

# Cape Royale Utility District Five-Year Plan 2016

Adopted \_\_\_\_\_, 2016

## 1. Introduction

### 1.1. Purpose and Primary Considerations –

A carefully constructed business plan that extends beyond the current budget year is necessary for several reasons:

1. It provides continuity as the membership of the Board of Directors changes, and as staff members come and go.
2. It assists in the decision making process during budget development each June.
3. It provides direction when prioritizing capital projects.
4. It displays the short and long term effects of setting tax rates and/or service fees.

This plan should never be so rigid that it becomes detrimental to safe and reasonable operation, but it should be consistent enough to use as a benchmark for the achievements over the past several years as well as motivation for striving toward future goals.

During the development of this Five-Year Plan there are a number of issues that are considered and need to be balanced against each other. These considerations include:

1. Providing high quality water and other services that affect the quality of life for all District customers.
2. Complying with state and federal regulations that specify the financing, construction, operation, and maintenance of a public utility.
3. Providing sufficient funds to upgrade/maintain a 50-plus year old system with a proactive plan. A reactive approach to repair or replacement of equipment places extreme stress on budgets. Planned maintenance helps to regulate tax rates and service fees by reducing unexpected expenditures.
4. Creating stringent but reasonable annual budgets.
5. Maintaining water rates and fees which are sufficient to recover daily costs without overburdening the water users.
6. Maintaining a stable total tax rate, minimizing year-to-year variations.
7. Accumulating sufficient funds in reserve to pay for large capital improvements without issuing bonds.

### 1.2. Definitions and Terms –

- 1.2.1. Certified Operator** - An operator that has taken the required classroom hours and successfully passed the testing requirements to obtain a water and/or wastewater license from the State of Texas. A “C” level license is required to perform all of the necessary duties of daily operation and maintenance.
- 1.2.2. Fiscal Year** - The fiscal year for the District is from July 1<sup>st</sup> to June 30<sup>th</sup> of the following calendar year. Any reference made to a fiscal year is prefixed with “FY” (example: FY 12-13). Any date that is not prefixed with “FY” is calendar year.

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- 1.2.3. Flushing** – This is a monthly routine for moving fresh water to the extremities of the water distribution system (dead-ends and unpopulated areas). Flushing water lines by opening valves located at these locations raises disinfectant concentrations to levels determined acceptable by state and federal agencies.
- 1.2.4. GASB** - Government Accounting Standards Board. This board establishes the methodologies for financial accountability of all governmental entities.
- 1.2.5. Inflow & Infiltration** – This is a problem of unwanted storm water or ground water entering the wastewater collection system. The causes can be broken lines or manholes, foreign matter in the system (roots and grease), storm drains and gutters connected to the collection system, etc. The result of these problems can cause system overflows and excessive treatment requirements.
- 1.2.6. Infrastructure** – Permanently installed resources that form the systems necessary to perform or provide services related to water, wastewater, solid waste or other direct functions of the District.
- 1.2.7. Planned Upgrades** – Installation or expansion of components of the infrastructure that are normally considered capital improvements. These projects do not recur on an annual basis.
- 1.2.8. Purchase Point** - The Purchase Point is derived from a depreciation schedule and used to determine whether to spend funds to repair a malfunctioning or inoperable asset or to spend funds for total replacement.
- 1.2.9. Recurring Upgrades** – Regularly scheduled repair or replacement of components of the infrastructure that are not considered capital improvements but have a direct impact on the system’s life expectancy and/or replacement cost.
- 1.2.10. SLD** - Straight Line Depreciation is used to calculate the cost of asset replacement compared to the average life expectancy of the asset. This is most evident in establishing an annual budget figure that is either spent on recurring upgrades or should be set aside each year for covering the cost of one-time replacement.
- 1.2.11. TCEQ** – Texas Commission on Environmental Quality
- 1.2.12. Wastewater Collection** - The system of pipes, manholes, and lift stations used to move sewage from the point of generation to the final location for treatment.
- 1.2.13. Wastewater Treatment** - The process required to remove solids from wastewater and disinfect the remaining water for safe release back into the environment.
- 1.2.14. Water Distribution** - The system of pumps, piping, and valves used to move the water from storage to the final point of consumption.
- 1.2.15. Water Production** - The process required to draw water from an available source and the treatment necessary to disinfect and remove undesirable elements.

## 2.0. Description of Existing Facilities

(See Section 8 for detailed life expectancy and replacement cost.)

The District is located on the west bank of Lake Livingston in San Jacinto County, Texas. It is five miles north of the city of Coldspring and 60 miles northeast of the city of Houston, Texas.

The Utility District, as recorded in the *Certificate of Convenience and Necessity*, provides services for water, wastewater treatment, storm water drainage, and solid waste disposal. The Utility District provides service to two areas outside the platted limits of the Cape Royale Subdivision: the Cape Royale Golf Course and a residential site at the end of Brisbane Court owned by the Cape Royale Property Owners Association.

On May 21, 1969, the District was created by the 61<sup>st</sup> Legislature as a conservation and reclamation district containing 920.61 acres. There has been one de-annexation and several annexations since creation for a total current area of 967.29 acres. On November 30, 1977, the District was converted to a municipal utility district without a change in name. The District operates under Chapters 49 and 54 of the Texas Water Code.

Since 1999, Cape Royale Utility District has maintained an official State of Texas rating as a Superior Public Water System. To attain this rating, a water system exceeds minimum acceptable requirements by:

- ◆ Having two or more certified operators
- ◆ Having no microbiological violations for at least the last 24 months
- ◆ Complying with all primary quality parameters listed in the TCEQ standards
- ◆ Complying with all secondary constituent levels listed for chemical quality
- ◆ Complying with state statutes regarding system operation
- ◆ Exceeding minimum water system capacity requirements
- ◆ Having three wells with enough capacity to satisfy average daily consumption even though the largest well may need to go off-line
- ◆ Maintaining facilities that present a pleasing appearance to the public

As of June 2016, the following items were known:

Total platted lots in the subdivision:	1783
Total single family service connections:	682
Estimated permanent residences:	295 ( <i>Based on</i>
Estimated intermittent residences:	387 <i>mailing address</i> )
Total multi-family service connections:	5
Commercial customers not located on platted lots:	10

### 2.1. Water Supply Infrastructure

Water is obtained from three wells located within the boundaries of the Cape Royale Subdivision. The groundwater is treated at two plant locations and distributed through a network of piping. Water is provided to the consumers through a closed loop system wherein both water plants can be interlinked. Consistent pressure differentials are maintained through the use of pressure regulating devices that account for the changes in elevation throughout the subdivision and the pressure losses due to the length of line from the plants to the most distant service locations.

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2.1.1. **Water Wells** - Wells No. 1 and 2 draw from the Gulf Coast Aquifer; Well No. 3 draws from the Jasper Aquifer:

Well No	Location	Date Drilled	Depth	Rated GPM	Certified GPM
1	Water Plant No 1	1969	580	280	250
2	Admin Bldg	1984	714	220	210
3	Water Plant No 2	1997	1090	500	500

- 2.1.1.1. Polyphosphates are automatically injected at each well location to sequester dissolved iron and manganese. The term “sequester” refers to the process of inhibiting the dissolved particles from adhering to each other or distribution system surfaces.
- 2.1.1.2. Raw water samples drawn from all three wells indicate that Well No. 2 (Admin. Office) is the primary source of oxidized iron or “red” water.
- 2.1.1.3. The method for determining the condition and operation of wells is to monitor the GPM of each well on a weekly basis. Metered production less than 80% of rated GPM requires well rehab.
- 2.1.1.4. TCEQ requires 0.6 GPM well capacity per service connection. Based on the rated GPM of each well, the combined capacity of all three wells will provide for 1,667 connections.

