

HCSD Revisions

Water Systems

Introduction

System Standards

Humboldt Bay Municipal Water District

6.4 Urban Study Areas

Urban study areas (USAs) are regions within the County either already served by both water and sewer systems or are under consideration for these services. Water study areas (WSAs) are regions within the County that have community water systems, and are covered in more detail in Section 0. The County's purpose in defining urban study areas is to identify areas for more detailed planning and analysis, mainly with respect to development capacity and the infrastructure required to service both existing and any further development that may occur within these areas. As a part of this effort, the County is working collaboratively with the special Districts to refine information regarding development potential and allow for more informed development timing policies within the County.

The following sections introduce the County's USAs and WSAs and provide a detailed discussion on development potential and water infrastructure assessment for each study area. Any water system infrastructure deficiencies will be identified along with plans for timing and financing of needed improvements. Some study areas consist of both an urban study area and water study area. In these instances, the water study area will be described in conjunction with the urban study area in this section.

USAs and WSAs for the most part share the name of the service district that provides water and wastewater service. The Humboldt Community Services District (HCSD) has a population of over 21,000 and is the County's largest and most diverse service district. Because the characteristics of the communities within and adjacent to the boundaries of the HCSD vary considerably, this district has been divided into multiple USAs and WSAs with names reflecting the community names and not the name of the service provider. The following USAs and WSAs have been evaluated with respect to HCSD:

- Freshwater WSA
- Humboldt Hill USA
- Indianola WSA
- Myrtle town USA & WSA

- South Eureka USA & WSA

To make the issues affecting the HCSD easier for the reader to understand, all of the USAs and WSAs within or adjacent to HCSD are presented together in Section 6.6 of this Chapter, following the discussion of the water systems located in the other USAs and WSAs.

6.5 Water Study Areas

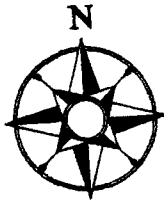
6.6 Humboldt Community Services District (HCSD) USA & WSA (Water)

HCSD was declared formed in September of 1952 after a successful special election was held. The District was formed as an independent multi-purpose special District organized pursuant to Section 61000 et seq. of the California Government Code, providing water, wastewater, and streetlight services. Formation of the District was prompted by an unmet need for urban type services in the rapidly growing "suburban" areas surrounding the City of Eureka. Because the desired services could not be obtained from the City, District formation was the only means available for providing those services necessary for the maintenance of existing and developing residential and commercial areas.

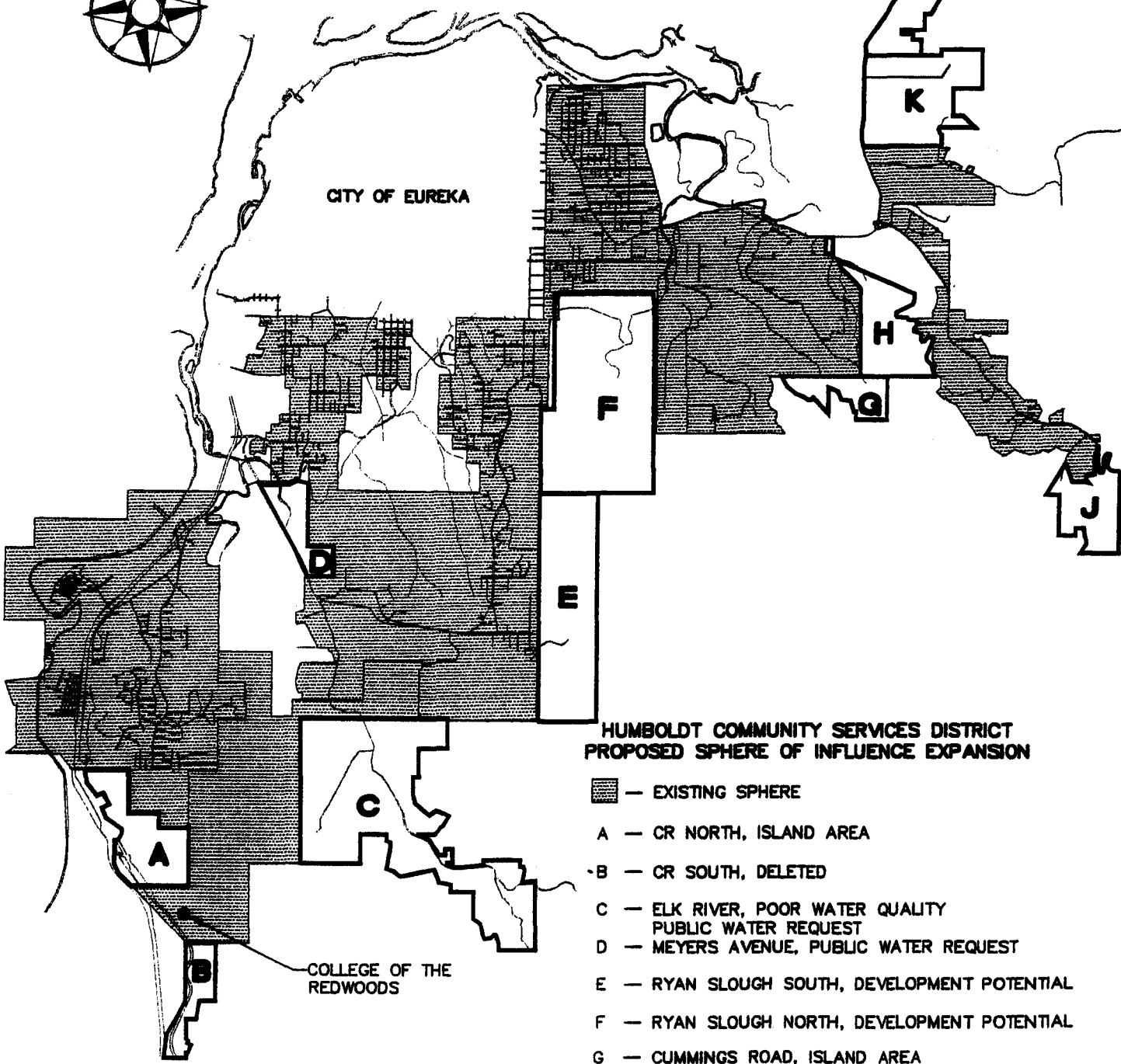
HCSD is located in the Humboldt Bay area ~~and virtually surrounds~~ **servicing the unincorporated areas of the County surrounding** the City of Eureka ~~on the east and south~~. The District extends from ~~Eureka Slough~~ **Freshwater Valley** on the north to ~~Fields Landing~~ **College of the Redwoods** in the south. Humboldt Bay and the City of Eureka form the districts western boundary and the eastern edge of the Freshwater Creek valley forms the eastern boundary. Included within or adjacent to the boundaries of the district are the following USAs and WSAs, each of which will be analyzed in detail below:

- Freshwater WSA
- Humboldt Hill USA
- Indianola WSA
- Myrtle town USA & WSA
- South Eureka USA & WSA


HCSD has requested that this General Plan Update support and recommend that specific areas be included in its application for Sphere of Influence (SOI) expansion before LAFCO. These SOI Areas are referenced as areas A through L (attached Map Exhibit). By law, areas that are not within a jurisdictions SOI may not plan for or receive that agency's public services (in HCSD's case, sewer and water). HCSD has requested expansion of its SOI areas based on specific and varying reasons. Areas A, D, G, and H would eliminate "island" areas and result in a contiguous service area as recommended by LAFCO standards. Areas C, J, and L have water quality problems and its residents have requested public water. Areas E and F are adjacent to HCSD's service area and urban service boundary, currently contain HCSD facilities and could support additional long term development. Areas E and F are also similar in development character to the existing McKay Tract developments described in the County adopted 1995 Eureka Community Plan. Area B has been withdrawn for SOI consideration per County request.



