REFERENCE NO. 50182367

WACCASASSA WATER AND WASTEWATER COOPERATIVE FACILITIES PLAN

Wastewater Facilities Plan

DECEMBER 16, 2024

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Facilities Plan

Table of Contents

Table of Tables

Table of Figures

1. Executive Summary

The Waccasassa Water and Wastewater Cooperative (W3C) is a regional cooperative formed to provide water supply and wastewater treatment for the Town of Bronson, Town of Otter Creek, and City of Cedar Key which are all located in western Levy County, Florida. The W3C is being developed to solve specific water quality and wastewater disposal issues for each of its communities and improve resilience for all W3C members while leveraging economies of scale.

In 2022, Wetland Solutions was contracted by the SRWMD to prepare a feasibility report for addressing water and wastewater issues for the W3C's three communities and for unincorporated areas of Levy County located along State Road 24 (SR24). The report titled "Phase 1: Regional Alternative Water Supply Feasibility – Cedar Key, Bronson, Otter Creek, and Unincorporated Areas in Levy County" (Wetland Solutions, Inc. & Dewberry, 2022) identified a combined regional water and wastewater system for Cedar Key, Otter Creek, Bronson, and unincorporated areas of Levy County including the communities of Rosewood and Sumner as the preferred alternative to address identified water supply, water quality, and wastewater treatment and disposal concerns.

The existing wastewater systems in the W3C service area face significant challenges related to aging infrastructure and capacity limitations. Cedar Key's wastewater system faces challenges from its vulnerable location, with risks of wastewater spills and contamination from storm surges and sea level rise. Otter Creek lacks a centralized wastewater treatment facility, with most properties relying on individual septic systems. This setup increases the risk of groundwater contamination, especially during heavy rain events, and poses public health and environmental risks as the population grows. It has been identified that the existing Bronson WWTP site offers sufficient land for expansion, simplifying construction logistics and reducing additional land acquisition needs.

This W3C Wastewater Facilities Plan (Plan) assesses current system capacity, predicts future needs, evaluates treatment options and regulatory compliance, and develops a long-term improvement program. It emphasizes sustainability, public health, financial strategies, stakeholder engagement, and resilience, aiming to provide efficient, reliable wastewater management for future growth and environmental protection of the areas to be served.

The W3C has evaluated various alternatives to address anticipated demand growth, environmental sustainability, and regulatory compliance requirements through 2070. Two alternatives involving actions by the W3C, along with one alternative that does not involve W3C participation, were evaluated. The recommended solution, Alternative 1, involves a 5-Stage Bardenpho Biological Nutrient Removal (BNR) system installed in a Carrousel Oxidation Ditch at the site of the existing wastewater treatment facility (WWTF) in Bronson. This setup ensures operational resilience, redundancy, and compliance with nutrient removal standards critical for protecting local water resources. While the construction alternatives presented in this Plan have similar capital and annual operation costs, Alternative 1 offers significant non-cost advantages, including higher reliability and process redundancy.

The recommended WWTF will initially have a capacity of 0.8 MGD AADF, with two, 0.4 MGD trains for each unit process to maximize operational flexibility as well as ensure Class 3 Reliability. This design considers the small treatment capacity and expected variability in flows and loads. The future phase may include an additional 0.4 MGD train for each unit process, increasing the treatment capacity to 1.2 MGD, with startup targeted by 2050. Alternatively, the facility may be re-rated to 1.0 MGD based on updated future flows and loads, along with potential flow equalization to reduce peak hourly flow.

A core component of the project is the regional wastewater transmission system, which includes two lift stations and a force main spanning approximately 28.7 miles. Lift Station #1, located in Cedar Key, and Lift Station #2, situated in Otter Creek, will be designed to facilitate wastewater transport over long distances. Each lift station will include grit removal, odor control systems, and emergency power backup.

The alternative not involving W3C participation evaluates the future responsibilities of each local government if the W3C project does not move forward. This alternative incurs no direct costs to the W3C; however, each local utility would remain responsible for its own wastewater system. The Town of Bronson would maintain and expand its system while likely being required to meet future Basin Management Action Plan (BMAP) requirements including reduced nutrient concentrations in effluent. Otter Creek, which currently has no centralized wastewater system, faces challenges in developing wastewater services due to its dispersed population and funding constraints, while Cedar Key's system is vulnerable to flooding, storm surges, and sea level rise. Cedar Key would require a major overhaul, including relocating its treatment facility off of the island and constructing extensive infrastructure to mitigate environmental risks.

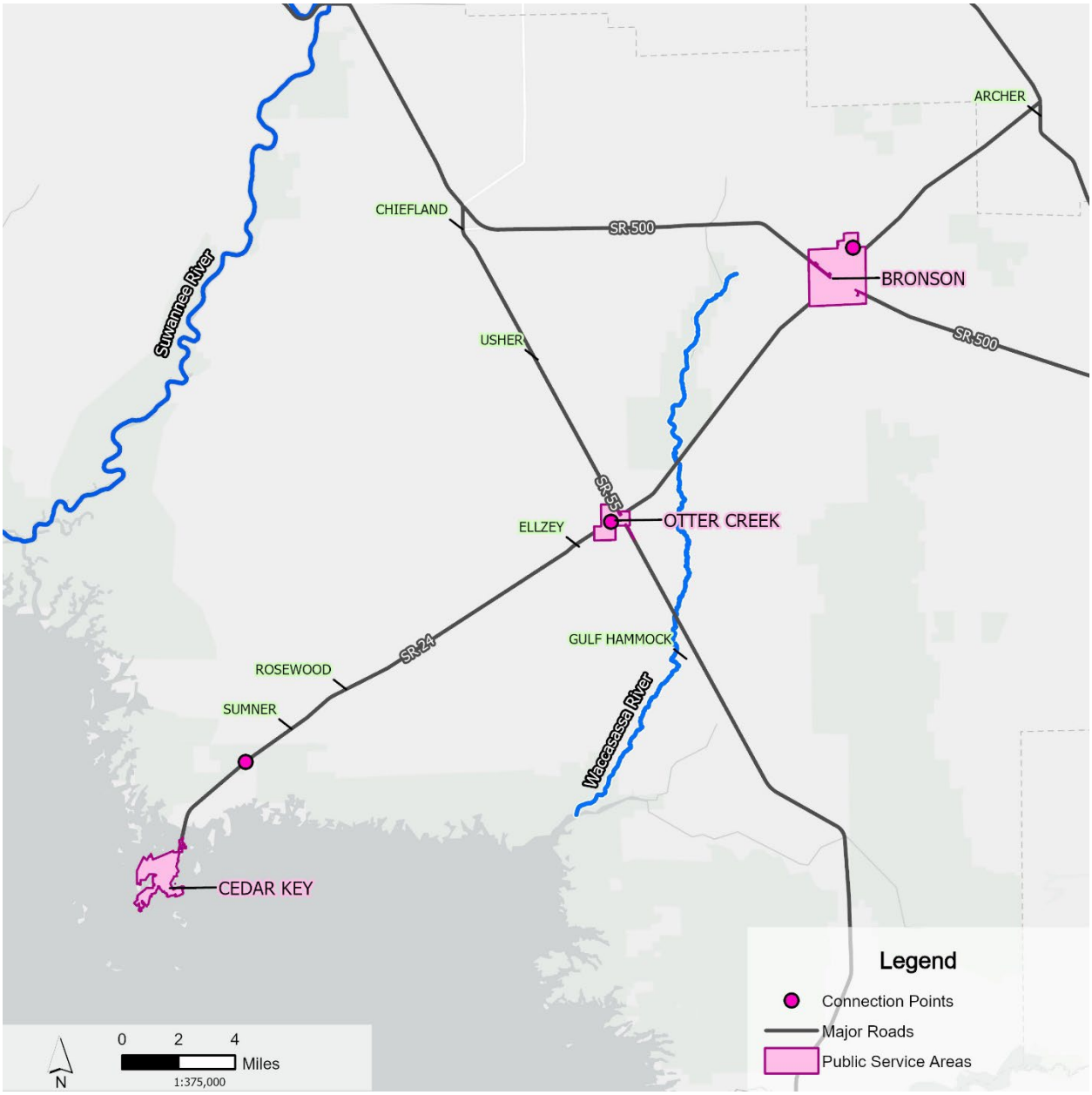
The estimated costs (2024) of the major components of this project are summarized in Table 1.1.

Table 1.1 - Estimate of Major Components

Item	Description		Cost
	Wastewater Treatment Plant Capital Cost (No Contingency)		$ 30,258,000
	Force Main Capital Cost (No Contingency)		$ 21,902,000
	Lift Stations (2) Capital Cost (No Contingency)		$ 3,632,000
1	Total Capital Cost (No Contingency)		$ 55,792,000
2	Contingency, percent of Item 1 (to nearest $1000)	30%	$ 16,738,000
3	Engineering, percent of Item 1 (to nearest $1000)	10%	$ 5,579,000
4a	Contract Administration, percent of Item 1 (to nearest $1000)	7%	$ 3,905,000
4b	Construction Administration, percent of Item 1 (to nearest $1000)	7%	$ 3,905,000
5	Estimated Land Cost		$ 1,770,000
6	**Total Construction Cost**		**$ 87,689,000**
	High Estimate – AACE Class 4 (30%)	**30%**	**$ 113,996,000**
	Low Estimate – AACE Class 4 (-20%)	**-20%**	**$ 70,151,000**

This project is expected to use federal funds for its implementation. Given anticipated federal funding sources the project will be reviewed under the National Environmental Policy Act (NEPA). An Environmental Information Document (EID) will be prepared for this project to address potential concerns under NEPA. While some unavoidable environmental impacts are anticipated, they are not expected to be significant since the project is mostly contained within the SR24 right-of-way. The project is likely to qualify for a Categorical Exclusion (CATEX) or may require an Environmental Assessment (EA). If an EA is needed, it will outline the project's purpose, evaluate alternatives, impacts, and agency coordination, with the expectation of a Finding of No Significant Impact (FONSI).

Figure 1.1: W3C Project Area and Communities in Levy County (W3Cfl.org)



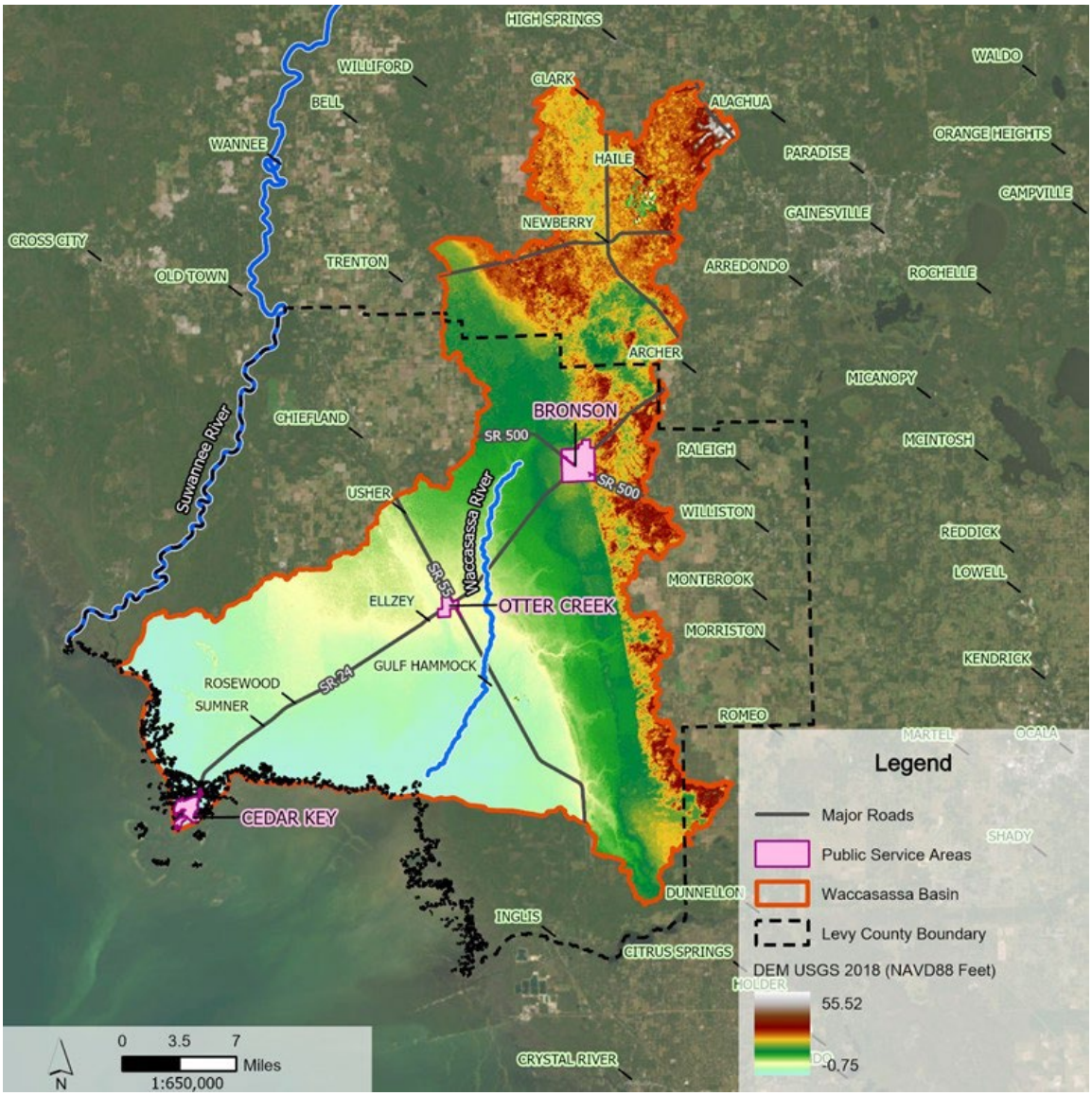
2. Project Location and Service Area

2.1 Project Location

The W3C project area is comprised of the Town of Bronson, Town of Otter Creek, and the Cedar Key Water and Sewer District. The project is located wholly within Levy County with project components generally located adjacent to SR24 between Bronson and Cedar Key. The Member Public Service Area and Public Service Areas for each community are shown in Figure 2.1. Additional description of the proposed connection points is described in subsequent sections of this plan. Levy County is characterized by a transition from higher elevation sandy areas to lower elevation pine flatwoods and wetlands, with this transition occurring in the vicinity of the western edge of the Town of Bronson as also shown in Figure 2.1. Elevations in the project area range from approximately 25 feet (NAVD88) near Bronson to less than 10 feet (NAVD88) near Otter Creek and further west. Lower areas of the watershed are characterized by high-water tables near or above the ground surface and extensive freshwater wetlands. These areas, most of which

have poor confinement, are also associated with relatively poor-quality water with high iron concentrations, color, and total organic carbon.

Figure 2.1 - W3C Public Service Area



2.2 Environmental, Cultural, Historical, and Socioeconomic Assessment

The regional water and wastewater pipelines developed as part of the W3C will span approximately 30-miles between Bronson and Cedar Key and will pass through multiple existing community types and natural habitats including freshwater marsh, scrub, forested wetland, pine flatwoods, and upland hardwood forests. Because of the project type and potential for federal funding sources, additional permitting through the National Environmental Policy Act (NEPA) will be required. NEPA outlines its purpose as follows:

> *"To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation."*

The following sections discuss NEPA considerations including wetland extents along the proposed pipeline alignment; protected species that may be encountered; and cultural, historical, or socioeconomic effects. This information is provided to inform facility planning, costing, and permitting pathways related to project implementation.

2.2.1 Wetland Extents

Various data sources were investigated to classify land use along SR24. Sources included the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI), geographic information system (GIS) shapefiles showing wetland extents in Florida, Florida Geographic Information Office (FLGIO) raster data showing elevation along SR24 collected using Light Detection and Ranging (LiDAR), Florida Department of Environmental Protection (FDEP) GIS shapefiles showing land use in the Suwannee River Water Management District (SRWMD), and Google Earth Pro's Street View feature which shows images along SR24 from September 2023 (Table 2.1).

Table 2.1 - Data Sources for Wetland Extent Assessment Along SR24

Data	Source
National Wetlands Inventory GIS Shapefiles (2024)	USFWS
Elevation Raster Data Using Lidar (2019)	FLGIO
SRWMD Land Use (2019-2020)	FDEP
Street View Imagery (2023)	Google Earth Pro

Areas along SR24 were classified into five (5) land use types (see Table 2.2) to identify areas that might require wetland permitting through the SRWMD and the United States Army Corps of Engineers (USACE). Land uses along the northern and southern edges of SR24 were classified separately to provide alternative construction options. The USFWS' NWI shapefile showing the 2024 estimated extent of wetlands in Florida and the FDEP's shapefile showing wetland extents described by the Florida Land Use, Cover, and Forms Classification System (FLUCCS) code 6000 (Wetlands) were used to obtain a general wetland footprint. Elevation data collected via LiDAR and Google Earth Pro's 360° Street View imaging from September 2023 were used to refine wetland footprint estimates along SR24.

Characteristics used by the Florida Water Management Districts (WMDs) and the USACE to identify wetlands include hydrology, hydric soils, and hydrophytic vegetation. For the purposes of this desktop analysis, the confidence associated with the classifications is shown in Table 2.2. These criteria were used to verify wetland, upland, transitional, and waterway habitat classifications along SR24 once the initial classifications were refined.

Table 2.2 - Classification of Land Use Along SR24

Land Use Classifications Along Sr24	Hydrologic Indicators Expected	Hydric Soils Expected	Dominance By Hydrophytic Vegetation Expected
Waterway	High	High	High
Wetland	High	High	High
Transitional	Low	Medium	Medium
Upland	Low	Low	Low
Road/Driveway Crossing	---	---	---

Results are provided in Table 2.3. Estimated wetland extents along the northern and southern transects were 11.92 miles and 13.43 miles, respectively. Estimated upland extents along the northern and southern transects were 7.22 miles and 5.55 miles, respectively. Areas described as transitional are expected to include both jurisdictional wetlands, as well as uplands, but will require site-specific evaluation to determine the presence of wetland indicators. Figure 2.2 to 2.8 show the estimated extents of land uses along the SR24 corridor.

A preferred alignment was developed that has the pipelines located along the same side as the powerline along SR24, which is located on the north side of SR24 from Bronson to Rosewood, where the powerlines cross SR24 and continue along the south side of SR24 to the Cedar Key well field. The rationale for this co-location is the cleared width and existing impacts are lower in the areas with the existing powerlines.

Table 2.3 - Extent of Land Use Classifications Along the Northern and Southern Transects Along SR24

Land Use Classifications Along SR24	North SR24 Alignment Length (Miles)	South SR24 Alignment Length (Miles)	Preferred SR24 Alignment Length (Miles)
Waterway	0.32	0.39	0.37
Wetland	11.92	13.43	12.08
Transitional	8.25	8.27	8.64
Upland	7.22	5.55	6.69
Road/Driveway Crossing	0.26	0.33	0.19

Figure 2.2 - Land Use Transects Along SR24 (1 of 7)

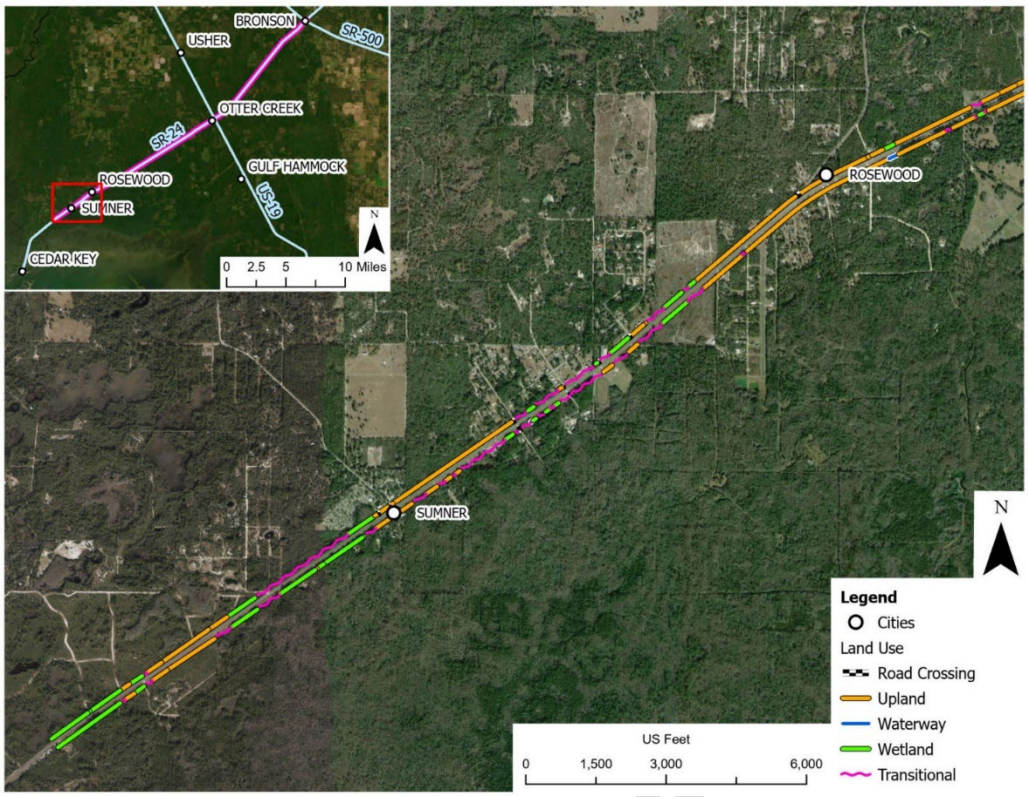


Figure 2.3 - Land Use Transects Along SR24 (2 of 7)

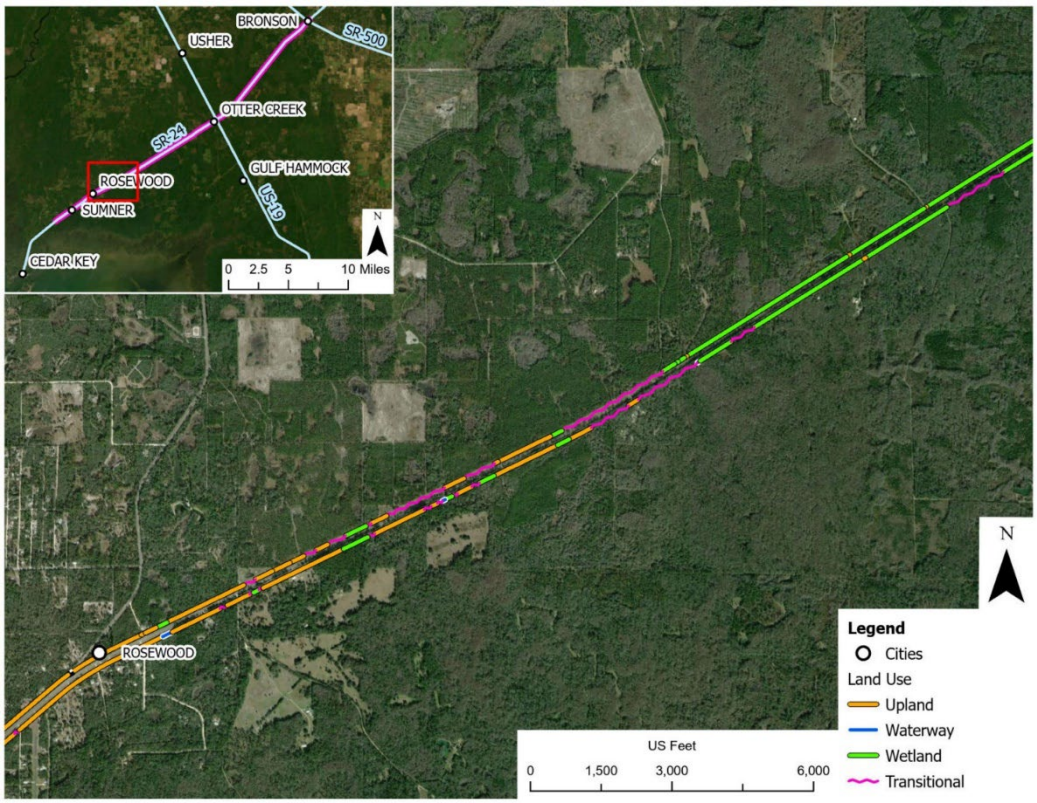


Figure 2.4 - Land Use Transects Along SR24 (3 of 7)