2.1.2. **Groundwater Treatment** - The water treatment plant data is as follows:

Plant No	Storage Capacity (gal)	Pressure Tank Capacity (gal)	Booster Pump Capacity (GPM)
1	295,000	10,000	1,000
2	120,000	5,000	1,000

- 2.1.2.1. Chlorine is automatically injected at each plant for disinfection purposes.
- 2.1.2.2. Full back-up power is provided at both water treatment plants by diesel generators.
- 2.1.2.3. Ground storage tanks and pressure tanks are visually inspected by an outside contractor every 3 years, and by District Operators annually.
- 2.1.2.4. Maximum fill rate of the storage tanks is 500 GPM (see well ratings in 2.1.1 table). The maximum distribution rate is 1,000 GPM (combined booster pumps ratings at each plant). This causes a possible volume deficit during a large system leak or using water to fight a fire for a duration more than 7 hours.
- 2.1.2.5. TCEQ requires service capacity of the hydro-pneumatic pressure tanks to be 20 gallons per service connection. WTP 1 has the current capacity to provide for 500 connections. WTP 2 has the current capacity to provide for 250 connections. These tanks make up for pressure drops caused by demand on the water system. Once the booster pumps are activated, the tanks return to a static level of water and air at the original pressure. An Alternate Capacity Rating was issued to CRUD in Aug 2011 for 15.14 gallons per connection.
- 2.1.2.6. TCEQ requires ground storage capacity of 200 gallons per service connection. WTP 1 has the current capacity to provide storage for 1,480 connections. WTP 2 has the current capacity to provide storage for 600 connections.

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**2.1.3. Water Distribution Inventory Table**

Section	Diam	Material	Pipe (ft)	Gate Valves	Hydrants	Taps	BOV	ARV	PRV
Royale Greens	12	AC	1,521	3	14	96	27	3	1
	8	C900	379						
	8	AC	2,086						
	6	C900	136						
	6	PVC	203						
	6	AC	10,630	28					
	4	C900	69						
	4	AC	700	4					
	2	PVC	4,777	29					
Forest Cove	12	AC	696	2	6	81	9		0
	8	AC	360	1					
	6	PVC	97						
	6	AC	6,281	14					
	4	AC	1,422	1					
	3	AC	3,697	8					
	2	PVC	208	1					
Pine Harbour	12	C900	105		10	80	8	2	0
	12	AC	1,719	3					
	8	PVC	112	1					
	6	AC	8,058						
	6	C900	9	24					
	4	AC	744						
	4	C900	1,898	1					
	3	AC	2,682	4					
2	AC	248							
Imperial Point	12	AC	1,028		7	42	3	1	0
	8	PVC	965	3					
	6	AC	179						
	6	PVC	182						
	6	AC	4,025	11					
	2	PVC	725						
Imperial Estates	8	C900	5,066		14	83	4	3	1
	8	PVC	1,443	4					
	6	AC	257						
	6	PVC	2,841	17					
	4	PVC	1,098	3					
	2	PVC	1,466	3					
Harbour Point Est	6	PVC	1,252	2	1	24	1	0	0
Villas de Marina	6	C900	42		2	81	3	2	0
	6	PVC	1,520	4					
	4	C900	655						
	2	PVC	840	2					
Harbour Villas	12	AC	447	2	1	28	3	0	0
	6	C900	11						
	6	PVC	7	3					
	4	AC	884	3					

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<b>Kings Point</b>	12	C900	1,155	1	10	54	3	4	1
	8	PVC	5,317	7					
	6	AC	185						
	6	C900	661	12					
	4	AC	16						
	2	C900	187	1					
<b>Kings Ridge</b>	12	C900	2,339	2	25	67	9	7	2
	8	PVC	9,604	9					
	6	AC	570						
	6	PVC	6,088	27					
	4	AC	10						
	4	PVC	996	2					
	2	AC	387						
	2	PVC	2,157	4					
<b>Reserves</b>	12	AC	1,061		7	30	2	2	1
	12	C900	1,692	13					
	8	PVC	3,325						
	6	AC	71						
	6	C900	7						
	2	PVC	379						
<b>Other</b>	Golf course, treatment plants, etc					11			
<b>Totals</b>	12	AC	6,472	24					
	12	PVC/C900	2,952						
	8	AC	2,446	25					
	8	PVC/C900	21,033						
	6	AC	27,483	140					
	6	PVC/C900	13,548						
	4	AC	3,776	14					
	4	PVC/C900	4,716						
	3	AC	6,379	12					
	3	PVC/C900	0						
	2	AC	635	40					
	2	PVC/C900	10,739						
<b>Grand Total</b>	-	-	<b>100,179</b>	<b>255</b>	<b>96</b>	<b>690</b>	<b>72</b>	<b>24</b>	<b>6</b>

*A/C = composite cement*

*PVC/C900 = plastic*

*BOV = blow-off valve*

*ARV = air release valve*

*PRV= pressure reduction vault*

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- 2.1.3.1. Blow-off valves (BOV) are ball valves placed at the end of the water line on dead-end streets and cul-de-sacs. These valves are used to release water from the lines in order to regulate chlorine residual by moving freshly chlorinated water to the end of the water line. The District is required by TCEQ to flush all dead ends monthly. For number and locations see Water Distribution Inventory Table 2.1.3.
  - 2.1.3.2. Air release valves (ARV) are installed to release unwanted air from the water lines that has become trapped due to elevation undulations. For number and locations see Water Distribution Inventory Table 2.1.3.
  - 2.1.3.3. Pressure reduction vaults (PRV) control and regulate the pressure to help the District maintain a pressure of 50 psi to 85 psi. For number and locations see Water Distribution Inventory Table 2.1.3.
  - 2.1.3.4. The District has a combination of meters consisting of residential meters, commercial meters, and master meters to record water sales. See TAPS in Water Distribution Inventory Table 2.1.3. Mobil meters are used in field operations such as flushing, jetting, etc.
- 2.1.4. Pressure Zones** – The water distribution system is able to be split into a high pressure and low pressure zone. Two valves can be shut to allow Plant 1 to supply the low pressure zone, and Plant 2 to supply the high pressure zone. At present, the distribution system is operating with the zones combined. Any reference to separate high and low pressure zones is strictly for reference.
- 2.1.5. Booster Pumps** - The water from the ground storage tanks is pushed through the distribution piping using booster pumps arranged in parallel. Each treatment plant houses three booster pumps that are cycled by the electronic controls that sense a drop in pressure. Multiple booster pumps may run simultaneously when a large demand is placed on the distribution system. These pumps are redundant in a group of three (two 250 GPM pumps and one 500 GPM pump per plant).

## 2.2. Wastewater Treatment Infrastructure

Wastewater is collected from all permanent structures in the subdivision (with the exception of “The Reserves” section) utilizing a system of gravity flow pipes, manholes, lift stations, and force mains.

It should be noted that there will be a difference between the number of water meters and the number of sewer taps throughout this document. Residences in “The Reserves” are responsible for treating wastewater by using individual aerobic treatment plants at each homeowner’s property. And, in some instances, a residence may have a single water meter, but multiple wastewater taps. These two factors account for the difference in customer water meter count vs. customer wastewater tap count.

The collected waste is piped to two wastewater treatment plants located at a single site at the end of Pebble Beach Circle in the N Royale Greens Section. This treatment plant site is permitted by the State of Texas, protected from buffer zone limitations, and is the only available site feasible without major modifications to the wastewater collection system.

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2.2.1. **Wastewater Collection System** - The collection system consists of three types of gravity pipe, force mains, manholes of various depth and lift stations.

