

2018 Annual Water Capacity Analysis

Prepared for:
Garberville Sanitary District
Board of Directors
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HISTORY OF WATER SOURCES

In 2004 the Garberville Sanitary District (GSD) purchased the Garberville Water Company (GWC) from the Hurlbutt family. The GWC had a number of historical water sources which included:

- South Fork Eel River (SFER) Diversion
- Tobin Well
- Miller Well
- Unnamed Stream

In addition to these GWC water sources, GSD had the right to use water from an unnamed creek on Brisbin's property for the wastewater treatment plant. The right to this water source was relinquished as part of the lot line adjustment agreement for the acquisition of the new primary pond at the wastewater plant.

When the purchase of GWC was completed, only the South Fork Eel River diversion, Tobin well, and Miller well was transferred to GSD.

In recent history the GSD has used the water from the SFER and Tobin well. Some effort has been made to clean out the well casing on the Miller Street Well, but no water has been pumped from this well in the past 10 years.

INFRASTRUCTURE OF WATER SOURCES

The South Fork of the Eel River Infiltration Gallery provides collection of the main water source. It was originally installed in 1940. The water flows through a collection chamber into a corrugated metal pipe that is 4 feet in diameter by 55 feet in high. There are two 25 HP submersible pumps that supply up to 350 GPM to the system. The pump discharges to a 6" raw water pipeline that transports the raw water to the new surface water treatment plant (SWTP) on Tooby Ranch Road.

The SWTP consists of flocculation, direct filtration, chlorination, and finished water pumping system.

The water treatment plant utilizes Catfloc L Polymer as a coagulant and filter aid. The polymer is injected into the raw water line prior to entering the flocculation basin located upstream of the filters. The baffled flocculation tank is 5,500 gallons, 8 feet in diameter and 14 feet straight shell length, 150 psi pressure tank.

The filtration system is a duplex Loprest model and generally consists of two 108" diameter x 72" straight shell length, 150 psi pressure tanks with 18" filter sand and 12" anthracite with two grades media support gravel and associated piping, valves, controls, and accessories. The filtrations system requires occasional backwash of the filter medium. The spent backwash water is stored in a 35,000 gallon, 18 feet diameter by 18 feet side water depth with overall height of 22 feet, steel welded storage tank. The clearwater from the backwash storage tank will be recycled back into the treatment plant system and the sediment will periodically be pumped from the tank and disposed of by the pumping company. The backwash recycling pump allows the clearwater from the storage tank to be pumped back into the treatment plant.

The water is chlorinated using liquid sodium hypochlorite. The liquid sodium hypochlorite can be injected prior to flocculation and after the water has been filtered. After the sodium hypochlorite is injected, the chlorination detention time must be satisfied prior to the water being used. Originally the SWTP was constructed with an underground chlorine contact chamber of 30" serpentine pipe. That pipe failed in Nov. 2017 and had to be replaced. The construction of an above ground steel baffled pressure vessel was completed in 2018 to replace the underground chamber.

The finished water is pumped up Sprowel Creek Road, through town, and to the existing main storage tank on APN 032-211-012. These pumps are a duplex pumping system. The SWTP has a permanently mounted, diesel, 60 kW generator with a tank that will allow for 72 hours of continuous operation. This generator can power the entire SWTP facility during power outages.

Tobin Well is a groundwater source with a duplex pumping system with chlorination

Miller Well is a groundwater source with no pumping system and is not currently operational.

The existing system has adequate production, treatment, and storage capacities for the average peak daily demand. The maximum daily demand is 427,780 gpd recorded during the month of July in 1999. The total storage capacity for the system is approximately 500,000 gallons which is the sum of the four storage tanks in the system. This is sufficient to meet the average dry day water demand. The water treatment facility produces water that meets or exceeds the State regulations for drinking water and the Surface Water Treatment Regulations. The turbidity and residual free chlorine levels comply with the maximum allowable levels. The existing system provides four pressure zones with adequate pressure throughout the District.

EXCERPTS FROM SWRCB AND CDFG AFFECTING DIVERSION

The District holds a water diversion permit from the State Water Resources Control Board for appropriation of water from the South Fork of the Eel River. The permit is number 20789. This permit allows the District to divert a maximum of 0.595 cubic feet per second (267 gpm) from the river, year round. The District also has a fixed license that allows the District to divert an additional 0.155 cfs. The total maximum instantaneous diversion allowed is 0.75 cfs (336 gpm). This would equate to a maximum daily diversion of approximately 484,700 gallons and 177 million gallons per year. Both documents were amended as of October 11, 2013, and can be found in Appendix A. In addition, GSD executed a Lake and Streambed Alteration Agreement with the California Department of Fish and Game dated June 26, 2012. This document can be found in Appendix B.

Some specific terms of the License are:

*#5. The water appropriated under this right shall be limited to the quantity which can be beneficially used and shall not exceed **0.155 cubic foot per second** by direct diversion to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this right shall not exceed **112.2 acre-feet per year**.*

*#6. The total quantity of water diverted under this right and the right pursuant to Application 29981 shall not exceed **542.2 acre-feet per year**.*

#7. The maximum simultaneous rate of diversion under this right and the right pursuant to Application 29981 shall not exceed 0.75 cubic foot per second.

Some specific terms of the Permit are:

#5. The water appropriated under this right shall be limited to the quantity which can be beneficially used and shall not exceed 0.595 cubic foot per second by direct diversion to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this right shall not exceed 430 acre-feet per year.

#8. Construction work and complete application of the water to the authorized use shall be prosecuted with reasonable diligence and completed by December 31, 1999.

Some of the terms of the DFG Agreement for the diversion are:

2.15 The Permittee shall not divert more than 0.75 cfs or 10% of the streamflow as measured at the USGS Gauge Station No. 11476500 at Miranda.

This Agreement shall expire five years from execution, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

So in summary, GSD is allowed to divert at a rate up to **336 GPM** (0.75 cfs) with a maximum of up to 176 million gallons per year (442.2 acre-feet per year) limited to the maximum amount diverted during the 5-year construction period ending December 31, 1999; which was **80 million gallons** in one year.

For assessment of the amount allowable under the SFER diversion, we use this 80 million gallons per year maximum annual diversion at a rate of up to 336 GPM. The new SWTP is capable of treating 350 GPM.