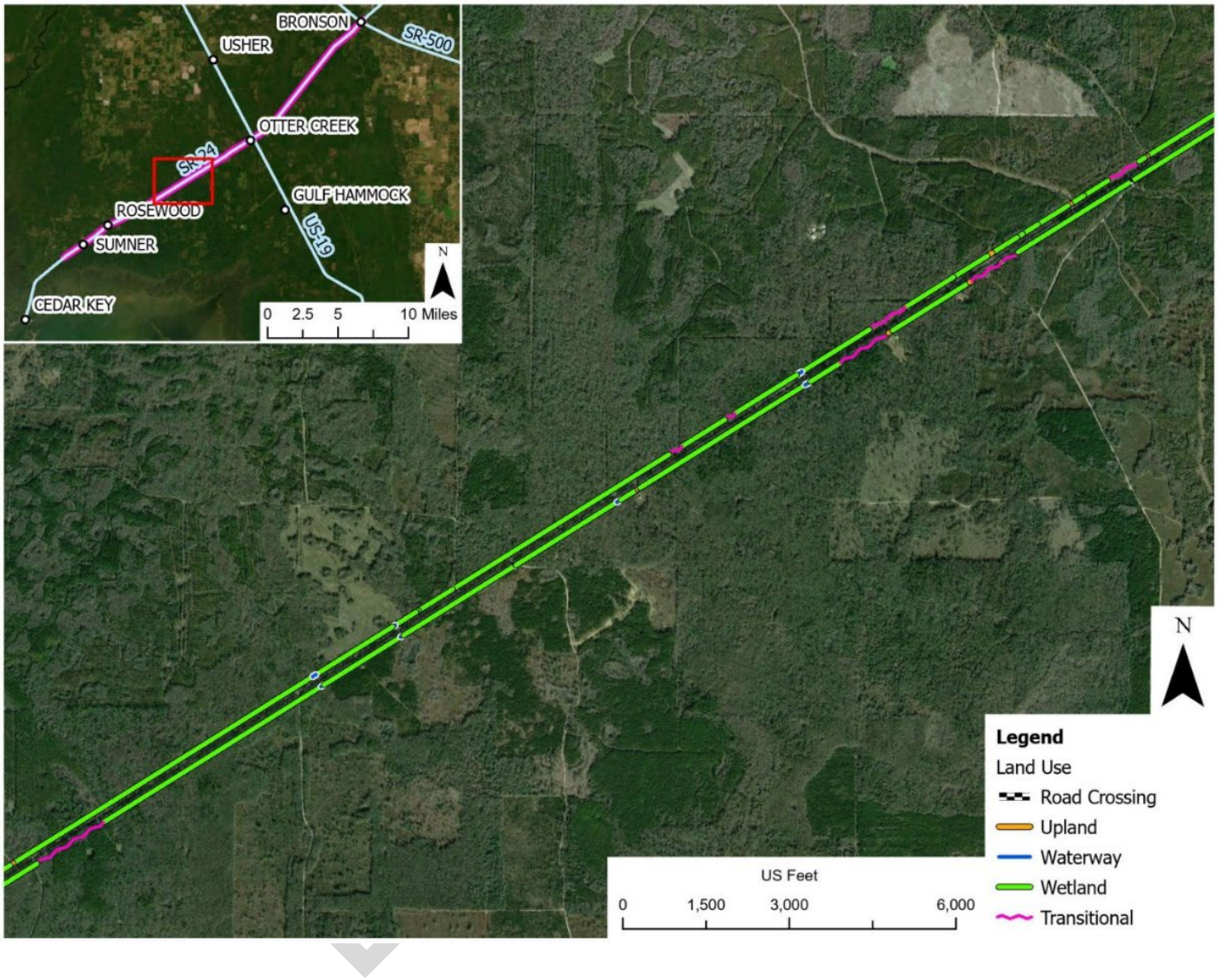


Figure 2.5 - Land Use Transects Along SR24 (4 of 7)

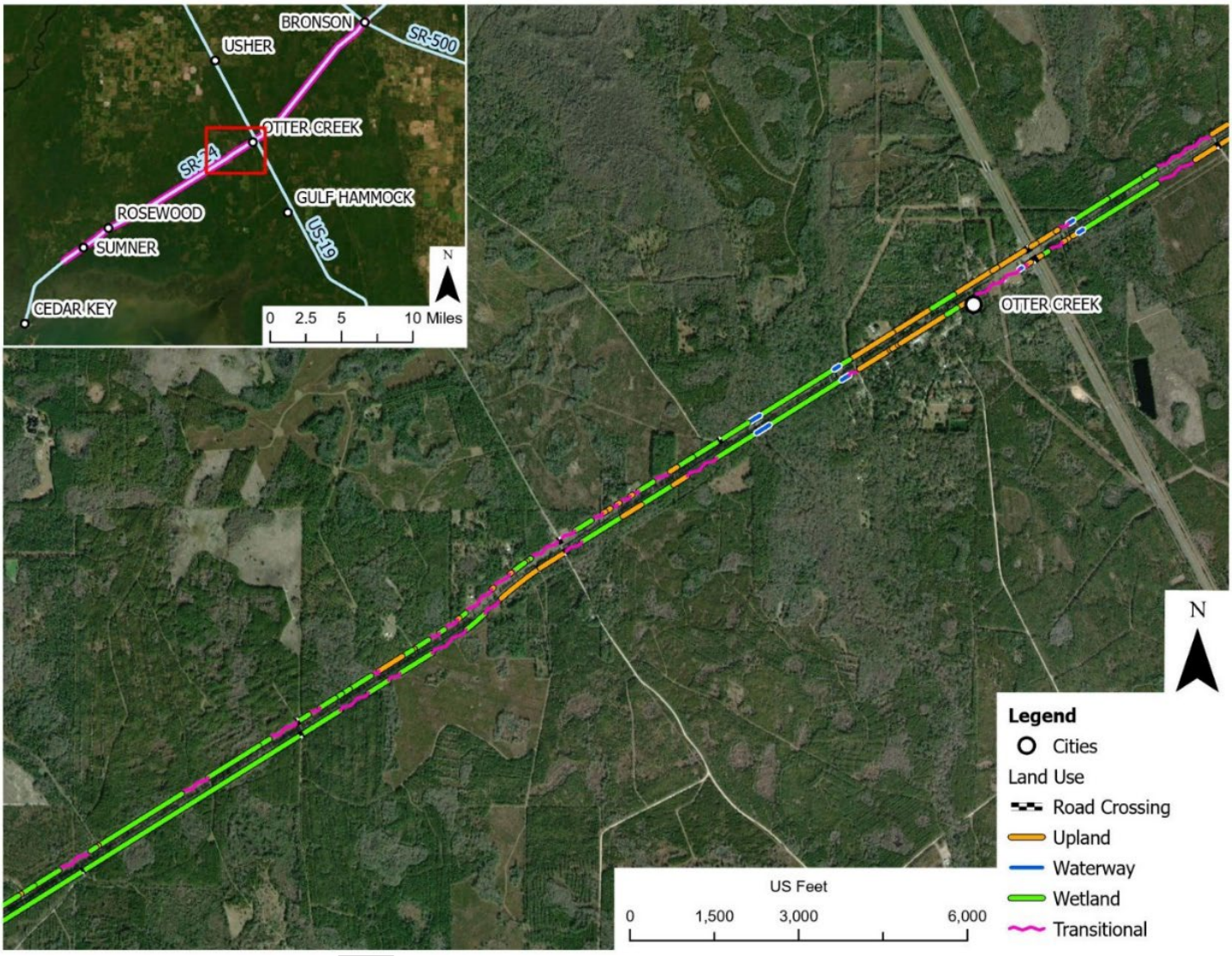


Figure 2.6 - Land Use Transects Along SR24 (5 of 7)

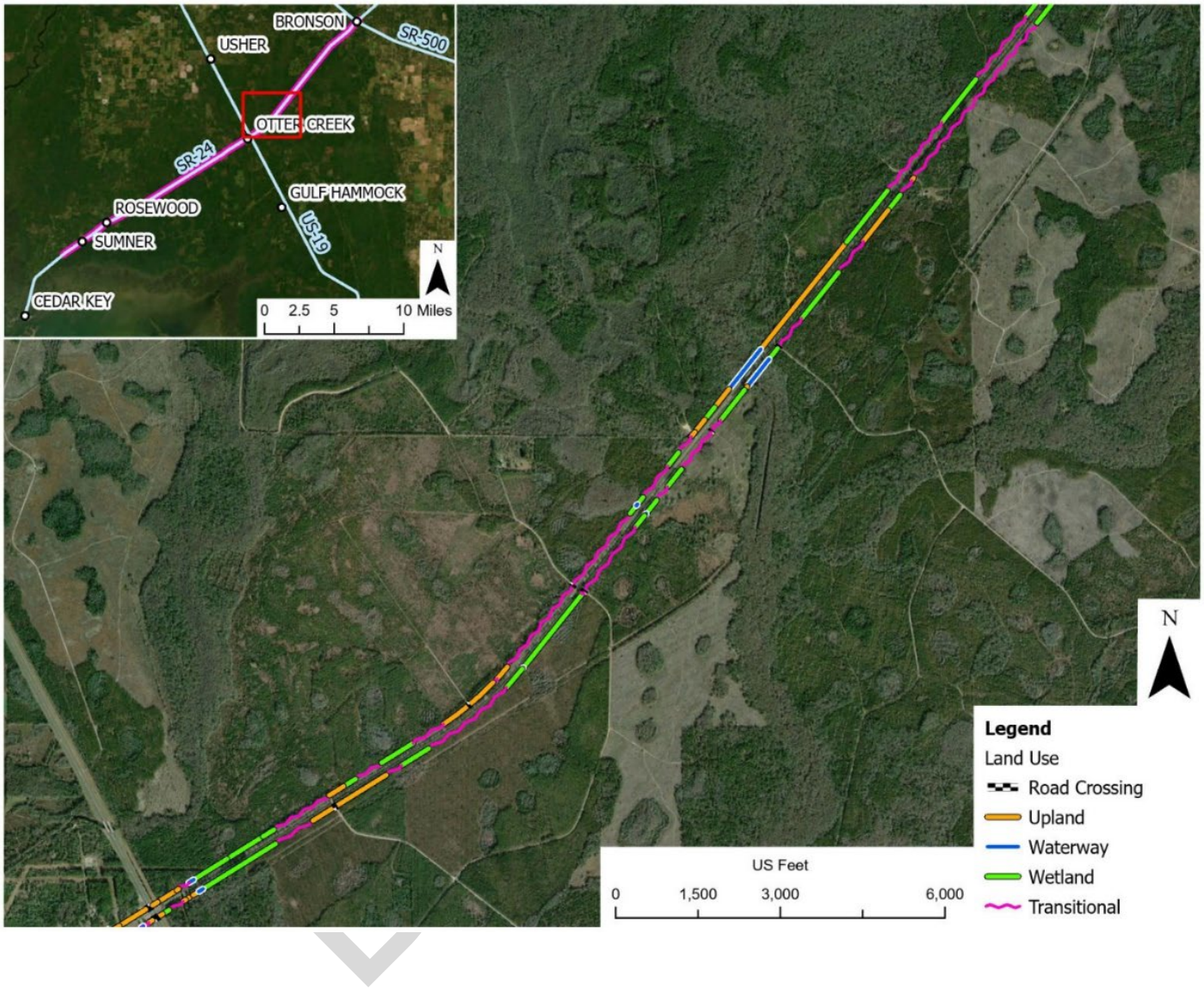


Figure 2.7 - Land Use Transects Along SR24 (6 of 7)

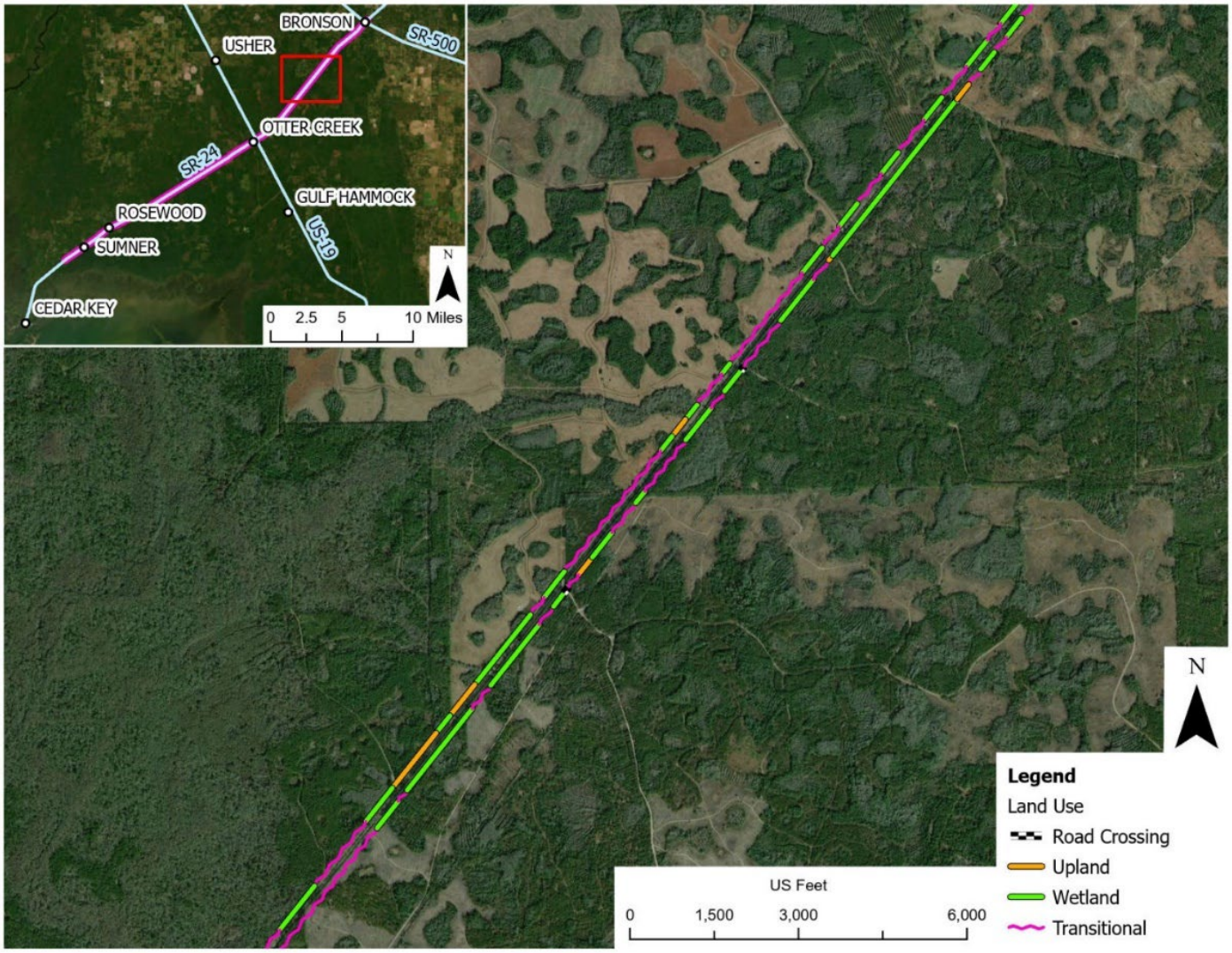
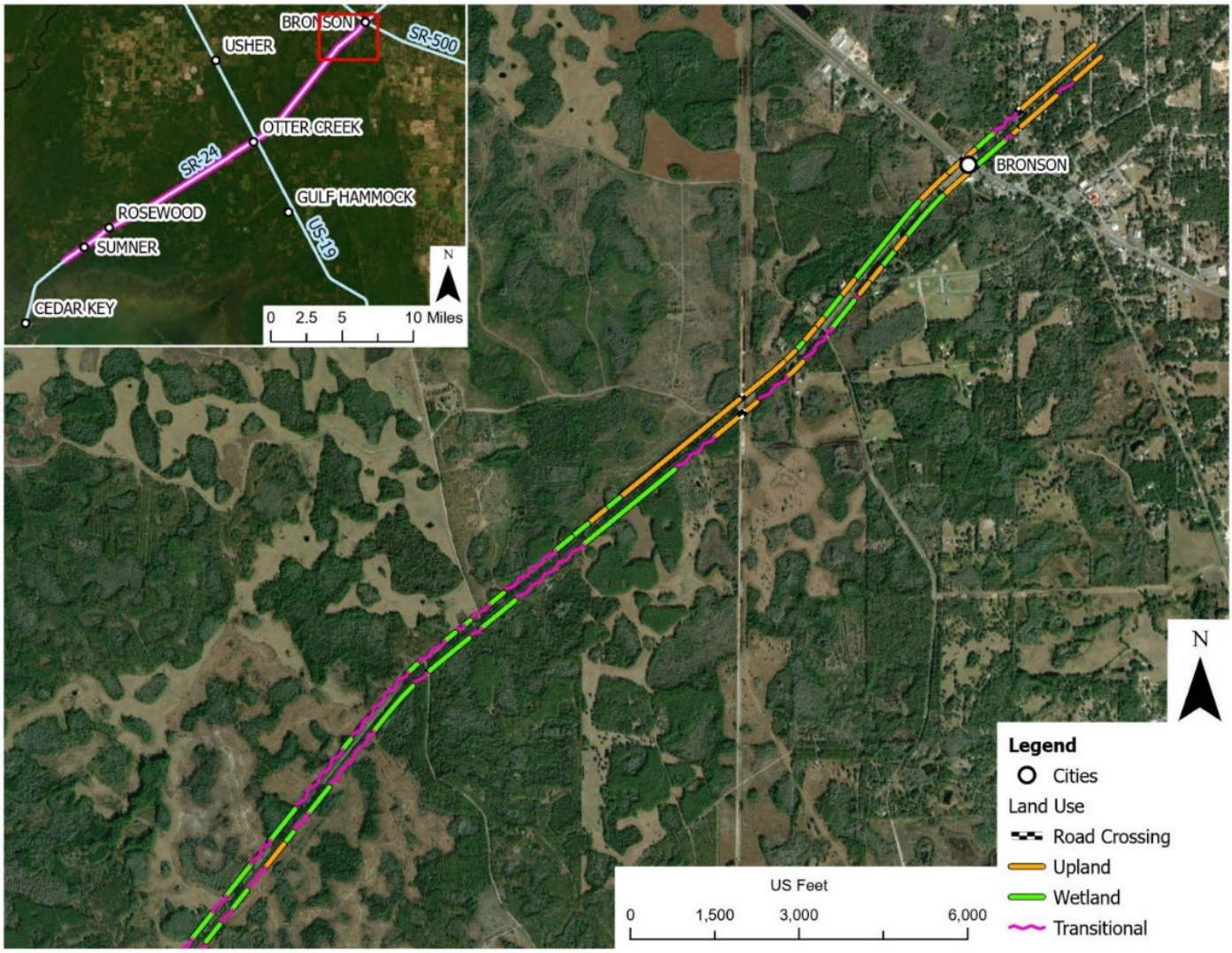


Figure 2.8 - Land Use Transects Along SR24 (7 of 7)



2.2.2 Cultural and Historical Assessment

NEPA declares the continuing responsibility of the federal government to "*preserve important historic, cultural, and natural aspects of our national heritage*." (FDOT, 2004 Cultural Resource Management Handbook). Consequently, NEPA Section 102(c) requires that an Environmental Impact Statement (EIS) be prepared when federal actions will impact significant cultural resources.

> *"Significant cultural resources are those which meet the Criteria of Significance as established by the National Register of Historic Places (NRHP) and maintain their integrity, that is, the ability to convey the quality or qualities for which they are considered exceptionally important in history."*

Additionally, under Section 106 (16 U.S.C. 470f) of the National Historic Preservation Act (NHPA), all federal agencies are required to take into consideration the effect of federally assisted, licensed or permitted projects on cultural resources that are listed, or eligible for listing, on the National Register of Historic Places (NRHP).

A cultural resource roster was obtained from the State Historic Preservation Officer (SHPO) identifying historic and cultural sites along SR24. Additional data sources included FGDL GIS shapefiles containing Florida Master Site File (FMSF) resource group locations and attributes. Resource groups are historical

districts, archaeological districts, or building complexes including the locations of archaeological sites, historic structures, unmarked human burials, cemeteries, and other cultural features.

The SHPO evaluates cultural and historical resources to determine their eligibility for inclusion in the NRHP. Two NRHP-eligible resources were identified in the cultural resource roster (Table 2.4). The historic site of the Florida Railroad (Site ID LV00228) is located adjacent to SR24, running the length of the proposed project from Bronson to Sumner. The proposed project would be constructed on the northern side of SR24 from Bronson to Rosewood and on the southern side of SR24 from Rosewood to Sumner and is not expected to affect this resource. From Bronson to Rosewood, the pipe will be run between the powerline and road on the north side of SR24, across SR24 from the historic railroad feature. The pipeline corridor switches to the south side of SR24 as the historic railroad feature simultaneously crosses to the north in Rosewood. The C and S Lumber Mill (Site ID LV00747) was the only other resource listed as eligible for inclusion in the NRHP. This building is located on the northern edge of SR24 between Rosewood and Sumner. As the proposed construction along this section of SR24 will be located on the southern edge, no impacts to this historic feature are expected.

Table 2.4 - Cultural Resource Roster Along SR24

Florida Master Site File

Florida Master Site File

AR=2
SS=5
CM=1
RG=3
BR=0
Total=11

Created: 7/23/2024

Cultural Resource Roster

SiteID	Type	Site Name	Address	Additional Info	SHPO Eval	NR Status
LV00228	RG	FLORIDA RAILROAD-SITE OF	Bronson	Linear Resource - 1 Contrib Resources	Eligible	
LV00398	SS	SR 500 HOUSE # 22	E OF SR 24/SR 500, BRONSON	c1930 Frame Vernacular	Not Eligible	
LV00399	SS	MCKENZIE'S BAR	HATHAWAY & THRESHER AVE, BRONSON	c1940 Commercial	Not Eligible	
LV00400	SS	SR 500 HOUSE # 23	HATHAWAY & THRESHER AVE, BRONSON	c1930 Frame Vernacular	Not Eligible	
LV00637	RG	ACL's Perry Cutoff Resource Group	Lebanon Station	Linear Resource - 1 Contrib Resources	Not Eligible	
LV00683	CM	Rosemary Cemetery	Bronson	Graves = 400		
LV00747	AR	C and S Lumber Mill	Sumner		Eligible	
LV00865	SS	688 West Thrasher Drive	688 W Thrasher DR, Bronson	c1960 Commercial	Not Eligible	
LV00891	AR	FL-824	Bronson		Not Eligible	
LV00981	RG	Historic Rosewood Town		Mixed District - 6 Contrib Resources		
LV00984	SS	Studstill House		c1925 Frame Vernacular		

2.2.3 Socioeconomic Assessment

NEPA Section 102 ensures government agencies carry out the national policy described in NEPA Section 101 by requiring an environmental review process. According to NEPA Section 101, national agencies should foster and promote the general welfare of present and future generations of Americans, create and maintain conditions conducive to people and nature existing in productive harmony, and "fulfill social, economic, and other requirements" (42 U.S.C. §4321 et seq. (1969), epa.gov/nepa). For this document, socioeconomic effects include social, economic, and other effects with close ties to changes in the physical environment. This definition is supported by the following quote which describes the outcome of several court cases involving attempts to halt projects due to socioeconomic concerns with no ties to a direct environmental impact:

> *"Thus, after much litigation, federal courts have concluded that socioeconomic concerns, unless closely tied to changes in the physical environment, are not the type of environmental effects that Congress intended impact assessments consider.*

As no significant environmental impact is expected to result from this project, socioeconomic concerns were not considered. Furthermore, this project is being developed to enhance water availability and quality, collect and return wastewater for advanced treatment and disposal, and improve water and wastewater system resilience. If socioeconomic concerns are identified, they will be considered as a part of project permitting.