CITY OF EUREKA



**HUMBOLDT COMMUNITY SERVICES DISTRICT
PROPOSED SPHERE OF INFLUENCE EXPANSION**

-  — EXISTING SPHERE
- A — CR NORTH, ISLAND AREA
- ~~B~~ — CR SOUTH, DELETED
- C — ELK RIVER, POOR WATER QUALITY PUBLIC WATER REQUEST
- D — MEYERS AVENUE, PUBLIC WATER REQUEST
- E — RYAN SLOUGH SOUTH, DEVELOPMENT POTENTIAL
- F — RYAN SLOUGH NORTH, DEVELOPMENT POTENTIAL
- G — CUMMINGS ROAD, ISLAND AREA
- H — PIGEON POINT ROAD, ISLAND AREA
- I — NOT USED
- J — PACIFIC LUMBER CAMP ROAD, PUBLIC WATER REQUEST.
- K,L — INDIANOLA, POOR WATER QUALITY PUBLIC WATER REQUEST

COLLEGE OF THE REDWOODS

HUMBOLDT COMMUNITY SERVICES DISTRICT

PROPOSED SPHERE OF INFLUENCE EXPANSION AREA'S

DATE: FEBRUARY 2008

Findings and Recommendations – Where the Findings sections recommends that HCSD Service Area be expanded to include specific areas, it is implicit that the General Plan Update supports the planning process required to effect these changes including specific plan update, urban limit line expansion, SOI change, and boundary annexation.

Freshwater WSA

The Freshwater Valley was originally served water by private, individual wells and several private water companies. In 1992, the residents requested that HCSD create the Freshwater Assessment District to provide high quality public water to solve a long standing water quality problem. A map showing the Freshwater WSA is attached as Figure 6-18. The Freshwater WSA is located within a beautiful rural valley east of Humboldt Bay. The Freshwater WSA has 3,568 total acres, of which 1,637 acres are underdeveloped and/or vacant parcels. ~~Of this total acreage, 1,024 acres within the WSA are developable.~~ With respect to development potential, the Freshwater WSA has both underdeveloped and vacant parcels that could see further development. The area's land use guidelines and development potential are covered in the Freshwater Community Plan, which was last updated in May 1985. **Existing zoning restrictions and lack of sewer service restrict the development potential of this area. One of the major concerns of the residents during the Freshwater Assessment District formation was that expansion of public water would result in accelerated growth and development, irregardless of the existing zoning. However, fewer County building permits have been issued since receiving public water than previous to the Assessment District Formation.**

Pacific Lumber Camp Road (Area J) - Most of the Freshwater WSA is within the boundaries or SOI of the HCSD. The Pacific Lumber Camp Road area is outside the current district SOI, **and Lumber Camp Road residents have requested that the Freshwater Assessment District be extended to include them because of similar water quality problems.** ~~but the district has requested that LAFCO consider adding this area upon adoption of the General Plan Update. The HCSD has also requested that the area located between the ends of Cummings and Felt Roads in the Mitchell Heights area be included within their SOI. The Freshwater/Mitchell Heights area was annexed to HCSD in 1992. A more detailed description of the HCSD can be found in Section 0.~~

~~The Freshwater WSA receives water service through Humboldt CSD, who also serves several other study areas including the Humboldt Hill USA, Myrtle town USA and WSA, and South Eureka USA and WSA. The Freshwater WSA represented approximately 9.4% of total housing units within these multiple study areas in 2005.~~

The County estimates there were 803 housing units within the Freshwater WSA in 2005. ~~Based on the County's housing growth projections of between 0.5% and 2.5%, the Freshwater WSA could have between 887 and 1,316 total housing units by 2025. According to **Error! Reference source not found.**, the high~~ The projected build-out estimate for total development potential within the Freshwater WSA, which takes into consideration physical and zoning constraints, is 1,138. ~~Therefore, the high growth rate projection for the WSA is in excess of what the land can bear.~~

~~The high estimate for total development potential of 1,138 housing units in the WSA was used for infrastructure assessment and recommendations. **This represents 335 new**~~

housing units within the Freshwater WSA or 2.9% of the total new housing units in the District.

Findings

Humboldt HCSD's water system in Freshwater is in good condition overall. There are no major infrastructure deficiencies associated with the existing system, as it was constructed in 1992. The Freshwater WSA is expected to receive up to 335 new housing units before reaching build-out conditions. To the extent that development occurs where existing service is provided, no major improvements will be needed. However, where development is not adjacent to an existing water main, an extension of service will be needed.

Pacific Lumber Camp Road (Area J) - The District has also received a request from some residents on Pacific Lumber Camp Road to extend water service to their residences, which are located in the WSA. **It is recommended that the District be allowed to expand its SOI and serve the Lumber Camp area and improve the health, safety and water quality of this area.**

Cummings Road (Area G) and Pigeon Point Road (Area H) – **The Freshwater Assessment District includes both the Freshwater Valley to the East and Mitchell Heights area on the West resulting in the Freshwater Valley area being non-contiguous with the rest of the District. It is recommended that the District be allowed to expand its SOI in this area to eliminate the non-contiguous "island" area.**

Humboldt Hill USA

The Humboldt Hill USA was created in the 1980's with the purchase of the Pialorsi Private Water System and take-over of the County Service Area 3 (CSA 3) Sewer System.

A map showing the Humboldt Hill USA is attached as Figure 6-5. The Humboldt Hill USA represents some of the greatest development potential within unincorporated Humboldt County. The Humboldt Hill USA has 3,967 total acres, of which 1,937 acres are underdeveloped and/or vacant parcels. Of this total acreage, 1,224 acres within the USA are developable. With respect to development potential, the majority of the Humboldt Hill USA has a significant amount of both underdeveloped and vacant parcels. The area's land use guidelines and development potential are covered in the Eureka Community Plan, which was last updated on April 25, 1995.

The County estimates there were 1,791 housing units within the Humboldt Hill USA in 2005. ~~Based on the County's housing growth projections of between 0.5% and 2.5%, the Humboldt Hill USA could have between 1,979 and 2,935 total housing units by 2025. According to~~ **Error Reference source not found.** ~~The high~~ **projected** build-out estimate for total development potential within the Humboldt Hill USA, which takes into consideration physical and zoning constraints, is 3,861. Therefore, the growth estimates are within the range of what the land can bear, and the Humboldt Hill USA has additional development potential beyond the 20-year planning horizon.

~~The high build-out estimate for total development potential of 3,861 housing units in the USA was used for infrastructure assessment and recommendations. This represents 2,070 new housing units within the Humboldt Hill USA or 18% of the total new housing units in the District. Overall, there is potential for an estimated 11,602 new housing units within the Humboldt CSD service area.~~

Most of the Humboldt Hill USA is within the boundaries of Humboldt Community Services District (HCSD). Two areas, identified by the HCSD as the Humboldt Hill South area (the area located between Humboldt Bay and the district boundaries near the U.S. 101-Tompkins Hill exist) and the College of the Redwoods area, are not located within the HCSD SOI. The district has requested that LAFCO consider adding this area upon adoption of the General Plan Update.

Following the purchase of the Pialorsi Water System, the District drilled three municipal water wells to further serve the Humboldt Hill USA. The Humboldt Hill USA's water system is served almost exclusively by the well water sources, although HBMWD water can be supplied to this part of the system. Reservoirs serving Humboldt Hill include the 1.0 MG Blue Spruce tank and the 0.5 MG Donnae Drive tank, for a total storage capacity of 1.5 MG.

Water service within the Humboldt Hill USA is generally very good. The District has an ongoing program for ~~replacing some old steel water line of various sizes and anticipates that all of it will be replaced by 2012~~ **upsizing undersized water mains installed by the Pialorsi Water Company to improve fire protection.** The Humboldt Hill study area's main water source is the District's wells. Current peak day demands within the study area are estimated at 40% of the well's total capacity.

College of the Redwoods (Area A) – College of the Redwoods is within the HCSD SOI and currently receives public water. The area to the north of College of the Redwoods has requested public water. Area A is an "island" area bordering the existing water main.

Findings

HCSD's water system in Humboldt Hill area is in fair to good condition. The only major deficiency associated with the existing system serving the existing development on Humboldt Hill is an aging distribution system that was purchased from a private water system and is in ~~significant~~ need of repair. **HCSD anticipates adding an additional 1.0 Million gallons of water storage to support planned development, to provide fire protection and to serve the higher elevation zones in the Humboldt Hill area.**

Additionally, the Humboldt Hill USA is expected to receive up to an additional 2,070 units before reaching build-out conditions. Humboldt CSD will need to expand its water system infrastructure to serve this additional growth. Humboldt CSD has made improvements to the system wells and reservoirs since it purchased this system in the early 1980's.