DIVERSION TRENDS AND WATER SALES

To follow are two graphs summarizing the District's water diversions, metered customer sales, and bulk water sales. Graph 1 on the following page depicts the annual diversions from the South Fork of the Eel River as reported to the SWRCB for the license plus the permit from 1977 to 2018. The average from 1977 to 2018 was **61,381,523** gallons per year. The average over the past 20 years was **63,164,126**. The average over the past 10 years was **57,463,390**. This 10-year average is lower than previous years in part because GSD implemented a new rate structure from 2009 - 2014 that increased rates and replaced the leaking Alderpoint Road Tank in 2014.

Graph 2 depicts the 2010 - 2018 diversions, metered customer sales, and bulk water sales.

The metered water sales are to 440 Customers. There are 304 residential and 136 commercial customers. In addition to metered water sales, historically the District had been selling bulk water to numerous water haulers.

In December of 2012, the District received a Cease and Desist Order from the State Water Resources Control Board (see appendix F). The CDO in part required that the District "*cease*

and desist the bulk sale and delivery of water under its permit and license to areas outside the authorized place of use, unless the water is needed for emergency domestic water supply”.

In an email from John O’Hagan, Manager of the SWRCB DWR Enforcement Unit dated Dec 03, 2012, responding to District staff inquiry on the definition of an “emergency domestic water supply” criteria, he states *“Our intent in providing an exception allowing for bulk water sales for Emergency Domestic Use is a limited and narrow exception available only in temporary circumstances where such deliveries are required for essential health and safety uses. State Water Board staff does not agree with your proposal to use the definition of Domestic use provided by section 660 of Title 23, California Code of Regulations to interpret the draft CDO. This section is the definition used by the State Water Board for a domestic beneficial uses of water when an applicant files for a water right permit. When referring to “emergency domestic”, the draft CDO was intentionally narrowing this broad definition of Domestic use down to the essential uses necessary to sustain human and animal life, and for the water necessary for sanitation. Uses for outside irrigation of lawns, gardens and landscaping, even if within ½ acre, would not be an emergency need of water.”*

In 2015, bulk water was sold to CalFIRE to fill water tender type trucks out of the fire hydrant near their complex on Alderpoint Road to fight the Buck Fire on Alderpoint Road. This water was used directly on the fire and for the personnel housed as the Eel River Fire Base Camp just outside of our POU. We deemed this to be an emergency that met the criteria of the CDO.

In 2017, we sold bulk water for several emergency projects. In April 2017 a large slide covered all lanes of Hwy 101 and closed the road to southern Humboldt County. Caltrans issued an emergency contract for the work with Mendocino Construction Services as a subcontractor. MCS needed water for the work to be done at the site. We also sold bulk water to Cox & Cox and Mercer Frasier for the work on the Garberville Airport.

In 2018 a complaint was filed, the District supplied the requested documents, and the SWRCB notified the District that bulk water sales for construction were a violation of the CDO.

The graphs also show that there is “lost” water within our water system. That is the case with every water system, although the magnitude of the loss varies with the age of the system. This lost water was reduced with the replacement of the Alderpoint Road Tank.

From US EPA, Office of Water. 2013. Drinking Water Infrastructure Needs Survey and Assessment: Fifth Report to Congress. EPA 816-R-13-006, “The US EPA’s fifth national assessment of public water system infrastructure needs documents a 20-year capital improvement need of over \$384 billion between 2011 and 2030.” They also state, “Lost water from aging infrastructure is also costing local governments and utilities lost revenue or unrecovered costs of production. Thus, taxpayer and ratepayer dollars are being wasted along with the commodity itself. A positive return on investment is almost certain for many systems, and tools are available for determining the economic level of loss for an individual water supply system - the level at which the cost of investing in water loss management is less than the value of the lost water.”

EPA’s Document No EPA 816-F-13-002, dated July 2013, entitled “WATER AUDITS AND WATER LOSS CONTROL FOR PUBLIC WATER SYSTEMS” provides instructions and ideas for ways to identify unauthorized water consumption, leakage, by conducting a water audit of the system.

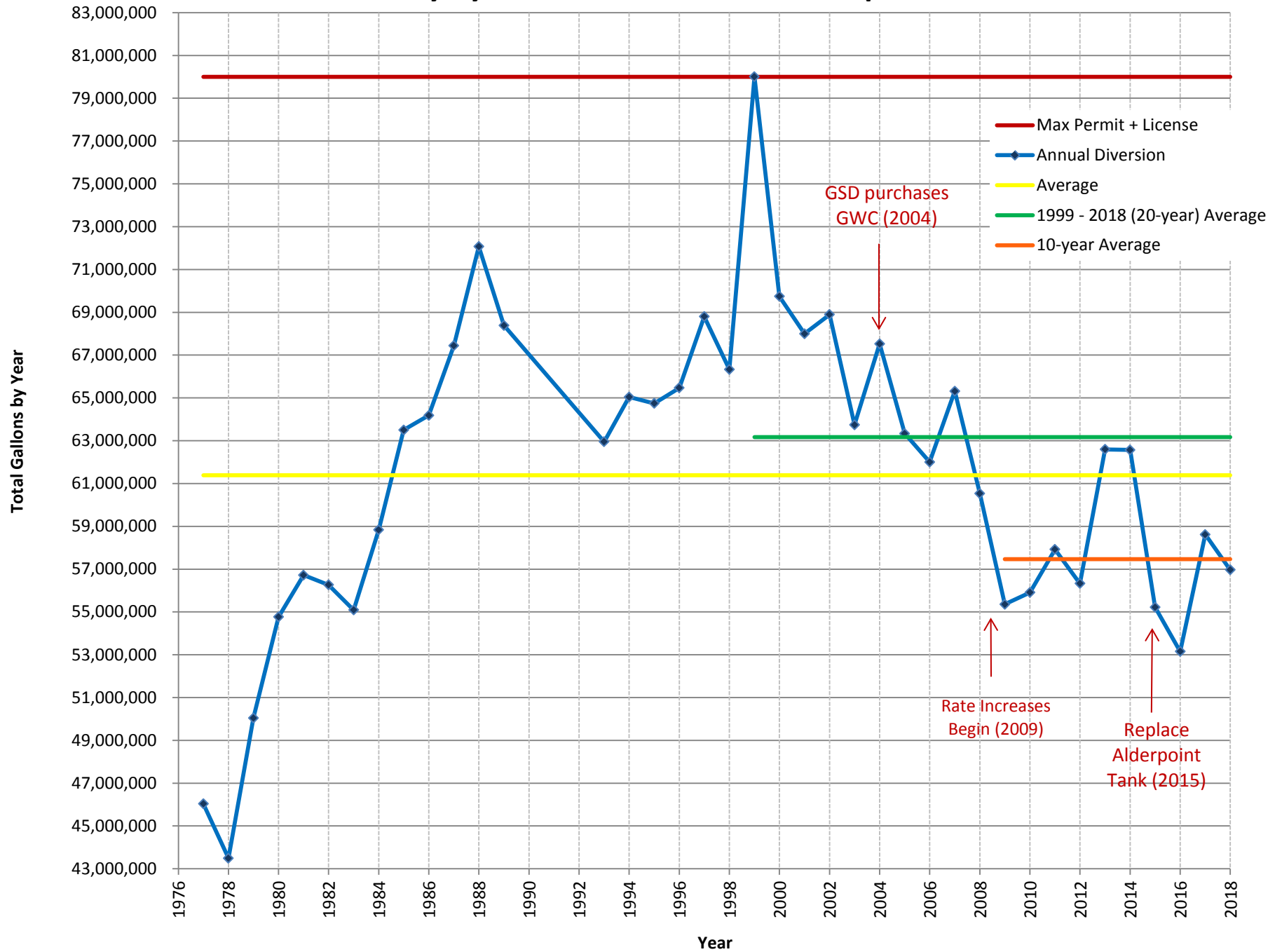
Some of the likely sources of the District's lost water are:

- Inaccurate (old) meters that do not record the total water actually coming through the meter
- Leaking waterlines (from old joints) and broken waterlines (cracks/holes in the waterline itself) especially with the amount of old clay and transite waterlines in the District's system
- Leakage from fire hydrants and valves
- Leakage and overflows from storage tanks
- Leakage from service connections (laterals) or service meters
- Unauthorized consumption (theft)
- systematic data handling errors in the meter reading and billing processes

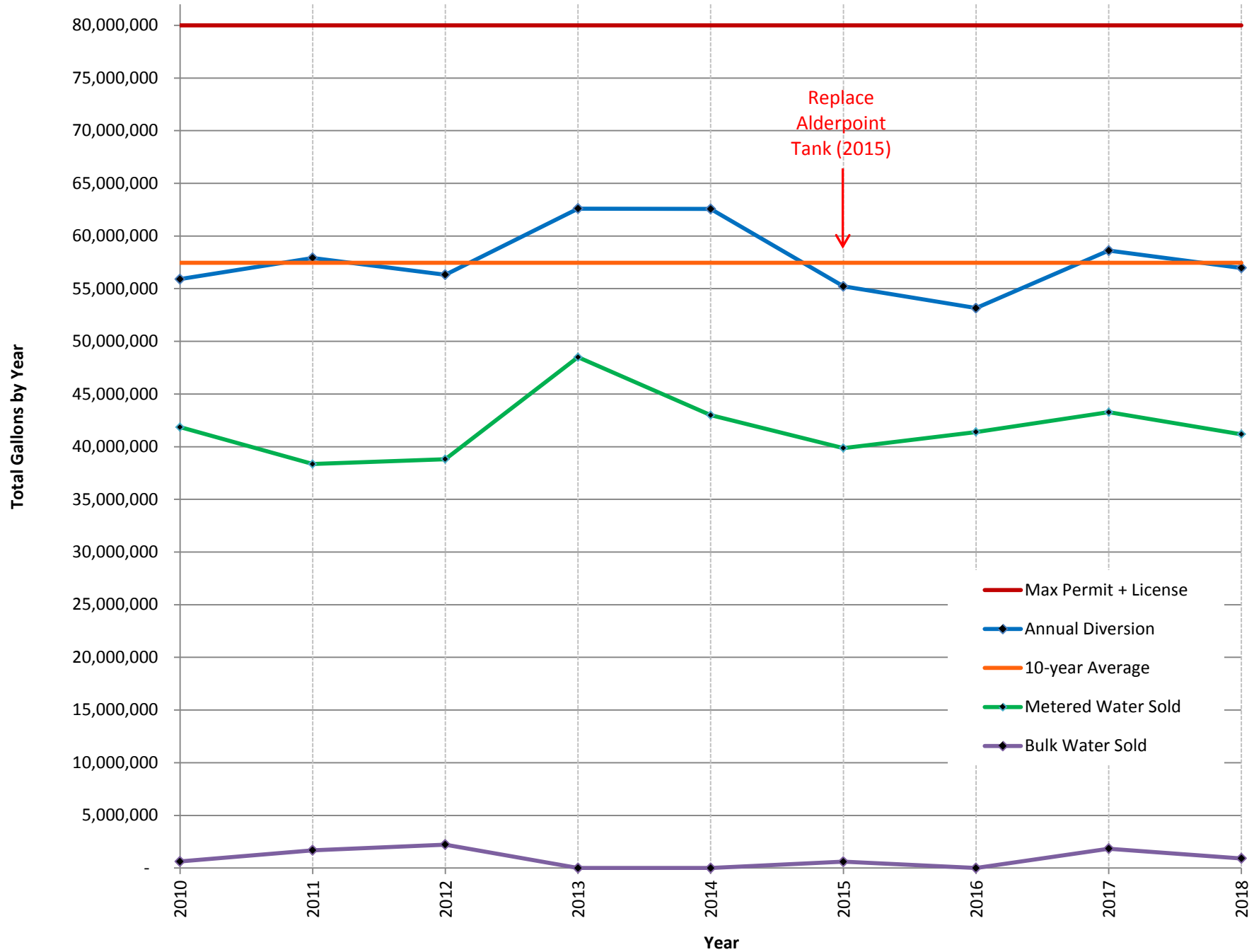
Should the Board desire to pursue adopting a policy on water loss or complete a Water Audit and/or Water Loss Control Plan staff can coordinate this effort.

The District has many miles of old waterline and replacement of this quantity of waterline for a small system is a massive undertaking. The District replaces sections as part of larger infrastructure projects. There are three older tanks in the system; one redwood tank and two in-ground concrete tanks. The District plans for eventual replacement of the three older tanks subject to funding availability.

Summary by Year of Water Diversion Reported



Summary by Year of Water Diversion Reported



DEVELOPMENT POTENTIAL WITHIN PLACE OF USE

As stated in the Annexation IS/MND, in addition to the existing consumption, there are vacant APNs and/or APNs that are not GSD customers and are not consuming water within the existing permit and license POU. For the purposes of determining potential water consumption within the existing license and permit POU, the following table document (by APN) the potential water consumption in areas within the license POU and permit POU that may be realized in the future if the parcels not currently consuming water become GSD customers.