2.3 Population Trends

2.3.1 Data Sources

To update the population estimates developed as part of the feasibility study and prepare estimates of household incomes for the W3C a variety of public databases were queried. The primary focus was Levy

County, the Towns of Bronson and Otter Creek, and the City of Cedar Key. Available sources of information included:

- The University of Florida Bureau of Economic and Business Research (UF BEBR) reports for population and economic data at the state, county, and municipal levels.
- The United States Census Bureau for census results and economic census data.
    - The American Community Survey (ACS) for detailed population, housing, and income information.
- The Florida Office of Economic & Demographic Research (EDR) for county-level data.

2.3.2 Population Estimates

The UF BEBR provides an annual projection of population for each Florida county and city/town (Bureau of Economic and Business Research, 2023). As of April 1, 2023, Levy County's population was estimated to be 45,283 (44 out of 67 Florida counties by population). Levy County covers 1,118 square miles and has an average population density of 41 people per square mile (Office of Economic & Demographic Research, 2023). Approximately 77 percent of Levy County residents live in unincorporated areas. Estimated county and municipal populations for 2023, 2020, 2010, and 2000 are provided in Table 2.5 (Bureau of Economic and Business Research, 2023).

Table 2.5 - Estimates of 2023, 2020, 2010, and 2000 Population

County/City	2023 Population	Change 2020-2023	2020 Census	2010 Census	2000 Census
Levy County	45,293	2,378	42,915	40,801	34,450
Levy County Unincorporated	34,916	1,996	32,920	31,526	25,701
Bronson	1,152	12	1,140	1,113	964
Cedar Key	689	2	687	702	790
Chiefland	2,323	7	2,316	2,245	1,993
Inglis	1,506	30	1,476	1,325	1,491
Otter Creek	110	2	108	134	121
Williston	3,297	321	2,976	2,768	2,297
Yankeetown	588	0	588	502	629
Fanning Springs (Levy)	702	-2	704	486	464
Fanning Springs (Gilchrist)	*568*	*90*	*478*	*278*	*273*

2.3.3 Households

The UF BEBR estimates the number of households for each county by dividing the population in households by the average household size. The population in households is equal to the total population minus the population in group quarters (e.g. prisons). Household data for Levy County are shown in Table 2.6 (Rayer et al., 2023). There were 18,803 households with an average household size of 2.39 estimated in 2023. This was an increase of 14.6 percent in the number of households and a decrease in household size of 2.4 percent.

Table 2.6 - Estimates of 2023, 2020, 2010, and 2000 Population

Year	Households	Average Household Size
2000	13,867	2.44
2010	16,404	2.45
2020	17,756	2.40
2030	18,803	2.39

2.3.4 Population Projections

The 2023 populations of the W3C members were reported as 1,152; 110; and 689 for Bronson, Otter Creek, and Cedar Key; respectively. Cedar Key also has a significant tourist population that can be twice the permanent population during weekends and events. Future population estimates were calculated for each municipality and for the W3C currently and with the potential addition of surrounding neighborhoods and unincorporated areas including Rosewood, Sumner, and the University Oaks Mobile Home Park (MHP). In the case of University Oaks MHP additional population increases were not projected as it is a neighborhood that is largely built out.

UF BEBR did not develop population estimates for the individual municipalities within Levy County, so the county estimates were used to project population growth. Estimated growth rates for municipal areas were based on projected medium- and high-growth scenarios from UF BEBR. The low estimate from UF BEBR included a negative growth rate which was not considered representative of observed trends for these communities. Projections were developed for a planning horizon through 2070 with UF BEBR estimates applied through 2050 and constant increases in new persons through 2070. For the purposes of this analysis two population projections were developed:

- W3C Population – Populations of Bronson, Otter Creek, and Cedar Key including estimated, normalized Cedar Key tourist population (assuming Friday to Sunday occupancy at twice permanent population, normalized on an annual basis) for the planning period 2025-2070.
- W3C Population & Additional Communities – Same as above but including estimated populations of Rosewood/Sumner and University Oaks.

The medium-growth population projections are shown in Table 2.7 and the high-growth population projections are shown in Table 2.8.

Table 2.7 - Medium-Growth Population Projections for W3C

Year	Bronson	Otter Creek	Cedar Key	Cedar Key Tourists	W3C	Rosewood & Sumner	University Oaks MHP	W3C & Additional Communities
2023	1,152	110	689	591	**2,542**	743	890	**4,175**
2025	1,175	112	703	603	**2,593**	758	890	**4,241**
2030	1,229	117	735	630	**2,711**	793	890	**4,393**
2035	1,272	121	761	652	**2,806**	820	890	**4,517**
2040	1,308	125	782	670	**2,885**	843	890	**4,618**
2045	1,336	128	799	685	**2,947**	861	890	**4,698**
2050	1,364	130	816	699	**3,008**	879	890	**4,778**
2055	1,392	133	832	713	**3,070**	898	890	**4,858**
2060	1,420	136	849	728	**3,132**	916	890	**4,937**
2065	1,448	138	866	742	**3,194**	934	890	**5,017**
2070	1,476	141	882	756	**3,255**	952	890	**5,097**

Table 2.8 - High-Growth Population Projections for W3C

Year	Bronson	Otter Creek	Cedar Key	Cedar Key Tourists	W3C	Rosewood & Sumner	University Oaks MHP	W3C & Additional Communities
2023	1,152	110	689	591	**2,542**	743	890	**4,175**
2025	1,247	119	746	639	**2,750**	804	890	**4,444**
2030	1,353	129	809	694	**2,986**	873	890	**4,749**
2035	1,448	138	866	742	**3,194**	934	890	**5,017**
2040	1,531	146	916	785	**3,379**	988	890	**5,257**
2045	1,610	154	963	826	**3,553**	1,039	890	**5,481**
2050	1,682	161	1,006	862	**3,710**	1,085	890	**5,685**
2055	1,753	167	1,048	899	**3,867**	1,131	890	**5,888**
2060	1,824	174	1,091	935	**4,024**	1,176	890	**6,091**
2065	1,895	181	1,134	972	**4,181**	1,222	890	**6,294**
2070	1,967	188	1,176	1,008	**4,339**	1,268	890	**6,497**

2.3.5 Population Recommendations

The W3C infrastructure project is composed of four key infrastructure components: a water plant, a wastewater facility, a water main, two wastewater lift stations, and a wastewater force main. The water plant and wastewater facility are both anticipated to be located on parcels near Bronson with adequate land for future expansions. Conversely the pipelines that will move water between Bronson and Cedar Key and wastewater between Cedar Key and Bronson include nearly 30 miles of pipe, multiple roads, river, and utility crossings, as well as complex environmental and wetland permitting. For this reason, it is recommended that medium-growth population projections for the year 2045 be used for sizing the water plant and wastewater facility and that high-growth population projections for the year 2070 be used for sizing the water and wastewater pipelines. Of note, the water and wastewater pipelines between Bronson and Cedar Key do not need to accommodate the capacity of Bronson or the University Oaks MHP as these can be directly and separately piped to and from the facilities. The recommended populations for individual infrastructure components are provided in Table 2.9.

Table 2.9 - Recommended Populations for Sizing Infrastructure Components

Year	Scenario	Water Plant	Wastewater Facility	W/WW Pipeline
2045	Medium	4,698	4,698	--
2070	High	--	--	3,640

2.3.6 Water Demand and Wastewater Flow Projections

Water demand and wastewater flows were estimated for the W3C using the medium-growth population projections. Water demand was based on a per capita average daily water demand of 130 gallons and wastewater flows were based on an average daily per capita wastewater flow of 100 gallons (Wetland Solutions, Inc. & Dewberry, 2022). Table 2.10 provides the estimated average daily water demand in million gallons per day (MGD) for two scenarios: W3C demand and W3C demand with additional community demand. Table 2.11 provides average daily wastewater flows for the W3C project under medium-growth population projections. It is recommended that the initial water and wastewater facilities be designed to accommodate the projected 2045 needs.

Table 2.10 - Projected Water Demand for the W3C Project – Medium-Growth Scenario

Year	W3C Demand (MGD)	W3C & Additional Communities Demand (MGD)
2023	0.330	0.543
2025	0.337	0.551
2030	0.352	0.571
2035	0.365	0.587
2040	0.375	0.600
2045	**0.383**	**0.611**
2050	0.391	0.621
2055	0.399	0.631
2060	0.407	0.642
2065	0.415	0.652
2070	0.423	0.663

Table 2.11 - Projected Wastewater Flow for the W3C Project – Medium-Growth Scenario

Year	W3C Demand (MGD)	W3C & Additional Communities Demand (MGD)
2023	0.254	0.417
2025	0.259	0.424
2030	0.271	0.439
2035	0.281	0.452
2040	0.288	0.462
2045	**0.295**	**0.470**
2050	0.301	0.478
2055	0.307	0.486
2060	0.313	0.494
2065	0.319	0.502
2070	0.326	0.510

The regional pipeline developed for this project is approximately 29 miles involving complex permitting and construction considerations. For these reasons, the regional pipeline used to deliver water to Otter Creek, Cedar Key (resident and tourist), Rosewood, and Sumner was sized based on the high-growth population scenario. Table 2.12 provides the water and wastewater flows that are projected for the regional pipeline and potential future customers. It is recommended that the pipeline be sized to accommodate the projected 2070 needs for current and potential future customers (Rosewood and Sumner).

Table 2.12 - Projected Regional Pipeline Flows for the W3C Project – High-Growth Scenario

Year	Regional Water Demand (MGD)	Regional Wastewater Demand (MGD)
2023	0.277	0.213
2025	0.300	0.231
2030	0.326	0.251
2035	0.348	0.268
2040	0.369	0.284
2045	0.388	0.298
2050	0.405	0.311
2055	0.422	0.324
2060	0.439	0.338
2065	0.456	0.351
2070	**0.473**	**0.364**

2.3.7 Income

Economic data for Levy County was collected from the Florida Office of Economic and Demographic Research (EDR) and from the U.S. Census American Community Survey (ACS.) Levy County has a 48.3 percent employment rate, an average annual wage of $39,622 (2022 all industries), a median household income of $49,933, and a median family income of $60,961 (Office of Economic & Demographic Research, 2023).

For the purposes of W3C grant funding, it is useful to characterize the income of the individual municipalities and for the service area population. This effort allows for determination of grant eligibility for state revolving fund programs, state grants, and federal grant programs. The US Census Bureau produces estimates of income and poverty at the county and state level through the ACS 5-Year Estimates. The W3C service area has not yet been defined and data is unavailable for the entity. Therefore, Levy County income data were used in combination with detailed data from the ACS to develop income estimates.

2.3.8 Estimated Per Capita Income

Data was downloaded from the U.S. Census Bureau, "Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)," American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1901 (United States Census Bureau, 2022). Income data for households were used in conjunction with population estimates and household counts to calculate people per home and per capita incomes. In 2022, Levy County had a median income of $20,592, lower than the state ($27,498) and national ($29,130) median incomes. The three entities that comprise the current membership of the W3C were separately queried with median incomes of $22,028, $34,999, and $30,259 for Bronson, Otter Creek, and Cedar Key, respectively. The estimated per capita weighted median income for the W3C entities was $25,807 which is less than for Florida ($27,498).

2.3.9 Household Income

Household income data were similarly available from the ACS. In 2022, Levy County had a median household income of $49,933. The State of Florida had a median household income of $69,303 and the United States had a median household income of $74,755. For the W3C members median household incomes were $57,557, $60,665, and $69,886 for Bronson, Otter Creek, and Cedar Key; respectively. The median weighted household income for the W3C was calculated based on the number of households and median for each community with a value of $62,670, which is less than for the state of Florida.

2.4 Community Engagement

W3C has prioritized community engagement by holding a series of public board meetings that are open to the public to involve stakeholders in the project planning process. These meetings serve as an open forum for community members to learn about and provide input on key aspects of the W3C's projects. Board members can give their input on all aspects of the project as well.

During these sessions, W3C representatives provide detailed explanations regarding the financial aspects of the proposed projects. The breakdown of both the immediate costs and the long-term financial impacts ensure community members are informed about the financial sustainability of the initiatives. This transparency allows stakeholders to assess the feasibility of projects from an economic standpoint, ensuring responsible and informed decision-making. The sessions also include a review of multiple funding opportunities and the need for the Cooperative and its members to obtain grants to offset the costs of the program.

Additionally, W3C utilizes these meetings to present and explain project alternatives. The community was introduced to the three project alternatives that were considered in the planning stages, offering a clear understanding of the options available and the cost-benefit associated with each. By presenting these alternatives, the W3C facilitates community members' conversations to compare potential outcomes and contribute feedback to select the most beneficial path forward.

This open, participatory approach emphasizes W3C's commitment to transparency and collaboration, ensuring that projects are shaped not just by internal decision-makers but with meaningful community input. Meeting minutes have been provided (Appendix A).

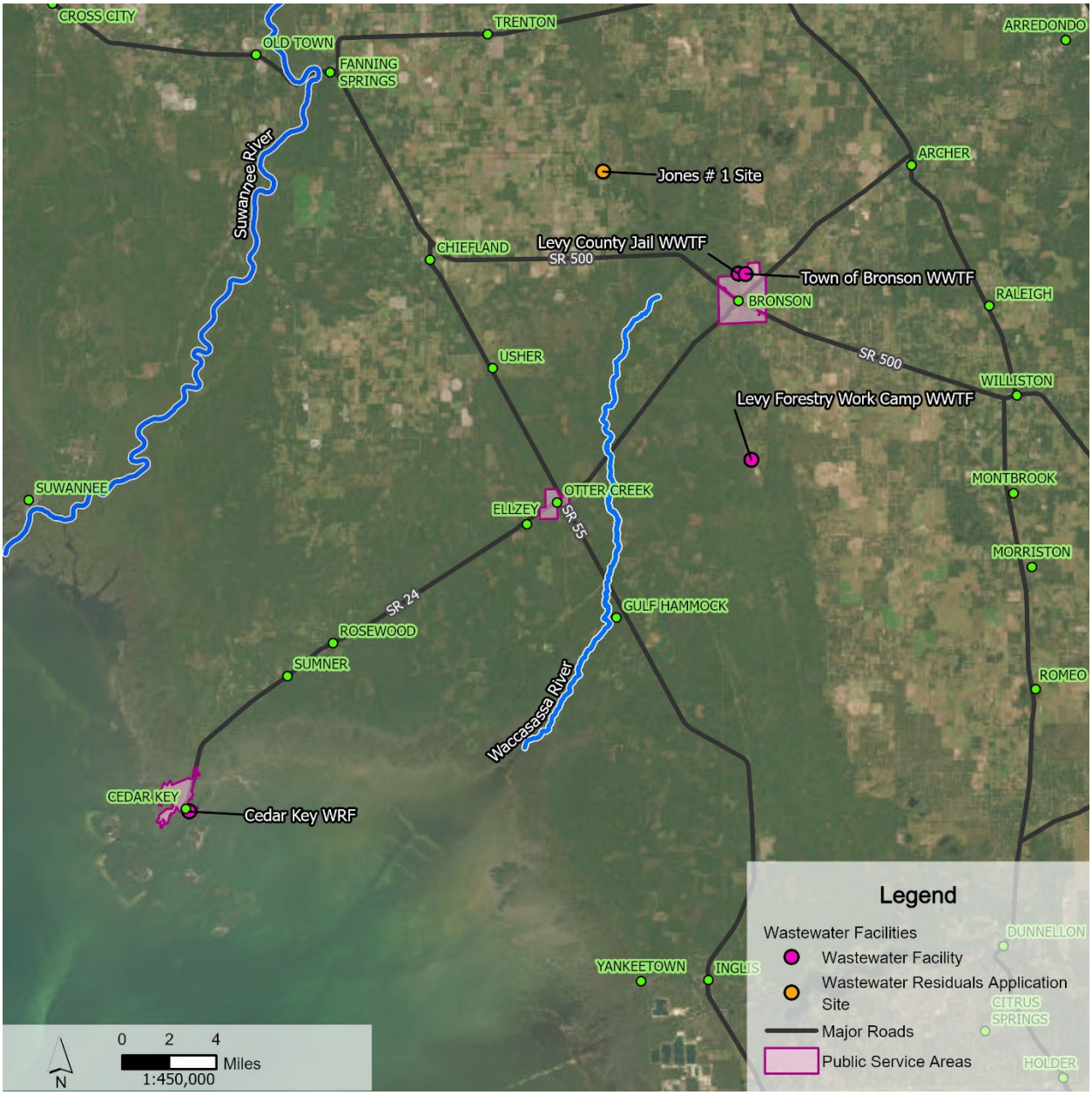
3. Existing Facilities

3.1 Facilities

Wastewater infrastructure within the study area were identified based on FDEP data that are a part of the Wastewater Facility Regulation (WAFR) database. These facilities include all permitted domestic, power plant, or industrial WWTFs, as well as residuals application sites and wastewater collection systems. Onsite Sewage Treatment and Disposal Systems (OSTDSs) were identified based on FDOH parcel data. Effluent quality data were collected for the permitted WWTFs from the FDEP Oculus Database. Available data included facility permits, discharge monitoring reports (DMRs), and related engineering reports.

Based on the WAFR database, a total of five wastewater facilities are located within the study area as shown in Figure 3.1. Based on searches of the FDEP Oculus database for Levy County, there were an additional 53 facilities that had permits and had their location referenced as either Cedar Key, Bronson, or Unincorporated. Most of these facilities appear to be aquaculture processing facilities, based on facility name and a spot-check of available permit files. Upon reviewing a selection of these facilities, the process appears to involve the once-through pumping of water from the Gulf, through the facility, with discharge back to the Gulf. Additionally, there are other wastewater permits that appear to be related to small stores or condominiums. These 53 facilities are not of interest to this project because none of these systems are centralized, municipal systems.

Figure 3.1 - Existing Wastewater Facilities



Any of these facilities that discharge to OSTDSs, specifically stores or condominiums, could be considered for connection to an existing or expanded WWTF. All the facilities in the WAFR database are domestic facilities, this includes one domestic wastewater residuals application site and four domestic WWTFs, with the characteristics shown in Table 3.1. Capacities of the wastewater facilities range from 0.024 to 0.18 MGD. Of the four WWTFs, two facilities are associated with municipalities (Bronson and Cedar Key), one with the Levy County Jail, and one with the Levy Forestry Work Camp.

Table 3.1 - Permitted Wastewater Treatment Facilities

Facility ID	Name	Capacity (MGD)	Facility Type
FLA956945	Jones #1 Site	--	Domestic WW Residuals Application Site
FLA011656	Levy Forestry Work Camp WWTF	0.035	Domestic WW Facility
FLA011647	Levy County Jail WWTF	0.024	Domestic WW Facility
FLA317659	Bronson, Town of WWTF	0.083	Domestic WW Facility
FL0031216	Cedar Key WRF	0.18	Domestic WW Facility

This study is focused specifically on the municipal wastewater facilities located in Bronson and Cedar Key.

3.1.1 Bronson Wastewater Collection and Treatment System

The Town of Bronson package wastewater treatment facility was constructed and placed into operation in 2005. The system was designed to treat 83,000 gallons per day (gpd), or 0.083 million gallons per day (MGD), of domestic wastewater. The WWTF was constructed and placed into operation during 2005 and was designed to operate as a Modified-Ludzack-Ettinger (MLE) activated-sludge process with effluent disposal via two (2) rapid infiltration basins (RIBs). Since this time, the WWTF has been converted to an extended aeration system with an 8.2 acre slow-rate-restricted-access spray field for effluent disposal. A second effluent disposal area consists of two rapid infiltration basins with a combined area of 0.849 acres. The permit for the facility was issued February 7, 2024, with an expiration date of February 6, 2029.

The Bronson WWTF had an Operation and Maintenance Performance Report prepared in September 2018 as part of the facility permit renewal. This report described the components of the wastewater system as well as the condition of each component. Facility performance was evaluated based on data from July 2016 through March 2018. Evaluated constituents were generally within permit limits except during single events for nitrate (October 2016, 60.09 mg/L) and fecal coliform (May 2017, 9,000/100 mL). Three-month average daily flows were below 50% for the facility, meaning that a Capacity Analysis Report was not required. Groundwater sampling found pH to be out of compliance, although effluent pH values were within limits. This was postulated to be the result of natural soil conditions.

Bronson has an established wastewater collection system that conveys wastewater to their WWTF. The future operation and expansion of this wastewater collection system will be the responsibility of Bronson, since W3C will serve as a wholesale provider of wastewater services. It is expected that quality and operational standards will be required for Bronson to manage infiltration, inflow, and the introduction of excessive solids, sand, or grit as they connect to the W3C regional system.

Figure 3.2 - Wastewater Treatment Facility Site in Bronson

Figure 3.3 - Components of the Existing WWTF in Bronson

Figure 3.4 - Components of the WWTF in Bronson

Figure 3.5 - Components of the existing WWTF in Bronson

Figure 3.6 - Chlorine Contact Chambers of the Existing WWTF in Bronson

Figure 3.7 - Infiltration Basins at the Existing WWTF in Bronson

Figure 3.8 - Infiltration Basins at the existing WWTF in Bronson

3.1.2 Cedar Key Wastewater Collection and Treatment System

The Cedar Key wastewater treatment facility consists of screening, grit removal, aeration, settling, filters, and disinfection. Unit processes consist of dual tanks or equipment, providing Class 1 reliability. A propane fueled motor generator set is also provided to generate electricity in case of power failure. High level disinfection is included to destroy bacteria, and dichlorination facilities dechlorinate the effluent during periods of effluent discharge. Effective in 2003, the DEP approved the facilities for an average annual flow of 180,000 gpd with an instantaneous peak capacity of 400 gpm, or 576,000 gpd. The active permit for the facility was issued July 18, 2019, with an expiration date of July 17, 2024. The existing permit is currently in the renewal process with an application date of May 29, 2024.

The primary effluent disposal of the reclaimed water is at the 50,000 sq ft block surrounded by “G” St., “H” St., 8th St., and Whiddon Ave. This area is approved for disposal of 166,000 gpd. Effluent disposal utilizes leaching chambers installed slightly below grade and is classified by the DEP as an adsorption field. Additional areas approved for 14,000 gpd of effluent disposal by spray irrigation are the cemetery, the School, the City Park and some R/W areas along 1st Street.

Cedar Key’s wastewater collection system consists of gravity sewer collection areas discharging into pumping stations and a force main network discharging to the treatment plant. A low-pressure sewer system was constructed in 2000-2001, connecting all remaining buildings on the island to the existing sewer system. The future operation and expansion of this wastewater collection system will be the responsibility of Cedar Key, since W3C will serve as a wholesale provider of wastewater services. It is expected that quality and

operational standards will be required for Cedar Key to manage infiltration, inflow, and the introduction of excessive solids, sand, or grit as they connect to the W3C regional system.

