	145
14	Governmental/Institutional	0.62	0.62	0.84	1.46	5	0.00	1.46	5
15	Parks	2397	2397	0.00	2397	77	0.00	2397	77
16	Schools	920	920	0.00	920	59	0.00	920	59
17	Landscaping	372	372	0.00	372	24	0.00	372	24
18	<b>Total Non-Residential</b>	15894	15894	312	16206		335	16541	
19	<b>Water Demand</b>								
20	Annual Average Demand (AAD) (4) af/yr					1232			1339
21	Actual Delivery per DWR Annual Reports					928			1009
22	Actual as a percentage of Projected					75%			75%
23									

Note: Years 1994 to 2003 are shaded signifying historical data is shown.

Dixon-Solano Municipal Water Service  
 Northeast Quadrant Water Supply Assessment

**Table 6**  
**Annual Demand Projections**

1	Calendar Year		1996		1997		1998	
	Land Use Designation (LUD)	Unit	New (2,3)	Total	New (2,3)	Total	New (2,3)	Total
4	<b>Residential</b>							
5	LD + VLD	DU	133	1,090	87	1,177	139	1,316
6	MDL	DU	108	393	41	434	19	453
7	MDH	DU	0	166	0	166	0	166
8	<i>Residential Allocation</i>	DU	241	1,649	128	1,777	158	1,935
9	<b>Non-Residential</b>							
10	CH	Acres	0.94	1,886	1.62	20.48	2.73	23.21
11	CN, PD, PAO	Acres	0.00	13.77	0.00	13.77	0.00	13.77
12	CS	Acres	6.36	11.55	1.69	13.24	0.00	13.24
13	Industrial (ML, MH, GI)	Acres	0.00	90.18	23.16	113.34	0.00	113.34
14	Governmental/Institutional	Acres	0.00	1.46	2.90	4.36	0.06	4.42
15	Parks	Acres	0.00	23.97	3.60	27.57	8.48	36.05
16	Schools	Acres	0.00	9.20	0.00	9.20	0.00	9.20
17	Landscaping	Acres	0.00	3.72	5.56	9.28	0.00	9.28
18	<b>Total Non-Residential</b>	Acres	7.30	172.71	38.53	211.24	11.27	222.51
20	<b>Water Demand</b>							
21	Annual Average Demand (AAD) (4)	af/yr		1,512		1,701		1,847
22	Actual Delivery per DWR Annual Reports			1,155		1,395		1,329
23	Actual as a percentage of Projected			76%		82%		72%

**Table 6**  
**Annual Demand Projections**

1	Calendar Year		1999		2000		2001	
	Land Use Designation (LUD)	Unit	New (2,3)	Total (4)	New (2,3)	Total (4)	New (2,3)	Total (4)
4	<b>Residential</b>							
5	LD + VLD	DU	80	1,396	3	1,399	17	1,416
6	MDL	DU	1	454	0	454	0	454
7	MDH	DU	0	166	0	166	0	166
8	<i>Residential Allocation</i>	DU	81	2016	3	2019	17	2036
9	<b>Non-Residential</b>							
10	CH	Acres	326	2647	0.00	2647	0.00	2647
11	CN, PD, PAO	Acres	204	1581	2.78	1859	2.20	2079
12	CS	Acres	0.00	1324	8.93	2217	0.00	2217
13	Industrial (ML, MH, GI)	Acres	4.94	1828	29.64	14782	0.00	14782
14	Governmental/Institutional	Acres	0.00	442	0.00	442	2.52	694
15	Parks	Acres	0.00	3605	0.92	3697	0.00	3697
16	Schools	Acres	0.00	920	0.00	920	10.28	1948
17	Landscaping	Acres	0.71	999	0.00	999	0.00	999
18	<b>Total Non-Residential</b>	Acres	10.95	23346	42.17	27563	15.00	29063
20	<b>Water Demand</b>							
21	Annual Average Demand (AAD) (4)	af/yr		1938		2028		2121
22	Actual Delivery per DWR Annual Reports			1662		1702		1801
23	Actual as a percentage of Projected			86%		84%		85%

Dixon-Solano Municipal Water Service  
 Northeast Quadrant Water Supply Assessment