2.2.1.1. Gravity pipe will range in diameter from 6 inches to 15 inches, and is composed of either reinforced concrete, truss (thin-wall plastic with a gypsum filler), or PVC plastic. Each service tap empties into the gravity flow system which slopes gradually downhill.

2.2.1.2. At points which call for a change of pipe direction or service access, manholes have been constructed to accommodate the need. Manholes will vary in depth from a few feet to as much as thirty feet, depending on the depth of the bottom of the gravity pipe exiting the manhole. Most manholes in Cape Royale are constructed of concrete sections stacked on each other. The concrete joints are sealed with elastomeric rings and sealed from the inside with grout.

2.2.1.3. Lift stations are substituted for manholes when greater pipe depth cannot be accommodated or when collected wastewater must be pumped uphill. Lift stations are constructed in the same manner as manholes, but with a larger diameter and a flat concrete bottom. Wastewater collected through the gravity system empties into the lift station until a certain liquid level is obtained. Electronic controls will then turn on a pump that discharges into a force main (pressurized pipe), carrying the wastewater to an adjacent manhole or another lift station. Each lift station is equipped with two pumps which alternate at regular intervals.

2.2.1.4. Wastewater Collection Gravity Pipe Inventory Table

Location	Diam	Material	Lin ft	
Royale Greens	15	Concrete	1,002	
	10	Concrete	1,284	
	10	Truss	432	
	10	Truss (SL)	256	
	8	PVC	1,106	
	8	Truss	2,564	
	8	Truss (SL)	531	
	6	Concrete	6,618	
	6	Truss	2,875	
	6	PVC	3,980	
	Forest Cove	15	Concrete	1,882
		15	Conc (SL)	998
6		PVC	393	
6		Concrete	12,569	
4		C900	666	
Pine Harbour	15	Concrete	828	
	12	Concrete	2,188	
	12	Truss	3,054	
	12	Truss (SL)	134	
	10	Truss	354	
	10	Truss (SL)	62	
	8	PVC	1,133	
	6	Truss	1,469	
	6	Concrete	7,672	
	6	Conc (SL)	312	
	6	PVC	1,684	
	6	Duct Iron	222	
Imperial Point	12	Truss	3,452	



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	12	PVC	123
	12	Concrete	131
	6	Truss	3,327
	6	Concrete	97
	6	ABS	307
	6	PVC	362
Imperial Estates	10	Concrete	141
	10	PVC	1,740
	6	Concrete	15,087
	6	Duct Iron	1,511
	6	PVC	429
Harbour Point	10	Concrete	480
	8	Concrete	156
	8	PVC	360
	6	PVC	23
Harbour Point Estates	10	Concrete	493
	6	Concrete	373
Harbour Villas	10	PVC (SL)	337
	8	Concrete	244
	6	Concrete	1,113
Villas de Marina	8	ABS	1,601
	8	Concrete	86
	6	ABS	2,363
	6	PVC	643
Kings Point	10	Concrete	5,299
	8	Concrete	1,155
	6	PVC	1,444
	6	Concrete	1,583
Kings Ridge	10	PVC	786
	10	Concrete	1,117
	8	Concrete	460
	8	PVC	1,799
	6	PVC	14,118
	6	Concrete	3,410
	6	Duct Iron	2,979
Kings Ridge Cove	10	Concrete	549
	10	PVC	2,138
	10	PVC (SL)	156
	6	Concrete	2,622
	6	PVC	1,099
Reserves	10	Truss	354
	10	PVC	337
	6	PVC	109
<b>Totals</b>	15	Concrete	3,712
	15	Conc (SL)	998
	12	Concrete	2,319
	12	Truss	6,506
	12	Truss (SL)	134
	12	PVC	123
	10	Truss	1,140
	10	PVC	5,001
	10	Concrete	9,363
	10	PVC (SL)	493
	10	Truss (SL)	318
	8	Truss	2,564
	8	PVC	4,398
	8	Concrete	2,101
	8	ABS	1,601
	8	Truss (SL)	531
<b>Location</b>	<b>Diam</b>	<b>Material</b>	<b>Lin ft</b>
	6	C900	666
	6	Concrete	51,144

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6	Truss	7,671
6	PVC	24,284
6	ABS	2,670
6	DI	4,712
<b>Grand Total</b>		<b>132,942</b>

2.2.1.5. Wastewater Manhole Inventory Table

Location	Qty	Max Depth
Royale Greens (North)	74	13.5
Royale Greens (South)	40	13.0
Forest Cove (North)	62	25.0
Forest Cove (South)	14	14.0
Pine Harbour (North)	73	25.0
Pine Harbour (South)	34	15.8
Imperial Point	43	20.7
Imperial Estates	107	19.0
Harbour Point Estates	16	31.0
Villas de Marina	25	29.0
Kings Point	42	23.0
Kings Ridge 1	33	16.0
Kings Ridge 2	26	9.0
Kings Ridge 3	66	24.0
Kings Ridge Cove	34	21.0
Harbour Villas	10	13.3
<b>Total</b>	<b>699</b>	<b>-</b>

2.2.1.6. Wastewater Collection Force Main Inventory Table

Force Main	Diam	Material	Length
RG-01	6	PVC	1,326
FC-S2	4	C900	669
KR-1	6	PVC	2,865
PH-1	6	Ductile iron	1,195
IP-1	4	PVC	424
IE-2	6	PVC	10
IE-1	6	PVC	1,536
VM-1	4	PVC	641
FC-N1	6	Ductile iron	103
CW-1	8	PVC	313
<b>Total</b>	<b>-</b>	<b>-</b>	<b>9,082</b>

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2.2.1.7 Wastewater Collection Lift Station Inventory Table

Location	Pump No	Type	HP	GPM
Pine Harbour (dry well)	1	Horiz	15	1250
	2	Horiz	15	1250
Clearwater (dry well)	1	Horiz	5	600
	2	Horiz	5	600
Imperial Point (wet well)	1	Sub	5	600
	2	Sub	5	600
Imperial Estates (wet well)	1	Sub	3	300
	2	Sub	3	300
Imperial Estates (dry well)	1	Vert	7.5	600
	2	Vert	7.5	600
Villas de Marina (wet well)	1	Sub	2	250
	2	Sub	2	250
Kings Ridge (wet well)	1	Vert	35	3000
	2	Vert	35	3000
Royale Greens (dry well)	1	Vert	25	2000
	2	Vert	25	2000
N Forest Cove (wet well)	1	Sub	10	1000
	2	Sub	10	1000
S Forest Cove (wet well)	1	Sub	5	600
	2	Sub	5	600
Forest Cove Grinder*	1	Sub	2	250
WW Treatment Plant (wet)	1	Sub	7.5	600
	2	Sub	7.5	600

*\* This grinder pump serves a single residence, but is the responsibility of the District. Other residences within the Cape have grinder pumps that are the sole responsibility of the property owner. This situation needs to be investigated.*

2.2.2. **Wastewater Treatment Plant** - The wastewater treatment plant is a two-train plant permitted to treat 150,000 gallons per day (maximum 30-day average) with a 2-hour peak flow of 312 gallons per minute. Secondary treatment consists of a contact-stabilization process. Effluent from the two clarifiers is recombined in a common chlorine contact tank where it is disinfected. The processed water then goes through mixed media filters to a final holding tank where it is measured by a v-notch weir and released to Lake Livingston. The water leaving the plant is checked daily and meets or exceeds all state and federal regulations.

The sludge that is separated from the wastewater is treated and removed from the processing tanks by a licensed contractor on an “as needed” basis.

Auxiliary power is provided using a diesel generator.