Figure 3.9 - Cedar Key WWTF

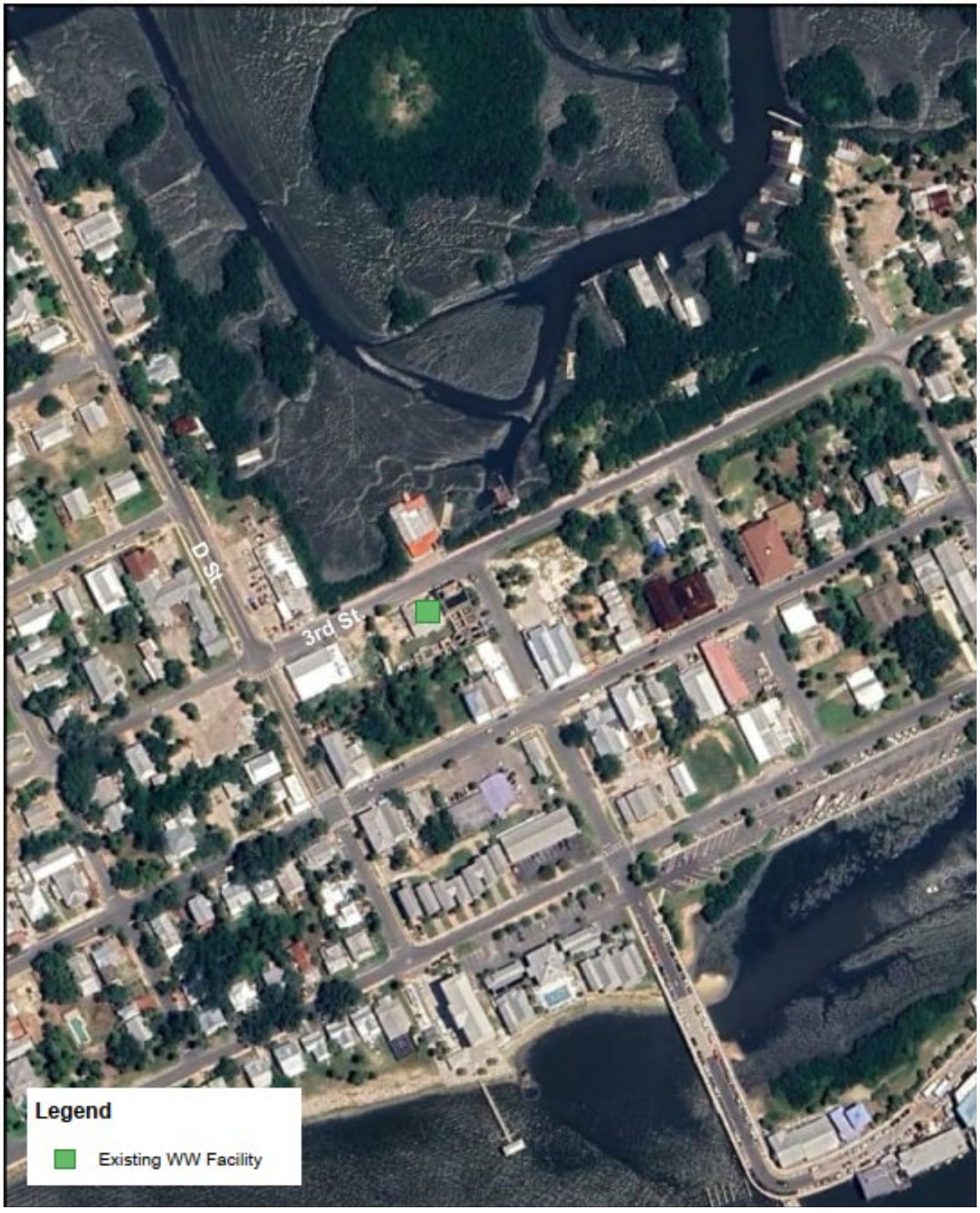


Figure 3.10 - Components of the Existing WWTF in Cedar Key

Figure 3.11 - Components of the Existing WWTF in Cedar Key

Figure 3.12 - Components of the Existing WWTF in Cedar Key

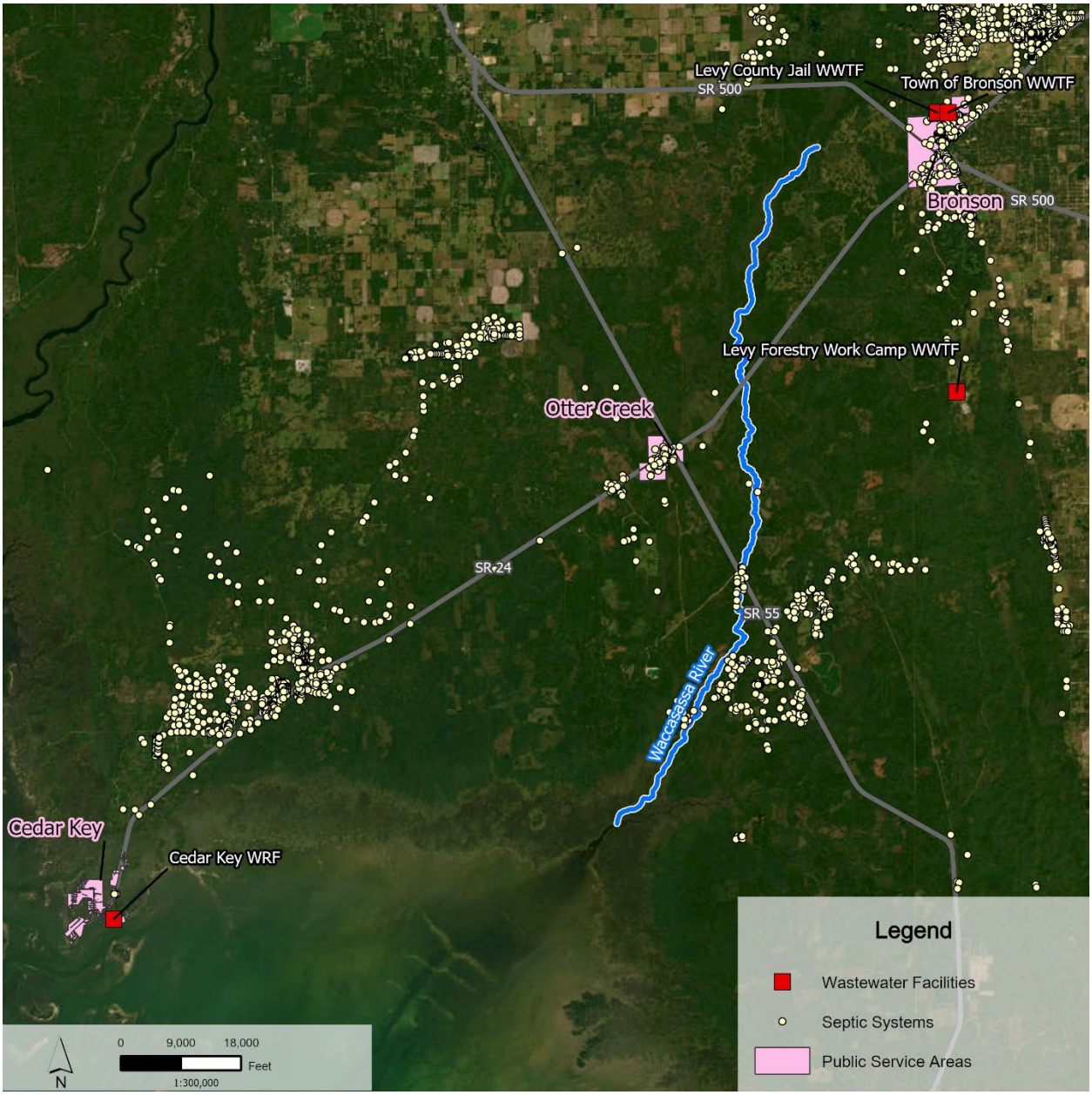
3.2 Existing On-Site Treatment and Disposal Systems

There are approximately 638 parcels identified as having On Site Treatment and Disposal Systems (OSTDS) located completely or partially within the Public Service Areas (PSAs), as follows:

- Bronson (n=189),
- Otter Creek (n=79),
- Cedar Key (n=2),
- University Oaks Mobile Home Park (n=368)

The Town of Otter Creek and University Oaks Mobile Home Park do not provide wastewater service, and all homes are on OSTDSs. Cedar Key has converted all units to central sewer and abandoned existing septic systems. The two reported systems are not actually present based on conversations with the CKWSD. The Town of Bronson has approximately 220 wastewater accounts that are on central sewer with the remainder served by OSTDSs.

Figure 3.13 - Location of Existing On-Site Treatment and Disposal Systems



3.3 Condition of Existing Facilities

3.3.1 Bronson Wastewater Treatment Facility

The Bronson WWTF had an Operation and Maintenance Performance Report prepared in September 2018 as part of the facility permit renewal. This report described the components of the wastewater system as well as the condition of each component. Reported conditions and identified issues are summarized in Table 3.2.

Table 3.2 - Bronson Wastewater Treatment Facility Operation and Maintenance Summary

Component	Condition	Identified Issues
Static Screen	Excellent	None
Surge Tank	Satisfactory	None
Flow Splitter Box	Excellent	Recommended to evaluate sizing to allow simultaneous operations of pumps and to monitor grit levels
Biological Treatment Unit	Satisfactory	Offline blower and clogged line should be repaired
Secondary Clarifiers	Satisfactory	Recommend cleaning to remove scum and algae
Chlorine	Good	None, but cleaning recommended quarterly
Spray fields	Satisfactory	Complete repair of control panel
RIBs	Satisfactory	None, recommend normal maintenance
Aerobic Digester	Satisfactory	None
Collection System	Good	No identified infiltration and inflow issues

Facility performance was evaluated based on data from July 2016 through March 2018. Evaluated constituents were generally within permit limits except during single events for nitrate (October 2016, 60.09 mg/L) and fecal coliform (May 2017, 9,000/100 mL). Three-month average daily flows were below 50% for the facility, meaning that a Capacity Analysis Report was not required. Groundwater sampling found pH to be out of compliance, although effluent pH values were within limits. This was postulated to be the result of natural soil conditions.

3.3.2 Cedar Key Wastewater Treatment Facility

The Cedar Key WWTF had an Operation and Maintenance Performance Report prepared in July 2018 as part of the facility permit renewal. This report described the components of the wastewater system as well as the condition of each component. Reported conditions are summarized in Table 3.3.

Table 3.3 - Cedar Key Reclamation Facility Operation and Maintenance Summary

System	Component	Condition	Identified Issues
Influent	Static Screen	Satisfactory	None
Influent	Grit Chamber	Poor	Inoperable, relying on removal in aeration tanks, safety issue with exposed open channels, recommended to monitor sediment accumulation in aeration tanks
Aeration	Tanks	Poor	Walls have cracks that require rehabilitation
Aeration	Blowers	Poor	leaking oil and require maintenance
Aeration	Diffusers	Good	None
Clarification	Clarifiers	Good	Safety issue with a lack of handrail around edge
RAS	Pumps	Good	None
Filtration	Filters	Good	None. but air scour system is not efficient
Chlorination	Pumps	Good	None
Chlorination	Chamber	Good	None
Dechlorination	Pumps	Good	None
Reclaimed	Pumps	Good	None
Polymer Feed	Pumps	Satisfactory	None
Aerobic Digester	Tank, Blower	Satisfactory	None, but changes could be made to reduce sludge volume
Collection	Collection	-	The system does experience some infiltration and inflow due to materials and condition and is being evaluated in a study

Facility performance was evaluated based on data from January 2016 through June 2017. Performance was well within permit requirements for treated effluent. The groundwater monitoring program indicated permit exceedances for total dissolved solids (TDS), chloride, and sodium, although water quality criteria exemptions have been issued for these parameters.

3.4 Asset Management Plans for Existing Facilities

Town of Bronson - Per the Facility Operation and Maintenance Performance Report of 2018, record drawings are available at the facility site. An operation and maintenance manual is currently available at the WWTF site and is in use by the facility operator. Additional component manuals are located at each control panel.

An operation and maintenance log is maintained and kept by the operator. The facility is staffed by the Town, as are maintenance, record keeping, and sampling programs. All laboratory tests are performed by a certified laboratory. There is an in-facility laboratory for current operations.

City of Cedar Key - Per the facility Operation and Maintenance Performance Report of 2018, record drawings of the facility are available and located at the facility's office. It includes an inventory of essential spare parts.

The facility is staffed by the lead plant operator. The maintenance, record keeping, sampling programs and lab testing are performed by Aqua Pure Water & Sewage Service, Inc., 10865 East State Road 40, Silver Springs, Florida 34488-2347.

4. Identification of Project Need

4.1 Public Health

The description of the existing wastewater treatment along with the evaluation of possible alternatives to wastewater treatment are discussed in the study "Phase 1: Regional AWS Feasibility – Cedar Key, Bronson, Otter Creek, and Unincorporated Areas in Levy County, Wetlands Solutions & Dewberry, September 2022." It describes potential challenges for wastewater treatment across the study area.

This Wastewater Facilities Plan aims to identify wastewater infrastructure projects necessary to provide wastewater treatment and disposal services that comply with applicable regulatory requirements and standards. Each of the communities addressed in this study have challenges associated with their wastewater collection and treatment systems. The following existing conditions affect public health:

- Lack of centralized wastewater collection and treatment outside of Cedar Key and Bronson.
- Potential contamination of private wells during flooding events in unincorporated areas of Levy County due to inadequate on-site treatment and disposal systems.
- Treated wastewater from Cedar Key being infiltrated to the Gulf of Mexico.
- Impacts to and potential loss of Cedar Key's aquaculture industry due to wastewater spills.
- Vulnerability of existing wastewater treatment in Cedar Key and coastal areas to storm surge and sea level rise.
- Large numbers of septic systems within the Town of Bronson and in unincorporated areas of Levy County that have the potential to impact groundwater supplies, springs, and the coastal ecosystem.

4.2 Priority Area Projects

None of the W3C communities, including the proposed location for the new wastewater facility, wastewater transmission systems, and the effluent dispersal site, are currently included in any Basin Management Action Plan (BMAP). However, given the long-term planning horizon of this Plan, it is prudent to assume that at some point the study area and facilities will be incorporated into a BMAP.

In evaluating the alternatives, it is recommended that W3C plans as if it were a local government entity that has a domestic wastewater treatment facility (WWTF) within its jurisdiction and is part of a BMAP. Planning for the proposed WWTF assumes that the facility will adhere to specific regulatory and operational requirements, utilizing Advanced Wastewater Treatment (AWT) technology to reduce nutrient concentrations in the treated effluent, particularly nitrogen and phosphorus.

4.3 Surface Water/ Ground Water Protection

The medium-growth population projections for the year 2045, used to estimate the demands for the proposed wastewater facility, assume that a portion existing OSTD's will be eliminated as local utility providers expand collection systems and connect them to the W3C. While W3C is not responsible for enforcing conversions or requiring new connections to the wastewater system, the establishment of this regional system facilitates and encourages local utilities to develop policies aimed at eliminating OSTDs. The timeframe for the elimination of OSTDs in the study area will depend on the ability of local utilities to provide the infrastructure and establish regulatory requirements. The number of potential septic-to-sewer conversions available in each area and estimated flows are provided in Table 4.1.

Table 4.1 - Septic Parcels in Identified Area

Potential Septic-to-Sewer Areas	Number	Est. Flow (MGD)
Town of Bronson PSA	182	0.046
University Oaks PSA	356	0.089
Town of Otter Creek PSA	79	0.02
Bronson Area (excl. PSA)	502	0.126
SR24 1-mile Buffer	353	0.088
SR24 1.5-mile Buffer (excl 1-mile)	77	0.019
Total	**1,549**	**0.388**

Wastewater needs identified in previous studies are primarily related to the need to relocate wastewater treatment off the island of Cedar Key because of the vulnerability of the treatment system to natural events and because of the potential impact on the City's aquaculture from a major wastewater spill. Furthermore, the City currently infiltrates treated water on the island where it is lost to the Gulf.

Outside of Cedar Key, there is significant reliance on septic systems for wastewater disposal. This effluent management approach has the potential to contaminate shallow drinking water wells, increase nutrients in groundwater, and impact coastal ecosystems.

The regional approach, technologies, and regulatory compliance measures proposed in this project address key environmental factors currently impacting surface and groundwater quality in the study area.

4.4 Other Reclaimed Water or Residual Projects

The Bronson WWTF relies on an 8.2-acre slow-rate, restricted-access spray field and two rapid infiltration basins with a combined area of 0.849 acres for effluent disposal.

In Cedar Key, the primary effluent disposal of the reclaimed water is at the 50,000 sq ft block surrounded by "G" St., "H" St., 8th St. and Whiddon Ave. This area is approved for disposal of 166,000 gpd. Effluent disposal utilizes leaching chambers installed slightly below grade and is classified by the DEP as an adsorption field. Additional areas approved for 14,000 gpd of effluent disposal by spray irrigation are the cemetery, the School, the City Park and some R/W areas along 1st Street.

No other projects employing effluent disposal for beneficial use are identified within the study area.

4.5 Potential Compliance Issues

The vulnerability of the treatment system to natural events, the significant reliance on septic systems for wastewater disposal in areas without wastewater services, and the aging infrastructure of the wastewater treatment facility (WWTF) in Bronson and Cedar Key present potential regulatory compliance risks. Like every county in Florida, Levy County—particularly the study area—is not exempt from population growth and development.

Without the regional approach and planning expertise that this project will provide, each local municipality would be left to manage its responsibilities and challenges in providing wastewater services and protecting the environment from the adverse effects of mismanaged, insufficient, or deteriorating infrastructure. Lacking the necessary expertise and resources, each municipality is likely to pursue individual approaches to meet their responsibilities, often at higher costs and with an increased risk of failing to comply with environmental regulations due to natural events or infrastructure failures.

5. Alternatives Considered

After consideration of the individual and cooperative paths forward, a qualitative alternatives evaluation was developed in the study "Phase 1: Regional AWS Feasibility – Cedar Key, Bronson, Otter Creek, and Unincorporated Areas in Levy County, Wetlands Solutions & Dewberry, September 2022". Based on this qualitative analysis it was observed that Sumner and Rosewood were expected to remain unserved unless there is a regional solution. Bronson was observed to have similar outcomes regardless of an independent or regional approach. Cedar Key and Otter Creek were expected to continue to have similar service and continue to face ongoing challenges in the absence of a regional alternative. Given the cost of conveying and treating wastewater and the desire of the impacted communities to incorporate neighbors, an independent approach was not recommended.

5.1 Description

The proposed project alternatives and their analysis, described below, are based on field observations, data reviews, existing conditions, and discussions with the W3C Board of Directors and local government members of the Cooperative Interlocal Agreement. Three project alternatives for the proposed wastewater treatment system have been identified. For the two alternatives that involve action and investment by W3C, a wastewater transmission system is proposed for the required pumping and conveyance infrastructure to interconnect Cedar Key, Otter Creek, and Bronson.

The alternatives for wastewater treatment include:

- Alternative 1: 5-Stage Bardenpho Biological Nutrient Removal (BNR) System in Carrousel Oxidation Ditch – at the site of the existing WWTF in Bronson. This concept is a common wastewater treatment system in the State of Florida that uses aerobic, anaerobic and anoxic conditions and secondary clarifiers to remove nitrogen and phosphorus. The Carrousel Oxidation Ditch BNR trains and secondary clarifiers are constructed in separate concrete structures. This process helps prevent nutrient pollution in water bodies and supports environmental sustainability.

- Alternative 2: 5- Stage Bardenpho Biological Nutrient Removal (BNR) System in Davco Circular Plant – at the site of the existing WWTF in Bronson. This concept is a compact and consolidated wastewater treatment system that uses aerobic, anaerobic, anoxic conditions, and secondary clarifiers to remove nitrogen and phosphorus. Each Davco Circular Plant train is constructed in a ring steel tank structure and contains all BNR process basins and secondary clarifier within the structure. It is used for small communities, offering efficient nutrient management in limited space.

- Alternative 3: W3C does not move forward. In this scenario each local utility would remain responsible for operating, upgrading, and constructing new infrastructure independently.

The following is a list of common unit processes and components of Alternatives 1 and 2 in addition to the BNR processes and secondary clarifiers:

- Headworks structure with a mechanical screen, manual bar racks for screen bypass, and vortex grit removal;
- Flow splitter box for BNR trains;
- Flow splitter box for secondary clarifiers;
- Return activated sludge and waste activated sludge (RAS/WAS) pump station;
- Disinfection with sodium hypochlorite;
- Sludge holding tanks for offsite hauling;
- Emergency generator.

5.2 Design Criteria

The wastewater demands are derived from the recommendations reached in Section 2.3.6. In summary, wastewater flows for the wastewater treatment facility were estimated for the W3C using the medium-growth population projections, with a per capita water demand of 100 gallons per day. Table 5.1 provides wastewater flows for the W3C project under medium-growth population projections. Even though the 2045 wastewater flow is 0.470 MGD, the decision was made to design the new facility with a capacity of 0.80

MGD (two, 0.4 MGD trains) with a Headworks structure and an ultimate buildout capacity of 1.2 MGD AADF for the following reasons:

- At least two treatment trains need to be provided for the following unit processes to meet EPA Class 3 reliability:
    - Aeration equipment to handle 100% of the peak design capacity with the largest unit out of service;
    - Multiple secondary clarifiers;
    - Minimum two chlorine contact basins.
- Operational flexibility and process redundancy need to be maximized due to:
    - The small treatment capacity and expected high degree of variabilities in flows and loads;
    - Additional variabilities from tourist population at Cedar Key;
    - Emergency preparedness for natural disasters.

Two additional configurations were eliminated from consideration including the following:

- Constructing a 0.4 MGD WWTF with two 0.2 MGD treatment trains for each unit process is not cost effective due to higher unit prices of the smaller treatment basins and equipment. With the future expansion to 0.8 MGD AADF, there will be four treatment trains of each unit process which increases operational complexity.
- Constructing a 0.4 MGD WWTF with one 0.4 MGD treatment train for some unit processes may be feasible with Class 3 reliability. However, W3C needs maximum operational flexibility considering the small treatment capacity and expected high degree of variabilities in flows and loads from multiple municipalities. In addition, operating one treatment train for unit processes like the 5-Stage Bardenpho BNR process substantially limits the serviceability for equipment replacement and tank maintenance. Failure of one component may lead to operation stoppage of the entire unit process.

With the proposed 0.8 MGD WWTF, the future expansion phase may include an additional 0.4 MGD train for each unit process to increase the treatment capacity to 1.2 MGD for startup by 2050. Alternatively, the facility may be re-rated to 1.0 MGD based on the updated future flows and loads and potential flow equalization to reduce the peak hourly flow.

The unit processes of the wastewater treatment facility shall be designed to meet the following regulatory criteria:

- Advanced nutrient removal to meet the Basin Management Action Plan requirements for Springs' Protection:
    - 5 mg/L BOD, annual average
    - 5 mg/L TSS, annual average with the future tertiary filtration
    - 3 mg/L TN, annual average
    - 1 mg/L TP, annual average with the future tertiary filtration

The following influent wastewater quality parameters included in Table 5.1 are used for unit process design based on data from similar Florida municipalities with low inflow and infiltration:

- Annual average influent quality at AADF
- Maximum monthly average influent quality at AADF
- Maximum daily influent quality at AADF

Table 5.1 - Wastewater Influent Quality Parameters

Influent Parameters	Influent Concentrations (Mg/L) at Annual Average Daily Flow (AADF) Treatment Capacity (MGD)		
	Annual Average	Maximum Monthly	Maximum Daily
CBOD5	300	400	600
TSS	300	400	600
TKN	75	100	150
TP	15	20	30

The following influent wastewater peaking factor parameters included in Table 5.2 are used for estimating the required capacity of the facility.