The potential water consumption in the table is based upon the customer type and zoning, then estimates the anticipated future consumption associated with each APN. The GSD customers' billing data was separated by billing code into two categories: residential and commercial /industrial. This separated data was then averaged. The average annual demand of the GSD commercial customers is 177,500 gallons or 237 units per year. This average has been applied to the properties that are commercially or industrially zoned. The average demand of the GSD residential customers is 70,500 gallons or 94 units per year, and this average has been applied to parcels that are residentially zoned.

Figure 1a and 1b (in Attachment 1) illustrate in turquoise, the APNs within the Place of Use that are not consuming water as of 2018.

There could be additional development as a result of "Housing Opportunity Zones" and second dwelling units, but this is considered unlikely due to the previous development history that does not include second dwelling units in the Garberville area. There are 14 APNs within "Housing Opportunity Zones," and 9 APNs that are allowed second dwelling units (these are all within the "Housing Opportunity Zones)," and one APN with Agriculture Exclusive zoning that allows 4 single detached dwelling units. For planning purposes, water supplies were identified to include potential second dwelling units. Assuming that most second dwellings units are equivalent to an apartment type user, Metcalf & Eddy's estimates that apartment flows are approximately 93% of the average residential house. Using this ratio, the equivalent consumption per second dwelling unit would be 65,465 gallons per year. These locations are shown in yellow on both Figure 1a and 1b in Attachment 1.

When the parcel is unconnected **and** has an HOZ/second dwelling unit possibility, both turquoise and yellow are applied and they appear green.

The table below lists those APNs and estimates the future potential water consumption for each parcel and a brief description of the type of development anticipated on the parcel.

Table 1. Potential Future Development within POU - unconnected as of 12/31/18

APN	Potential Development Description	Estimated Future Water Consumption (gallon/year)	Conn Fee Paid?	In IS/MND?
032-042-017	Commercial	177,500	N	Y
032-102-028	SFR	70,500	N	Y
032-121-019	Commercial	177,500	N	Y
032-121-020	Commercial	177,500	N	Y

032-171-015	RESIDENTIAL	70,500	N	Y
032-171-027	HOZ/Second Dwellings was 032-171-015, -017, and -025	65,465	N	Y
032-171-022	SFR	70,500	N	Y
032-171-023	SFR	70,500	N	Y
032-171-024	SFR	70,500	N	Y
032-211-003	HOZ/Second Dwellings	65,465	N	Y
032-211-010	HOZ/Second Dwellings	65,465	N	Y
032-211-012	HOZ/Second Dwellings	65,465	N	Y
032-211-034	SFR + HOZ/Second Dwellings Was 032-211-014	135,965	N	Y
032-211-015	HOZ/Second Dwellings	65,465	N	Y
032-211-018	SFR + HOZ/Second Dwellings	135,965	N	Y
032-211-021	SFR + HOZ/Second Dwellings	135,965	N	Y
032-231-016	RESIDENTIAL	70,500	N	Y
032-231-028	RESIDENTIAL	70,500	N	Y
032-231-043	RESIDENTIAL	70,500	N	Y
032-231-045	Has Shops	177,500	N	Y
032-231-053	RESIDENTIAL	70,500	N	Y
032-231-054	RESIDENTIAL	70,500	N	Y
032-231-056	RESIDENTIAL	70,500	N	Y
222-091-011	3 SFR	282,000	N	Y
222-091-014	SHCP	180,000	N	Y
222-156-014	SFR	70,500	N	Y
222-156-015	SFR	70,500	N	Y
222-156-016	2 SFR	141,000	N	Y
222-156-019	Con Crk using alt source	70,500	N	Y
223-061-025	SFR (was APN 222-156-012)	70,500	N	Y
223-061-034	HOZ/Second Dwellings	65,465	N	Y
223-171-002	COMMERCIAL	177,500	N	Y
223-171-003	Second Meter for Ag Use	115,005	Yes	Y
223-171-007	COMMERCIAL	177,500	N	Y
223-181-012	RESIDENTIAL	70,500	N	Y
223-181-017	RESIDENTIAL	70,500	N	Y
223-181-020	RESIDENTIAL	70,500	N	Y
223-181-031	HOZ/Second Dwellings	65,465	N	Y
223-181-043	HOZ/Second Dwellings	65,465	N	Y
223-181-044	HOZ/Second Dwellings	65,465	N	Y
223-183-010	RESIDENTIAL	70,500	N	Y
	Total for Section	4,119,585		

In addition to this potential development intensification due to existing zoning, there are property owners that sometimes inquire with GSD prior to submitting application documents for water connection or County permits. Projects that are commercial in nature or include four or more single family residential units will be reviewed by the Board prior to approval. The following table lists some projects that are still in the planning phases for their total development type, needed off-site infrastructure, and associated water consumption estimates. These projects have yet to be approved with a specific water consumption amount from GSD.

Table 2. Projects Under Consideration

APN	Potential Development Description	Estimated Future Water Consumption (gallon/year)	Conn Fee Paid?	In IS/MND?
032-141-010	17 Unit Hotel with Cannabis Dispensary	Requested	No	Y
032-044-008 & 09	Bank Remodel - 2 commercial units, office space, 2 studio apartments; + 3 connections	211,500	No	Existing
032-091-014	New Hospital at CR site	Requested	No	Existing
	Total for Section	211,500		

COUNTY REFERRAL PROJECTS

For all planning and building projects within the GSD place of use, Humboldt County is responsible for sending GSD a project referral asking for our input on whether the project will be served with GSD water and or sewer. As part of this referral process, GSD can and should enumerate any conditions that will be placed upon the applicant to receive or expand their service. When projects are at the planning stage, many applicants do not know exactly how much water and sewer capacity they will need. Staff works with the applicants to supply general information on our infrastructure and any concerns we have about connection so that the applicant can proceed with designing their project and eventually apply for new water or sewer services using our application. Future applicants can also contact GSD directly prior to applying for water or sewer service to receive information on possible service at a particular parcel.

GSD receives numerous County referrals each year. Many do not include new water service. They are electrical, mechanical, roofing, or other non-expansion building permits. Some are planning actions that do not have a specific water service component. The table below lists the projects that do or could have an effect on the water consumption. These project locations are illustrated in orange on Figure 2a and 2b in Attachment 1. Some are still in the preliminary stages of development so the specific amount of water consumption is not listed in the table if it has yet to be determined.