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## 2.3. Storm Water Drainage

Storm water drainage is accomplished primarily by the “sheeting” methodology. The storm water drains in sheets across the land surface to low points in the terrain which eventually drain to the lake. Additional drainage aids consist of surface ditches and subsurface culverts which follow the natural topography of the area. Property owners are responsible for the initial contouring of the roadside ditches and installing driveway culverts for all new construction, with the District’s approval.

- 2.3.1. The District is responsible for cleaning and maintaining the flowline of the existing roadside ditches.
- 2.3.2. The District is responsible for inspecting any culverts installed at driveways for proper sizing and to ensure the natural gradient lines are maintained.
- 2.3.3. The District is responsible for maintenance of existing drainage easements and structures as described in the District Storm Drainage Policy. There is no obligation on the District’s part to construct new drainage facilities.

## 2.4. Garbage and Trash Disposal

The District uses two separate systems for providing garbage and trash disposal.

- 2.4.1. **Household garbage disposal** - is handled by having all residents deposit their garbage in dumpsters centrally located in the subdivision. The District provides dumpsters through a contract with a regional waste management company, and the dumpsters are emptied on a scheduled basis per contract.
- 2.4.2. **Large items** - (i.e. - furniture, appliances, etc.) and landscape debris (i.e. - lawn clippings, hedge and tree trimmings, etc.) are disposed of by depositing them at a separate central location that is open daily. The “large item” trash is hauled from the subdivision by a local contractor. The landscape debris is hauled from the subdivision by a waste management company in a 40 cubic yard roll-off dumpster. Both large item removal and landscape debris containers are picked up on an “as needed” basis rather than a time table. The District also operates a commercial size chipper/shredder at this location. When enough shrub and tree trimmings have been accumulated at this site, the chipper/shredder is operated by a member of the District field operations staff to create mulch at the site. Effective April 2003 this mulch material is available to District customers on a “first come – first served” basis. This mulch is not made available to commercial operators or for resale processing [See Large Item and Yard Waste Disposal Facility Policy, Sec 6.14].

## 2.5. Equipment, Buildings and Miscellaneous Facilities

(See Attachment ‘A’ for a listing of these assets.)

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### **3. Personnel and Consultants**

The District is governed by a five member Board of Directors. This Board is elected by the registered constituency of Cape Royale in even numbered years. Two positions were filled in May 2014 and three positions were filled in May 2016.

The District maintains a staff of full-time and part-time employees. Areas of specialty and professional services are contracted through consultants.

#### **3.1. General Manager**

The General Manager is responsible for all administrative functions and field operations and answers directly to the Board of Directors.

#### **3.2. Field Operations Personnel**

**3.2.1. Field Operations Supervisor** - The District currently employs a Class C Water and Class C Wastewater operator as the Field Operations Supervisor who is responsible for execution of all field operations and answers directly to the General Manager.

**3.2.2. Field Operators** - The District currently employs two Class C-C operators and two Class D-D operators (9in training) to perform the duties necessary to install and maintain the water and wastewater systems. The Field Operators answer directly to the Field Operations Supervisor.

**3.2.3. Inspectors** - In the past the District has employed one inspector for the purposes of investigating and reporting system conditions. The inspector answers directly to the Field Operations Supervisor.

**3.2.3. Laborers** - The District employs part-time, non-licensed laborers to assist in field operations and to perform general maintenance and landscaping duties. The laborers answer directly to the Field Operations Supervisor.

#### **3.3. Office Personnel**

**3.3.1. Office Manager** - The District currently employs an Office Manager who is responsible for execution of all administrative and financial tasks. The Office Manager answers directly to the General Manager.

**3.3.2. Tax Assessor/Collector** - As a taxing entity, the District requires a certified Tax Assessor/Collector. The current Office Manager is certified for these duties and performs them along with the duties of Office Manager.

**3.3.3. Accounts Receivable Clerk** - The District employs one full-time clerk to serve customers at the front desk, answer telephones, perform billing operations, and other duties as assigned. The Accounts Receivable Clerks answer directly to the Office Manager.

**3.3.4. Part-Time Clerk** - The District employs one part-time clerk on an as needed basis to assist during billing and during vacations.

**3.4. Engineering** - Bleyl & Associates, Conroe TX (*Mike Kelley, PE*)

**3.5. Legal** - Smith, Murdaugh, Little and Bonham, Houston, TX (*Lori Aylett, Atty*)

**3.6. Auditor** – Davis, Heinemann & Company, P.C., Huntsville, TX (*Kyle Heinemann*)

**3.7. Financial Advisor** - RBC Dain Rauscher (*Jan Bartholemew*)

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#### **4. Schedule of Testing, Inspections and Permits**

The District's administration must regularly submit scheduled reports to various regulating agencies. Field Operations must submit reports, perform inspections, and apply for renewal permits as well. The following is a list of these submissions, other scheduled tasks, and the required dates.

##### **4.1. Field Operations**

###### **4.1.1. Water -**

Weekly:

Bi-Weekly:     Raw water  
                  Sampling sites  
                  Distribution samples

Monthly:       Raw water

Annually:       In-house inspection of ground storage tanks (Feb)  
                  Entry point levels (Mar)  
                  TCEQ onsite inspection (Apr)  
                  Backflow device inspection & calibration (Jun)  
                  Master meter certification (Jul)  
                  Asbestos testing

Three Years:   Lead and copper (Aug 2016)  
                  Disinfectant by-products (2016)  
                  Contractor inspection of hydro-pneumatic tanks (Jun 2018)  
                  TCEQ site inspection

###### **4.1.2. Wastewater -**

Weekly:         BOD  
                  pH  
                  Dissolved oxygen  
                  Chlorine contact chamber sludge level  
                  Settable solids  
                  Sludge blanket

Bi-Weekly:     MLSS  
                  MLVSS  
                  TSS  
                  VSS

Monthly:       Microscopic exam  
                  Bacteriological

Annually:       Tier Two Report (Mar)  
                  Sludge summary (Aug)  
                  Daily discharge monitoring report (Dec)

Three Years:   WWTP permit application (Feb 2017)  
                  TCEQ site inspection (Jun 2018)

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**4.2. Administrative Operations**

**4.2.1. Water & Wastewater -**

Weekly:

Monthly: Tap Count (1<sup>st</sup>)  
Late Notice Certified Letters (6<sup>th</sup>)  
Lock-Off Notices (15<sup>th</sup>)  
Lock-Offs (16<sup>th</sup>)  
Water Usage Report (16<sup>th</sup>)  
Late Notices (26<sup>th</sup>)  
Meter Readings (27<sup>th</sup>)  
Billing (30<sup>th</sup>)

Quarterly: Lower Trinity Groundwater Conservation District pumpage  
report and payment (Jan-Apr-Jun-Oct)  
Newsletter (Mar-Jun-Sep-Dec)

Annually: TCEQ Regulatory Assessment (Jan)  
TWDB Water Loss Audit (Mar)  
Water Rate Calculation (Jun)  
Consumer Confidence Report (Jun)  
Tap Count & Security Deposit Report (Jul)  
SSO Initiative report (Jul)

Five Years: Drought Contingency Plan Update (May 2019)

**4.2.2. Other Administrative Tasks -**

Weekly: Accounts Payable  
Timecards (signed)  
Payroll (Every other Monday)

Monthly: Bank Statement Reconciliation (6<sup>th</sup>)  
Tax Assessor/Collector Report (11<sup>th</sup>)  
Directors' information packets (3<sup>rd</sup> Tue)  
Board of Directors Meeting (3<sup>rd</sup> Thu)

Quarterly: Federal Tax & Texas Workforce returns (J-A-J-O)  
San Jacinto CAD installment (J-A-J-O)

Annually: IRS 1099, W-2, W-3 and W-4 Forms (Jan)  
Texas Water Utilities Assoc. registration (Jan)  
Budget preparation (Jun)  
Trial Fund Balances (Jun)  
Delinquent Tax Rolls (Jul)  
Debt Fund & General Fund close-out (Jul)  
Tax Rate Calculation (Aug)  
Audit (Aug)  
Five Year Plan (Aug)  
Investment Policy Resolution (Sep)  
Directors bond renewal (Sep)

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Dental and life insurance renewal (Sep)  
Property and medical insurance renewal (Oct)  
Tax Statements (Nov)

Two Years: Director Election (May 2018)

Four Years: Notary Public Renewal (Sep 2019)



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**Adopted \_\_\_\_\_, 2016**

**5. Usage Rates and Available Capacities**

**5.1. Current Water Usage**

The District provides service to two types of consumers – “permanent” residents and “part-time” residents. The part-time residents are classified as customers with seasonal or intermittent use of services.