Table 6  
 Annual Demand Projections

1	Calendar Year		2002		2003		2004	
	Land Use Designation (LUD)	Unit	New (2,3)	Total	New (2,3)	Total	New (2,3)	Total
2								
3								
4	<u>Residential</u>							
5	LD + VLD	DU	53	1,469	58	1,527	126	1,653
6	MDL	DU	0	454	0	454	27	481
7	MDH	DU	0	166	0	166	17	183
8	<i>Residential Allocation</i>	DU	53	2,089	58	2,147	170	2,317
9	<u>Non-Residential</u>							
10	CH	Acres	0.00	26.47	0.00	26.47	2.50	28.97
11	CN, PD, PAO	Acres	0.00	20.79	8.76	29.55	1.50	31.05
12	CS	Acres	0.00	22.17	0.00	22.17	2.00	24.17
13	Industrial (ML, MH, GI)	Acres	16.66	164.48	27.93	192.41	15.00	207.41
14	Governmental/Institutional	Acres	0.00	6.94	0.00	6.94	0.50	7.44
15	Parks	Acres	0.00	36.97	0.00	36.97	1.50	38.47
16	Schools	Acres	0.00	19.48	0.00	19.48	2.00	21.48
17	Landscaping	Acres	0.00	9.99	0.00	9.99	1.00	10.99
18	<b>Total Non-Residential</b>	Acres	16.66	307.29	36.69	343.98	26.00	369.98
20	<b>Water Demand</b>							
21	Annual Average Demand (AAD) (4)			2,184				2,478
22	Actual Delivery per DWR Annual Reports			1,844				
23	Actual as a percentage of Projected			84%				



Dixon-Solano Municipal Water Service  
 Northeast Quadrant Water Supply Assessment

**Table 6**  
**Annual Demand Projections**

Calendar Year	Land Use Designation (LUD)	Unit	2005			2006			2007			
			New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	
4	<u>Residential</u>											
5	LD + VLD	DU	129	1,782	1,198	134	1,916	1,288	138	2,277	1,530	
6	MDL	DU	28	510	274	29	539	290	30	569	306	
7	MDH	DU	17	200	90	18	218	98	18	237	106	
8	<u>Residential Allocation</u>	DU	175	2492		181	2673		186	3,083		
9	<u>Non-Residential</u>											
10	CH	Acres	2.50	31.47	169	2.50	33.97	183	2.50	36.47	196	
11	CN, PD, PAO	Acres	1.50	32.55	105	1.50	34.05	110	1.50	35.55	115	
12	CS	Acres	2.00	26.17	84	2.00	28.17	91	2.00	30.17	97	
13	Industrial (ML, MH, GI)	Acres	15.00	222.41	359	15.00	237.41	383	15.00	252.41	407	
14	Governmental/Institutional	Acres	0.50	7.94	26	0.50	8.44	27	0.50	8.94	29	
15	Parks	Acres	1.50	39.97	129	1.50	41.47	134	1.50	42.97	139	
16	Schools	Acres	2.00	23.48	151	2.00	25.48	164	2.00	27.48	177	
17	Landscaping	Acres	1.00	11.99	77	1.00	12.99	84	1.00	13.99	90	
18	<u>Total Non-Residential</u>	Acres	26.00	395.98		26.00	421.98		26.00	447.98		
20	<u>Water Demand</u>											
21	Annual Average Demand (AAD) (4) af/yr				2,662			2,851			3,193	
22	Actual Delivery per DWR Annual Reports											
23	Actual as a percentage of Projected											

Dixon-Solano Municipal Water Service  
 Northeast Quadrant Water Supply Assessment

**Table 6**  
**Annual Demand Projections**

1	Calendar Year		2008		2009		2010	
	Land Use Designation (LUD)	Unit	New (2,3)	Total (4)	New (2,3)	Total (4)	New (2,3)	Total (4)
2	<b>Residential</b>							
3	LD + VLD	DU	142	2,419	146	2,565	150	2,715
4	MDL	DU	31	600	32	632	33	665
5	MDH	DU	19	349	20	369	20	389
6	<i>Residential Allocation</i>	DU	192	3,368	197	3,565	203	3,768
7	<b>Non-Residential</b>							
8	CH	Acres	2.50	38.97	2.50	41.47	2.50	43.97
9	CN, PD, PAO	Acres	1.50	37.05	1.50	38.55	1.50	40.05
10	CS	Acres	2.00	32.17	2.00	34.17	2.00	36.17
11	Industrial (ML, MH, GI)	Acres	15.00	267.41	15.00	282.41	15.00	297.41
12	Governmental/Institutional	Acres	0.50	9.44	0.50	9.94	0.50	10.44
13	Parks	Acres	1.50	44.47	1.50	45.97	1.50	47.47
14	Schools	Acres	2.00	29.48	2.00	31.48	2.00	33.48
15	Landscaping	Acres	1.00	14.99	1.00	15.99	1.00	16.99
16	<b>Total Non-Residential</b>	Acres	26.00	473.98	26.00	499.98	26.00	525.98
17	<b>Water Demand</b>							
18	Annual Average Demand (AAD) (4) af/yr			3,430		3,628		3,830
19	Actual Delivery per DWR Annual Reports							
20	Actual as a percentage of Projected							