Table 5.2 - Wastewater Influent Peaking Factor Parameters

Influent Parameters	Influent Concentrations (Mg/L) at Annual Average Daily Flow (AADF) Treatment Capacity (MGD)
	Annual Average
Maximum Monthly Average Flow to AADF	1.2
Maximum Daily Flow to AADF	2.3
Peak Hourly Flow to AADF	3.5

Table 5.3 includes a summary of unit process design criteria and sizing of Alternatives 1 and 2 for the initial 0.8 MGD WWTF.

Table 5.3 - Unit Process Design Criteria and Sizing

Structures	Unit Processes	Design Criteria	Equipment Sizing
Headworks Structure (designed for 1.2 MGD AADF buildout capacity)	Influent mechanical screen	Min hydraulic capacity = 100% peak hourly flow (PHF)	4.2 MGD (2,920 gpm)
	Manual bar racks	Min hydraulic capacity = 100% PHF	4.2 MGD (2,920 gpm)
	Vortex grit removal	Min hydraulic capacity = 100% PHF	4.2 MGD (2,920 gpm)
5-Stage Bardenpho BNR System	Aerobic basins	Minimum 12-day SRT at maximum monthly average daily (MMAD) loadings for complete nitrification	0.882 MG
	Anaerobic basins	Minimum 1 hr HRT at maximum monthly average daily Flow (MMADF)	0.081 MG
	Anoxic basins	Minimum 5-day SRT for 1st anoxic zone at MMAD loadings Minimum 2-day SRT for 2nd anoxic zone at MMAD loadings	0.408 MG 1st anoxic zone 0.182 MG 2nd anoxic zone
	Re-aeration basin	0.5 hr HRT at MMADF	0.04 MG
	Aeration equipment	Oxygen transfer rate to handle maximum daily (MD) loadings	Four (4) 60 HP mechanical aerators (three duty one standby)
	Internal recirculation pumping	400% AADF pumping capacity	Six (6) 600 gpm pumps (four duty two standby)
Secondary Clarifiers	Clarifier Equipment	Max HOR = 1000 gpd/sf/d Max SLR = 35 lb/sf/d 75% peak capacity with one unit out of service	Two (2) 65 ft diameter clarifiers
RAS/WAS Pumping Station	RAS/WAS Pumps	100% AADF pumping capacity	Three (3) 250 gpm pumps (two duty one standby)
Basic Level Disinfection	Chlorine contact basins	Min HRT = 15 minutes	29,250 gallons with two basins
	Sodium hypochlorite feed and storage	Min effluent TRC = 0.5 mg/L at PHF 15-day storage at maximum month flow	Three 3 gph metering pumps, Two 1,500 gallons storage tanks
Effluent Pump Station	Effluent pumps	100% PHF pumping capacity	Five 500 gpm pumps (four duty one standby)
Sludge Holding Tank	Sludge holding tank	Min HRT = 4 days	200,000 gallons, two compartment

The regional pipeline developed for this project is approximately 30 miles long, involving complex permitting and construction considerations. For these reasons, the regional pipeline segments used to convey wastewater from Cedar Key to Otter Creek, and form Otter Creek to Bronson are sized based on the high-growth population scenario. Table 5.3 provides the wastewater flows that are projected for the regional pipeline. For the conceptual planning purposes, the pipeline will be sized to accommodate the projected year 2070 flows and assumed to be constructed to its ultimate design and capacity in year 2030.

The general engineering design criteria follows the Recommended Standards of Wastewater Facilities (Ten States Standards), Florida Department of Environmental Protection and applicable local municipality requirements, where those exist.

Figure 5.1 and Figure 5.2 presents conceptual site plan of Alternative 1 (Carrousel Oxidation Ditch) and Alternative 2 (Davco circular plant), respectively.

Figure 5.1 - Conceptual Site Plan Alternative 1

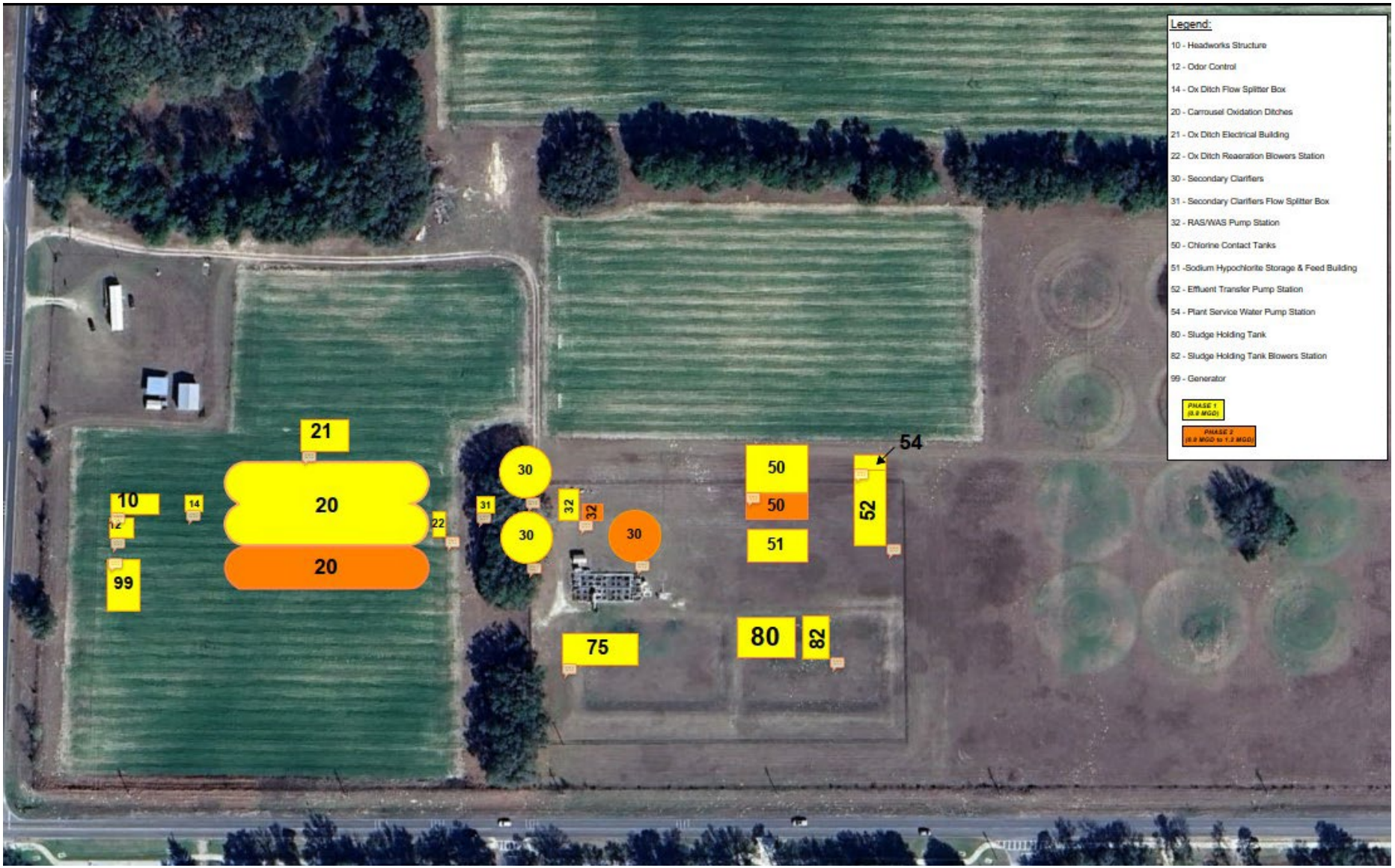
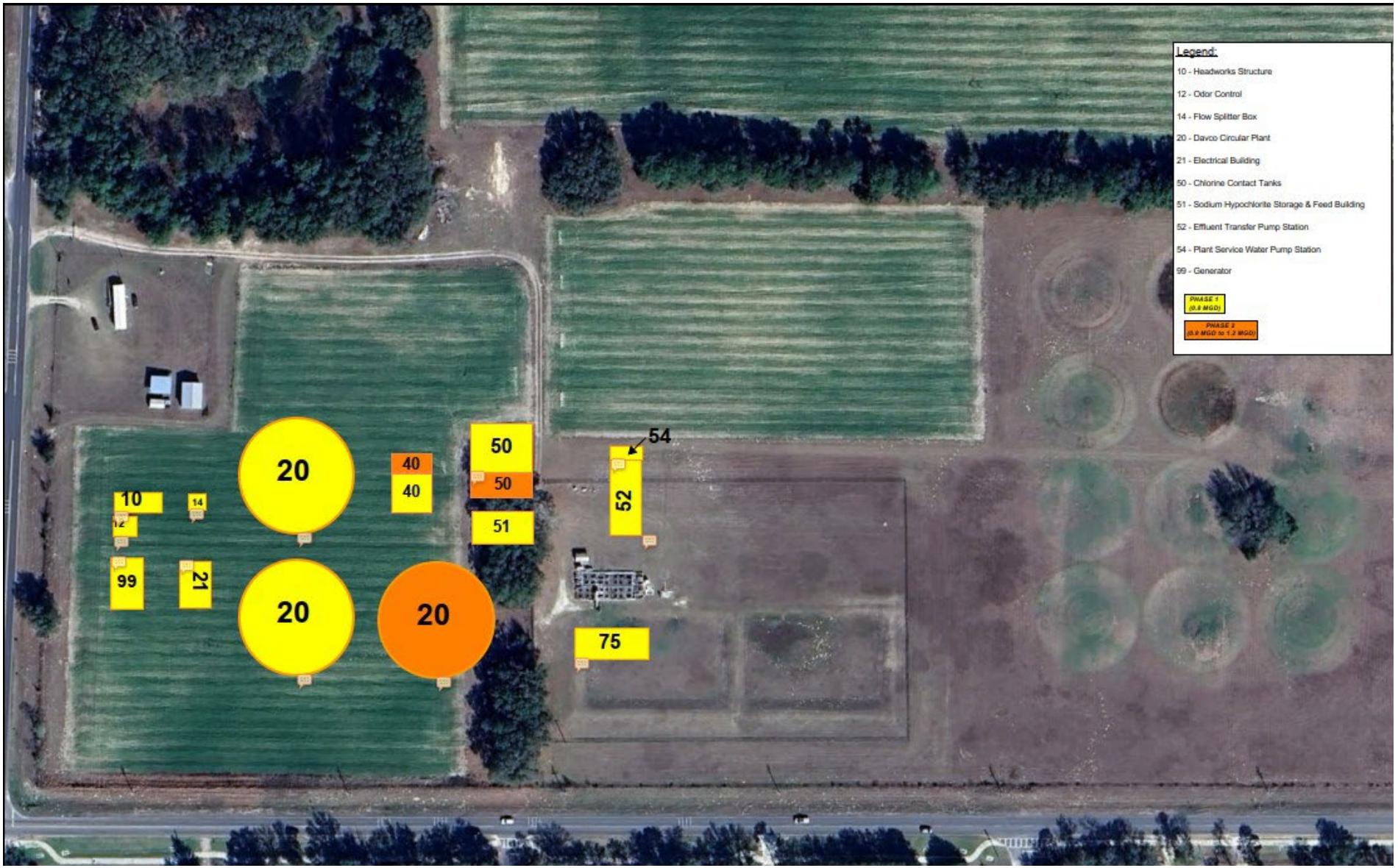


Figure 5.2 - Conceptual Site Plan Alternative 2



5.3 Land Requirements

Both W3C WWTF alternatives are proposed to be located on the same parcel as the existing WWTF, which is owned by the Town of Bronson. The proposed facility would be co-located within the existing WWTF site, with construction coordinated to avoid disrupting the current facility's operations. It is expected that a parcel owned by the Town of Bronson will be acquired and the costs shared between the Water Treatment Facility and Wastewater Treatment Facility. The anticipated price of this parcel is $2.5 million, and it is estimated that $1.75 million (70%) will be attributable to the WWTF project.

Lift Stations – Two lift stations are proposed.

Lift Station #1 (Cedar Key) will be located in the vicinity of parcel 0030800100 owned by the Cedar Key Special Water and Sewage District. A special easement or transfer of property will be required for the area to be occupied by this lift station, estimated at 0.10 acres. This site is located in FEMA Flood Zone designated AE with flood elevation of 13-ft.

Lift Station #2 (Otter Creek) will be located in the vicinity of parcel 0196800100 owned by the Town of Otter Creek. A special easement or transfer of property will be required for the area to be occupied by this lift station, estimated at 0.10 acres. This site is not located within a designated FEMA Flood Zone.

Additional Land Requirements – To construct the wastewater transmission system, right of way (R/W) construction permits will be required along the R/W of SR24 and possibly along the community and municipal streets of each municipality. This will allow for the installation, operation, and maintenance of the wastewater transmission force main.

Figure 5.3 - Lift Station 1 Proposed Site (Cedar Key)

Figure 5.4 - Lift Station 2 Proposed Site (Otter Creek)

5.4 Potential Construction Challenges

5.4.1 Wastewater Treatment Facility

Geological: At the proposed wastewater treatment site in Bronson, final design will include geotechnical borings and soil testing, to verify subsurface conditions, especially the presence of adverse conditions (such as relic sinkholes) that could impact structures. It is estimated that there is sufficient room to co-locate the new WWTF on the 20-acre site of the existing WWTF.

Wetlands: No wetlands impacts are expected for pipelines located in the Bronson R/W, the WWTF site, or the lift station sites.

5.4.2 Lift Stations and Pipeline

Wetlands: There are jurisdictional wetlands located in the R/W of SR24, west of Bronson to the termination point of the transmission force main at Lift Station #1 in Cedar Key. The potential wetlands have been identified in Section 9 of this Plan (Environmental Review). During final design, wetlands will be delineated with the concurrence of the regulatory agencies and consultation to determine the best way to minimize and avoid wetlands impacts. Horizontal directional drilling under certain wetlands may be an option; however, the limitation on the length of drill bores (e.g., 3,000 to 4,000 feet) would indicate many entrance and exit points, which with mobilization of the drilling equipment could create larger impacts than a standard open cut construction with temporary dewatering. The pipeline can be installed under either installation scenario.

Geotechnical: Soil borings will be conducted during final design along the pipe routes, with deeper borings provided at special crossings (e.g., horizontal directional drills, jacked and bored casings). Additionally, due to the anticipated high-water table, significant dewatering is expected. If the trenches and construction sites are not properly dewatered there are additional safety concerns as well as potential problems with soil stability.

5.5 Sustainability Considerations

When designing a new wastewater treatment facility, sustainability is key to reducing environmental impact and conserving resources. Using energy-efficient technologies and renewable energy helps cut down on emissions, while water reuse and nutrient recovery minimize waste. Advanced treatment processes ensure the water leaving the facility is safe and clean. Planning for climate change by making the facility resilient to flooding and adaptable to future needs ensures it can operate long-term. By reducing chemical use and incorporating green infrastructure, the design can protect the environment and potentially reduce operational costs.

Sustainability goals for the transmission force main and lift stations, are to provide a system that minimizes environmental impacts, and achieves long-term viability. Lift station wet wells will be impervious to inflow and the electrical components will be operable at required flood levels and protected from damage where flood waters level exceed operational levels. This will help prevent sanitary sewer overflows and reduce the energy and resources needed during treatment.

5.5.1 Water and Energy Efficiency

Both alternatives for the new WWTF in Bronson consider on-site disposal of treated reclaimed water through rapid infiltration basins or spray fields. Groundwater recharge in this region will contribute to maintaining Upper Floridan Aquifer levels, supporting local water resources.

The project will be constructed with energy efficient pumps, motors, and electrical equipment to increase cost-savings and sustainability.

5.5.2 Green Infrastructure

Green infrastructure and best management practices for the types of WWTF being considered will be evaluated to enhance stormwater management. Vegetative buffers can provide additional ecological benefits, supporting sustainability and reducing the facility's environmental footprint.

5.5.3 Other

Resilience Planning: The design of all facilities will plan for climate impacts such as flooding or the effects of hurricanes and tornadoes. Cybersecurity in wastewater treatment facilities is critical to prevent unauthorized access and system disruptions. Key considerations include implementing strong firewalls, multi-factor authentication, encryption of sensitive data, and regular software updates. Network segmentation and intrusion detection systems further enhance security, protecting critical infrastructure from potential cyberattacks and operational threats.

5.6 Operations and Maintenance Program and Capacity of Existing and Proposed System

The operation and maintenance of the new W3C program infrastructure will be conducted by a contract operator. Solicitation and procurement documents for the contract operator will provide requirements for the staffing, repair, and maintenance of all components of the wastewater system to meet regulatory requirements and reliability.

The capacity of the existing wastewater treatment systems is mainly represented by the wastewater treatment systems of Cedar Key and Bronson. There is a considerable sector of the population not currently served by wastewater systems in the Sumner, Rosewood, Otter Creek and unincorporated areas of Levy County.

Table 5.4 - Permitted Wastewater Treatment Facilities

Facility ID	Name	Capacity (MGD)	Average Flow (MGD)	Flow to Capacity Ratio	Period of Record
FLA317659	Bronson, Town of WWTF	0.083	0.032 [1]	39%	Jan 2017- May 2022
FL0031216	Cedar Key WRF	0.18	0.093	52%	Jan 2017- Mar 2022

The proposed wastewater system capacity will exceed the existing capacities of the Cedar Key and Bronson wastewater systems combined and includes provisions to serve areas not currently connected to wastewater systems. This capacity will be available when local municipalities develop collection systems and are prepared to connect to the W3C regional system. The proposed capacities are based on the population estimates and projections outlined in Section 2.3.6.

The approach followed in defining the WWTF alternatives entailed constructing a 0.8 MGD AADF facility initially with two, 0.4 MGD trains for each unit processes to maximize process operational flexibility as well as meet Class 3 Reliability considering the small treatment capacity and expected high degree of variabilities in flows and loads. The future phase may include an additional 0.4 MGD train for each unit process to increase the treatment capacity to 1.2 MGD for startup by 2050. Alternatively, the facility may be re-rated to 1.0 MGD based on the updated future flows and loads and potential flow equalization to reduce the peak hourly flow.

5.7 Cost Estimates

The proposed project components and cost estimates presented in this document were prepared based on the level of development of the analysis. The cost estimates for this facility plan were classified based on guidelines established by AACE International (Association for the Advancement of Cost Engineering) as a Class 4 estimate. This indicates a project that is still in a conceptual level of development without a specific design. The cost estimation classification provides an expected uncertainty range around the cost estimates that are intended to bracket the project cost, based on the current level of definition, with an 80% confidence interval of actual to estimated costs (AACE 2020). The expected accuracy range of estimates at the Class 4 level is a high estimate range between +20 to +30% and the low estimate range is between -10% to -20%. Given the size, scope, and complexity of this project the highest and lowest band of this range was selected.

5.7.1 Force Main Estimated Costs

Table 5.5 summarizes the estimated costs associated with the construction of the force main. The open cut installation method is expected to be more broadly employed throughout the force main alignment, with certain sections installed via trenchless methods were justified by field conditions or due to the need to clear obstacles. After conducting preliminary hydraulic modeling analyses, it is recommended that a 10-inch diameter force main be used. This responds to the high total dynamic head experienced due to the long transmission lengths and the relatively low flows expected during the initial years of the force main being in operation.

The recommended pipe material for the force main is PVC 900 DR 18, due to high pressures expected nearing year 2070. The force main is expected to be constructed mainly within the public R/W. The unit cost for each type of installation includes allowances for required isolation valves and air control valves.

Table 5.5 - Estimated Force Main Installation Costs Range by Installation Method and Segment

Item	Units	Quantity	Unit	Item
10-Inch Dr18 PVC Force Main By O.C.	LF	138306	$100.00	$13,830,600
10-Inch/12-Inch Dr11 HDPE Force Main By HDD	LF	12133	$160.00	$1,941,280
10-Inch PVC Force Main In 20-Inch Casing	LF	660	$1,715.00	$1,131,900
Pipeline Restraints	EA	430	$318.00	$136,740
Fitting Restraints	EA	60	$229.00	$ 13,740
10" Fm Plug Valve	EA	30	$4,500.00	$ 135,000
Tee	EA	4	$728.00	$2,912
Air Release Valve	EA	40	$4,657.00	$186,280
Pipe Bends and Fixtures	EA	50	$1,500.00	$75,000
Clearing	AC	1	$44,000.00	$44,000
Asphalt Paving	SY	180	$354.00	$63,720
Milling And Overlay	SY	1235	$63.00	$77,805
Concrete Driveway Repair	SF	106	$21.00	$2,226
Concrete Sidewalk	SY	1628	$75.00	$122,100
Grassing/Seed	SY	160475	$2.00	$320,950
Grassing/Sod	SY	956	$24.00	$22,944
Erosion And Sedimentation Control	LF	151099	$5.89	$889,557
Survey And As-Builts	LF	151099	$2.14	$323,303
Pre-Construction Video	LF	151099	$0.75	$113,049
Testing Force Mains	LF	151099	$7.01	$1,059,219
Subtotal (To Nearest $1000)				**$20,492,000**
Mobilization	PERCENT	2%		$410,000
Subtotal (To Nearest $1000)				**$20,902,000**
Allowances				
Testing And Inspection Fees	LS	1	$ 250,000	$250,000
Permit Fees	LS	1	$ 500,000	$500,000
Insurance Deductible	LS	1	$ 250,000	$250,000
Capital Cost (No Contingency)				**$21,902,000**

5.7.2 Lift Stations Estimated Costs

Lift station costs are estimated parametrically, based on the cost per horsepower of the facility. Allowances are made for solids and grit removal, and for chemical application systems for odor control. Siting of the lift stations is assumed to be on land currently owned by Otter Creek and Cedar Key, to be obtained at relatively low or no cost to W3C.

Table 5.6 below presents the parametric unit costs utilized to evaluate the cost of the proposed lift stations.

Table 5.6 - Lift Station Cost Estimate

Item	Units	Quantity	Unit Cost	Item Cost
Civil / Mechanical	Ls Horsepower	160	$5,500	$880,000
Electrical / Scada	Percent	35%		$308,000
Backup Power	Percent	20%		$176,000
Odor Control	Percent	15%		$132,000
Solids / Grit	Percent	25%		$220,000
Fencing	LF	200	$100	$20,000
Erosion And Sedimentation Control	LF	400	$6	$2,355
Survey And As-Builts	LS	1	$7,500	$7,500
Subtotal (To Nearest $1000)				**$1,746,000**
Mobilization	Percent	2%		$34,920
Subtotal (To Nearest $1000)				**$1,781,000**
Allowances				
Testing And Inspection Fees	LS	1	$15,000	$15,000
Permit Fees	LS	1	$10,000	$10,000
Insurance Deductible	LS	1	$10,000	$10,000
Each LS - Capital Cost				$1,816,000
Cost For 2 Lift Stations (No Contingency)				**$3,632,000**
High Estimate - AACE Class 4 (30%)		30%		**$2,360,800**
Low Estimate - AACE Class 4 (-20%)		-20%		**$1,452,800**

5.7.3 Alternative 1

The detailed capital costs for the wastewater treatment facility are presented in Table 5.7. Note that these capital costs do not include project contingency, or other items such as engineering fees.