Table 3. Projects referred by County with potential water use increase- unconnected as of 12/31/18

APN	Potential Development Description	Estimated Future Water Consumption (gallon/year)	Conn Fee Paid?	In IS/MND?
032-011-010	Cannabis + SFR	177,500	No	
032-044-007	Church Rebuild + 2843 Sq Ft Expansion	17,952	N/A	Existing
032-111-019	Burn Down; 821 Locust St.	70,500	N/A	Existing
032-034-001	Remodel kitchen for new restaurant	89,012	N/A	Existing
032-012-007	Rehabilitate apartments	193,358	No	Existing
222-156-018	SFR in IS/MND - Ag meter	70,500	Yes	Y
222-231-012	Rezone - not in POU, in SOI	0	No	
223-191-006	2nd Dwelling Unit	70,500	Y (easement)	Existing
	Total for Section	689,322		

PROJECTS APPROVED AND CONNECTED AS OF DECEMBER 31, 2018

The following table lists various projects that have been approved by GSD within the last few years. It details the type of development and the annual water consumed by those customers in 2018. These consumption amounts are already included in the total water sold and diverted for 2018.

Table 4. Approved and Connected Projects

APN	Description	Actual 2018 Water Consumption (Gallon/year)	Conn Fee Paid?	In IS/MND?
032-111-024	16 unit Apartment Complex + 4 laundry	518,364	Yes	Y
20 APNs	Kimtu Subdivision	2,271,676	N/A	Y
032-012-001	Convert to Cannabis; Unit B	51,612	No	Existing
032-042-020	Town Square Restroom + Food Truck	233,376	Yes	Existing
032-011-015	Hospital - modular with CT scanner	0	No Discontinue	Existing
032-171-027	Cannabis grow (Was 032-171-015) No Structure; using existing meter	107,712	No	Existing
032-101-006	Add bathroom in converted pool house	55,352	N/A	Existing

223-191-014	Addition with rec room, bedroom, + 1 1/2 baths	117,436	No	Existing
223-171-003	Improvements for processing & packaging commercial cannabis	14,960	N/A	Existing
032-135-016	SFR	13,464	Yes	Y
	Total for Section	3,383,952		

OTHER PROJECTS WITH POTENTIAL FUTURE USE

Southern Humboldt Community Park.

In the area known as the SHCP, GSD & GWC water service has been previously provided to two residences and outbuildings, but they do not currently consume water. A previous water connection was extended to bring water to a caretaker's cottage and various other outbuildings on the former APN 222-091-006 from the yellow house. As a result of several lot line adjustments, the structures served by the GWC (and subsequently GSD) are now split between a portion of APN 222-091-014 and 222-091-011. When GSD processed the Change in Place of Use with SWRCB DWR and the annexation with LAFCo, the SHCP property was not included. It is within the GSD SOI.

The Humboldt County Planning and Building Department processed an application from the SHCP for a general plan amendment and rezone for APN 222-241-009 and APN 222-091-014. The EIR has been finalized. The EIR did not list GSD as a proposed water source.

In June 2018, the SHCP inquired with GSD staff about the possibility of receiving treated water from GSD. During the October 9, 2012 GSD board meeting, the GSD Board agreed to allow a new future connection for the SHCP when the State Water Resources Control Board and Humboldt Local Agency Formation Commission had both approved service to all or part of the Park property. The GSD Board adopted the following conditions on October 9, 2012 for this new connection:

- a. *"SHCP would be given one new connection (3/4" meter) to rectify the condition that both the yellow house and the park are served off the same meter. This condition was created in 2009 when the Lot Line Adjustment was recorded and the property line was moved so that the residential structures were split into two properties.*
- b. *The SHCP will make application for this new service connection. The application will stipulate at which location the park is proposing installation of the one new 3/4" meter. The three possible locations currently under consideration are:*
 - i. *On Tooby Ranch Road near the property line between APN 222-091-014 (SHCP) and 222-091-011 (Buck Mountain Ranch) on the existing 1" line that currently serves the park property. (not recommended by GSD)*
 - ii. *On Tooby Ranch Road off the 8" waterline that was constructed as part of the Drinking Water Improvement Project. A new meter would be set here for SHCP service.*
 - iii. *On Sprowel Creek Road off the existing 8" waterline that serves the Kimtu Subdivision. This location requires CDPH and LAFCo approval of the connection to the Kimtu waterline.*

- c. No connection fee would be charged, but the SHCP would be responsible for all costs associated with the installation of the new meter, pressure reducer, and backflow preventer plus any associated appurtenances.*
- d. The one new ¾" meter is for residential use only and is not intended to be used to serve future development on the Property contemplated by SHCP in the application for a General Plan Amendment (and associated applications for a conditional use permit, the Operational Plan, and the CEQA Initial Study Checklist as submitted to the Humboldt County Planning Department by SHCP) currently on file with the Humboldt County Planning Department.*
- e. The usage for the connection is limited to **2,000 cubic feet per month**. The usage will be monitored monthly in conjunction with the reading of the meters. The SHCP will be notified each time the usage reading is in excess of the 2,000 cubic feet per month limit. The meter will be shut off if the usage is more than 1.5 times (3,000 cubic feet per month) the allowable quantity for any 2 months in a 12 month period. If the meter is shut off, the SHCP will have to petition the Board for reinstatement of service and obtain approval from LAFCo if necessary.*
- f. As part of the application for the new connection, the SHCP will be required to enter into a legally binding agreement that will be recorded for the parcel agreeing to the stipulated types and quantities of use as well as the enforcement methods."*

The Final IS/MND prepared for the Annexation Project (State Clearinghouse No. 2012032025) identifies these circumstances described above and listed these conditions. As part of the impact analysis to determine sufficient water supplies, the CEQA document accounts for a future consumption quantity of up to 2,000 cubic feet per month (approximately 180,000 gallons per year) for APNs 222-091-014 and 222-241-009.

The SHCP would need to pay to have an amendment to the GSD SWRCB water diversion permit and license to add the SHCP properties to the Place of Use. In addition, some type of action by LAFCo would be required. This LAFCo action could conceivably be as simple as an Out of Agency Service or as involved as an Annexation of all or part of the property. Both LAFCo and SWRCB will require CEQA documentation before being able to take action. Since the SHCP EIR did not include an analysis of GSD treated water as a source, some form of CEQA analysis would need to be conducted.