College of the Redwoods (Area A) – Recommend expanding the HCSD SOI to include College of the Redwoods Area A.

Indianola WSA

The Indianola WSA (Area k & L) is currently served by individual wells and is not within the City of Eureka, Arcata, or HCSD Service Area or SOI.

A map showing the Indianola WSA is attached as Figure 6-18. The WSA encompasses the community of Indianola, located just east of Humboldt Bay along Old Arcata Road between Arcata and Eureka, CA. The Indianola WSA has 1,916 total acres, of which 1,269 acres are underdeveloped and/or vacant parcels. Of this total acreage, 835 acres within the WSA are developable. With respect to development potential, the Indianola WSA contains mostly underdeveloped parcels with some vacant parcels that could see

further residential development. The area's land use guidelines and development potential are covered in the Humboldt Bay Area Plan.

There is currently no provider of municipal drinking water in the Indianola area. The study area relies ~~solely~~ almost exclusively on private water sources of poor water quality and quantity for supply. The City of Eureka's sphere of influence covers a small portion of the WSA, and HCSD's service boundary borders the southern end of the WSA. The City of Eureka water transmission line from HBMWD passes by the Indianola area and the City boundaries extend north east along US 101 to the edge of the Indianola WSA boundary. The City of Eureka has ~~several~~ a number of retail water customers in this area including the Humboldt Area Foundation and provides a limited network of fire hydrants. Residents in Indianola have stated that private wells provide poor water quality and **has requested that Humboldt HCSD has shown interest in extending** service to the study area. An amendment to the Humboldt Bay Area Plan (HBAP) will be required to extend the urban limit line for this to occur. It is recommended that this extension of service be allowed to improve water service within the study area. The Indianola area is located outside the urban limit line established in the HBAP. Municipal water systems cannot be extended to Indianola until it is included within the urban limit line. The urban limit line will have to be extended to include the Indianola WSA if either HCSD or the City of Eureka is to serve the area. Since Indianola WSA is a rural residential area, modifications to the urban limit line may only be made in conformance with Section 3.22 B of the HBAP.

The Indianola WSA is expected to receive up to 162 new housing units before reaching build-out conditions. Therefore, in addition to extending service to serve existing housing units, the new system would have to expand to serve this additional growth.

Summary of Required Improvements

Because the Indianola WSA is not located within the HCSD boundaries and no HCSD infrastructure is located within the WSA, a separate assessment of in-frastructure required to provide service to this area was made. The following table summarizes the infrastructure assessment for the Indianola WSA and addresses infrastructure needs for existing development and for build-out conditions. There are no planned developments within the WSA, and therefore infrastructure for the next 10-year planning horizon was not assessed.

Findings

Indianola Area (Areas K & L) - It is recommended that extension of service to serve the Indianola area's K & L be allowed to improve the health, safety, and water quality service within the study area.

Table 0-1. Water system infrastructure assessment for the Indianola WSA.

WATER SYSTEM STATISTICS	
# of Existing Houses Needing Service	516
Storage Capacity	0
Estimated Usage Rate (gpd/connection)	629 (HCSD)
CORRECTION OF EXISTING DEFICIENCIES	
Proposed Infrastructure Upgrades	Estimated Cost (\$)
<i>Install storage – 0.444 MGD¹</i>	\$888,000
<i>Install distribution piping – 3 miles²</i>	\$1,584,000
Estimated Cost for Existing Deficiencies (\$)	\$2,472,000
Estimated Cost per Existing Connection (\$)	\$4,791
Estimated Financing Cost per Existing Connection (\$/Month)	\$25.61
LOW BUILD-OUT ESTIMATE	
# of Projected New Connections	99
Proposed Infrastructure Upgrades	Estimated Cost (\$)
<i>Install storage – 0.062 MGD³</i>	\$124,000
Estimated Cost for Build-Out Infrastructure (\$)	\$124,000
Estimated Cost per New Connection (\$)	\$1,253
Combined Cost for Build-Out and Existing Deficiencies (\$)	\$2,596,000
Estimated Cost per Connection (\$)	\$4,221
Estimated Financing Cost per Connection (\$/Month)	\$22.56
HIGH BUILD-OUT ESTIMATE	
# of Projected New Connections	162
Proposed Infrastructure Upgrades	Estimated Cost (\$)
<i>Install storage – 0.102 MGD³</i>	\$204,000
Estimated Cost for Build-Out Infrastructure (\$)	\$204,000
Estimated Cost per New Connection (\$)	\$1,259
Combined Cost for Build-Out and Existing Deficiencies (\$)	\$2,676,000
Estimated Cost per Connection (\$)	\$3,947
Estimated Financing Cost per Connection (\$/Month)	\$21.10

NOTES: ¹ Additional storage requirements are based on 1 day of estimated maximum day use using existing HCSD usage rates (629 gpd/connection x 516 connections = 0.324 MG) plus minimum fire storage of 120,000 gallons.

² Estimated length of distribution system required to serve existing residences. Distribution requirements for future development are not estimated at this planning level, and are assumed to be covered by the developer(s).

³ Additional storage requirements are based on 1 day of estimated maximum day use for new connections (# of projected new connections x 629gpd/connection).

The above estimated costs are based upon assumptions and the actual costs will be different. With a lack of reserves in place, funding for correcting existing deficiencies would likely come in the form of a low interest loan, like a State Revolving Fund loan which currently has loan terms of 20 years at 2.5% interest. At this rate, annual payments for a \$2.472 million loan would amount to approximately \$159,000 per year. With 516 potential existing ratepayers, monthly bills to cover the above infrastructure would be approximately \$26 per month to fund this loan. In reality, we would expect the District to apply for and hopefully obtain some grant funding that would reduce the local cost. In addition, we would expect the actual improvements to be sized to correct both existing deficiencies and have additional capacity to serve future development. To the extent that this can be done it will provide savings through economies of scale.

Myrtle town USA & WSA

A map showing the Myrtle town USA and WSA is attached as Figure 6-5. The Myrtle town USA represents one of the larger development potentials within the County. The Myrtle town USA is located just east of the City of Eureka along Myrtle Avenue. The WSA is located on the northeastern corner of the USA and borders the Eureka Slough on the north.

The Myrtle town USA has 830 total acres, of which 278 acres are underdeveloped and/or vacant parcels. Of this total acreage, 249 acres within the USA are developable. The Myrtle town WSA has 61 total acres, of which 18 acres are underdeveloped and/or vacant parcels. Of this total acreage, 16 acres within the WSA are developable. With respect to development potential, the majority of the Myrtle town USA has a significant amount of both underdeveloped and vacant parcels. The Myrtle town WSA consists of mainly underdeveloped parcels. The area's land use guidelines and development potential are covered in the Eureka Community Plan, which was last updated on April 25, 1995.

~~Discussions with property owners and developers are currently ongoing for the future of all McKay tracts. These areas are within the proposed expanded USA.~~

The Myrtle town study area contains both a USA and WSA. The County estimates there were 1,760 USA and 4 housing WSA units within ~~the Myrtle town USA and WSA, respectively in 2005. Based on the County's housing growth projections of between 0.5% and 2.5%, the Myrtle town USA could have between 1,945 and 2,884 total housing units by 2025, while the Myrtle town WSA could have between 4 and 7 total housing units by 2025. According to~~ **Error! Reference source not found.**, the high **The projected** build-out estimates for total development potential within the **Myrtle town** USA and WSA, which takes into consideration physical and zoning constraints, are 2,781 and 85, respectively. Therefore, the growth projections for each study area are within the range of what the land can bear.

The high build-out estimates for total development potential of 2,781 and 85 housing units in the USA and WSA were used for infrastructure assessment and recommendations. This represents a combined 1,102 new housing units within the Myrtle town USA **or 9.5% of total new housing units in the District.**

Findings

Myrtle town's water system is in good condition overall. There are no major infrastructure deficiencies associated with the existing system. Some older steel pipe in the distribution system is currently being replaced. The Myrtle town USA and WSA is expected to receive up to 1,102 new housing units before reaching build-out conditions. Humboldt CSD will need to expand its water system infrastructure to serve this additional growth.