**5.1.1.** The number of water service customers and average volumes are as follows:

	<u>Connections</u>	<u>Avg Water Usage (gallons/month/meter)</u>
Permanent Residents -	<b>295</b>	<b>2,200</b>
Commercial -	<b>10</b>	<b>2,000</b>
Part-time Residents -	<b>387</b>	<b>1,230</b>
Total (as of June 2016) -	<b>692</b>	

**5.1.2.** Metered sales, metered but unsold, and unmetered loss for water as recorded for FY15-16 is as follows:

	<b>Gal/Year</b>	<b>Gal/Month (average)</b>	<b>Gal/Day (average)</b>
Produced	56,071,200	4,672,600	153,620
Metered sales	46,149,300	3,845,775	126,436
Metered/unsold	4,873,900	406,158	13,353
Unmetered loss	5,048,000	420,667	13,830

**5.1.3.** In FY15-16, unmetered loss was 9.00% of the total water produced.

**5.1.4.** The highest total metered sales in a single month were 7,645,700 gallons (Aug, 2015).

**5.1.5.** Maximum throughput capacities are calculated using well meter certifications dated April, 2016.

	<b>Gal/Year</b>	<b>Gal/Month</b>	<b>Gal/Day</b>
Plant No 1 (low pressure zone)	241,776,000	20,148,000	662,400
Plant No 2 (high pressure zone)	109,324,800	9,110,400	299,520
<b>Total</b>	<b>351,100,800</b>	<b>29,258,400</b>	<b>961,920</b>

**5.1.6.** TCEQ requirements are 0.6 GPM of well production per service connection. The pressure zone limits for the District’s wells are:

<b>Water Plant</b>	<b>Connection Capacity</b>	<b>Current Connections</b>	<b>Current % of Limit</b>
Plant 1 (low)	766	368	48.0%
Plant 2 (high)	833	314	37.7%
<b>Total</b>	<b>1,599</b>	<b>682</b>	<b>42.7%</b>

# Cape Royale Utility District Five-Year Plan 2016

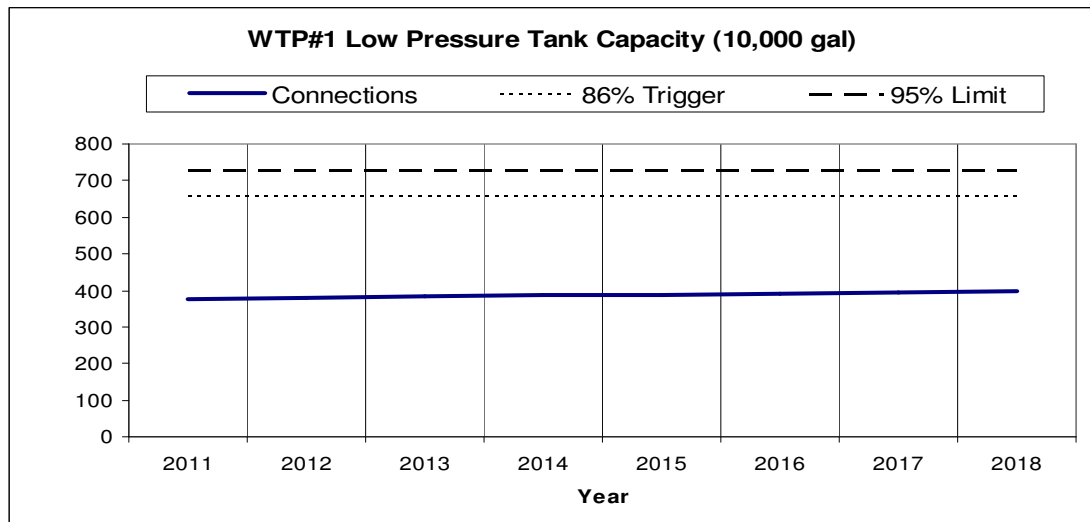
## Adopted \_\_\_\_\_, 2016

5.1.7. TCEQ requirements are 15.14 gallons (Alternate Capacity Rating dated 31 Aug 2011) of pressure tank capacity per service connection. The pressure zone limits for the District’s hydro-pneumatic tanks are:

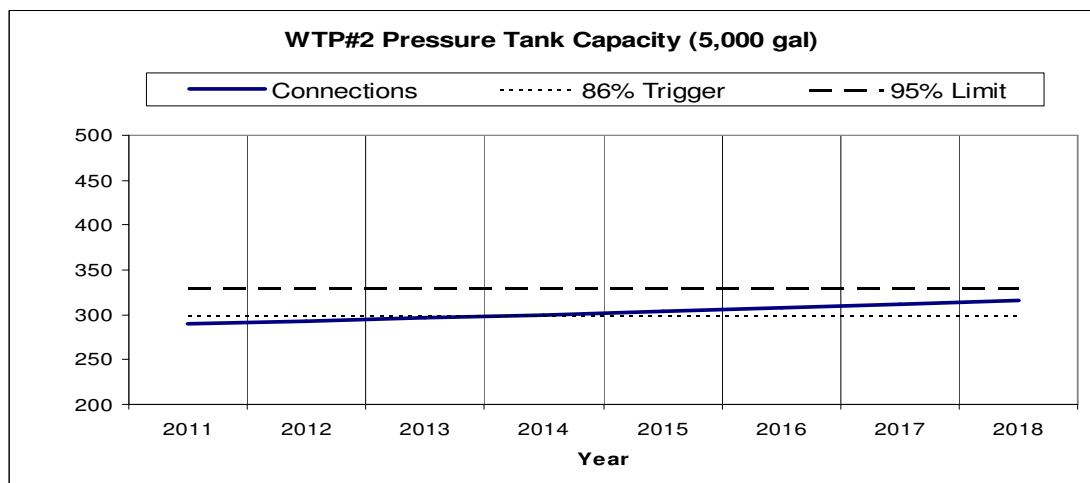
Water Plant	Connection Capacity	Current Connections	Current % of Limit
Plant 1 (low)	660	368	55.8%
Plant 2 (high)	330	314	95.2%
<b>Total</b>	<b>990</b>	<b>682</b>	<b>68.9%</b>

When connections reached 86% of the intended pressure tank capacity, TCEQ notified the District of required action necessary to initiate the engineering and financing of increased pressure tank capacity. The installation of more or larger pressure tanks must begin when 95% of the maximum connections are reached. Plant 2 is at 95.2% and must be expanded this year.

Based on current capacity and anticipated connections, the low pressure zone (Water Plant 1) will not require expansion until after 2030.