Table 5.7 - Alternative 1 WWTF Cost Estimate

Item	Quantity	Units	Unit Cost	Item Cost
Headworks Structure				
Mechanical Screens and Screening Compactors	1	EA	$575,000	$575,000
Electrical and Instrumentation (40% of Equipment Costs)	1	LS	$184,000	$184,000
Fabricated Slide Gates	4	EA	$25,000	$100,000
Concrete	1	LS	$150,000	$150,000
Miscellaneous Metals (30% of Concrete Costs)	1	LS	$45,000	$45,000
Process Piping, Fittings, and Valves	1	LS	$100,000	$100,000
Subtotal				**$1,154,000**
Odor Control				
Biotrickling Filter Odor Control System	1	LS	$156,250	$156,250
Concrete	1	LS	$15,000	$15,000
Subtotal				**$171,250**
5-Stage Bardenpho BNR - Carrousel Oxidation Ditches				
Flow Splitter Box - Concrete	1	LS	$245,000	$245,000
Flow Splitter Box Slide Gates	2	EA	$31,250	$62,500
Carrousel Oxidation Ditches - Concrete	1	LS	$7,800,000	$7,800,000
Carrousel Oxidation Ditches - Equipment	1	EA	$3,625,000	$3,625,000
Electrical and Instrumentation (20% of Equipment Costs)	1	LS	$580,000	$580,000
Reaeration Blowers	2	EA	$18,750	$37,500
Electrical and Instrumentation (40% of Equipment Costs)	1	LS	$12,000	$12,000
Concrete Pad	1	LS	$10,000	$10,000
Electrical Building	1	LS	$200,000	$200,000
Miscellaneous Metals (5% of Concrete Costs)	1	LS	$390,000	$390,000
Process Piping, Fittings, and Valves	1	LS	$150,000	$150,000
Subtotal				**$13,112,000**
Secondary Clarifiers				
Flow Splitter Box - Concrete	1	LS	$245,000	$245,000
Flow Splitter Box Slide Gates	2	EA	$31,250	$62,500
Secondary Clarifier Mechanisms	1	EA	$800,000	$800,000
Electrical and Instrumentation (20% of Equipment Costs)	1	LS	$128,000	$128,000
Concrete	1	LS	$1,430,000	$1,430,000
Miscellaneous Metals (30% of Concrete Costs)	1	LS	$429,000	$429,000
Process Piping, Fittings, and Valves	1	LS	$175,000	$175,000
Subtotal				**$3,269,500**
RAS/WAS Pump Station				
RAS/WAS Pumps	4	EA	$37,500	$150,000
Electrical and Instrumentation (40% of Equipment Costs)	1	LS	$48,000	$48,000
Concrete Pad	1	LS	$75,000	$75,000
Process Piping, Fittings, and Valves	1	LS	$50,000	$50,000
Subtotal				**$323,000**
CCT and Sodium Hypochlorite Feed and Storage				
Pump skid and storage tanks	1	LS	$93,750	$93,750
Concrete	1	LS	$450,000	$450,000
Fabricated Slide Gates	2	EA	$31,250	$62,500
Process Piping, Fittings, and Valves	1	LS	$60,000	$60,000
Subtotal				**$666,250**
Effluent Transfer Pump Station				
Effluent Transfer Pumps	5	EA	$56,250	$281,250
Variable Frequency Drives	5	EA	$20,000	$100,000

Electrical and Instrumentation (15% of Equipment Costs)	1	LS	$33,750	$33,750
Concrete	1	LS	$240,000	$240,000
Process Piping, Fittings, and Valves	1	LS	$50,000	$50,000
Subtotal				**$705,000**
Plant Service Water Pump Station				
Plant Service Water Pumps	3	EA	$31,250	$93,750
Concrete Pad	1	LS	$15,000	$15,000
Process Piping, Fittings, and Valves	1	LS	$50,000	$50,000
Subtotal				**$158,750**
Sludge Holding Tanks				
Sludge Holding Tanks	2	EA	$303,222	$606,444
Blowers and coarse bubble diffusers	1	LS	$100,000	$100,000
Electrical and Instrumentation (30% of Equipment Costs)	1	LS	$16,000	$16,000
Process Piping, Fittings, and Valves	1	LS	$50,000	$50,000
Subtotal				**$772,444**
Generators				
Generators	2	EA	$125,000	$250,000
Concrete Pads	1	LS	$40,000	$40,000
Subtotal				**$290,000**
Operation & Maintenance Buildings				
Operations Building	1	LS	$625,000	$625,000
Subtotal				**$625,000**
Treatment Components Construction Subtotal				**$21,247,000**
Site/Civil (12%)				$2,550,000
Electrical and Instrumentation/Controls (20%)				$4,249,000
Yard Piping (10%)				$2,125,000
Geotechnical Allowance				$20,000
Mobilization (2%)				$42,494
Levy County Building Department Permit Allowance				$25,000
Capital Cost (No Allowance)				**$30,258,000**

5.7.4 Alternative 2

The capital costs for the wastewater treatment facility are presented in Table 5.8. Note that these capital costs do not include project contingency, or other items such as engineering fees.

Table 5.8 - Alternative 2 WWTF Cost Estimate

Item	Quantity	Units	Unit Cost	Item Cost
Headworks Structure				
Mechanical Screens and Screening Compactors	1	EA	$575,000	$575,000
Electrical and Instrumentation (40% of Equipment Costs)	1	LS	$184,000	$184,000
Fabricated Slide Gates	4	EA	$25,000	$100,000
Concrete	1	LS	$150,000	$150,000
Miscellaneous Metals (30% of Concrete Costs)	1	LS	$45,000	$45,000
Process Piping, Fittings, and Valves	1	LS	$100,000	$100,000
Subtotal				**$1,154,000**
Odor Control				
Biotrickling Filter Odor Control System	1	LS	$156,250	$156,250
Concrete	1	LS	$15,000	$15,000
Subtotal				**$171,250**
5-Stage Bardenpho BNR - Davco Circular Plants				
Flow Splitter Box - Concrete	1	LS	$245,000	$245,000
Flow Splitter Box Slide Gates	2	EA	$31,250	$62,500
Concrete slabs	1	LS	$3,925,000	$3,925,000
Two 5-Stage Bardenpho Davco Circular Plants, Secondary Clarifiers, Aeration, Airlift pumping, Sludge Holding Tanks	1	EA	$13,450,000	$13,450,000
Electrical and Instrumentation (20% of Equipment Costs)	1	LS	$580,000	$580,000
Electrical Building	1	LS	$200,000	$200,000
Process Piping, Fittings, and Valves	1	LS	$200,000	$200,000
Subtotal				**$18,663,000**
CCT and Sodium Hypochlorite Feed and Storage				
Pump skid and storage tanks	1	LS	$93,750	$93,750
Concrete	1	LS	$450,000	$450,000
Fabricated Slide Gates	2	EA	$31,250	$62,500
Process Piping, Fittings, and Valves	1	LS	$60,000	$60,000
Subtotal				**$666,250**
Effluent Transfer Pump Station				
Effluent Transfer Pumps	5	EA	$56,250	$281,250
Variable Frequency Drives	5	EA	$20,000	$100,000
Electrical and Instrumentation (15% of Equipment Costs)	1	LS	$33,750	$33,750
Concrete	1	LS	$240,000	$240,000
Process Piping, Fittings, and Valves	1	LS	$50,000	$50,000

Subtotal				**$705,000**
Plant Service Water Pump Station				
Plant Service Water Pumps	3	EA	$31,250	$93,750
Concrete Pad	1	LS	$15,000	$15,000
Process Piping, Fittings, and Valves	1	LS	$50,000	$50,000
Subtotal				**$158,750**
Generators				
Generators	2	EA	$125,000	$250,000
Concrete Pads	1	LS	$40,000	$40,000
Subtotal				**$290,000**
Operation & Maintenance Buildings				
Operations Building	1	LS	$625,000	$625,000
Subtotal				**$625,000**
Treatment Components Construction Subtotal				**$22,433,000**
Site/Civil (12%)				$2,692,000
Electrical and Instrumentation/Controls (20%)				$4,487,000
Yard Piping (10%)				$2,243,000
Geotechnical Allowance				$20,000
Mobilization (2%)				$44,866
Levy County Building Department Permit Allowance				$25,000
Capital Cost (No Allowance)				**$31,945,000**

5.7.5 Alternative 3

Alternative 3 represents the scenario in which the W3C project does not proceed. This could occur due to a failure to secure the required funding or other unforeseen circumstances that prevent the project's advancement.

This alternative does not involve direct costs to W3C; however, each local utility would remain individually responsible for operating, upgrading, and constructing new infrastructure. Given the dispersed nature of populations in unincorporated areas, the utility operators would likely continue managing their systems independently, instead of adopting a regional approach. Estimating costs for individual municipalities is beyond the focus of this analysis, however the necessary actions for each utility are described below for context.

The Town of Bronson has both a wastewater collection system and a wastewater treatment facility. The Town would be responsible for maintaining, operating, and expanding its wastewater treatment facility, including making upgrades to accommodate a future scenario in which the service area is included in a Basin Management Action Plan (BMAP).

Located approximately 13 miles from Bronson's WWTF, the Town of Otter Creek does not provide wastewater services, and all homes rely on OSTDSs. The likelihood of Otter Creek developing a wastewater collection and treatment system largely depends on funding. The dispersed location of homes and the challenges associated with constructing a wastewater collection system, combined with the potential future need to meet BMAP requirements, present challenging and costly scenarios for Otter Creek to implement the required wastewater infrastructure projects.

The City of Cedar Key faces significant challenges to providing sustainable and resilient wastewater services due to its geographic location. The current wastewater facility is often subject to flooding from storm surges

and has been impacted negatively with repeat flood events. Additionally, the collection and transmission systems are vulnerable to flooding, requiring substantial infrastructure to maintain lift station operations during the frequent storms. This includes maintaining the low-pressure sewer system that connects several buildings on the island to the main sewer system. The potential impact on, and possible loss of, Cedar Key's aquaculture industry due to wastewater spills is a serious concern. Effluent from the wastewater facility is primarily disposed of through leaching chambers installed just below grade, classified by the DEP as adsorption fields. Additional effluent disposal sites include areas used for spray irrigation. However, all these sites are located in flood-prone areas, allowing treated wastewater from Cedar Key to infiltrate the Gulf of Mexico.

In this scenario, Cedar Key would need to undertake a major wastewater infrastructure overhaul. This would involve hardening the wastewater collection and transmission system and relocating the wastewater treatment facility to a location off the island that is not vulnerable to flooding caused by storm surges and sea level rise. Their projects would also require constructing approximately five (5) miles of force main with at least four (4) underwater crossings and developing an environmentally compliant effluent disposal site, which would be challenging given generally low-lying areas or environmentally protected lands near the coast.

5.7.6 Operations and Maintenance

Operation and maintenance costs are presented in Section 6 along with the present worth analysis.

6. Selected Alternative

Alternative 1 was chosen over Alternative 2 due to a combination of cost efficiency and operational advantages. Both alternatives presented similar capital and annual costs, but Alternative 1 offered notable non-cost advantages, including better reliability and process redundancy. This alternative uses a Carrousel Oxidation Ditch with a 5-Stage Bardenpho Biological Nutrient Removal (BNR) system, providing enhanced emergency preparedness, resiliency, and process control efficiency compared to Alternative 2. Despite requiring a longer construction period, Alternative 1's extended service life for BNR structures was an added benefit, supporting long-term sustainability goals.

6.1 Life-Cycle Cost Analysis

A present worth analysis was conducted for the two alternatives under consideration. The present worth analysis considered the following:

- Interest rate of 4% was adopted.
- Equipment life was estimated at 20 years.
- Facility life (structures, pipelines) was estimated at 50 years.
- Equipment annual O&M was estimated at 2% of the equipment cost per year.
- Structure annual O&M was estimated as 1% of the construction cost per year.
- Pipeline annual O&M was estimated as $2000.00/mile of pipe per year.
- Annual electrical costs and chemical costs were estimated based on unit cost per MGD of wastewater treated.
- Personnel costs for the wastewater plant were estimated based on FDEP manpower requirements.
- Land costs were estimated based on anticipated land requirements and cost based on Levy County property appraiser valuations.
- A 40-year present worth (PW) period was adopted:
    - O&M was based on the PW of 40 years operation.
    - Equipment cost was based on the PW of equipment replacement in years 20 and 40.
    - Chemical, Electrical and Personnel cost was based on the PW of these items for 40 years operation.
    - Salvage value of the facilities was based on the PW of the remaining value of the facilities at year 40.

6.2 Non-Monetary Factors

Both alternatives for the WWTF site propose its location within a large parcel owned by the Town of Bronson, where the existing WWTF is located. The Town has indicated a willingness to sell the parcel for both the WWTF and the proposed W3C disposal facility.

Table 6.1 summarize the non-monetary factor evaluation of the three WWTF alternatives with the advantages and disadvantages.

Table 6.1 - Advantage and Disadvantage of WWTF Alternatives

Alternatives	Advantages	Disadvantages
Alternative 1: 5-Stage Bardenpho Biological Nutrient Removal (BNR) System in Carrousel Oxidation Ditch	• Reliability and process redundancy • More efficient process control • High emergency preparedness and resiliency • Longer services life of BNR structure	• Longer construction
Alternative 2: 5- Stage Bardenpho Biological Nutrient Removal (BNR) System in Davco Circular Plant	• Shorter construction than Alt 1 • Moderate emergency preparedness and resiliency	• Less reliability and process redundancy especially with secondary clarifiers • Less efficient process control • Shorter service life of BNR structures
Alternative 3: W3C does not move forward	• No capital improvement projects	• Aging infrastructure • Lower emergency preparedness and resiliency due to the existing conditions • Lower cost-effectiveness due to redundant equipment requirements.

For both Alternatives, the pipelines in the Town of Bronson that currently convey wastewater to the existing WWTF are expected to be rerouted within the site to the new WWTF influent headworks, requiring moderate work. The new force main from Otter Creek will be installed along SR24 and local streets in Bronson, with no significant traffic impacts anticipated on SR24. Alternative routes can be provided on local roads, and trenchless installation methods can be used if necessary.

7. Proposed Project Recommended Alternative

Alternative 1 is recommended for implementation. It has similar capital and annual costs to Alternative 2 and has non-cost advantages as previously identified.

7.1 Preliminary Project Design

7.1.1 Wastewater Treatment Facility

The recommended Alternative 1 is the construction of a new 5-Stage Bardenpho BNR advanced wastewater treatment facility with capacity of 0.8 MGD AADF and peak capacity of 2.8 MGD PHF. The proposed AWTF will comply with wastewater treatment and nutrient removal standards described in Section 5.2.

7.1.2 Wastewater Transmission System

The proposed wastewater transmission system will consist of two (2) lift stations and a force main that interconnects the two lift stations with the proposed AWTF. It is expected that the CKWSD will construct required infrastructure to convey their wastewater to Lift Station #1, and in a future phase the Town of Otter Creek and other adjacent centers of population will construct infrastructure to convey their wastewater to Lift Station #2. Other areas and communities like the University Oaks Mobile Home Park are expected to connect directly to the AWTF through established utilities required by the Interlocal Agreement.

Table 7.1 - Main Components of the Wastewater Transmission System

Main Components of the Wastewater Transmission System			
	Location / Estimated Length	Type	Characteristics
Lift Station #1	Cedar Key	Triplex wetwell with submersible pumps.	Provided with emergency power, solids/grit removal, and odor control systems. Located within FEMA 500 yr. flood zone.
Force Main Segment 1	15.5 miles	10” force main	
Lift Station #2	Otter Creek	Triplex wetwell with submersible pumps.	Provided with emergency power, solids/grit removal, and odor control systems. Wet well to provide for future gravity or force main connections.
Force Main Segment #2	13.2 miles	10” force main	

The wastewater transmission system is designed to begin operations in 2030, when wastewater flows are expected to be minimal compared to the demands projected for 2070. The significant variability in system capacity presents a challenge, particularly given the goal of constructing the majority of the civil infrastructure

and force main system by 2030. This approach is driven by the intent to minimize environmental impacts and secure facility siting only once during the project's lifespan.

Sub-alternatives for the wastewater transmission system were evaluated, including using a combination of duplex and triplex lift stations with varying capacities, as well as the advantages and disadvantages of installing a single force main versus tandem force main pipes along the same corridor.
The uphill topography combined with the long pumping distances from Cedar Key to Otter Creek (15.5 miles) and from Otter Creek to Bronson (13.2 miles), directly impacts the total dynamic head (TDH) that the lift stations must overcome. The combination of relatively low flows and high TDH presents a challenge in identifying pumps that operate efficiently under these conditions. Utilizing a combination of variable frequency drives (VFD) and appropriately sized wet wells to accommodate flow variability throughout the project's design life has been deemed feasible for this project.

The recommended configuration for the lift stations involves constructing wet wells capable of accommodating three pumps. However, between 2030 and 2045, only two pumps will be necessary. This approach enables future capacity increases based on observed demand without requiring modifications to the wet wells and can be implemented while the system remains operational.

Maintaining adequate flow velocity in these longer-than-typical force mains is essential to reduce the effects of sedimentation and minimize the need for frequent maintenance. The wet wells diameters are estimated at 12-feet to allow for the future installation of larger pumps and sufficient volume accumulation, ensuring that wastewater can be pumped at or above the minimum recommended velocities consistently. As flows increase in the future, operational adjustments can be made to adjust the active volume of the wet wells while maintaining the same pumps. By 2045, after 15 years of service with the initial pumps set, a new set of pumps including a third pump can be installed to meet the required capacity.

Analyses indicate that two pumps in the range of 45 hp will be required for the service period of 2030 to 2045, and upscaled to a projected capacity of 80 hp and the addition of third pump for the years 2045 to 2070. The feasibility of installing 8-inch tandem force mains was evaluated against a single 10-inch force main. Cost was the determining factor, leading to the preference for installing a single 10-inch force main.

Solids and sedimentation in the force main are a concern due to the long distances involved. At this time, it is not feasible to determine the quality and pre-treatment (solids and grit removal), if any, that Cedar Key and the future systems connecting at Otter Creek will provide. As a result, primary solids removal via screens and the potential inclusion of a grit removal system are being considered for both lift stations. This consideration impacts both the cost estimate and the footprint of the proposed lift stations. Septicity of wastewater can also become an issue, especially in the years 2030 to 2045 period, due to the relatively low volumes being conveyed resulting in larger wastewater age by the time it reaches Bronson. Chemical application for odor control at the lift stations should also be evaluated and allowances are made in the cost estimate.

Table 7.2 - Proposed Lift Stations Configuration

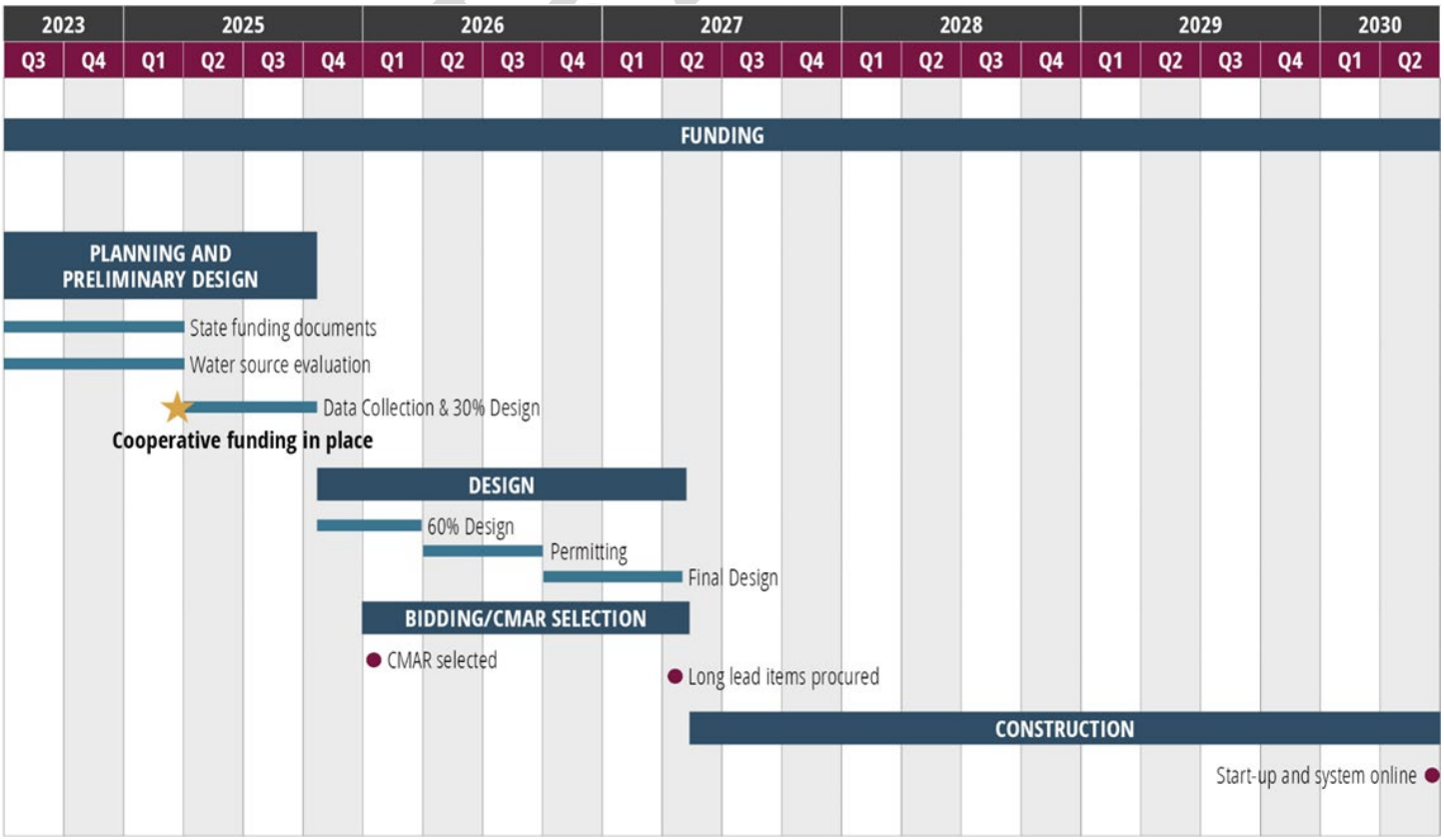
Proposed Lift Stations Configuration				
	Design Period 2030 to 2045	ADF / Peak Flow (mgd) 2030 to 2045	Design Period 2045 to 2070	ADF / Peak Flow (mgd) 2045 to 2070
Lift Station #1 Triplex Wet Well	(2) 45 hp pumps to (3) 45 hp pumps	0.150 / 0.553 to 0.283 / 0.980	(2) 80 hp pumps to (3) 80 hp pumps	0.283 / 0.980 to 0.358 / 1.208
Lift Station #2 Triplex Wet Well	(2) 45 hp pumps to (3) 45 hp pumps	0.150 / 0.553 to 0.298 / 1.027	(2) 80 hp pumps to (3) 80 hp pumps	0.298 / 1.027 to 0.377 / 1.266

7.1.3 Collection Systems

As defined by the Cooperative Interlocal Agreement, the W3C will serve as a wholesale provider of wastewater services. Connections to the W3C infrastructure and the reclaimed water system will be permitted only for municipal utilities or similar entities, unless specific exceptions are granted. While this limits W3C's jurisdiction over local wastewater collection systems, it is recommended that quality and operational standards be required for utilities. Infiltration, inflow, and the introduction of excessive solids, sand, or grit should not be permitted due to their detrimental impact on the W3C regional system.

7.2 Project Schedule

Figure 7.1 - Project Schedule



7.3 Permit Requirements

This section outlines the permitting requirements identified for this project. Coordination with each agency will be conducted in final design to review requirements for the submittal of necessary documentation to construct the necessary facilities. Permitting agencies governing the project include the following:

7.3.1 Florida Department of Environmental Protection

Wastewater Treatment Facility - The newly constructed wastewater treatment plant will be designed in accordance with the standards and criteria set forth in Rule 62-600, F.A.C. A Wastewater Facility or Activity Permit Application, Form 62-620.910 (1) and Wastewater Permit Application Form 2A for Domestic Wastewater Facilities, Form 62-620.910 (2) will be submitted.

