

Table of Contents

Section 11 – Bedell Flat FSA	1
11.1 Background.....	1
11.2 Water	1
11.2.1 Assumptions, Planning Criteria and Methodology.....	1
11.2.2 Future Water Demand.....	2
11.2.3 Water Facilities	2
11.3 Wastewater.....	2
11.3.1 Assumptions, Planning Criteria and Methodology.....	2
11.3.2 Projected Wastewater Flow	3
11.3.3 Wastewater Treatment Locations	3
11.3.4 Water Reclamation.....	3
11.4 Floodplain Management and Channel Migration	4

List of Tables

Table 11.1 - Bedell Flat Projected Water Demands	2
Table 11.2 - Bedell Flat Wastewater Projections.....	3
Table 11.3 - Potential Effluent Reservoir Sites.....	3

List of Figures – Included at End of Section

Figure 11-1 Study Area
Figure 11-2 Area Constraints
Figure 11-3 Planned Water Supply Facilities
Figure 11-4 Planned Wastewater and Disposal Facilities

Section 11 – Bedell Flat FSA

11.1 BACKGROUND

A reconnaissance level analysis of several water resource related issues has been performed in order to assist the City with identifying lands that need to be reserved for water resource purposes. Planning within the FSA is based on an assumed land use pattern provided by the City. The January 6, 2006 staff report describes the proposed amendment to the 2002 Regional Plan that would implement the ASA, and calls for local governments to collaborate with Federal officials on a proposal for conversion of federal lands to private use within the FSA.

Information is presented to provide input to the planning process that may lead to recommendations for transfer or sale of appropriate public lands. Land areas should be considered for either: a) transfer to local government ownership for future public facilities, or b) retained in federal or local public ownership for protection or management of hydrologic resources. The following water resource related issues are presented in this Section:

1. Projection of water demands
2. Projection of wastewater treatment plant capacity and possible sites to serve future development
3. Analysis of recharge sites and locations for storage and/or disposal of effluent
4. Floodplain management and channel migration

The Bedell Flat FSA includes approximately 70,200 acres in several hydrographic basins including Bedell Flat, Red Rock, Dry Valley, Cold Springs, Warm Springs, and Long Valley. Bedell Flat is within the City of Reno FSA and consists mostly of federal lands. The land would not be developable until 2028 per the FSA development projections. The Bedell Flat area is shown on Figure 11-1 (see figures at end of section). Areas that are limited or constrained for future development include areas with slopes greater than thirty percent and drainageways. These areas are shown on Figure 11-2. Approximately 22 percent of the area is projected to be in a future Transit Oriented Development Corridor (TOD) or Center.

11.2 WATER

The projected water demands are developed in this section.

11.2.1 Assumptions, Planning Criteria and Methodology

Water demand factors used to estimate potential demand are based on TMWA Rule 7 demand factors. It is assumed that this new development will dedicate water resources in accordance with TMWA water rights dedication policies.

In the case of non-residential development, the demand factor used represents an average number for planning purposes only. When TMWA or Washoe County receives a request for water service on a non-residential property, the actual water rights dedication requirement would be based on a project-specific analysis of the number of fixture units and the specific landscaping plan. This level of detail is not available for this analysis.

11.2.2 Future Water Demand

Based on the land use analysis, projected water demands for Bedell Flat are listed in Table 11.1. The irrigation demands are projected assuming that 6,000 gallons per month is consumed within the dwelling and the remainder is used for irrigation. The irrigation demand range is based on either front yard only irrigation or the combined front yard and back yard irrigation. Irrigation demands for commercial and industrial land use were estimated assuming fifteen percent of the total acreage is irrigated at an application rate of 3.5 AFA. The total projected demand includes both indoor and outdoor water use.

Table 11.1 - Bedell Flat Projected Water Demands

Irrigation Demand Component (AFA)	Total Demand Including Irrigation (AFA) (a)
4,700-6,775	21,355

(a) Based on 52,518 dwelling units at an average of 0.3 AF per unit, and 5,000 acres of commercial and industrial land use.

11.2.3 Water Facilities

Existing and proposed water supply facilities are presented in Figure 11-3. The Vidler Water Supply Project crosses the Bedell Flat FSA. The planned Intermountain Water Supply Project and several of their water supply wells are also located within the FSA. However, the demand for potable water supplies for Cold Springs, Stead and Lemmon Valley will significantly exceed the available water supply from the Fish Springs and Intermountain projects. Imported water, for instance, from the Smoke Creek or Duck Lake basin, will likely be required to meet projected demands.