South Eureka USA & WSA

A map showing the South Eureka USA and WSA is attached as Figure 6-5. The South Eureka USA, containing both the Cutten and Ridgewood areas, represents one of the greatest development potentials within the County. The South Eureka WSA is located south of the South Eureka USA and east of the Humboldt Hill USA, along Elk River Road.

The South Eureka USA has 6,030 total acres, of which 3,207 acres are underdeveloped and/or vacant parcels. Of this total acreage, 2,279 acres within the USA are developable. The South Eureka WSA has 1,199 total acres, of which 651 acres are underdeveloped and/or vacant parcels. Of this total acreage, 175 acres within the WSA are developable. With respect to development potential, both the South Eureka USA and WSA have a significant amount of both underdeveloped and vacant parcels.

The area's land use guidelines and development potential are covered in the Eureka Community Plan, which was last updated on April 25, 1995.

The South Eureka study area contains both a USA and WSA. The South Eureka USA, containing both the Cutten and Ridgewood areas, receives water service through Humboldt CSD, who also serves several other study areas including the Freshwater WSA, Humboldt Hill USA, and Myrtle town USA and WSA. The South Eureka USA and WSA represented approximately 49% of total housing units within these multiple study areas in 2005.

~~With the exception of the areas known as the North and South McKay Tracts, the South Eureka USA is within the Humboldt Community Services District (HCSD) district boundaries or SOI. Most area within the district boundaries are currently provided water service through the HCSD. The WSA is either within the HCSD proposed sphere of influence or within an area requested by the HCSD to be included within its SOI (Elk River area south of Ridgewood Road and Elk River Road at Pine Hill Road) and would require annexation into the sphere in order to receive water service. See section 0 (Humboldt Hill USA) for a detailed description of the Humboldt CSD.~~

~~The County estimates there were 4,254 and 106 housing units within the South Eureka USA and WSA, respectively in 2005. Based on the County's housing growth projections of between 0.5% and 2.5%, the South Eureka USA could have between 4,700 and 6,971 total housing units by 2025, while the South Eureka WSA could have between 117 and 174 total housing units by 2025. According to **Error! Reference source not found.**, †The high projected build-out estimates for total development potential within the USA and WSA, which takes into consideration physical and zoning constraints, are 12,302 and 153, respectively. Therefore, although the growth projections for the South Eureka USA are within the range of what the land can bear, the high growth rate projections for the WSA are in excess of what the land can bear. The WSA would reach build-out conditions at a slower growth rate of 1.85% over the next twenty years.~~

The high estimates for total development potential of 12,302 and 153 housing units in the USA and WSA were used for infrastructure assessment and recommendations. This represents a combined 8,095 new housing units within the South Eureka USA **or 70% of the total new housing units in the District.**

Elk River Valley (Area C) – Similar to the Freshwater Valley, the Elk River Valley includes an enclave of homes that experience poor water quality and have requested public water. Currently the Elk River residents rely on sub-standard private wells or have their storage tanks filled by water truck haulers. This area is also considered an "island" area, separating the non-contiguous District areas of Humboldt Hill and Ridgewood.

Meyers Avenue (Area D) – Residents along Elk River Road, near Meyers Avenue, are not within the HCSD SOI or area boundary but currently receive public water for agricultural and domestic purposes.

Findings

HCSD's South Eureka's water system, ~~owned and operated by Humboldt CSD,~~ is in good condition overall. There are no major infrastructure deficiencies associated with the existing system. Some older steel pipe in the distribution system is currently being replaced **and additional water capacity storage added to support planned growth and improve fire protection.** The South Eureka USA and WSA is expected to receive up to 8,095 new housing units before reaching build-out conditions. H-CSD will need to expand its water system infrastructure to serve this additional growth.

Elk River Area (Area C) - It is recommended that the District expand its SOI to include the Elk River Valley (Area C) to improve the health, safety and water quality of the area.

Meyers Avenue (Area D) – It is recommended that HCSD expand its SOI to include this service area currently receiving public water and to eliminate another “island” area gap.

Humboldt Community Services District Infrastructure Assessment

Existing Capacity

The HCSD's water system is not limited by either source or treatment capacity with respect to its availability of connections. HBMWD has sufficient water supply to meet District demands, and the District has extensive available capacity within District wells.

Summary of Required Improvements

The following table summarizes the infrastructure assessment for all study areas served by Humboldt CSD, including the Humboldt Hill USA, Myrtle town USA and WSA, South Eureka USA and WSA, and Freshwater WSA. As noted above, the Indianola WSA is located outside the HCSD service area and its infrastructure assessment is presented above. **The Lumber Camp Road and Elk River WSA's are also outside the District and infrastructure assessment is not provided. Contingent on HCSD expanding its SOI in order to serve these areas, the customers requesting water service would probably form an Assessment District to finance the infrastructure improvement.** Due to the interconnectedness of the water system, the study areas could not be assessed individually and were instead assessed collectively. The following table addresses the District's infrastructure needs for existing development and for build-out conditions.

“REVISE” - Table 0-2. Water system infrastructure assessment for the **Humboldt HCSD** service area, including Humboldt Hill, Myrtle town, South Eureka, and Freshwater.

WATER SYSTEM STATISTICS	
# of Existing Connections ¹	7,494
# of Available Connections ²	---
Source Capacity (MGD)	Not limiting (HBMWD + wells)
Storage Capacity (MG)	4.785
Treatment Capacity (MGD)	Not required
Peak Day Use (MGD)	4.71
Usage Rate (gpd/connection)	629
CORRECTION OF EXISTING DEFICIENCIES	
Proposed Infrastructure Upgrades	Estimated Cost (\$)
Additional storage - 0.045-1.095 MG ³	\$90,000 \$1,090,000
Upgrade distribution system - 10-2 miles ⁴	\$5,280,000 \$1,056,000
Estimated Cost for Existing Deficiencies (\$)	\$5,370,000 \$2,146,000
Estimated Cost per Existing Connection (\$)	\$717 \$286
Estimated Financing Cost per Existing Connection (\$/Month)⁷	\$3.83 ???
LOW BUILD-OUT ESTIMATE	
# of Projected New Connections	4,314
Proposed Infrastructure Upgrades ⁶	Estimated Cost (\$)
Additional storage - 2.711 MG ⁵	\$5,422,000
Estimated Cost for Build-Out Infrastructure (\$)	\$5,422,000
Estimated Cost per New Connection (\$)	\$1,257
Combined Cost for Build-Out and Existing Deficiencies (\$)	\$10,792,000
Estimated Cost per Connection (\$)	\$914
Estimated Financing Cost per Connection (\$/Month)⁷	\$4.89
HIGH BUILD-OUT ESTIMATE	
# of Projected New Connections	11,602
Proposed Infrastructure Upgrades ⁶	Estimated Cost (\$)
Additional storage - 7.292 MG ⁵	\$14,584,000
Estimated Cost for Build-Out Infrastructure (\$)	\$14,584,000
Estimated Cost per New Connection (\$)	\$1,257
Combined Cost for Build-Out and Existing Deficiencies (\$)	\$19,954,000
Estimated Cost per Connection (\$)	\$1,045
Estimated Financing Cost per Connection (\$/Month)⁷	\$5.59

NOTES: ¹ The number of connections shown is for the entire Humboldt CSD service area and includes Humboldt Hill USA, Myrtle town USA and WSA, South Eureka USA and WSA, and Freshwater WSA.

² There is sufficient source supply from HBMWD and the wells to serve all development potential within the study areas.

³ Additional storage requirements are based on 1 day of existing maximum day use (4.71 MGD) plus minimum fire storage of 120,000 gallons minus existing storage (4.785 MG).

⁴ According to the DHS annual inspection report, approximately 10-2 miles of distribution system is steel (coal tar lined and galvanized) pipe in fair condition. Distribution requirements for future development are not estimated at this planning level, and are assumed to be covered by the developer(s).

⁵ Additional storage requirements are based on 1 day of estimated maximum day use for new connections (# of projected new connections x 629 gpd/connection).

⁶ Above costs do not include improvements associated with fluoridation, HBMWD Somoa Peninsula Techite Line Replacement or City of Eureka Martin Slough project, nor Elk River Wastewater Treatment Plant expansion.