The 5,000 gallon pressure tank at Water Plant 2 is reaching maximum capacity. Replacing it with a 10,000 gallon tank will extend required capacity beyond 2040.



**Cape Royale Utility District Five-Year Plan 2016**  
**Adopted \_\_\_\_\_, 2016**

**5.1.8.** TCEQ requirements are 200 gallons of ground storage tank capacity per service connection. The pressure zone limits for the District’s ground storage tanks are:

	Connection Capacity	Current Connections	Current % of Limit
Plant 1 (low)	1,475	368	24.9%
Plant 2 (high)	600	314	52.3%
<b>Total</b>	<b>2,075</b>	<b>682</b>	<b>32.9%</b>

The addition of the 212,000 gallon storage tank has increased the total allowable connections beyond the number of Cape Royale’s buildable lots.

**5.2. Current Wastewater Treatment**

Wastewater is not metered at the customer level. The values listed here are achieved by using the total gallons of wastewater per month (metered at the treatment plant) divided by the weighted average water usage per month (see Section 5.1.2.).

* Connections	Permanent	Part-time	Monthly Avg. Wastewater	Estimated Gal/Month/Household	
				Permanent	Part-time
640	277	363	2,087,100	2,850	1,300

\*“Reserves” residents do not receive wastewater service, reducing this total vs the total water customers.

**5.2.1.** Combined plant maximum capacity rating = 150,000 gallons per day for a 30 consecutive day average

**5.2.2.** Two hour peak flow rating = 312 gallons per minute

**5.2.3.** Treatment plant flows are affected by inflow/infiltration of rain water and ground water through the collection system.

**5.2.4.** The TCEQ permit requires engineering and financial planning for plant expansion whenever the average daily flow exceeds 75% of the rated capacity (0.75 X 150,000 GPD = 112,500 GPD) over three consecutive months. Application to begin construction must be submitted to TCEQ whenever the average daily flow reaches 90% of permitted capacity. The current average daily flow is 61.0% of permitted capacity.

**5.3. Current Household Garbage Disposal**

The District currently provides 16 dumpsters (8 cubic yards each) at the garbage disposal site. Each dumpster is emptied twice a week. Based on the actual number of dumpsters on the ground, each dumpster serves 35 permanent residences and approximately 47 part-time residences.

**5.3.1.** The waste stream (type of waste) and volume fluctuates erratically during weekends and holidays.

**5.3.2.** Illegal dumping of oversized items, construction materials, etc. causes a disproportionate decrease in the total number of households that the site will accommodate.

**5.3.3.** Roll-off containers (30 yd capacity) are provided on holidays.

**5.3.4.** The current contract with the waste management company specifies the number of dumpsters to be serviced as well as the number of times per week that the dumpsters are emptied. Any variation in the terms will cause a price adjustment in the contract.

**Cape Royale Utility District Five-Year Plan 2016**  
**Adopted \_\_\_\_\_, 2016**

- 5.3.5. The current size and configuration of the site limit the number of dumpsters to 16 or less.
- 5.3.6. An alternative to multiple dumpsters is a compactor placed onsite. The reduction in volume would be reflected in the contract price, and large objects (furniture, etc.) could not be placed in the compactor.

**5.4. Current Yard Waste and Large Item Disposal**

- 5.4.1. All bagged debris in this category is placed in roll-off containers (40 cu yd) which are emptied at a rate of 1.5 containers per month. Limbs and brush are chipped at the site, and the chipped material is made available to residents for mulching purposes.
- 5.4.2. The rate of use does not seem to be affected by seasonal population.
- 5.4.3. Construction waste is NOT accepted by the District.
- 5.4.4. Large items are hauled by a separate contractor based on a price per item.
- 5.4.5. The site has accumulated approximately 20 to 30 tons of broken concrete.
- 5.4.6. Total land area appears to be adequate for maximum population.

**5.5. Storm Water Drainage**

Storm water drainage requires capacity calculations based on individual instances and is not covered by this section. The one item of note is that the corrugated metal culverts used to duct storm water have been in the ground for approximately 30 years and are showing severe deterioration in some instances (rust, root perforation, joint separation, etc.). It will be necessary to visually inspect the entire length of each culvert prior to developing a replacement schedule.

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**6. Estimated Growth**

**6.1. New Service Connections**

NOTE: There is a difference between the number of meters reported and the number of connections due to 4 meters serving multi-family units.

Based on historical data of construction activity, and discounting future activity for lack of available waterfront property within the Cape, this estimate will be based on a rate of 8 new homes per year. This basis yields the following number of service connections for each of the next 5 years. (Assumed constant ratio between permanent residents and intermittent residents.)

Year	Meter Count				Increase
	New	Perm.	Interm.	Total	
FY13-14 (A)	4	293	385	678	1.50%
FY14-15 (A)	2	294	386	680	0.29%
FY15-16 (A)	2	295	387	682	0.29%
FY16-17	8	298	392	690	1.17%
FY17-18	8	302	396	698	1.16%
FY18-19	8	306	400	706	1.15%
FY19-20	8	310	404	714	1.13%
FY20-21	8	314	408	722	1.12%
FY21-22	8	318	412	730	1.11%
FY22-23	8	322	416	738	1.10%
FY23-24	8	326	420	746	1.08%

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*The highlighted percentage will be used as the growth factor for the remaining items.*

**6.2. Estimated Water Usage**

**6.2.1. Total Required Production -**

Year	Increase	Usage (gallons sold)	
		Month	Year
FY13-14 (A)	1.90%	3,853,625	46,243,500
FY14-15 (A)	-17.99%	3,160,408	37,924,900
FY15-16 (A)	21.69%	3,845,775	46,149,300
FY16-17	1.85%	3,916,922	47,003,062
FY17-18	1.80%	3,987,426	47,849,117
FY18-19	1.75%	4,057,206	48,686,477
FY19-20	1.70%	4,126,179	49,514,147
FY20-21	1.65%	4,194,261	50,331,130
FY21-22	1.60%	4,261,369	51,136,428
FY22-23	1.55%	4,259,272	51,111,263
FY23-24	1.50%	4,325,290	51,903,475

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**6.2.2.** The current population of the Cape represents approximately 48% of maximum population density. Should the District need to provide water to 1,400 connections, it would require the following capacities based on TCEQ requirements per connection:

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**Adopted \_\_\_\_\_, 2016**

- 6.2.2.1. Wells – no increase of rated capacity. Increasing the capacity of Well No 2, or drilling a new well is an alternative solution to clearing red water.
  - 6.2.2.2. Ground storage – no increase of rated capacity. An elevated tank with 0.5 million gallon capacity would benefit firefighting capability and reduce booster pump operation.
  - 6.2.2.3. Booster pumps – no increase
  - 6.2.2.4. Pressure tanks – increase by 5,000 gallons (see Sec. 5.1.7.)
  - 6.2.2.5. Distribution piping –AC composite piping should be replaced. Eliminating dead-ends on cul-de-sacs would reduce the amount of flushing required. Increasing the size of mains would have direct benefit to firefighting ratings.
- 6.2.5.** A high percentage of field maintenance hours are spent repairing water leaks in the distribution system. These leaks increase the production demand and provide opportunities to contaminate the water supply.
- 6.2.5.1. A study of District leaks shows that most are cement pipe fractures that occur due to ground shift. Leaks in plastic pipe are usually caused by mechanical separation as a result of ground shift or metal decay on fittings. There are three methods available to rectify these problems:
    - a. uncovering the entire length of pipe and “bedding” the lines with a minimum of 12” of sharp sand all around.
    - b. replacing cement pipe with plastic pipe and sand bedding.
    - c. repairing the leak from the inside using epoxy liners or pipe “bursting”.
  - 6.2.5.2. The first two methods involve trenching to gain access to the pipe. The current average cost of trenching is \$85.00 per foot.
  - 6.2.5.3. Inspection of pipe sections removed during repair are not showing any signs of material erosion or disintegration.