**Table 6**  
**Annual Demand Projections**

Calendar Year	Land Use Designation (LUD)	Unit	2011			2012			2013			
			New (2,3)	Total	AAAD (4)	New (2,3)	Total	AAAD (4)	New (2,3)	Total	AAAD (4)	
4	<b>Residential</b>											
5	LD + VLD	DU	155	2,869	1,928	160	3,029	2,036	164	3,193	2,146	
6	MDL	DU	34	1,425	766	35	1,460	785	36	1,496	804	
7	MDH	DU	21	409	183	21	431	193	22	453	203	
8	<i>Residential Allocation</i>	DU	209	4,704		216	4,920		222	5,142		
9	<b>Non-Residential</b>											
10	CH	Acres	2.50	46.47	250	2.50	48.97	263	2.50	51.47	277	
11	CN, PD, PAO	Acres	1.50	41.55	134	1.50	43.05	139	1.50	44.55	144	
12	CS	Acres	2.00	38.17	123	2.00	40.17	130	2.00	42.17	136	
13	Industrial (ML, MH, GI)	Acres	15.00	312.41	504	15.00	327.41	528	15.00	342.41	552	
14	Governmental/Institutional	Acres	0.50	10.94	35	0.50	11.44	37	0.50	11.94	39	
15	Parks	Acres	1.50	48.97	158	1.50	50.47	163	1.50	51.97	168	
16	Schools	Acres	2.00	35.48	229	2.00	37.48	242	2.00	39.48	255	
17	Landscaping	Acres	1.00	17.99	116	1.00	18.99	123	1.00	19.99	129	
18	<b>Total Non-Residential</b>	Acres	26.00	551.98		26.00	577.98		26.00	603.98		
20	<b>Water Demand</b>											
21	Annual Average Demand (AAD) (4) af/yr				4,427			4,638			4,852	
22	Actual Delivery per DWR Annual Reports											
23	Actual as a percentage of Projected											

Dixon-Solano Municipal Water Service  
 Northeast Quadrant Water Supply Assessment

**Table 6**  
 Annual Demand Projections

Calendar Year	Land Use Designation (LUD)	Unit	2014			2015			2016			
			New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	New (2,3)	Total	AAD (4)	
4	<b>Residential</b>											
5	LD + VLD	DU	169	3,362	2,260	175	3,537	2,377	180	3,717	2,498	
6	MDL	DU	37	1,533	824	38	1,571	845	39	1,610	866	
7	MDH	DU	23	476	213	23	499	224	24	523	234	
8	<i>Residential Allocation</i>	DU	229	5,371		236	5,607		243	5,850		
9	<b>Non-Residential</b>											
10	CH	Acres	2.50	53.97	290	2.50	56.47	304	2.50	58.97	317	
11	CN, PD, PAC	Acres	1.50	46.05	149	1.50	47.55	153	1.50	49.05	158	
12	CS	Acres	2.00	44.17	142	2.00	46.17	149	2.00	48.17	155	
13	Industrial (ML, MH, GI)	Acres	15.00	357.41	577	15.00	372.41	601	15.00	387.41	625	
14	Governmental/Institutional	Acres	0.50	12.44	40	0.50	12.94	42	0.50	13.44	43	
15	Parks	Acres	1.50	53.47	172	1.50	54.97	177	1.50	56.47	182	
16	Schools	Acres	2.00	41.48	268	2.00	43.48	281	2.00	45.48	293	
17	Landscaping	Acres	1.00	20.99	135	1.00	21.99	142	1.00	22.99	148	
18	<b>Total Non-Residential</b>	Acres	26.00	629.98		26.00	655.98		26.00	681.98		
20	<b>Water Demand</b>											
21	Annual Average Demand (AAD) (4) af/yr				5,070			5,293			5,521	
22	Actual Delivery per DWR Annual Reports											
23	Actual as a percentage of Projected											