⁷ Costs and connection fees shown are provided for planning purposes and do not constitute a basis for HCSD connection fee implementation.

Humboldt CSD has approximately \$1.5 million in water reserves that could contribute to correcting existing deficiencies in the water system. According to the above table, approximately \$3.87 million in additional funding will be required to address existing deficiencies. This funding would likely come in the form of a low interest loan, like a State Revolving Fund loan which currently has loan terms of 20 years at 2.5% interest. At this rate, annual payments for a \$3.87 million loan would amount to approximately \$248,000 per year. With 7,494 existing ratepayers, monthly bills would have to be increased by approximately \$3. In reality, we would expect the District to apply for and hopefully obtain some grant funding that would reduce the local cost. In addition, we would expect the actual improvements to be sized to correct both existing deficiencies and have additional capacity to serve future development. To the extent that this can be done it will provide savings through economies of scale.

Future connections should buy into the existing infrastructure through connection fees. These should be determined by detailed rate studies and financial analyses. The unit costs shown under the low and high build-out estimates represent a minimum value for a connection fee, as these numbers do not reflect new connections' cost for sharing of the existing infrastructure. District specific studies (master plans) or project specific studies (facility plans) should be used to appropriately distribute the costs between existing and new users.

System Standards

HCSD's water system is a public water system, and as such must be operated to meet the requirements of the State of California. See Section 0 for additional information regarding system standards.

Fiscal Condition/Capital Replacement Program

According to HCSD records, they operate their water system on an annual budget of approximately \$2.8 million. The majority of this income is from service charges, but funding also comes from property taxes, interest revenue, connection fees, loans, and other ~~smaller~~ sources. Replacement or depreciation funds are not accumulated through revenues. The District's latest Capital Improvement Plan was developed in 2007, and they currently have approximately \$3 million in water and wastewater reserves.

Water Demand

According to 2005/2006 HBMWD records, HCSD's average daily use was 1.253 MGD and peak daily use was 2.32 MGD. The District purchased over 479 million gallons of HBMWD water in fiscal year 2005/2006 direct from HBMWD. However, HBMWD water represents only part of HCSD's water supply.

According to the 2007 HCSD records, they produced approximately 914 million gallons of water for customers in 2006 (257.2 MG from wells, and 659.9 from HBMWD either direct from HBMWD or through the City of Eureka). Therefore, average daily use is estimated at 2.53 MGD, and peak daily use estimated at 4.71 MGD (utilizing the HBMWD peaking factor from above – 1.86). The District has approximately 7,494 existing connections, of which 97% are residential connections, and does not retail water to any other Districts. It

~~is estimated that the Humboldt Hill USA represents approximately 30% of total water usage.~~

Water Supply, Treatment, Distribution and Storage

~~The Humboldt Hill USA is part of HCSD's larger overall water system.~~ HCSD receives approximately 75% of their water from HBMWD and the City of Eureka. HCSD also maintains three water supply wells (two active and one active backup) that supplement their water supply, with a rated capacity of 1,580 gpm (2.28 MGD). HCSD's active connection with the City of Eureka has a capacity of 800 gpm, or 1.15 MGD. Their contract with the HBMWD allows for a peak rate allocation of 2.9 MGD. Therefore, the combined source capacity is estimated at 6.33 MGD.

The Humboldt Hill USA's water system is served almost exclusively by the well water sources, although HBMWD water can be supplied to this part of the system. Reservoirs serving Humboldt Hill include the 1.0 MG Blue Spruce tank and the 0.5 MG Donne Drive tank, for a total storage capacity of 1.5 MG.

HCSD's distribution system stretches from Freshwater in the north to College of the Redwoods in the south and contains approximately 125 miles of pipe. The District has approximately 5 MG of storage capacity within ten storage tanks ranging in size between 0.12 MG and 1.0 MG. The District serves over fourteen pressure zones. Water quality is representative of HBMWD's excellent water source and meets or exceeds State standards.

Condition Assessment

Overview. Water service within ~~the Humboldt Hill US~~HCSD A is generally very good. The District has an ongoing program for replacing some old steel water line of various sizes and anticipates that all of it will be replaced by 2012. The Humboldt Hill study area's main water source is the District's wells. ~~Current peak day demands within the study area are estimated at 40% of the well's total capacity.~~

Peak daily use of HBMWD water for the District (2.32 MGD in 2005/2006) was below their peak rate allocation of 2.90 MGD set in contract with HBMWD on July 1, 2006. Overall peak daily use is at approximately 71% of existing source capacity. Current peak day demands within the study area are estimated at 40% of the well's total capacity

Current Deficiencies. There are no significant deficiencies within HCSD's water system ~~servicing the Humboldt Hill USA.~~ **although** some storage and fire flow improvements **are anticipated**. ~~for wild land urban interfaces are needed, and as the Greater Eureka area has been classified as at risk.~~

Underserved Areas. ~~All areas within the Humboldt Hill USA are served by HCSD~~ Areas within the boundaries of HCSD receive water service or are authorized to be served. Portions of the USAs or WSAs within or adjacent to the HCSD SOI do not currently receive service. Such areas that are currently developed with residential uses include Lumber Camp Road in Freshwater, the Indianola area (portions of the Indianola area receive service from the City of Eureka), and the Elk River area. Other new development areas such as Green Diamond timber land (also known as the ~~McKay Tract~~ **Ryan Slough (Areas E & F)**) (both within the Martin Slough and Ryan Sough drainages) are located within or adjacent to the HCSD SOI and **currently** do not receive water service.

Undesignated Areas – Several areas (Areas A, D, G & H) currently receive HCSD public water, but are outside of the HCSD SOI or service boundary. These areas should be included within an expanded SOI.

Proposed Improvements

System Upgrades. No major system upgrades are planned for the Humboldt Hill USA HCSD service area in the near future aside from routine maintenance, and the ongoing steel water line replacement project **or water storage tank additions to support planned development.** Replacement of HBMWD's Techite transmission line on the Peninsula will ultimately need replacement to **insure a reliable water supply not subject to seismic failure meet increasing demands from Humboldt CSD.** As future development occurs, the District is prepared to install additional storage and fire flow improvements. ~~for wild land interfaces as needed.~~

Future Expansion. The District is interested in expanding services to new developments as they occur. HCSD has requested that the areas identified above **as College of the Redwoods (Area A), Elk River Valley (Area C), Meyers Avenue (Area D), Ryan Slough (Area E & F), Cummings Road (Area G), Pigeon Point Road (Area H), Pacific Lumber Camp Road (Area J), Indianola (Area K & L)** ~~as the Humboldt Hill South; and College of the Redwoods; Lumber Camp Road (Area J); Ole Hanson Road; Indianola (area K & L); the Wood Gulch tank site area at the end of Pigeon Point and Cummings Roads (Area G), the Folt Road area (Area H), the McKay Ryan Slough Tracts (Area E & F); and Elk River Road (Area C)~~ be included within its SOI upon completion of the General Plan Update. **It is recommended that HCSD expand its SOI to be able to plan for and supply public service to these area's based on health, safety and fire protection requirements, as allowed by zoning and as approved by the County.**

Cost and Schedule of Improvements. The District developed a five-year Capital Improvement Plan in 2007 that covers costs and schedules for improvements to its water system. The majority of the CIP focuses on steel water main replacement, but also focuses on pumping facility upgrades. Proposed improvements are estimated to cost approximately \$3 million over the next five years.

7.3 HCSD and Eureka (Sewer)

Areas served by HCSD have the greatest development potential within the county. Although these areas have the most potential with respect to vacant and underdeveloped parcels, some major infrastructure limitations exist to developing some of these areas with respect to water, sewer, and transportation. The following discussion addresses issues surrounding sewer limitations.

HCSD's ability to serve new connections with sewer is contingent upon the City of Eureka's treatment and disposal capacity and in some cases their sewer collection capacity as well. The City and HCSD are under a contractual agreement to share capacity at the Elk River Wastewater Treatment Plant (WWTP) and to convey wastewater through several points of interconnection between HCSD's and Eureka's collection system in multiple locations. Unfortunately, portions of both HCSD's and Eureka's collection systems experience significant inflow and infiltration (I/I) and are near or at capacity in many locations. The Elk River WWTP is also near capacity and experiences problems related to I&I during winter months.