**6.3. Estimated Wastewater Treatment Requirements**

**6.3.1. Treated Amounts -**

Year	Increase	Avg Treatment (gallons)		
		Day	Month*	Year
FY13-14 (A)	11.99%	68,453	2,082,100	24,985,200
FY14-15 (A)	7.98%	74,391	2,262,725	27,152,700
FY15-16 (A)	-8.41%	68,617	2,087,108	25,045,300
FY16-17	1.85%	69,887	2,125,720	25,508,638
FY17-18	1.80%	71,145	2,163,983	25,967,794
FY18-19	1.75%	72,390	2,201,852	26,422,230
FY19-20	1.70%	73,620	2,239,284	26,871,408
FY20-21	1.65%	74,835	2,276,232	27,314,786
FY21-22	1.60%	76,032	2,312,652	27,751,823
FY22-23	1.55%	77,211	2,348,498	28,181,976
FY23-24	1.50%	78,369	2,383,725	28,604,706

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\* 4.5 million gallons max capacity

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**Adopted \_\_\_\_\_, 2016**

**6.3.2.** Should the District need to provide wastewater treatment for 1,300 service connections, it would require treatment of 92,400 gallons per day. The peak demand capacity would vary to the point that an hourly monitoring system would need to be installed. Installation of a holding tank would help regulate peak flows.

**6.4. Estimated Solid Waste Disposal Requirements**

**6.4.1.** The current usage of 16 dumpsters for household garbage should be sufficient until the year 2020. This is based on the current permanent residence count and the growth rate calculated in Sec. 6.1.

**6.4.2.** Maximum population would require the equivalent of 34 dumpsters or doubling the number of pick-up days from 2 to 4.

**6.5. Estimated Staffing Requirements**

The following personnel requirements are projected:

	2011	2012	2013	2014	2015	2016	2017	2018
Field Ops Supervisor	1	1	1	1	1	1	1	1
Class C-C Operators	1	1	2	1	2	2	3	3
Class D-D Operators	1	1	1	1	1	1	0	0
Inspector	1	1	0	0	0	0	1	1
Field Laborers	0	0	0	1	1	1	0	0
Office Staff	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
General Manager	1	1	1	1	1	1	1	1

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**7. Financial Conditions and Projections**

**7.1. Revenues**

On January 15, 1977 the District’s voters confirmed creation of the Taxing District. The District’s voters also authorized a total of \$15,275,000 in unlimited tax and revenue bonds (\$6,900,000 issued in 1996). The remaining \$8,375,000 has been authorized but not issued.

Debt Service Taxes that are collected must be utilized to pay CAD fees, principal, interest, and administrative fees for bonds that have been issued. All bond debt was eliminated in March 2016. Only past due debt service taxes will be collected in the 2016 tax year.

Maintenance & Operating (M&O) revenues are generated through M&O taxes, water sales and fees. The 2015 tax rate for Debt Service was 0.19888 per \$100 value and the M&O tax rate was 0.34788 for a combined rate of 0.54676. The anticipated M&O rate for 2016 is 0.44000 per \$100 which will exceed the 8% rollback option for tax payers, but is 0.10 per \$100 less than the total 2015 tax rate.

**7.1.1. Maintenance & Operation Tax -**

Fiscal Year	Taxable Value	Value Growth	Tax Rate	97% Collected	Back Taxes	Total Revenue
FY13-14 (A)	142,308,423	3.23%	0.31755	435,743	7,524	443,267
FY14-15 (A)	143,838,935	1.06%	0.33148	486,868	27,729	514,597
FY15-16 (A)	156,025,094	7.81%	0.34788	547,147	7,211	554,358
FY16-17	161,485,972	3.50%	0.44000	689,222	7,500	696,722
FY17-18	167,137,981	3.50%	0.44000	713,345	8,000	721,345
FY18-19	172,987,811	3.50%	0.44000	738,312	8,000	746,312
FY19-20	179,042,384	3.50%	0.44000	764,153	8,000	772,153
FY20-21	185,308,867	3.50%	0.44000	790,898	8,000	798,898
FY21-22	191,794,678	3.50%	0.48000	892,996	8,000	900,996
FY22-23	198,507,492	3.50%	0.48000	924,251	8,000	932,251
FY23-24	205,455,254	3.50%	0.48000	956,600	8,000	964,600

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**7.1.2. Water / Sewer Sales and Fees -**

Year	Meter Count	Growth	Rate Increase	Water Sales	Sewer Fees	Garbage Fees	Other Charges	Total
FY13-14 (A)	688	1.50%	6.0%	271,037	137,851	96,891	24,661	530,440
FY14-15 (A)	690	-3.65%	0.0%	250,706	140,620	98,894	20,844	511,064
FY15-16 (A)	692	0.40%	9.6%	259,666	152,142	116,681	31,421	559,910
FY16-17	700	1.17%	2.5%	269,204	153,927	118,050	26,000	567,180
FY17-18	708	1.16%	2.5%	279,055	155,711	119,418	27,000	581,185
FY18-19	716	1.15%	2.5%	289,230	157,496	120,787	28,000	595,513
FY19-20	724	1.13%	2.5%	299,738	159,281	122,156	29,000	610,174
FY20-21	732	1.12%	2.5%	310,590	161,065	123,524	30,000	625,179
FY21-22	740	1.11%	2.5%	321,796	162,850	124,893	30,000	639,539
FY22-23	748	1.10%	2.5%	333,367	164,635	126,262	30,000	654,264
FY23-24	756	1.08%	2.5%	345,315	166,419	127,631	30,000	669,365

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**Adopted \_\_\_\_\_, 2016**

**7.1.3. Total Revenues -**

Year	M&O Tax	Sales & Fees	Interest	Collection Fees & Bad Debt	Total
FY13-14 (A)	443,267	530,440	687	0	974,394
FY14-15 (A)	514,597	511,064	511	-7,457	1,018,715
FY15-16 (A)	554,358	559,910	550	0	1,114,818
FY16-17	696,722	567,180	600		1,264,502
FY17-18	721,345	581,185	650		1,303,179
FY18-19	746,312	595,513	700		1,342,525
FY19-20	772,153	610,174	750		1,383,077
FY20-21	798,898	625,179	800		1,424,878
FY21-22	900,996	639,539	800		1,541,335
FY22-23	932,251	654,264	800		1,587,314
FY23-24	964,600	669,365	800		1,634,765

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**Adopted \_\_\_\_\_, 2016**

**7.2. Projected M&O Expenses**

**7.2.1. Projected M&O Daily Expenses vs Revenue Source -**

Year	Expenses			Revenue Source		
	Admin	Field	Total	Sales & Fees	M&O Tax*	
FY13-14 (A)	370,540	362,520	704,783	530,440	174,343	
FY14-15 (A)	394,180	451,120	845,300	525,000	320,300	
FY15-16 (A)	385,678	443,798	829,476	559,910	269,566	
FY16-17	398,670	529,530	928,200	567,180	361,020	5 Yr Plan
FY17-18	403,346	535,741	939,088	581,185	357,903	
FY18-19	408,023	541,953	949,976	595,513	354,463	
FY19-20	412,699	548,164	960,864	610,174	350,690	
FY20-21	417,376	554,376	971,752	625,179	346,573	
FY21-22	422,052	560,587	982,640	639,539	343,101	
FY22-23	426,729	566,799	993,528	654,264	339,264	
FY23-24	431,405	573,010	1,004,416	669,365	335,051	

*\* Portion of M&O tax applied to meet daily expenses*

This projection indicates that adjustments to service rates are *NOT* having the desired effect of Water Sales and Fees progressing toward covering the cost of daily operations.