11.3 WASTEWATER

Projected wastewater flows, possible treatment plant sites, potential recharge sites and locations for storage and/or disposal of effluent are developed in this section.

11.3.1 Assumptions, Planning Criteria and Methodology

The wastewater flow factor for the Bedell Flat area was assumed from the 2007 Washoe County 208 Water Quality Management Plan. The flow factor for new development ranges from a low of 110 gallons per capita per day (gpcd) to 130 gpcd. An average of 120 gpcd was used for flow projection. All other wastewater planning assumptions are as stated in Appendix A.

11.3.2 Projected Wastewater Flow

Using the land use data, flow projections for Bedell Flat FSA were developed. The wastewater treatment capacity projection for this planning area is presented in Table 11.2.

Table 11.2 - Bedell Flat Wastewater Projections

Projected Wastewater Treatment Capacity (MGD) (a)
10.1

(a) Based on 52,518 dwelling units, and 5,000 acres of commercial land use.

11.3.3 Wastewater Treatment Locations

Potential wastewater treatment facility locations are shown on Figure 11-4. Potential sites for two treatment facilities are located in the two hydrobasins that appear most favorable for development. As land use master plans are developed for the area, the proposed treatment plant locations and alternative sites should be evaluated in detail.

11.3.4 Water Reclamation

Water reclamation would beneficially reuse a large portion of the effluent generated by Bedell Flat, and would provide a valuable water resource to help meet non-potable demands. Non-potable irrigation demands include parks, schools, landscape medians and residential areas. A review of the area was conducted to evaluate the feasibility of seasonal storage for the reclaimed water. Three potential effluent reservoir sites were identified. The reservoir sites are shown on Figure 11-4, potential reservoir volumes are listed in Table 11.3.

Table 11.3 - Potential Effluent Reservoir Sites

Reservoir	Surface Area (acres)	Dam Height (feet)	Approximate Volume (AF)
1	357	145	15,800
2	664	200	38,600
3	350	145	14,700

Effluent that is not reused potentially may be disposed of in rapid infiltration basins (RIBs). Thirteen soil borings were completed around portions of the Bedell Flat valley to evaluate the near surface geology and determine if highly permeable materials exist that would be favorable for operation of RIBs. The BLM permit required that all borings be located on existing dirt roads.

The borings were up to 33 feet deep, and during drilling, split spoon samples were collected every five feet. The results indicated that sandy surface soils present in many areas are underlain at shallow depth by dense to very dense, semi-consolidated, poorly-sorted sand having variable

silt content. Thin gravelly-sand interbeds locally exist. Similar materials are present in many areas throughout the North Valleys and they would be expected to have relatively low, in-place permeability. Well-sorted, coarse-grained, unconsolidated alluvial materials favorable for RIB operation were not encountered.

In some boreholes, the sand was coarser-grained, better sorted and contained less silt and very fine sand. Seven samples from two of the more favorable borings were submitted to a laboratory for grain size analysis. The site is located near the proposed reservoir site, on the south side of the valley near the end of Bird Springs Road. The results indicate that the materials may be marginally suitable for RIB use; however, additional drilling, and both in-situ and laboratory testing would be required to delineate the extent of the coarser materials and further evaluate the sites.

11.4 FLOODPLAIN MANAGEMENT AND CHANNEL MIGRATION

The natural drainage/conveyance areas within Bedell Flat are undeveloped and pose no threat to life and property. As development occurs, floodplain planning must alleviate the impact of flooding to ensure protection of life and property. This Facility Plan encourages the preservation of natural drainageways. These drainageways have several important functions: conveyance of flood flows, conveyance of watershed sediment loading, groundwater recharge, environmental and wildlife habitat, and aesthetic quality. These areas are shown in Figure 11-2.

Development of future roads and facilities within Bedell Flat will result in improvements within and across major drainageways. Open channels tend to have more conveyance capability than an enclosed facility. Moreover, open channels can convey debris more effectively provided that road crossings are designed properly. It is recommended that when enclosing major drainageways, the City should ensure that the design storm event for all such enclosures be a significant storm event, such as the 100-year storm event. Appropriate freeboard, debris conveyance capabilities and areas for natural channel migration should be provided.

Refer to Section 14 for further information on flood control management.