According to the National Pollutant Discharge Elimination System (NPDES) permit issued by the North Coast Regional Water Quality Control Board (RWQCB), the facility is permitted for an average dry weather flow (ADWF) of 5.24 MGD, peak dry weather flow of 8.6 MGD, and a peak wet weather flow of 32 MGD. The City has indicated that the ultimate design capacity of the Elk River WWTP is 6.0 MGD ADWF. Average dry weather flows for the month of August has varied from 4.5 MGD (2002) to 4.8 MGD (2005), while winter maximum day flows totaled approximately 18 MGD (City of Eureka, 2006). However, historically peak wet weather flows have exceeded 30 MGD. The City is currently evaluating their WWTP and anticipates **the WWTP infrastructure study** being completed in 2008, at which time they will also begin their NPDES permit renewal process (Knight, 2007).

The City of Eureka ~~is~~ **and HCSD are** also working on reducing the levels of infiltration and inflow (I/I) in their collection system. ~~and~~ **The construction of the City of Eureka and HCSD are also cooperatively working on the** Martin Slough Interceptor Project. **The Martin Slough project is multi-purpose in function; reducing sewer overflows that degrade the environment, eliminate existing city and HCSD sewage lift stations (by conversion to gravity service), energy conservation and capacity for planned development.** ~~which would reroute a significant portion of sewer flows from the southeastern parts of the City and surrounding unincorporated areas served by HCSD. Currently, flows from these areas travel north to the Hill Street Pump Station, circumnavigating the entire City before doubling back south to the WWTP, requiring costly pumping. The intent of the Martin Slough Interceptor Project is to alleviate capacity issues in the City's northern portion of the City's collection system and reduce the need for pumping, which should provide capacity for future development in the eastern portion of Eureka and HCSD (Myrtle town).~~

~~In 2006 the City initiated a new Wastewater Facilities Plan study. This is the first wastewater facilities study since the previous "Facility Plan Step 1" was prepared in 1984 by Martin, Northart and Spencer for the Second Slough I/I Correction project. The first phase of this new Facilities Plan was completed in 2007 and focused on a capacity and condition assessment of the City's gravity wastewater system.~~

~~Two years of flow metering data were collected and analyzed by creating a hydrologic model to analyze the data. The results of this effort were tabulated in a Hydrologic Model Calibration Technical Memorandum (TM), a revised version of which was issued on May 8, 2007. The Hydrologic Model Calibration TM indicates that, when Peak Wet Weather Flows are projected to the 20-year recurrence interval storm event, several areas of the wastewater system can be expected to reach capacity in their current condition. Implementation of an I/I correction program may be instrumental in decreasing peak wet weather flows.~~

~~In conjunction with the Hydrologic Model Calibration TM, in April 2007 a draft Hydraulic Model Calibration Technical Memorandum was partially completed. The completion of this draft TM is awaiting the inclusion into the model of future County population projection data for determination of future flow conditions. However, the draft TM does discuss current conditions for the simulated 20-year recurrence interval storm peak hourly wet weather flow (PHWWF).~~

~~The draft Hydraulic Model Calibration TM indicates that portions of the gravity sewer mains supplying the Hill Street, McCullens, and Washington Street pump stations have~~

~~varying capacity limitations for conveying the 20-year storm event. After construction of the Martin Slough Interceptor project additional capacity should be realized in the Hill Street, McCullens, and Washington wastewater systems due to the flow diversions into the Martin Slough Interceptor from the existing systems. Any remaining capacity limitations thereafter in the gravity system may be resolved by the implementation of an I/I reduction program in conjunction with replacements of selected gravity sewer mains.~~

~~With the completion of the Martin Slough Interceptor project, the Hill Street Pump Station should essentially be restored back to operating within its functional capacity without implementation of I/I correction work, and will continue to gain additional capacity for development as I/I correction work is implemented.~~

~~In 2007 the second phase of the Wastewater Facilities Plan study was initiated and is anticipated to be completed in 2008. The second phase focuses on evaluating the City's Elk River Wastewater Treatment Plant (WWTP). In 2008 the City will apply for renewal of its NPDES permit with increased capacity allowances above the current NPDES permit allowances. The second phase of the Wastewater Facilities Plan will focus on evaluating capacity limitations in the WWTP on a unit process-by-unit process basis, and will be used as the basis for the new NPDES permit re-rating. The end result will be a document that outlines long term capital improvements required for the WWTP to meet the projected wastewater flows of the future population in the Greater Eureka Area over the next 20 years (Knight, 2007).~~

~~One of the difficult issues facing all wastewater service providers (and their engineers) is evaluating the impact of future regulations. The Elk River WWTP was designed so that any flows in excess of 12 mgd, currently receive primary treatment only and are then blended with secondary treated wastewater before discharging to the bay. There is speculation that the RWQCB may question the use of blending in upcoming permit renewals. Significant upgrades to the WWTP would be necessary if 100% of inflows were required to be treated to secondary treatment standards. The City has indicated it will oppose any changes to their discharge permit, as their treatment process was designed, and is permitted, to utilize blending.~~

~~According to RWQCB staff, the EPA published draft revisions to its requirements in 2003 that would allow blending (Short, 2007). However, the EPA received significant opposition in Congress to the legislation as many see it as a violation of the Clean Water Act, and in 2005 the EPA abandoned its efforts of proposing this policy. While we agree with and are supportive of the City's position, many communities are being forced to make significant improvements to their wastewater treatment and disposal facilities to meet either changes in the regulations or how they are being interpreted.~~

In conclusion, significant challenges exist for both the City of Eureka and HCSD related to their collection, treatment and disposal systems. Both agencies are actively working to correct current deficiencies and to provide capacity for future growth. These improvements will take time to be completed and will need to be completed prior to any significant development occurring in areas served by HCSD. Areas such as Myrtle town, Ridgewood, and Cutten are limited by the City of Eureka's collection system capacity and the Elk River WWTP's capacity. Development in Humboldt Hill is mainly limited by the Elk River WWTP's ability to handle increased flows.

Martin Slough Interceptor (MSI)

The City of Eureka is currently in the process of finalizing designs for its Martin Slough Interceptor (MSI) Project, which is aimed at improving wastewater collection within the Martin Slough basin. The intent of the project is to reduce demands on portions of the City's system that are overloaded and from time to time experience sanitary sewer overflows. The project will also greatly improve efficiencies within both the City's and HCSD's collection systems by eliminating as many as 16 existing lift stations, with associated energy and cost savings.

Approximately 90 percent of the South Eureka USA is within the Martin Slough basin or MSI project boundaries. The areas of the South Eureka USA that are outside of the MSI project boundaries include a portion of Rosewood/Pinehill area and a portion of the Cuffen area, meaning that these area will drain to portions of the City of Eureka collection system other than the proposed MSI. Other portions of the South Eureka USA are within the Martin Slough basin but located outside the proposed project boundary established by the City of Eureka. The purpose of this section is to compare the development estimates and future wastewater flows used in the MSI project to the South Eureka USA assessment prepared as part of this analysis.

MSI Project Development Estimates. The future housing units in the Martin Slough basin were projected by the City of Eureka as part of the MSI design (Project Boundary and Population Density Technical Memorandum, amended April 23, 2003). *The Martin Slough basin was divided into 40 sub-basins (Service Area Collection Basins, Figure 3-2) that flow to 19 "Nodes" along the MSI. The Ten Percent Design Report projected future residential development (both primary and secondary dwelling units) within each sub-basin.* The City of Eureka based its development estimates on the approved 1995 Eureka Community Plan land use designations (including specific policies regarding allowable density, density limitations, and urban expansion).

The City of Eureka assumed that 15 percent of total HCSD primary dwelling units would have 2nd dwelling units and that 20 percent of total City of Eureka primary dwelling units would have 2nd dwelling units. The City of Eureka also assumed that 2nd dwelling units would have fewer total occupants and would contribute 60 percent of the wastewater flow of primary dwelling units. Primary dwelling units are considered equivalent dwelling units (EDU) and 2nd dwelling units are assumed to equal 0.6 EDUs. The City of Eureka estimated that there are 94 non-residential EDUs in the HCSD portion of the Martin Slough basin and assumed that there would be no additional non-residential development.