Wastewater Collection/Transmission System - The wastewater transmission system (lift stations and force main) will be designed in accordance with the standards and criteria set forth in Rule 62-604, F.A.C. An individual permit for a domestic wastewater collection/transmission system shall be applied for by means of a Notification/Application for Constructing a Domestic Wastewater Collection/Transmissions System, Form 62-604.300(3)(a).

NPDES Permit – The NPDES permit is required for all construction sites that are an acre in size or larger in the state of Florida, including stormwater systems, as stipulated under FDEP Rule 62.25. This permit will be obtained by the contractor before construction starts.
Air Quality Permit – The standby power generator emissions are regulated via an air general permit from FDEP. This permit will be obtained by the Waccasassa Water and Wastewater Cooperative (W3C) prior to start-up of the WTP.

Aboveground Storage Tank Registration – The FDEP requires registration of fuel storage tanks over 500 gallons. This permit will be obtained by W3C prior to installation of the fuel storage system.

7.3.2 Towns of Bronson, Otter Creek and Cedar Key or Levy County

Any permits from the Town of Bronson or Otter Creek for construction in the City limits will be obtained, as well as those required by Cedar Key or unincorporated Levy County.

7.3.3 Levy County Development Department

A Building Permit will be required.

7.3.4 Florida Department of Transportation

Permits from the Florida Department of Transportation (FDOT) for construction in State Highway right-of-way will be obtained.

7.3.5 CSX – Railroad Crossings and Right of Way

Permits from CSX for construction crossing rail lines will be obtained.

7.3.6 Suwanee River Water Management District (SRWMD)

Environmental Resource Permit (ERP) – New development or construction activities to occur in a manner that will prevent adverse flooding, manage surface water, and protect water quality, requires an ERP. Rules established within an ERP originate from Chapter 62-330, and as rules of Districts and delegated local governments in accordance with the authority under Section 373.4131, F.S. An ERP typically expires after 5-years, and once the construction activities are successfully completed, the permit must be converted to a perpetual operation and maintenance phase of permit.

The ERP will be submitted by the W3C's consultant who will be designing the site access improvements and stormwater system as part of the WWTP. Based on environmental mapping and observation, it is anticipated that no wetlands impacts will be incurred for the WWTP site, and the pipelines located in the Town of Bronson's streets rights of way, and that the stormwater facilities will be sized for all initial and future impervious area on the WWTP site. There are areas of jurisdictional wetlands located in the right of way of SR24 west of Bronson to the transmission main termination point at the Cedar Key well site, as note in

Section 2 of this Feasibility Study. The ERP application for the transmission pipeline will address minimization and avoidance of impacts and any mitigation deemed necessary.

7.4 Sustainability Considerations

The transmission force main and lift stations will be designed and operated with a focus on minimizing environmental impacts, conserving resources, and promoting long-term viability. Lift station wet wells will be designed to prevent inflow and electrical components to be operable at flood levels required, and protected from damage where flood water levels exceed operational levels. This will help prevent sanitary sewer overflows and reduce the energy and resources needed during treatment.

The unit process design and equipment selections will be conducted to maximize the energy efficiency and minimize chemical and material usage as follows:

- High efficiency motors;
- Pump motor speed adjustment using variable frequency drives and flow pacing control system;
- Aeration equipment speed control using DO monitoring and aeration control system;
- Biological selection to prevent sludge bulking and minimize use of chemicals;
- Disinfection chemical feed control based on flow pacing and or dose adjustment using compound loop.

7.4.1 Water and Energy Efficiency

For the alternatives under consideration, groundwater recharge in the Bronson area will help sustain the Upper Floridan aquifer levels as a sustainable resource.

The project will be constructed with energy efficient pumps, motors, and electrical equipment to provide cost-savings and sustainability.

7.4.2 Green Infrastructure

Green infrastructure for the proposed WWTF shall include permeable pavements, bioswales, and constructed wetlands to enhance stormwater management and promote natural filtration. Vegetative buffers and green roofs can reduce runoff and provide additional ecological benefits, while rainwater harvesting systems can optimize water reuse, supporting sustainability and reducing the facility's environmental footprint.

7.5 Total Project Cost Estimate

The estimated costs (2024) of the major components of this project are summarized in Table 7.3. These estimated costs include Design Uncertainty Factors and Contingency Cost Factors as defined in Section 5.10.

Table 7.3 - Major Component Cost Estimate

Item	Description		Cost
	Wastewater Treatment Plant Capital Cost (No Contingency)		$30,258,000
	Force Main Capital Cost (No Contingency)		$21,902,000
	Lift Stations (2) Capital Cost (No Contingency)		$3,632,000
1	Total Capital Cost (No Contingency)		$55,792,000
2	Contingency, percent of Item 1 (to nearest $1000)	30%	$16,738,000
3	Engineering, percent of Item 1 (to nearest $1000)	10%	$5,579,000
4a	Contract Administration, percent of Item 1 (to nearest $1000)	7%	$3,905,000
4b	Construction Administration, percent of Item 1 (to nearest $1000)	7%	$3,905,000
5	Estimated Land Cost		$1,770,000
6	**Total Construction Cost**		**$87,689,000**
	High Estimate – AACE Class 4 (30%)	**30%**	**$113,996,000**
	Low Estimate – AACE Class 4 (-20%)	**-20%**	**$70,151,000**

8. Capital Financing Plan

Table 8.1 - Capital Financing Plan

Parameter	Cost	Start Date	End Date	Duration (Months)	Monthly Spend	2025	2026	2027	2028	2029
Capital Costs (including continency)										
Wastewater Treatment Plant										
Pay for Major Equipment	$9,833,850	1/1/2027	4/1/2027	3	**$3,277,950.00**			$9,833,850.00		
Minor Equipment, Materials, Labor	$29,501,550	5/15/2027	4/22/2029	24	**$1,229,231.25**			$9,833,850.00	$14,750,775.00	$4,916,925.00
Total	**$39,335,400**									
Pipelines (Force Main)	$28,472,600	5/15/2027	10/31/2029	30	**$949,086.67**			$7,592,693.33	$11,389,040.00	$9,490,866.67
Lift Stations	$4,721,600	5/1/2028	4/22/2029	12	**$393,466.67**				$3,147,733.33	$1,573,866.67
Engineering/Design Fees	**$5,579,000**	**4/1/2025**	**5/15/2027**							
Preliminary (30%)	$1,673,700	4/1/2025	11/1/2025	7	**$239,100.00**	$1,673,700.00				
Final	$3,905,300	11/1/2025	5/15/2027	19	**$205,542.11**	$411,084.21	$2,466,505.26	$1,027,710.53		
Contract Administration	$3,905,000	4/1/2025	10/31/2029	55	**$71,000.00**	$639,000.00	$852,000.00	$852,000.00	$852,000.00	$710,000.00
Construction Administration	$3,905,000	5/15/2027	11/1/2029	30	**$130,166.67**			$1,041,333.33	$1,562,000.00	$1,301,666.67
Land	$1,770,000	10/1/2025	10/31/2025	1	**$1,770,000.00**	$1,770,000.00				
Estimated Total and Yearly Spend	**$87,689,000**					**$4,493,784.21**	**$3,318,505.26**	**$30,181,437.19**	**$31,701,548.33**	**$17,993,325.00**

9. Environmental Review

This project is expected to use federal funds for its implementation. Given anticipated federal funding sources the project will be reviewed under the National Environmental Policy Act (NEPA). This section discusses permitting considerations.

9.1 Type of EID Issued

As part of the development of this project an Environmental Information Document (EID) will be prepared that addresses potential concerns under NEPA. It is anticipated that this project will result in some unavoidable environmental impacts although the project will be developed to minimize or eliminate these impacts. Impacts are not expected to be significant given that the project will be primarily contained within the SR24 R/W. It is expected that the project will either qualify for a Categorical Exclusion (CATEX) or will require preparation of an Environmental Assessment (EA). If required the EA will discuss the purpose and need for the project, evaluated alternatives, environmental impacts of the proposed project, and agency coordination. Given the purpose of this project is in the public interest and the location of the project, primarily within the R/W of SR24, it is expected that the EA will result in a Finding of No Significant Impact (FONSI).

9.1.1 Public Comments to EA

Once drafted an EA requires a minimum 30-day period for review and comment by interested state and federal agencies, Indian tribes, and the affected public. One or more meetings may also be scheduled during this period if desired, but are not required for an EA.

9.2 USFWS Threatened/ Endangered/ Proposed/ Candidate Species and Critical Habitats List

9.2.1 Protected Species Assessment

Various data sources were investigated to identify suitable habitats for and evaluate the potential presence of protected species (designated as threatened, endangered, or state listed) within the project sites. Sources included:

- Florida Natural Areas Inventory Biodiversity Matrix;
- USFWS GIS shapefiles showing species ranges;
- FWC GIS shapefiles;
- FDEP GIS shapefiles showing land use in the SRWMD;
- Google Earth Pro Street View feature which shows images along SR24 from September 2023.

A candidate list of species that may occur within the project corridor, based on their documented ranges and preferred habitat types, is shown in Table 9.1. Impacts to protected species will be avoided to the greatest extent practicable. Areas with documented occurrences of and/or areas containing suitable habitat for protected species will be surveyed prior to construction. Additional construction techniques may be employed to avoid disrupting protected species' and to prevent habitat loss and functionality. If permit conditions require a protected species observer during construction activities, qualified personnel will be utilized and present during construction activities. Additional discussion related to these species is provided below.

Table 9.1 - Candidate List of Species

Common Name	Scientific Name	Federal	State
Little Blue Heron	*Egretta Caerulea*	--	T
Tricolored Heron	*Egretta Tricolor*	--	T
Southeastern American Kestrel	*Falco Sparverius Paulus*	--	T
Florida Sandhill Crane	*Antigone Canadensis Pratensis*	--	T
Bald Eagle	*Haliaeetus Leucocephalus*	T	T
Wood Stork	*Mycteria Americana*	T	T
Florida Scrub Jay	*Aphelocoma Coerulescens*	T	T
Florida Burrowing Owl	*Athene Cunicularia Floridana*	--	T
Roseate Spoonbill	*Platalea Ajaja*	--	T
American Alligator	*Alligator Mississippiensis*	T(S/A)	
Eastern Indigo Snake	*Drymarchon Corais Couperi*	T	T
Gopher Tortoise	*Gopherus Polyphemus*	T	T
Florida Pine Snake	*Pituophis Melanoleucus Mugitus*	--	T
Short-Tailed Snake	*Lampropeltis Extenuate*	--	T
Striped Newt	*Notophthalmus Perstriatus*	--	T
Chapman's Sedge	*Carex Chapmannii*	--	T
Florida Willow	*Salix Floridana*	--	E
Florida Hasteola	*Hasteola Robertiorum*	--	E
Pinewoods Dainties	*Phyllanthus Liebmannianus Ssp. Platylepis*	--	E
Variable-Leaved Indian Plantain	*Arnoglossum Diversifolium*	--	T
Hooded Pitcher plant	*Sarracenia Minor*	--	T
Many flowered Grass pink	*Calopogon Multiflorus*	--	T
Florida Milk vine	*Matelea Floridana*	--	E
Notes:			
E = Endangered			
T = Threatened			
T(S/A) = Threatened/ Similarity Of Appearance			
Ssc = Species Of Special Concern			
-- = Not Listed			

9.2.1.1 Wading Birds

Protected wading birds likely present or documented on the site include the Little Blue Heron (*Egretta caerulea*), Tricolored Heron (*Egretta tricolor*), and roseate spoonbill (*Platalea ajaja*). The proposed project will likely minimize the construction footprint through wetlands and include limited permanent impacts to wetland habitat. Temporary impacts are expected but there is sufficient, higher-quality, wetland habitat surrounding potentially affected wetland habitat along SR24. As a result, minimal impacts are anticipated for these species.

9.2.1.2 Southeastern American Kestrel

The Southeastern American Kestrel (*Falco sparverius paulus*) is not expected to observe major impacts. Some sandhills and similar pine savannah communities may need to be cleared for pipeline construction. However, most of the habitats within the proposed construction limits (and their surrounding communities) are not typical feeding or nesting sites for this species. Nesting boxes can be installed to minimize impacts to this species if snags need to be cleared during construction.

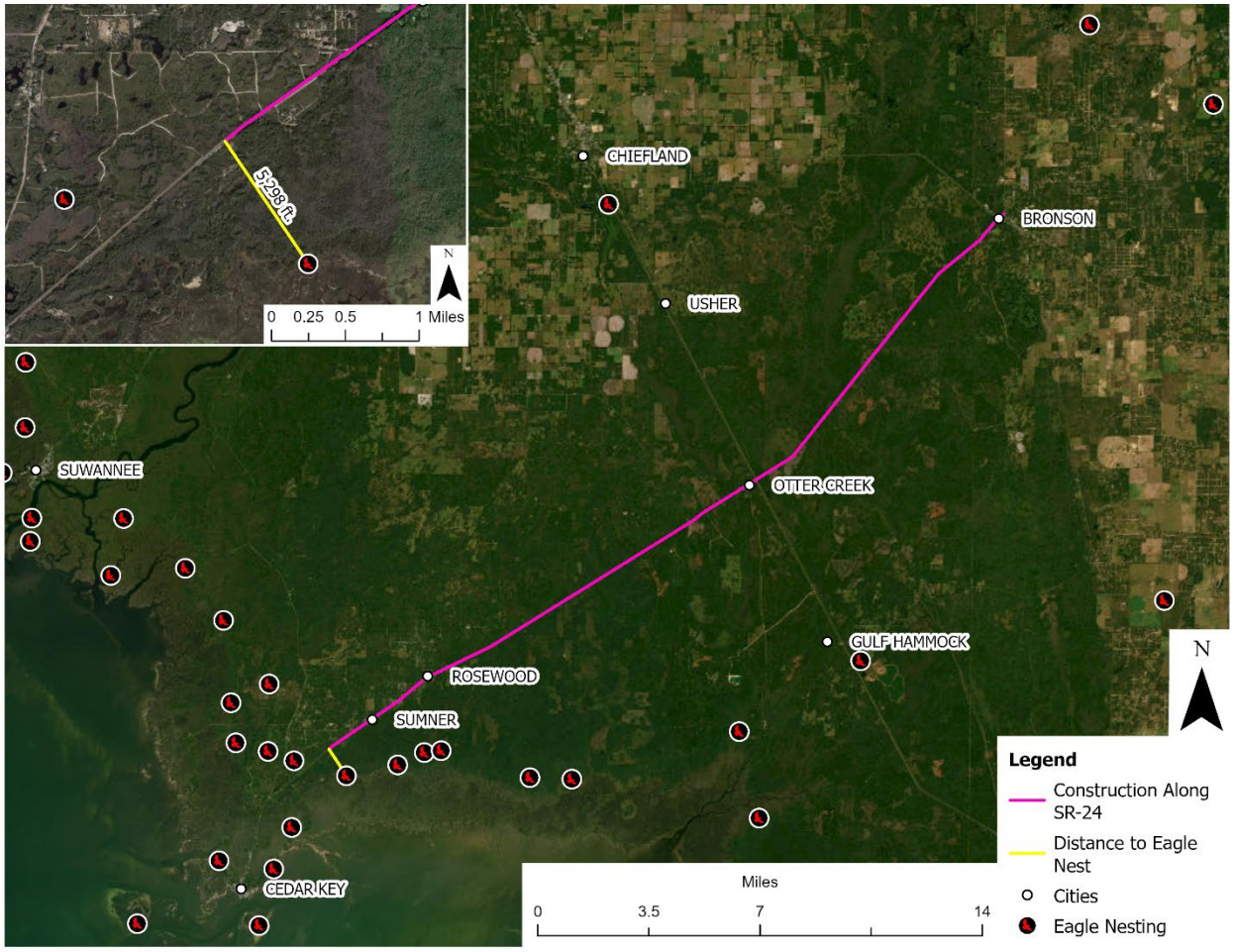
9.2.1.3 Florida Sandhill Crane

The Florida Sandhill Crane (*Antigone canadensis pratensis*) has been observed on the site. The proposed project will likely minimize the construction footprint through wetlands and include limited permanent impacts to wetland habitat. Temporary impacts are expected but there is sufficient, higher-quality, open wetland habitat surrounding the potentially affected wetland habitat along SR24 for nesting, roosting, and feeding. Large expanses of drier savannahs are nearby to provide upland foraging habitat. As a result, minimal impacts are anticipated for these species.

9.2.1.4 Bald Eagle

FWC GIS data indicate the presence of nest sites (Figure 9.1) for the Bald Eagle (Haliaeetus leucocephalus). Nest LV003 was last surveyed as active in 2014. The nest is located 5,298 feet southeast of the limits of construction. The nest lies outside the 660-foot buffer that would trigger coordination during construction. Should an active nest be identified, either during protected species wildlife surveys or through consultation with FWC, necessary buffers to avoid the disturbance of bald eagle behavior and/or the take of suitable bald eagle habitat will be applied. As such, currently, no impact is anticipated.

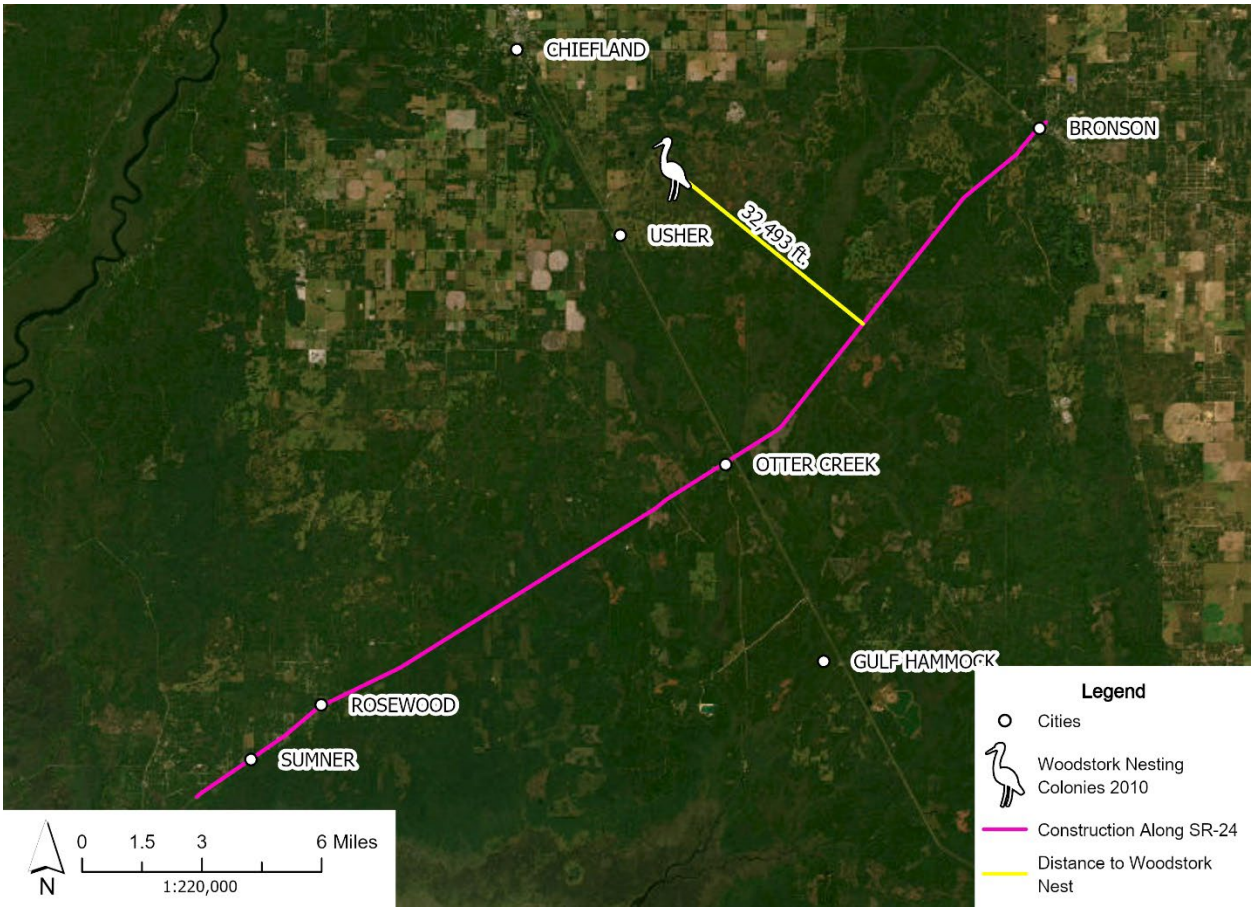
Figure 9.1 - Levy County Bald Eagle Nest Locations



9.2.1.5 Wood Stork

Wood Storks (*Mycteria americana*) have been observed near the limits of construction. FNAI and eBird data have documented the occurrence of this species within the Upper Waccasassa Conservation Area and various other locations along SR24. Figure 9.3 showcases the closest documented nesting colony located roughly 32,500 feet (6.15 miles) northwest of the limits of construction. The proposed project will likely minimize the construction footprint through wetlands and include limited permanent impacts to wetland habitat. Temporary impacts are expected but there is sufficient, higher-quality, wetland habitat surrounding most of the potentially affected wetland habitat along SR24. As a result, minimal impacts are anticipated for this species.

Figure 9.2 - Levy County Wood Stork Nesting Colonies



9.2.1.6 Florida Scrub Jay

Habitat suitable for the Florida scrub jay (*Aphelocoma coerulescens*) is confined to the lower reach of the limits of construction. This species has been observed in the Cedar Key Scrub State Reserve and the Waccasassa Bay Preserve State Park which border SR24 to the north and south, respectively, for approximately 3,000 feet on either side. No impacts to this species are expected assuming construction is restricted to the southern side of SR24 as it has a wider gap between SR24 and habitat suitable for scrub jay feeding and nesting.

9.2.1.7 Gopher Tortoise and Eastern Indigo Snake

A gopher tortoise (*Gopherus polyphemus*) survey will need to be completed no more than 90 days before construction (including development or the staging of heavy machinery) following Rule 68A-27.003 Florida Administrative Code (F.A.C.), for any suitable gopher tortoise habitats along SR24.

The historic range of Eastern indigo snakes (*Drymarchon corais couperi*) allow for the potential occurrence of this species within the project boundaries. This species will be included in the gopher tortoise survey as these snakes frequently occupy gopher tortoise burrows. Until a gopher tortoise or eastern indigo snake or burrow is observed within 25 feet of construction, no effects on these species are expected.

Standard protection measures for the Eastern indigo snake have been developed by the U.S. Fish and Wildlife Service and will be utilized for the protection of this species. At least 30 days prior to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented. The Plan materials should consist of 1) a combination of posters and pamphlets; and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated.

9.3 State Clearing House

This project is expected to require a combination of state and federal funding for completion. Given the likely use of federal money, this project may trigger federal permitting requirements. The Florida State Clearinghouse (SCH) is identified by 403.061(42) F.S. as the single point of contact for the state to review all activities that might be subject to federal permitting because of the receipt of federal funds. This project will be submitted for review by the SCH during project development and prior to a request for federal grants. The review process for the SCH includes assigning a State Application Identifier, distributing the application for review to relevant state agencies, receiving completed reviews, compiling comments, and issuing either a clearance letter or state process recommendation letter. This process typically takes 60 days from submission to issuing a clearance letter.

10. Project Authorization

10.1 Resolution

The Town of Bronson, Town of Otter Creek, and the Cedar Key Water and Sewer District entered into an Interlocal Agreement (Appendix B) that established a commitment to implement the planning recommendations and establish a unified entity related to water, wastewater, and reclaimed water services. This agreement was entered into on June 13, 2023.

11. General

11.1 Ordinances

Each member has instituted an ordinance that requires businesses and residences to connect to wastewater services where available (Appendix C).