The 2,000 cubic feet per month allocation has been included in Table 1 for APN 222-091-014.

ANALYSIS OF DIVERSIONS AND DEVELOPMENT POTENTIAL

Using 1977 - 2018 average of 61,381,523. Then adding the estimated water consumption for the potential development in Table 1 for undeveloped and under-developed parcels plus future water consumption for recent county referral projects from Table 3, the total estimated average annual water diversion would be 66,190,430. See Table 5 below for details.

Table 5. Total Estimated Annual Water Diversion Needs

DESCRIPTION	AMOUNT Gallons per Year
1977 - 2018 average water diversion	61,381,523
Undeveloped and under-developed	4,119,585
Referral Projects unconnected as of 12/31/18	689,322
Total estimated annual water diversion needed	66,190,430

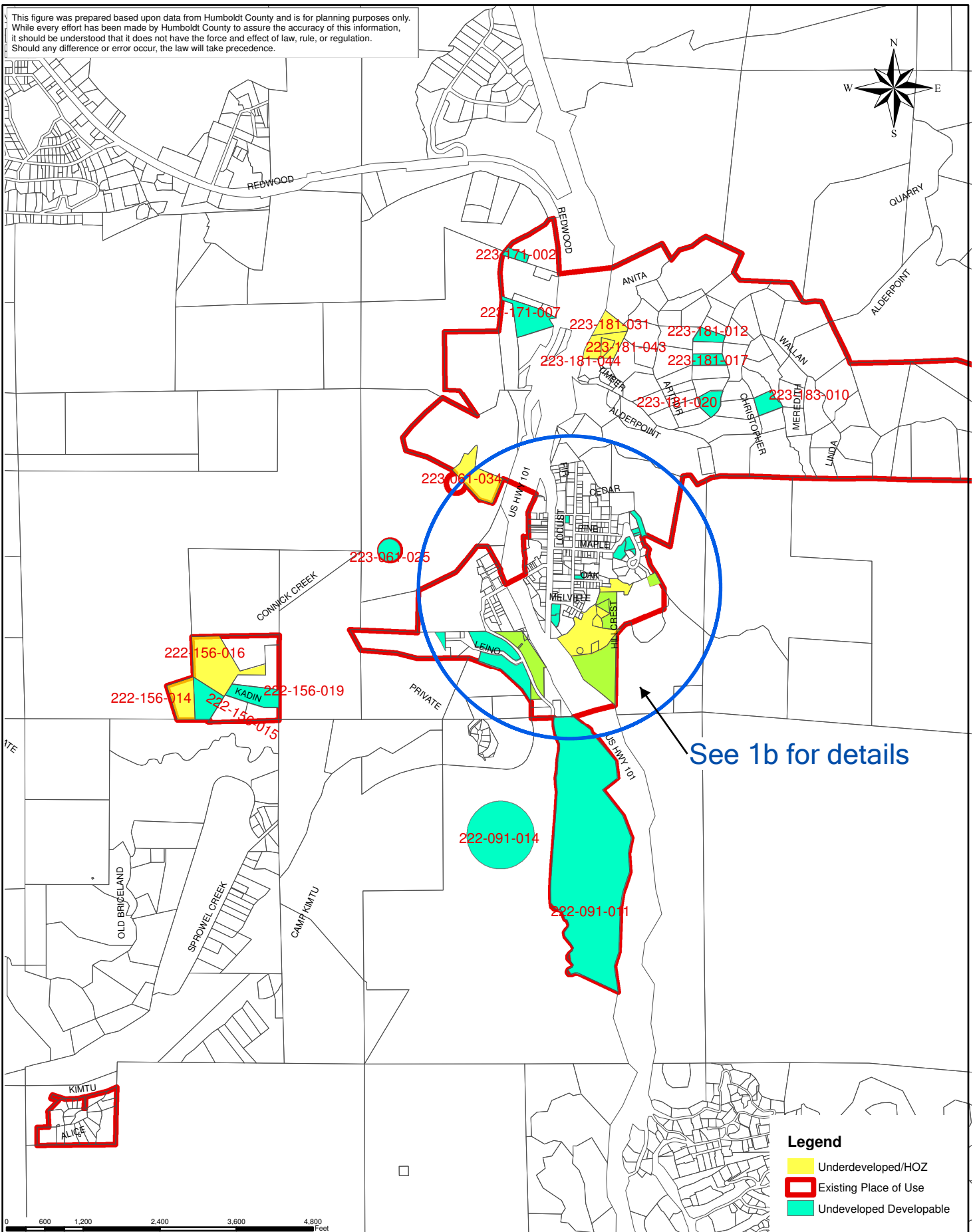
This water diversion needed can be collected from any combination of the South Fork Eel River diversion and/or the Tobin Well. The total estimated annual water diversion needed can be easily diverted from the river with the Tobin well remaining as a backup water supply when river water quality is poorer than desirable for treatment at the new SWTP.

Projects under consideration could total 13,809,570 gallons per year and still stay under the 80 million gallon maximum. Some cushion needs to be maintained as this analysis is based upon AVERAGE annual flows. Conservatively keeping 5,000,000 gallons as a buffer would still leave 8.8M gallons of available water capacity for future projects.

FINAL SUMMARY

After evaluating the capacity of each water source, the water diversions over the past 40 years, the future development potential within the place of use, and the projects approved and under consideration, there is adequate water sources to serve all these purposes as well as possible additional development within the POU or future annexations to the place of use and jurisdictional boundary. There is an estimated 8.8M gallons per year that could be diverted and sold to identified and/or unidentified future projects.

This figure was prepared based upon data from Humboldt County and is for planning purposes only. While every effort has been made by Humboldt County to assure the accuracy of this information, it should be understood that it does not have the force and effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.