The City of Eureka projected that the MSI would serve the following based on the Proposed Project:

Table 0-3. Dwelling units associated with the proposed MSI project.

Source	City of Eureka	HCSD	Total
Existing Residential Dwelling Units	1,345	2,839	4,184
Existing Non-residential Units	0	94	94
<i>Subtotal Existing Units</i>	<i>1,345</i>	<i>2,933</i>	<i>4,278</i>
Future New Primary Dwelling Units	440	3,900	4,340
Future New Secondary Dwelling Units	357	1,011	1,368
Future New Secondary Dwelling Units EDUs	214	606	820
Future Non-residential Units	0	0	0

<i>Subtotal New Units</i>	797	4,911	5,708
Total Units Served	2,142	7,844	9,986
Total EDUs	1,999	7,440	9,439

Source: Table 9-3, Martin Slough Interceptor Project Draft EIR, May, 2004 with EDUs added.

The MSI project was designed to (1) accommodate growth planned in the City of Eureka General Plan and the 1995 Humboldt County Eureka Community Plan and (2) to avoid the potential for growth inducing environmental impacts. Although the MSI Final Alternatives Analysis Report concluded that "greater densities...are very likely to occur within the project boundary as well as adjacent to the project boundary during the life of the project", the MSI project development estimates were limited by density caps placed by the County Board of Supervisors on three large developable areas within the Martin Slough basin. The following are the density caps approved by the Board of Supervisors in the Eureka Community Plan:

The 1995 Eureka Community Plan Policy 2620(7), (13), and (14) specifies the maximum allowable densities on the Robinson-Dunn Properties, Eggert North, and Eggert South. Policy 2620(20) further states that:

"During their review of the 1995 Eureka Community Plan, the Board of Supervisors supported removal of density limitations on the Eggert North (300 units), Eggert South (240 units) and Robinson-Dunn (700 units) properties. The Board ultimately did not remove the limitations because of the likelihood of significant delay in adopting the Eureka Community Plan."

"The Board supports submittal of a General Plan Amendment to remove the density limitations placed on the Eggert North, Eggert South and Robinson-Dunn properties, if such submittal includes a traffic study which documents the traffic service impacts of removal of those density limitations."

Traffic Impacts – Both the 1995 Eureka Community Plan and the MSI project required that traffic impact fees be implemented by the County as a mitigation measure. New sewer connections to the MSI may only occur if the new development traffic impact fees are implemented by the County.

MSI Project Comparison to South Eureka USA. The approach used by Humboldt County in projecting the development capacity of land within the South Eureka USA is described in Section ~~Error! Reference source not found.~~ of this report. The difference between the City of Eureka MSI project area dwelling unit count at build-out and the "high" dwelling unit count of the portion of the Humboldt County South Eureka "high" within the Martin Slough basin is +1,608 EDUs. This difference is focused ~~at three MSI nodes: "Node 2" at the "O" Street lift station which includes the~~ on the Middle and South McKay tracts, ~~"Node 9" at and the Robinson Tract./Leslie Rd. Gravity station which includes the Robinson Dunn properties; and "Node 18" at the HCSD stub station.~~ The following shows the primary differences between the City of Eureka proposed MSI project and the South Eureka "high" development projections:

"Node 2" at the "O" Street lift station (EDUs)	
Humboldt County USA "High" Development Potential Estimate	1,865
City of Eureka MSI Project Final Alternative Analysis Report	<u>1,422</u>
Difference	443

"Node 9" at the Robinson Tract/Leslie Rd. Gravity station (EDUs)	
Humboldt County USA "High" Development Potential Estimate	707
City of Eureka MSI Project Final Alternative Analysis Report	<u>388</u>
Difference	319

"Node 18" at the HCSD stub station (EDUs)	
Humboldt County USA "High" Development Potential Estimate	2,362
City of Eureka MSI Project Final Alternative Analysis Report	<u>1,557</u>
Difference	805

The MSI project area does not include all areas within the South Eureka USA or the HCSD boundaries. For instance, the area within the HCSD boundaries located south of Ridgewood Heights and adjacent to MSI basin 18, comprising the southeast quarter and a portion of the southwest corner of Section 14 (T4N R1W), is not included in the MSI project. In addition, several areas identified by the HCSD for inclusion within its Sphere of Influence (SOI), described as **the Ryan Slough Areas E & F "Add Area E"** (containing the portion of the North McKay Tract located in the Ryan Slough drainage), and **"Add Area F"** (containing the portion of the South McKay Tract located in the Ryan Slough drainage), also were not included in the proposed project area of the MSI. As stated previously, these areas were excluded from the MSI project in order to avoid growth inducing effects **and comply with the County adopted 1995 Eureka Community Plan.**

The City of Eureka MSI analysis also identified areas within the MSI basin that are "not used in calculating further growth." These areas were not considered developable by the City of Eureka ~~did~~. However, the Humboldt County "high" potential development projections for the South Eureka USA assumes that steeper (less than 30 percent slopes) will be developed in these areas and that up to 285 new primary dwelling units plus 26 2nd dwelling units could be accommodated, or 311 EDUs. It should be noted that the "low" estimate for the South Eureka USA assumes that only 30 new primary units can be accommodated.

The following is a listing of the additional South Eureka USA development areas that would logically contribute to the MSI:

Additional Development Area (EDUs)	
HCSD proposed SOI "Add Area E" including South McKay	1,223
HCSD proposed SOI "Add Area F" including Mid/North McKay	382
Additional "Node 18" basin within HCSD boundaries	509
No additional development ???	311
Elk River Road Area	13
Total	2,438

It should be noted that most of these additional development areas were evaluated by the City of Eureka in the MSI project Final Alternative Analysis Report and EIR. This report evaluated two alternatives: (1) "modified service area boundary without density adjustment;" and (2) "modified service area boundary at future densities" were analyzed. The modified service area boundary (as identified in Draft EIR Figure 2-2) includes HCSD's current boundaries as well as portions of proposed additions to the HCSD Sphere of Influence referred to as "Add Area E" and "Add Area F. The "modified

service area boundary at future densities" alternative is similar to the South Eureka USA "high" development estimate.

The following is the City of Eureka projection of future dwelling units based on the "modified service area boundary at future densities":

Table 0-4. Dwelling Units Associated with the MSI Modified Service Area at future densities.

Source	City of Eureka	HCSD	Total
Existing Residential Dwelling Units	1,345	2,839	4,184
Existing Non-residential Units	0	94	94
Subtotal Existing Units	1,345	2,933	4,278
Future New Primary Dwelling Units	440	6,996	7,436
Future New Secondary Dwelling Units	357	1,475	1,832
Future New Secondary Dwelling Units EDUs	214	885	1,099
Future Non-residential Units	0	0	0
Subtotal New Units	797	8,471	9,268
Total Units Served	2,142	11,404	13,546
Total EDUs	1,999	10,814	12,813

Source: Table 9-9, Martin Slough Interceptor Project Draft EIR, May, 2004 with EDUs added.

Comparison of Future South Eureka USA Wastewater Flows to MSI Project. The intent of the following analysis is provided to explain how additional development sewer capacity can be accommodated within the Martin Slough Interceptor Project (MSI) area and HCSD requested expanded Sphere of Influence Areas E & F. ~~is to develop potential alternatives to serve the additional potential housing, above what the MSI is currently designed for. In addition to this analysis, the City of Eureka and HCSD recently participated in a value engineering study of the MSI project that identified a number of potential modifications that could reduce the cost of that project.~~

Major Development Areas within HCSD – As previously explained, the proposed MSI Project was designed for a unit capacity as adopted in the County's 1995 Eureka Community Plan. This design requirement fulfilled the environmental condition of being non-growth inducing. The MSI design capacity was based on typical existing wastewater flow volumes. Therefore, sewage capacity is not based on the number of developer proposed units, but is limited to the MSI allocated flow volume. This flow volume limitation is stated in and made a part of all HCSD conditions of approval and intended to serve requirements for major developments. HCSD development flows into the City of Eureka is measured by sewage flow metering stations. When each individual development reaches its allocated capacity volume, no further units are allowed. Conversely, if capacity still exists (in the MSI), additional sewage connections may be allowed.