12. Flooding

For the location of the proposed WWTF in Bronson, there are no flood issues identified on FEMA mapping.

Lift Station #1 (Cedar Key) will be located in the vicinity of parcel 0030800100 owned by the Cedar Key Special Water and Sewage District. This site is located in FEMA Flood Zone designated AE with flood elevation of 13-ft. A special easement or transfer of property will be required for the area to be occupied by this lift station, estimated at 0.10 acres.

Lift Station #2 (Otter Creek) will be located in the vicinity of parcel 0196800100 owned by the Town of Otter Creek. This site is not located within the FEMA designated Flood Zone. A special easement or transfer of property will be required for the area to be occupied by this lift station, estimated at 0.10 acres.

13. References

- Bureau of Economic and Business Research. (2023). Florida Estimates of Population 2023. University of Florida. https://www.bebr.ufl.edu/wpcontent/uploads/2023/12/estimates_2023.pdf
- Office of Economic & Demographic Research. (2023). 2023 Levy County Profile (p. 3). http://edr.state.fl.us/Content/area-profiles/county/levy.pdf
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- United States Census Bureau. (2022). Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars), American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1901, 2022. https://data.census.gov/table/ACSST5Y2022.S1901?t=Income and Poverty&g=050XX00US12075
- Wetland Solutions, Inc. & Dewberry. (2022). Phase 1: Regional Alternative Water Supply Feasibility – Cedar Key, Bronson, Otter Creek, and Unincorporated Areas in Levy County (TWA: 19/20064.006; p. 128). Suwannee River Water Management District.

14. Appendices

14.1 Appendix A

The following are meeting minutes that were taken during W3C monthly Board Meetings, which reflect the project alternatives presented, and any public input that followed.

Waccasassa Water & Wastewater Cooperative
Agenda
August 22, 2024 @ 1:00 PM
660 East Hathaway Avenue, Bronson, FL 32626
Dogan S. Cobb Municipal Building

PRAYER

PLEDGE OF ALLEGIENCE

ROLL CALL

APPROVAL OF AGENDA

APPROVAL OF MINUTES:

- Minutes from the July 24, 2024 Cooperative Board Meeting

PUBLIC PARTICIPATION

INFORMATIONAL ITEMS: N/A

NEW BUSINESS:

- CMAR Construction Project Delivery Method Presentation
  - Krystal Strassman, Assoc. DBIA – Business Development Manager – Municipal Water with Haskell
- Acquisition of Water and/or Wastewater Utilities Presentation - Jamie Shannon - Business Development Associate with Central States Water Resources (CSWR)

OLD BUSINESS:

- Project Updates
  - Robert Beltran, PE, DBIA – Vice President, Business Unit Manager, Water Market Segment with Dewberry
    - Flow Projections - Facility Phasing - Funding Updates for the next year
- Review of Funding Applications
  - Shannon Williams – Director of Grant Services with Gateway Grant Writing
- Tyler Voorhees – Town of Bronson Town Councilor appointed as alternate for Chairperson Robert Partin by the Town of Bronson
  - Discuss status of alternates for Cedar Key Water and Sewer District & Town of Otter Creek
- Seacoast Bank – FloridaCommerce Grant Account – Requires Opening Funds

PUBLIC PARTICIPATION

REVIEW BILLS:

- Attorney Norm Fugate Statement for Legal Services – July 2024 = $765.00
- USPS – PO Box Fee (6 Months = $94.00 OR 12 Months = $188.00) – Due August 31, 2024

ADJOURN

WACCASASSA WATER & WASTEWATER COOPERATIVE BOARD MEETING
WEDNESDAY, SEPTEMBER 18, 2024 - DRAFT
510 3RD STREET, CEDAR KEY, FL 32625
CEDAR KEY WATER AND SEWER DISTRICT

Roll Call:

- Joe Hand, Cedar Key Water & Sewer District Board Member
- Zim Padgett, Town of Otter Creek Town Councilor
- Robert Partin, Town of Bronson Mayor
- Sue Beaudet, Town of Bronson Town Manager
- Norm Fugate, Attorney, Fugate & Fugate Law Firm
- Sherrie Yost, Administrator, Beauchamp & Edwards, CPA's

The meeting is called to order at approximately 1:00 PM. The prayer is led by Robert Partin. Roll call is taken. All members are present and accounted for.

APPROVAL OF AGENDA:

Zim Padgett makes a motion to approve the agenda as presented. Joe Hand seconds the motion. The motion passes.

APPROVAL OF MINUTES:

Zim Padgett makes a motion to approve the minutes from the August 22nd Waccasassa Water & Wastewater Cooperative Board Meeting. Joe Hand seconds the motion. The motion passes.

PUBLIC PARTICIPATION: N/A

INFORMATIONAL ITEMS: N/A

NEW BUSINESS: N/A

OLD BUSINESS:

Project Updates:

Mr. Robert Beltran with Dewberry was unable to attend the meeting due to other commitments. Mr. Dennis Davis of Wright-Pierce presents the project updates in his place. Mr. Davis indicates both the water and wastewater facilities are being designed to meet the current member communities projected needs, but would not require expansion considerations for the next ten years.

The projected water use for the member communities of the cooperative is unchanged from the previous estimation of approximately 0.35 MGD. This estimation is provided by Southwest Florida Water Management District (SWFWMD). Although W3C is not in the district boundaries of SWFWMD, this district provides the projections for all water management districts in the state of Florida. According to

Scott Knight with Wetland Solutions, the current water use for the cooperative members is approximately .20 MGD. The projected wastewater flow is .30 MGD.

A separate application for the water supply and the wastewater will be submitted to Florida Department of Environmental Protection (FDEP) for the State Revolving Fund (SRF) program with three alternatives being presented for each sector.

Feasibility Study Alternatives (Water):

- Alternative 1 – Co-Locate at Bronson WWTP
- Alternative 2 – Co-Locate at County/Courthouse WTP
- Alternative 3 – W3C Does Not Move Forward

Feasibility Study Alternatives (Wastewater):

- Alternative 1 – Biological Nutrient Removal (BNR) in Carrousel Oxidation Ditch - Wastewater enters a concrete basin and goes through various zones for treatment.
    a. Anoxic basin where it is depleted of oxygen for denitrification and Biochemical Oxygen Deman (BOD) – This process converts nitrates into nitrogen gas and removes organic matter.
    b. Carrousel oxidation ditch (oxygen added) with mechanical surface aerator for nitrification BOD removal – This process introduces bacteria that digests the nutrients in the wastewater, which cleans it.
    C. Secondary clarifiers – This process takes the clean water off the top and the bacteria then settle to the bottom. The bottom layer is sludge that moves on for further treatment within the plant.
- Alternative 2 – BNR in Package Plant – Wastewater is processed in the outer rings, but involves the same steps as above.
    a. Anoxic basin for denitrification and BOD removal.
    b. Aeration basin for nitrification and BOD removal.
    c. Secondary clarifier at center.
- Alternative 3 – W3C Does Not Move Forward

  Bronson:
    - It will need to upgrade and expand the WWTP for growth and new regulations.

  Otter Creek:
    - It could remain on unreliable septic systems or build a new WWTP to meet growth and new regulations.
    - They would need to build remote Rapid Infiltration Basins (RIBs) or a spray field.

  Cedar Key:
    - It will need to upgrade the existing WWTP or relocate it due to changing environmental conditions and regulations.
    - They would need to invest in additional treatment or build remote RIBS or a spray field.

At this time, the east side of Bronson is partially in a Basin Management Action Plan (BMAP) area of the Rainbow Springs Basin. The location of the existing and planned facilities for Bronson will not be in the BMAP area. However, this may change as FDEP re-evaluates Levy Blue Springs. The existing Cedar Key facilities are not in a BMAP area, but are held to higher treatment standards due to the aquaculture activities in their area. A BMAP area is not only near springs but can be near an impaired body of water (such as lakes, rivers or streams).

All facilities are being designed to meet current FDEP regulations, with the capability of expanded treatment as required (which may include nitrogen and phosphorus). This approach provides the best value for operational and capital costs to construct facilities.

Points of Connection (POC):

Bronson:

- Water – At the existing WTP.
- Wastewater – Wastewater will be sent via an additional force main (Bronson funded) from the existing WWTP to the new W3C WWTP.

Otter Creek:

- Water – At the existing WTP #1.
- Wastewater – Wastewater will need to be collected in a new sewer gravity collection system (Otter Creek funded) and then will be received at a new W3C pumping station.

Cedar Key:

- Water – It will be near the well facilities located off of SR 24.
- Wastewater – Wastewater will be sent via a new force main (CKWSD funded) from the existing CKWSD WWTP to a new W3C facility in the vicinity of the existing well facilities.

Mr. Robert Beltran with Dewberry met with Cedar Key Water & Sewer District (CKWSD) in recent weeks to discuss the various options. The CKWSD board met a week ago and agreed on the POC's as stated. W3C will support CKWSD in their efforts to secure funding for the additional wastewater force main.

Sue Beaudet asks if there are similar concerns with converting the existing CKSWD WWTP into a wastewater lift station as it will still be located on the island? Mr. Davis indicates there are the same concerns, however the design of the conversion will factor in protections to withstand a major storm. The protections may include placing panels at certain elevations and constructing the top of the facility as water tight and high as possible.

Joe Hands asks if CKWSD will have to treat the wastewater before delivering it to W3C? Mr. Davis says no, however W3C may need to address odor control once it reaches Bronson.

Robert Partin asks Mr. Greg Lane with Mittauer & Associates if the options presented for the Town of Bronson are feasible. Mr. Lane says they are feasible and likely the very best option for the Town of Bronson.

Project Topics for Next Meeting:

- Funding Update

Review of Funding Applications:

Ms. Shannon Williams is working closely with Dewberry regarding funding efforts. Funding opportunities will become more available once the Facilities Plan is completed. The plan provides answers to detailed questions that the agencies ask about the project, such as projected costs that are based on current facts and future estimates. This will also help determine if W3C will qualify for any amount of loan forgiveness. W3C will need to regularly show progress and provide proof of money spent. Having the plan completed will show that the $300,000.00 grant from FloridaCommerce was used to move the project forward.

W3C will not be able to apply for the Alternative Water Supply (AWS) grant for the potable water side of the project as the source water being used is clean groundwater. However, W3C can apply for AWS funding for the wastewater portion.

Having support from Suwannee River Water Management District (SRWMD) is exponential for the success of the overall project. Even with their support, there is no guarantee appropriation of funds (which may vary over the funding cycles). There is a possibility that previously appropriated funds to other projects may become available (if unused). It will help W3C to be organized and have a plan in place in order to be considered.

Ms. Williams indicates the application for the Rural Infrastructure Fund (RIF) grant was submitted on Monday, September 16th for the well testing.

Seacoast Bank – FloridaCommerce Grant Account:

Robert Partin states that $50.00 was moved from the general checking account to the FloridaCommerce Grant Account at Seacoast Bank. Mr. Justin Head with Seacoast Bank tells the Board that the bank generally looks for three repayment sources for a bridge loan or line of credit. In this case there is only one, the FloridaCommerce grant. Mr. Head stated that W3C may look to secure an additional guarantor, such as the members of the cooperative.

Attorney Norm Fugate previously submitted a request to FloridaCommerce to waive the matching fund requirement and to amend the grant from reimbursable to direct pay. This request was denied due to the W3C Cooperative entity not being a county or municipality as stated in the statutes. Sue Beaudet asks how other regional projects have overcome this hurdle? Their grants were reimbursable.

Attorney Fugate sent communication for assistance to Representative Chuck Clemons for assistance with this issue, but indicates it will not be solved today.

PUBLIC PARTICIPATION: A member of the audience asks if the visible pipeline size will change as the facilities expand? Mr. Davis explains that the design is a hydrological challenge to pump the wastewater 35 miles to Bronson, but is currently being configured by engineers. Mr. Davis indicates the pipeline will be one size the full distance (likely be a 6' – 8' pipe). Part of the challenge is determining the amount of pressure required to pump that distance. Also, the age of the wastewater once it arrives in Bronson is a challenge, as there will be approximately 500,000.00 gallons sitting in the pipe. Mr. Davis indicates the pipe size will be determined before construction begins and will not change during the expansion phases and will likely be buried and not seen.

Ms. Mandy Offerle asks if Cedar Key is responsible to get water and wastewater to and from the City of Cedar Key while W3C is delivering directly to Bronson and Otter Creek? Mr. Davis states that that on the potable water side, W3C will be delivering directly to the existing wells and that CKWSD is already pumping the water into the city. On the wastewater side, CKWSD will convert their existing WWTP into a pumping station to transport the wastewater to the newly constructed W3C pumping station at the CKWSD existing well site. Ms. Offerle then asks if Cedar Key will have to fund the pipe? Mr. Davis confirms that yes, Cedar Key will have to fund the pipe.

Sue Colson, City of Cedar Key Mayor indicates that the CKWSD will have to get funding for improvements to their existing facilities regardless if they are part of W3C or on their own. Funding is more likely to be available if CKWSD remains a member of W3C.

Sue Beaudet states that the cost of a new pipe to transport the wastewater from CKWSD to the W3C pumping station will be significantly less that CKWSD having to build a new WWTP. A difference of an estimated $8 million compared to $40 million.

REVIEW BILLS:

- The NET Group Online, Inc. invoice #4378 for website hosting – Sept. thru Nov. 2024 = $300.00

Joe Hand makes a motion to pay to pay the invoice in the amount of $300.00. Zim Padgett seconds the motion. The motion passes.

The meeting is adjourned at approximately 2:21 PM.

14.2 Appendix B

The Town of Bronson, Town of Otter Creek, and the Cedar Key Water and Sewer District entered into an Interlocal Agreement that established a commitment to implement the planning recommendations and establish a unified entity related to water, wastewater, and reclaimed water services. This agreement was entered into on June 13, 2023.

14.3 Appendix C

Each member has instituted an ordinance that requires businesses and residences to connect to water services where available (Appendix C).

14.3.1 Town of Bronson, FL Code of Ordinances

Chapter 22 - WATER, SEWER AND OTHER SERVICES

> *Footnotes:*
> *--- (1) ---*
> ***State Law reference—*** *Public utilities, F.S. ch. 366; water and wastewater systems, F.S. ch. 367; water resources, F.S. ch. 373.*

ARTICLE I. - IN GENERAL

Sec. 22-1. - Rates and charges.

The town council shall establish by resolution a schedule of rates, charges, and deposits for the services and facilities of the town's water, sewer and other services facilities. Rates for services and facilities for those locations outside the corporate limits are increased by a ten-percent surcharge being added to those rates applicable within the corporate limits.

(Code 1977, § 22-1; Ord. of 7-5-1977, § 1; Ord. No. 1980-4, § 1, 11-3-1980; Ord. No. 04-05, § 1, 7-26-2004)

Sec. 22-2. - Meter connection charges; extension costs to be borne by user.

(a) The town council shall establish by resolution a schedule of charges for meter connections to the town's water and sewer systems, such charges to relate to the size of the meter.

(b) The cost of extending the water, sewer and other services from the meter installation to the user's premises shall be at the user's expense. Meters shall be installed on the edge of public rights-of-way only, unless the user grants the town an easement in which instance the extension of the water line from the public right-of-way to the meter shall additionally be at the user's expense.

(Code 1977, § 22-2; Ord. of 7-5-1977, § 2; Ord. No. 1979-2, § 1, 8-31-1979; Ord. No. 1980-4, § 1, 11-3-1980; Ord. No. 04-05, § 1, 7-26-2004)

Sec. 22-3. - Application for service; furnishing of easement; deposit.

Before any person, firm or corporation shall be entitled to water, sewer and other services, he must file, in writing, an application with the town for water, sewer and other services showing the legal description of the premises to be served and the size of meter desired. The applicant must also furnish easement where required, and shall make a deposit of money in accordance with the prescribed schedule for each meter to be installed for each house or principal building or family unit with its adjacent accessories to be supplied with water, sewer and other services.

(Code 1977, § 22-3; Ord. of 7-5-1977, § 2; Ord. No. 04-05, § 1, 7-26-2004)

Sec. 22-4. - Separate meter required for each unit; motels excepted.

Not more than one business unit or one single-family dwelling with adjacent accessories nor more than one separate unit of multifamily buildings located on one premises shall be furnished with water, sewer and other services from the same meter; excepting that this provision is not meant to apply to motels composed of two or more separate buildings under one ownership and deemed to be a single premises.

(Code 1977, § 22-4; Ord. of 7-5-1977, § 2; Ord. No. 04-05, § 1, 7-26-2004)

Sec. 22-5. - Subscription to garbage and refuse service required.

All subscribers to the services and facilities of the town's water and sewer systems shall be required to subscribe concurrently to the town's garbage and refuse service.

(Code 1977, § 22-5; Ord. No. 1981-3, § 1, 12-7-1981; Ord. No. 04-05, § 1, 7-26-2004)

Sec. 22-6. - Subscription to water and sewer service required when available.

Any person, firm, corporation, partnership, society, club, unit of government or association of persons owning, occupying, using or doing business in out of real property in the town shall be required to connect the property so owned, used or occupied to the water and/or sewer service provided by the town when such service shall become available, or to pay the minimum monthly amount for said service if not so connected within one year after notice of availability. This obligation shall inure to both the owner and the occupant where the property is not owner-used or occupied.

(Ord. No. 04-05, § 2, 7-26-2004; Ord. No. 2012-01, 3-5-2012; Ord. No. 21-06, § 1, 12-6-2021)

Secs. 22-7—22-30. - Reserved.

ARTICLE II. - YEAR-ROUND WATER CONSERVATION MEASURES AND WATER SHORTAGE REGULATIONS

Sec. 22-31. - Intent and purpose.

It is the intent and purpose of this article to protect the water resources of Bronson from inefficient use at all times and overutilization during periods of water shortage by assisting the Suwannee River Water Management District in the implementation of its year-round water conservation measures and water shortage plan.

(Ord. No. 14-02, § A, 6-2-2014)

Sec. 22-32. - Definitions.

For the purpose of this article the following terms, phrases, words and their derivatives shall have the meaning given herein. When not inconsistent with the context, words used in the present tense include the future, words in the plural include the singular, and words in the singular include the plural. The word "shall" is always mandatory and not merely directory.

District means the Suwannee River Water Management District.

Person means any person, firm, partnership, association, corporation, company, or organization of any kind.

Water resource means any and all water on or beneath the surface of the ground, including natural or artificial water courses, lakes, ponds, or diffused surface water, and water percolating, standing, or flowing beneath the surface of the ground.

Water shortage condition is when sufficient water is not available to meet present or anticipated needs of persons using the water resources, or when conditions are such as to require temporary reduction in total water usage within a particular area to protect the water resource from serious harm. A water shortage usually occurs due to drought.

Water shortage emergency means that situation when the powers which can be exercised under subsection 408-21.621, Florida Administrative Code, are not sufficient to protect the public health, safety, or welfare, or the health of animals, fish or aquatic life, or a public water supply, or commercial, industrial, agricultural, recreational or other reasonable uses.

(Ord. No. 14-02, § B, 6-2-2014)

Sec. 22-33. - Application of article.

The provisions of this article shall apply to all persons using the water resource for lawn, irrigation, landscape irrigation, and related outdoor water uses such as car washing within the geographical areas determined by the district, whether from public or privately owned water utility systems, private wells, or private connection with surface water bodies. This article shall not apply to persons using saltwater.

(Ord. No. 14-02, § C, 6-2-2014)

Sec. 22-34. - Amendments to year-round water conservation measures water shortage plan.

All portions of Chapter 40D-21B, Florida Administrative Code, dealing with lawn irrigation, landscape irrigation, and related outdoor water use, as each may be amended from time to time, are incorporated herein by reference as part of the Town of Bronson Code of Ordinances.

(Ord. No. 14-02, § D, 6-2-2014)

Sec. 22-35. - Applicability of year-round water conservation measures.

In the absence of a declaration of a water shortage or water shortage emergency within all or any part of the town by the governing board or the executive director of the district, all lawn irrigation, landscape irrigation and related outdoor water conservation measures adopted by the district applicable to the town, or any portion thereof, shall be subject to enforcement action pursuant to this article. Any violation of the provisions of Chapter 40D-21, Florida Administrative Code, or any order issued pursuant thereto, shall be a violation of this article.

(Ord. No. 14-02, § E, 6-2-2014)

Sec. 22-36. - Declaration of water shortage; water shortage emergency.

Upon declaration of a water shortage emergency within all or any part of the town by the governing board or the executive director of the district, all lawn irrigation, landscape irrigation and related outdoor water shortage restrictions adopted by the district applicable to the town, or any portion thereof, shall be subject to enforcement action pursuant to this article. Any violation of the provisions of Chapter 40D-21, Florida Administrative Code, or any order issued pursuant thereto, shall be a violation of this article.

(Ord. No. 14-02, § F, 6-2-2014)

Sec. 22-37. - Enforcement.

Every police officer or sheriff having jurisdiction in the area governed by this article shall, in connection with all other duties imposed by law, diligently enforce the provisions of this article. In addition, the mayor of the town may also delegate enforcement responsibility for this article to agencies and departments of the town in accordance with state and local law.

(Ord. No. 14-02, § G, 6-2-2014)

Sec. 22-38. - Penalties.

Violation of any provision of this article shall be subject to the following penalties:

First violation	Verbal warning
Second violation	Formal warning
Third violation	$25.00

Fourth violation	$50.00
Fifth and subsequent violations	Fine not to exceed $500.00 and/or imprisonment in the county jail not to exceed 60 days

Each day in violation of this article shall constitute a separate offense. When a water shortage declaration is not in effect, and during the initial stages of a water shortage or water shortage emergency, enforcement officials may provide violators with no more than one written warning. The town, in addition to the criminal sanctions contained herein, may take any other appropriate legal action, including but not limited to emergency injunctive action to enforce the provisions of this article.

(Ord. No. 14-02, § H, 6-2-2014)

Sec. 22-39. - Water users to accept provisions of article.

No water services shall be furnished to any person by a public or private utility unless such person agrees to accept all the provisions of this article. The acceptance of water service shall be in itself the acceptance of the provisions thereof.

(Ord. No. 14-02, § I, 6-2-2014)

14.3.2 Cedar Key, FL Code of Ordinances

4-4.03.01. - Potable Water.

No development activity shall be approved unless there is sufficient available capacity allocated by the Cedar Key Water and Sewer District (CKW&SD) to sustain the following LOS for potable water as established in the potable water sub-element of the City's Comprehensive Plan:

A. Minimum design flow: 200 gallons per capita per day
B. Storage capacity: 250,00 gallons
C. Pressure: 50 psi static
D. Pumping capacity: 200 gallons per minute or 150,000 gallons per ten-hour period
E. Minimum design fire flow: 500 gpm at 20 psi

4-4.03.02. - Wastewater.

No development activity shall be approved unless there is sufficient available capacity allocated by the Cedar Key Water and Sewer District(CKW&SD) or an approved alternative system as hereinafter provided to sustain the following LOS for wastewater treatment as established in the sanitary sewer sub-element of the City's Comprehensive Plan:

A. Residential: 183 gallons per capita per day
B. Commercial and institutional: 183 gallons per capita per day at 50 percent of peak occupancy for commercial space and 100 percent for any dwelling unit as defined in Article VI of this Code

4-4.03.03. - Alternative Wastewater Systems.

Septic systems and alternative wastewater treatment systems, including package treatment plants, shall conform to the rules of the Department of Environmental Regulation and Department of Natural Resources in siting, construction and outfall or disposal locations, and no system shall dispose of effluent in coastal waters. No approval or permit shall be granted for any development proposing to use alternative septic systems unless the Levy County Sanitation Department has provided written assurance and approval of soil suitability, land area and coastal water or groundwater impacts.

14.3.3 Town of Otter Creek, FL Code of Ordinances