- Legend**
- Underdeveloped/HOZ
 - Existing Place of Use
 - Undeveloped Developable

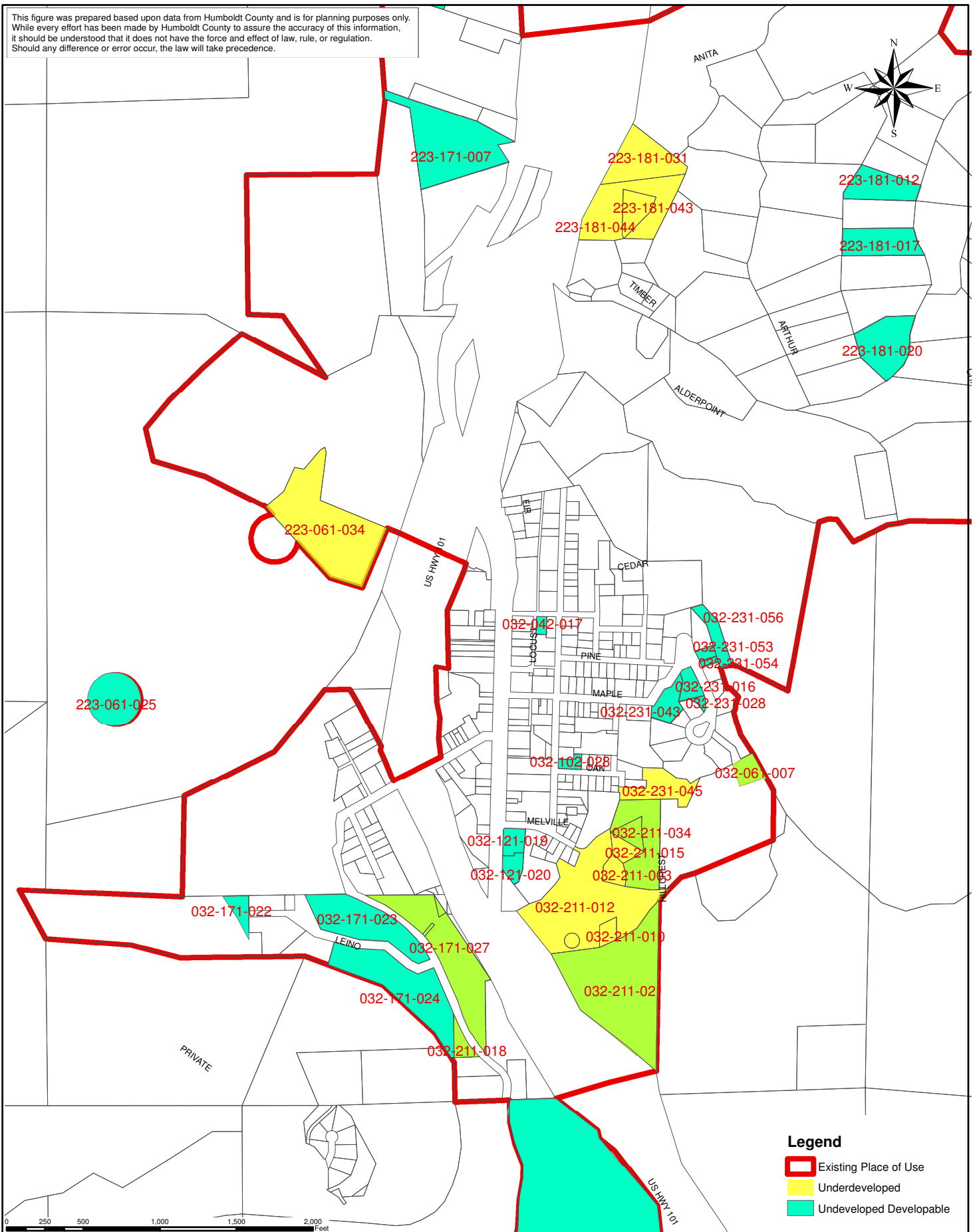


Water Capacity Report
 Garberville Sanitary District (707) 923-9566

Undeveloped or Under-developed Parcels
 SCALE: 1:24,000
 DRAWN BY: J. SHORT
 DATE: 01/22/2019

Figure
1a

This figure was prepared based upon data from Humboldt County and is for planning purposes only. While every effort has been made by Humboldt County to assure the accuracy of this information, it should be understood that it does not have the force and effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.



Legend

- Existing Place of Use
- Underdeveloped
- Undeveloped Developable

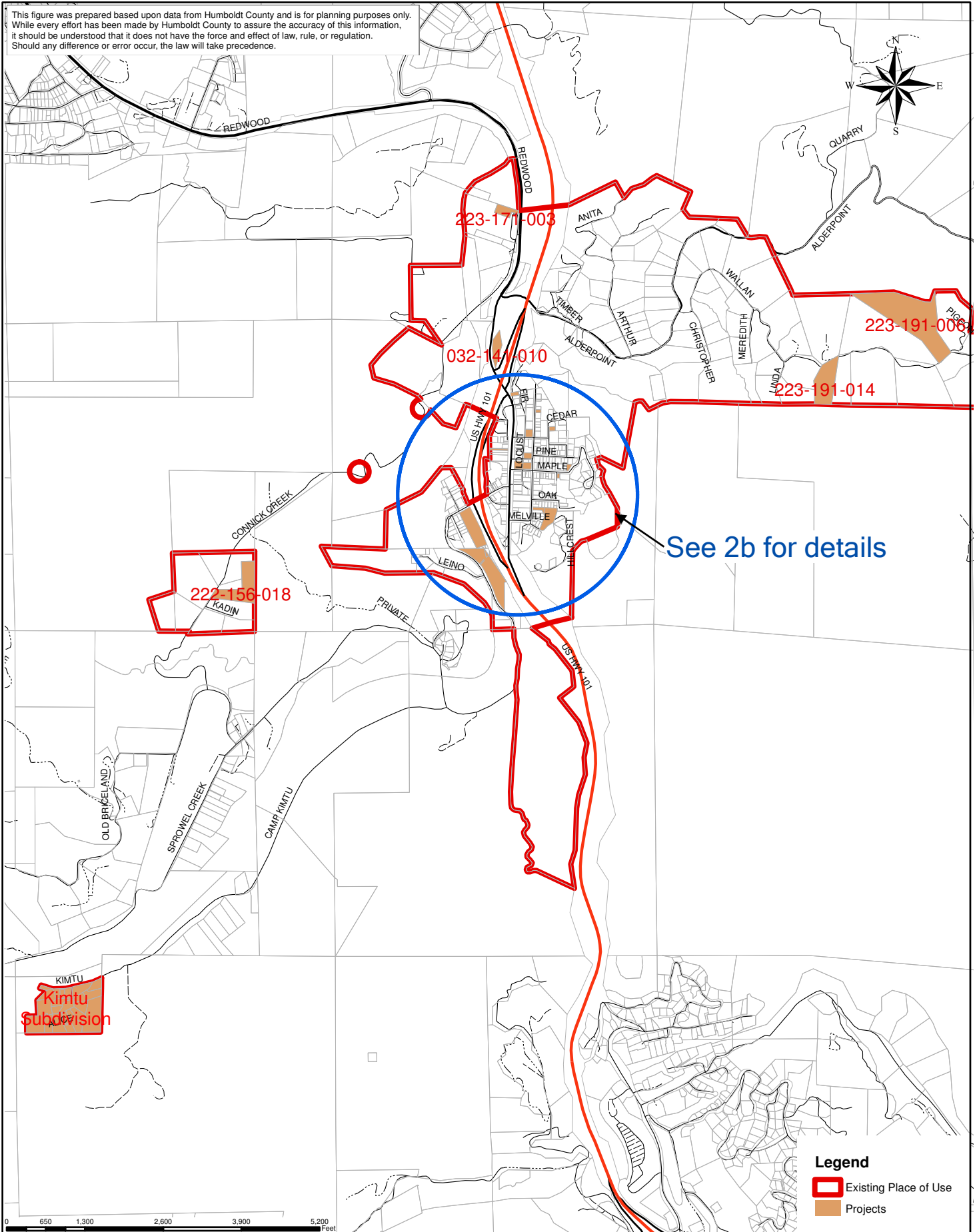
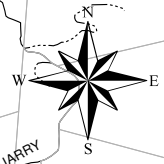