Major Developments not within the HCSD Boundary or Sphere of Influence - This section applies to HCSD's request to expand its SOI to plan for and provide sewer and water to areas E and F. All other SOI requested expansion areas are not within the MSI service area and are considered Water Service Areas (WSA) only. In order to provide sewer service to Areas E and F, the following infrastructure plan is proposed:

1. The sewage lift station servicing the existing approved McKay Tract developments would be expanded.

2. **A new pressure force main would be constructed from the McKay Tract Lift Station to the proposed Martin Slough Sewage Pump Station.**
3. **The Martin Slough Sewage Pump Station would be expanded in capacity.**
4. **A new (parallel) pressure sewer would be constructed from the MSI Pump Station to the City of Eureka Wastewater Treatment Plant (COE WWTP).**
5. **The COE WWTP would be upgraded as required.**
6. **The above improvements would be made part of each developments environmental approval process.**
7. **Areas E and F infrastructure improvements would be financed by the developer(s) requesting the service.**

In summary, the MSI provides sewer service to the approved service area, with provision for additional housing units if capacity exists and as approved by the development approval process. Development not part of the MSI Project and outside the present HCSD SOI can be sewer serviced by a combination of separate MSI Lift Station upgrades and parallel sewer infrastructure improvements paid for by the developer requesting service.

~~Ultimately, wet weather flows, and the associated inflow and infiltration (I/I) common to all collection systems, will dictate the capacity of the MSI to serve additional housing. Fortunately, somewhat conservative flow figures were used in the design and sizing of the MSI. The MSI has been sized to hydraulically accommodate an estimated average dry weather flow of 219 gpd/EDU and a peak hour wet weather flow (PHWWF) of 1,095 gpd/EDU for the 25-year recurrence storm event. The total PHWWF used in sizing the interceptor has been recently adjusted to 14.1 MGD. According to City staff, the interceptor is being designed to serve a full build-out of 9,765 EDUs, which yields a unit PHWWF of 1,443 gpd/EDU (Gierlich, 2007).~~

~~The PHWWF value dictated the sizing of the interceptor, as this is the maximum flow that must be passed. With a new collection system that will be installed to serve new housing growth within the Martin Slough basin, the actual peaking factor could be lower. Lower peaking factors are seen in communities with relatively new collection systems and low I/I, such as McKinleyville and Glendale. For example, McKinleyville CSD serves an estimated 5,500 EDUs and has peak wet weather flows (PWWF) of approximately 2.4 MGD, yielding a unit flow of approximately 436 gpd/EDU. Glendale's community wastewater system serves approximately 165 EDUs and has peak wet weather flows of approximately 75,000 gpd, yielding a unit flow of approximately 455 gpd/EDU.~~

~~Based on Humboldt County building permit data, an average of 53 new housing units per year were constructed within the South Eureka USA between 1995 and 2005. If this growth rate were to double or triple, between 2,000 and 3,200 new units could be constructed in the South Eureka USA during the Humboldt County General Plan update planning period. At a rate of growth of 160 new units per year (approximately three times the current rate) it would take over 50 years for Humboldt County's development projections to be realized (8,638 new primary and 2nd dwellings within the Martin Slough Basin).~~

Assuming the full build-out of the County's high development projections do occur within the Martin Slough basin during the useful life of the MSI, the MSI would be required to serve the existing 4,278 EDU's, plus the County's estimated 8,638 EDUs, plus an additional 655 EDUs estimated to occur within the City, for a grand total of 13,581 EDUs. Given the MSI is being sized to pass a PHWWF of 14.1 MGD; this corresponds to a unit flow of approximately 1038 gpd/EDU. The following discussion compares this daily flow per EDU to other newer collection systems within the County.

The projected unit flow for the Martin Slough basin is considerably higher than McKinleyville CSD flows of 436 gpd/connection and Fieldbrook Glendale CSD unit flows of 455 gpd/connection, which represent peak wet weather flows averaged over an entire day. Although these numbers seem similar it is important to recognize that they have different definitions; the difference being the peak day's total flow (PWWF) and the peak hour on the peak day (PHWWF) (expressed as a daily flow). Also, 25-year recurrence interval peak hourly wet weather flows were used in the sizing of the MSI. Some historical hourly data for McKinleyville was analyzed to determine the peaking factor between PHWWF and PWWF, and the data revealed peaking factors of approximately two. Therefore, McKinleyville's PHWWF is estimated at approximately 872 gpd/EDU, while Glendale's PHWWF is estimated at approximately 910 gpd/EDU. This peak hourly wet weather flow estimate however does not represent the 25-year recurrence interval flow, as is the case for the 1,038 gpd/EDU which would result if all development potential within the South Eureka USA were to be served by the MSI.

This analysis shows that the MSI could potentially have sufficient capacity to serve the additional development within the expanded service area boundary at future densities. There are a number of factors that will affect the extent to which other infrastructure solutions have to be constructed to serve this additional growth once the MSI has reached full capacity. These factors include the following:

- Having peak wastewater flows for new developments that are lower than existing rates should provide some additional capacity in the proposed MSI system. These lower peak flows should be possible through the use of low flow water fixtures, which are currently mandated by existing laws, and proper construction of the collection system.
- An aggressive infiltration and inflow reduction program for the existing collection system that flows into the MSI should result in reduced peak flows, which will also provide some additional capacity.
- The actual number of future residential units that are served by this system.

At this point in time, we do not believe that a new project in addition to MSI needs to be developed. Instead, we believe that the capacity of the MSI and the entire collection system needs to be monitored and possibly re-evaluated every 7 to 10 years. This analysis will help determine the impact of the above listed factors and whether an additional project is necessary. Some options that should be considered in the future for serving this potential growth include recommissioning one or more of the existing lift stations that will be relieved as part of the MSI project in the future, constructing another interceptor (possible down Henderson Street) or routing some of the future flows from some areas within the proposed new basin to the north via Ryan Slough. As the City of Eureka and HCSD collection systems reach full capacity, options to re-direct wastewater flows should be considered to maximize use of the existing capacity and system performance.

7.4 Community Wastewater Systems

The following sections introduce the County's USAs that either have existing community wastewater systems in place to serve their communities or have plans to develop community wastewater systems within the planning period considered herein. The sections provide a detailed discussion on development potential and wastewater infrastructure assessment for each study area. Any wastewater system infrastructure deficiencies will be identified along with plans for timing and financing of needed improvements.

Similar to the discussion of HCSD in Chapter 6, Water Systems, the USAs within or adjacent to HCSD are presented together in Section 7.5 of this Chapter, following the discussion of the wastewater systems located in the other USAs. The following USAs have been evaluated with respect to HCSD:

- Humboldt Hill USA
- Myrtle town USA
- South Eureka USA

All infrastructure costs presented herein represent our opinion of the probable construction and soft costs (engineering, legal, administrative, etc.) in September 2007 dollars. The costs are "order of magnitude" costs, and actual costs will be higher or lower due to specific issues related to a particular project/site. Wastewater system infrastructure costs are unique to each study area and highly speculative depending on the outcomes of some regulatory changes looming large on the horizon, and therefore unit costs were not able to be applied as they were in the water system infrastructure assessments. For example, wastewater treatment costs will vary from study area to study area depending on what constituents are included in waste discharge requirements. Summertime disposal costs will vary largely depending on site-specific variables such as land availability, topography, soil characteristics, and potential for irrigation. For these reasons, wastewater infrastructure costs were not estimated on a unit-basis as was done in the water infrastructure assessment. Instead, background knowledge of the systems and engineering judgment regarding forthcoming and anticipated regulations were used to "guesstimate" as accurately as possible.

Costs related to existing deficiencies were also more difficult to separate out from costs associated with necessary future upgrades. Since collection system upgrades and treatment upgrades will be required by law as regulations change, these upgrades will benefit both existing and future development. Therefore, unit costs were developed based on total existing and future units. Again, further studies will need to be performed by service providers to determine how to appropriate and distribute these costs over their existing and future ratepayer base in order to develop more accurate connection fees and rates needed to maintain and sustain systems well into the future.

7.5 Humboldt Community Services District USAs (Sewer)

See Section 6.6 for a general discussion of HCSD and Section 7.3 for a detailed discussion of issues affecting the HCSD and City of Eureka collection systems and the Elk River