Dixon-Solano Municipal Water Service  
 Northeast Quadrant Water Supply Assessment

Table 6  
 Annual Demand Projections

1	Calendar Year		2017		2018		2019	
	Land Use Designation (LUD)	Unit	New (2,3)	Total (4)	New (2,3)	Total (4)	New (2,3)	Total (4)
4	<b>Residential</b>							
5	LD + VLD	DU	185	3,902	190	4,092	196	4,287
6	MDL	DU	40	1,650	41	1,692	43	1,735
7	MDH	DU	25	548	25	573	26	600
8	<i>Residential Allocation</i>	DU	250	6,100	257	6,357	265	6,622
9	<b>Non-Residential</b>							
10	CH	Acres	2.50	61.47	2.50	63.97	2.50	66.47
11	CN, PD, PAO	Acres	1.50	50.55	1.50	52.05	1.50	53.55
12	CS	Acres	2.00	50.17	2.00	52.17	2.00	54.17
13	Industrial (ML, MH, GI)	Acres	15.00	402.41	15.00	417.41	15.00	432.41
14	Governmental/Institutional	Acres	0.50	13.94	0.50	14.44	0.50	14.94
15	Parks	Acres	1.50	57.97	1.50	59.47	1.50	60.97
16	Schools	Acres	2.00	47.48	2.00	49.48	2.00	51.48
17	Landscaping	Acres	1.00	23.99	1.00	24.99	1.00	25.99
18	<b>Total Non-Residential</b>	Acres	26.00	707.98	26.00	733.98	26.00	759.98
20	<b>Water Demand</b>							
21	Annual Average Demand (AAD) (4) af/yr							
22	Actual Delivery per DWR Annual Reports							
23	Actual as a percentage of Projected							
				5,753		5,989		6,230

**Table 6**  
**Annual Demand Projections**

1	Calendar Year		2020		2021		2022	
	Land Use Designation (LUD)	Unit	New (2,3)	Total	New (2,3)	Total	New (2,3)	Total
2	<b>Residential</b>							
3	LD + VLD	DU	202	4,489	208	4,697	214	4,912
4	MDL	DU	44	1,779	45	1,824	47	1,871
5	MDH	DU	27	627	28	654	29	683
6	<i>Residential Allocation</i>	DU	273	6,895	281	7,176	290	7,466
7	<b>Non-Residential</b>							
8	CH	Acres	2.50	68.97	2.50	71.47	2.50	73.97
9	CN, PD, PAO	Acres	1.50	55.05	1.50	56.55	1.50	58.05
10	CS	Acres	2.00	56.17	2.00	58.17	2.00	60.17
11	Industrial (ML, MH, GI)	Acres	15.00	447.41	15.00	462.41	15.00	477.41
12	Governmental/Institutional	Acres	0.50	15.44	0.50	15.94	0.50	16.44
13	Parks	Acres	1.50	62.47	1.50	63.97	1.50	65.47
14	Schools	Acres	2.00	53.48	2.00	55.48	2.00	57.48
15	Landscaping	Acres	1.00	26.99	1.00	27.99	1.00	28.99
16	<b>Total Non-Residential</b>	Acres	26.00	785.98	26.00	811.98	26.00	837.98
17	<b>Water Demand</b>							
18	Annual Average Demand (AAD) (4)			6,476		6,727		6,984
19	Actual Delivery per DWR Annual Reports							
20	Actual as a percentage of Projected							

**Table 6**  
**Annual Demand Projections**

1	Calendar Year		2023		2024	
	Land Use Designation (LUD)	Unit	New (2,3)	Total	New (2,3)	Total
2				AAD (4)		AAD (4)
3						
4	<b>Residential</b>					
5	LD + VLD	DU	220	5,132	227	5,359
6	MDL	DU	48	1,919	50	1,969
7	MDH	DU	30	713	30	743
8	<i>Residential Allocation</i>	DU	298	7,764	307	8,071
9	<b>Non-Residential</b>					
10	CH	Acres	2.50	76.47	2.50	78.97
11	CN, PD, PAO	Acres	1.50	59.55	1.50	61.05
12	CS	Acres	2.00	62.17	2.00	64.17
13	Industrial (ML, MH, GI)	Acres	15.00	492.41	15.00	507.41
14	Governmental/Institutional	Acres	0.50	16.94	0.50	17.44
15	Parks	Acres	1.50	66.97	1.50	68.47
16	Schools	Acres	2.00	59.48	2.00	61.48
17	Landscaping	Acres	1.00	29.99	1.00	30.99
18	<b>Total Non-Residential</b>	Acres	26.00	863.98	26.00	889.98
19	<b>Water Demand</b>					
20	Annual Average Demand (AAD) (4)	af/yr		7,246		7,514
21	Actual Delivery per DWR Annual Reports					
22	Actual as a percentage of Projected					
23						