Water Capacity Report
 Garberville Sanitary District (707) 923-9566

Undeveloped or Under-developed Parcels
 SCALE: 1:10,000
 DRAWN BY: J. SHORT
 DATE: 01/17/2019

Figure
1b

This figure was prepared based upon data from Humboldt County and is for planning purposes only. While every effort has been made by Humboldt County to assure the accuracy of this information, it should be understood that it does not have the force and effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.



See 2b for details

Legend
 Existing Place of Use
 Projects



Water Capacity Report

Recent Projects

Figure
2a

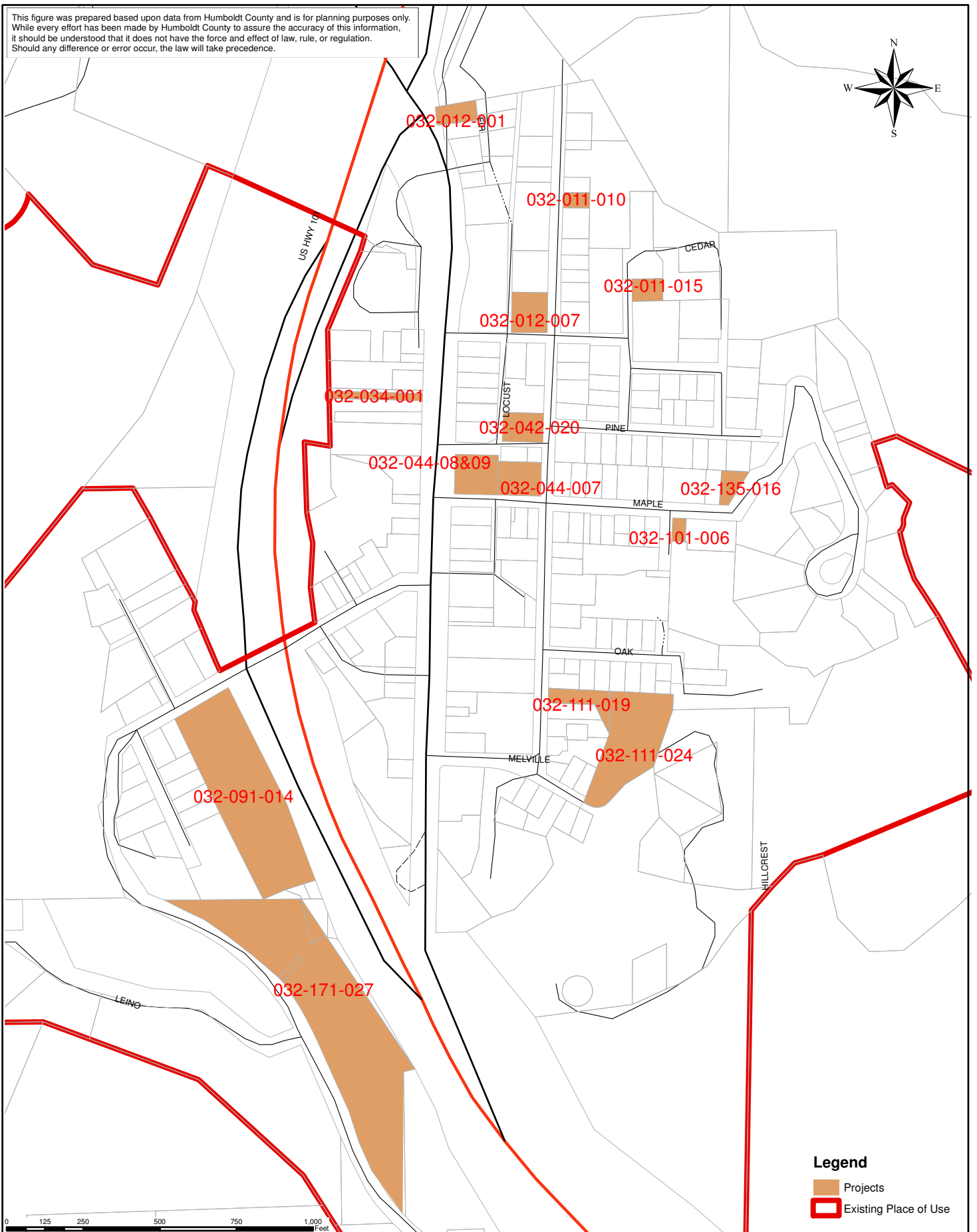
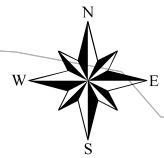
Garberville Sanitary District (707) 923-9566

SCALE:
 1:24,000

DRAWN BY:
 J. SHORT

DATE:
 01/14/2019

This figure was prepared based upon data from Humboldt County and is for planning purposes only. While every effort has been made by Humboldt County to assure the accuracy of this information, it should be understood that it does not have the force and effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.



Legend

- Projects
- Existing Place of Use



Water Capacity Report
 Garberville Sanitary District (707) 923-9566

Recent Projects
 SCALE: 1:5,000
 DRAWN BY: J. SHORT
 DATE: 01/14/2019

Figure
2b