**Dixon-Solano Municipal Water Service  
Northeast Quadrant Water Supply Assessment**

**Table 7  
Summary of Annual Demand Projections  
Acre-Feet per Year**

Line	Calendar Year	1994	1999	2004	2009	2014	2019	2024
No.	Land Use Designation	historical	historical					
1	<b>Residential</b>							
2	LD + VLD	593	938	1,111	1,724	2,260	2,882	3,602
3	MDL	105	244	259	340	824	933	1,058
4	MDH	74	74	82	165	213	269	333
5	<b>Non-Residential</b>							
6	CH	91	142	156	223	290	357	425
7	CN, PD, PAO	44	51	100	124	149	173	197
8	CS	17	43	78	110	142	175	207
9	Industrial (ML, MH, GI)	142	191	335	456	577	697	818
10	Governmental/Institutional	5	14	24	32	40	48	56
11	Parks	77	116	124	148	172	197	221
12	Schools	59	59	139	203	268	332	397
13	Landscaping	24	64	71	103	135	168	200
14	Annual Water Demand, acre-feet	1,232	1,938	2,478	3,628	5,070	6,230	7,514

These figures are extracted from Table 6, where some rounding of these figures has occurred automatically.

**Attachment 1**

**Appendix D to the  
1993 General Plan of the  
City of Dixon**



**APPENDIX D**

**PROJECTED NUMBER OF HOUSING UNITS IN DIXON  
BASED ON A 3 PERCENT GROWTH RATE, 1996-2030**



YEAR	BASE UNITS	NEW UNITS	CUMULATIVE FROM 1995
1996	4479	134	134
1997	4613	138	272
1998	4752	143	415
1999	4894	147	562
2000	5041	151	713
<b>BY 2000</b>			<b>713</b>
2001	5192	156	869
2002	5348	160	1029
2003	5509	165	1194
2004	5674	170	1365
2005	5844	175	1540
<b>BY 2005</b>			<b>1540</b>
2006	6019	181	1721
2007	6200	186	1907
2008	6386	192	2098
2009	6578	197	2296
2010	6775	203	2499
<b>BY 2010</b>			<b>2499</b>
2011	6978	209	2708
2012	7187	216	2924
2013	7403	222	3146
2014	7625	229	3375
2015	7854	236	3610
<b>BY 2015</b>			<b>3610</b>
2016	8090	243	3853
2017	8332	250	4103
2018	8582	257	4360
2019	8840	265	4626
2020	9105	273	4899
<b>BY 2020</b>			<b>4899</b>
2021	9378	281	5180
2022	9659	290	5470
2023	9949	298	5768
2024	10248	307	6076
2025	10555	317	6392
<b>BY 2025</b>			<b>6392</b>
2026	10872	326	6718
2027	11198	336	7054
2028	11534	346	7400
2029	11880	356	7757
2030	12236	367	8124
<b>BY 2030</b>			<b>8124</b>



Dixon-Solano Municipal Water Service  
2000 Water Master Plan

Table 3.2  
**Average Daily Demand Rates**

RESIDENTIAL AREAS	GPD/DU	DUE/DU	GPM/DU	PERSONS/DU	GPCD
VERY LOW DENSITY (VLD)	600	1.00	0.417	3.1	194
LOW DENSITY (LD)	600	1.00	0.417	3.1	194
MEDIUM DENSITY - LOW (MDL)	480	0.80	0.333	3.1	155
MEDIUM DENSITY - HIGH (MDH)	400	0.67	0.278	3.1	129
COMMERCIAL AREAS	GPD/ACRE	DUE/ACRE	GPM/ACRE		
HIGHWAY COMMERCIAL (HC)					
Developed	4,800	8.00	3.33		
Undeveloped	4,500	7.50	3.13		
SERVICE COMMERCIAL (SC)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
NEIGHBORHOOD COMMERCIAL (NC)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
COMMUNITY COMMERCIAL (CC)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
OFFICE (O)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
INDUSTRIAL AREAS					
Developed	1,440	2.40	1.00		
Undeveloped	1,350	2.25	0.94		
OTHER AREAS					
GOVERNMENT/INSTITUTIONAL (G)					
Developed	2,880	4.80	2.00		
Undeveloped	2,710	4.52	1.88		
PARKS (P)	2,880	4.80	2.00		
LANDSCAPING (L/S)	5,760	9.60	4.00		
SCHOOLS (S)	5,760	9.60	4.00		

Refer to the Water Usage Study in Section 8 and the discussion in Section 3 for development of these figures.

**LEGEND**

DU	Dwelling unit, being one house or one unit of a duplex or triplex, or one apartment in a complex.
DUE	Dwelling Unit Equivalent = one low density residential unit which over a year will use an average of 600 gallons of water per day.
DUE/ACRE	Number of dwelling unit equivalents that use the same amount of water as one acre of the stated non-residential area.
DUE/DU	Number of dwelling unit equivalents that use the same amount of water as one dwelling unit of the stated residential density.
GPCD	Gallons per capita (person) per day, or the average amount of water used by one person
GPD	Gallons per day, a measure of water use.
GPD/ACRE	Gallons per day per acre = GPM/ACRE / 60 minutes / 24 hours, rounded to nearest whole number.
GPD/DU	Gallons per day per dwelling unit = GPM/DU / 60 minutes / 24 hours, rounded to nearest whole number.
GPM	Gallons per minute, a measure of water use.
GPM/ACRE	Gallons per minute per acre.
GPM/DU	Gallons per minute for one dwelling unit.
PERSONS/DU	Persons per dwelling unit, as shown in Table 3.1.

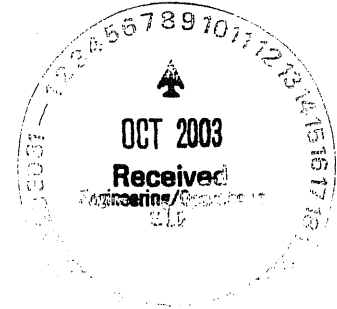


MAYOR MARY ANN COURVILLE  
VICE MAYOR GIL VEGA  
COUNCILMEMBER LOREN FERRERO



COUNCILMEMBER JILL ORR  
COUNCILMEMBER DAN SUPRIANO  
CITY TREASURER DAVID DINGMAN

October 7, 2003



Dixon-Solano Municipal Water Service  
508 Elmira Road  
Vacaville, Ca. 95687

Attention: James S. Daniels, DSMWS Engineer

Subject: Request for a Water Supply Assessment for Dixon Downs and the Northeast  
Quadrant (643 acres)

Dear Jim:

The City of Dixon has received a proposal to develop a project called Dixon Downs located on 260 acres on the west side of Pedrick Rd., north of Vaughn Rd., and east of I-80. Per Section 10912(a) of the California Water Code, this development is a "project" for the following reasons:

- It is a residential development of more than 500 dwelling units.
- It is a proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- It is a proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
- It is a proposed hotel or motel, or both, having more than 500 rooms.
- It is a proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- It is a mixed-use project that includes one or more of the previous projects.
- It is a project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The City has determined that Dixon Downs is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code, and that an environmental impact report is required. The City has also identified the Dixon-Solano Municipal Water Service as the water system that may supply water to this project. Therefore, the City hereby requests DSMWS to provide a water supply assessment (WSA) pursuant to Water Code Sections 10910-10915.

**Attachment 3**

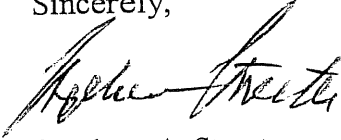
City of Dixon

600 East A Street • Dixon, California • 95620-3697  
(707) 678-7000 • FAX (707) 678-0960 • TDD (707) 678-1489

Per Water Code Section 10910(g) (1), the City Council of the City of Dixon and the Board of Directors of the Solano Irrigation District, as the governing bodies of the Dixon-Solano Municipal Water Service, must approve the WSA at regular or special meetings and submit the assessment to the City of Dixon within 90 days of your receipt of this request. Prior to the expiration of the 90-day period, DSMWS may meet with the City to request an extension of time of up to 30 days to prepare and adopt the WSA.

Thank you for your assistance. Please contact me if you need further information.

Sincerely,



Stephen A. Streeter  
Community Development Director

CC: Warren Salmons, City Manager  
Ron Tribbett, City Engineer