**7.3. Financial Summary**

The District’s financial objectives should follow a private business financial plan as closely as possible without the need to generate a profit. The loss factor is a vital consideration for the District, and a “break even” profit-loss statement is the goal. Even though profit is not an issue, it is still mandatory to have enough cash reserves or available financing to replace or expand existing systems.

A detailed history of receipts and expenditures is imperative for accountability in past actions and an indispensable tool for projection into the future. A solid business plan has investigated every direct and indirect cost involved with producing a product or providing a service. Its market is clearly defined and targeted. And, to the extent that research will allow, it has forecast any trends that will have an impact on conducting business in the future. Based on all of the indicators presented so far in this plan, the following items are critical in determining the direction of the District’s financial decisions:

**7.3.1. General Fund Reserve** - All M&O taxes collected are placed in the general fund, but can be used for daily expenses, system improvements, or bond payment. By the fiscal year FY16-17, this rate will provide sufficient flexibility of funding most capital improvements without the issuance of bonds.

**7.3.2. Recurring Upgrade Funds** – Maintenance efforts that involve the ongoing repair or replacement of existing assets should be placed on a recurring, proactive schedule. The District has allocated funds for reactive repair in previous budgets by including these costs with Field Operations. If these expenditures are not tracked specifically, the impact on life expectancy or depreciation of assets will be miscalculated. If a proactive approach is used, then the amounts required for reactive, emergency repair will decrease over time. The

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Recurring Upgrade Funds (RUF) should always include enough monies to cover unforeseen events, but the goal of this approach is to repair or replace before emergencies occur. The RUF budget adjustment will occur during FY17-18, after bond debt has been eliminated and M&O rates have avoided a rollback election. The RUF for FY16-17 is \$20,000, but will increase to \$108,000 the following year.

**7.3.3. Planned Upgrade Funds** – Projects that involve the replacement of existing assets or construction of new assets on a non-recurring basis should be classified as Planned Upgrades, funded by Planned Upgrade Funds (PUF). The annual budget process must coordinate closely with this Five-Year Plan to determine that adequate reserves are maintained to cover anticipated PUF projects that are scheduled beyond the scope of a single fiscal year or even this Five Year Plan. Adjustments in all M&O revenue streams should be considered in supplying adequate reserves. The PUF amount needed for FY16-17 (see Sec. 10 Cash Flow Projection) is \$336,000.

**7.3.4. Asset Management Schedule** - It is necessary to maintain an accounting mechanism which calculates depreciation of District assets for determining the anticipated point in time when assets need to be replaced or improved.

An Asset Management Schedule is included in this document as Attachment ‘A’. This schedule lists all system components by location and records the following information:

- Description
- Year of purchase
- Original cost
- Life Expectancy
- Replacement cost
- Accumulated repair costs to date
- Anticipated replacement year
- Ranking by condition
- Sinking funds necessary per year to cover replacement

The “ranking” process takes several conditions into account: Cosmetics, operation, life expectancy, accumulated repair costs, and health/safety issues. The higher the ranking of an asset, the sooner it will need replacement. This schedule also uses Straight Line Depreciation (SLD) based on the current replacement value of an asset divided by the total number of years remaining that the asset is expected to function.

*Example* – A hydrant that would cost \$2,500 to replace has an expected life of 50 years (based on industry accepted, historical data). A new hydrant’s SLD is \$50 per year, and a hydrant that has already been in service for 25 years would have a SLD of \$100 per year if a sinking fund was not established previously.

**7.3.5. Purchase Point** – The Asset Management Schedule will facilitate the determination of a Purchase Point for all assets. The Purchase Point is used to decide whether to spend funds to repair a malfunctioning or inoperable asset or to spend funds to replace it. The purchase point formula is derived from the Asset Management Schedule as follows:

**Replacement Cost – (SLD x Years in Service) – Accumulated Repair Cost**

As a rule of thumb, a purchase point calculation that results in an amount that is greater than current repair costs determines that repair should be the choice of action. If the result is less than repair cost, then replacement is generally chosen.

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*Example – The hydrant explained in 7.3.4. has been installed for 12 years and needs repair. A repair bid of \$750 has been received and \$500 was spent on previous repairs.*

$$2500 - (50 \times 12) - 500 = 1400$$

*If the low bid for repair was equal to or more than \$1,400, then replacement would be the option. Since the repair will cost \$750, it is the chosen action.*

In the case where an asset will be replaced with an item that costs more than the replacement value of the original item, the value of the new item would be used in this formula.

The purchase point calculation should also be used to determine the lead time and amount necessary for developing a pro-active plan and the associated budget. By anticipating the point at which repair costs will exceed the investment, assets will be placed in the RUF or PUF budget. Once the general fund reserve is well established, premature failure and replacement of an asset should not cause unnecessary hardship. Some assets may exceed the projected life expectancy and form a “buffer” that is able to absorb unexpected failures.

**7.3.6. Alternate Financing** - Until this buffer can be established, the flexibility of the General Fund reserve balance is very limited. The alternate means of financing Planned Upgrades are (1) bonds that have been approved but not issued or (2) conventional financing through lending institutions or nonprofit lenders such as the Rural Community Assistance Partnership.

**7.3.7. Summary** – The Asset Management Schedule depicts a total replacement value of approximately \$43 million in District assets. The life expectancy of these assets varies, but, for the purposes of this Plan, is determined to be around 51% depreciated as of the end of FY15-16. That equates to \$21.9 million depreciation and an SLD amount of \$2,375,000 per year. The fact that the majority of the investment is pipe in the ground with a life expectancy of 100 years keeps the SLD relatively low. But, in order to have a proactive replacement schedule, it was necessary to have a General Fund reserve balance INCREASE each year beginning in FY10-11. The trend in previous years had been a reduction in this reserve fund, but adherence to the Five Year Plan has caused a turnaround in this trend.

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**8. Statement of Goals and Priorities**

As with any organization, it is imperative that goals be established, stated in a clear fashion, and prioritized according to needs and resources. This Section lists administrative and recurring upgrade goals. Planned upgrades are covered in Section 9.

**8.1. Administrative Goals**

**8.1.1.** Develop *QualServe Benchmarking Performance Indicators* as a means to measure the performance of the District in a standardized, industry recommended fashion.

	<u>Year</u>	<u>Cost</u>	<u>Comp</u>
8.1.1.1. Organizational Best Practices Index	2006	\$0	90%
8.1.1.2. Training Hours per Employee	2007	\$0	100%
8.1.1.3. Customer Accounts, Water Delivered, Wastewater Processed per Employee	2006	\$0	80%
8.1.1.4. Customer Service & Technical Quality Complaints	2007	\$0	80%
8.1.1.5. Disruptions of Service	2006	\$0	80%
8.1.1.6. Residential Cost of Water / Wastewater Service	2006	\$0	100%
8.1.1.7. Customer Service Cost per Account	2007	\$0	80%
8.1.1.8. Billing Accuracy	2006	\$0	98%
8.1.1.9. Debt Ratio	2006	\$0	100%
8.1.1.10. System Renewal / Replacement Rate	2007	\$0	80%
8.1.1.11. Returns on Assets	2007	\$0	90%
8.1.1.12. Potable Water Compliance Rate	2006	\$0	100%
8.1.1.13. Distribution System Water Loss	2007	\$0	75%
8.1.1.14. Water Distribution System Integrity	2008	\$0	30%
8.1.1.15. Operation & Maintenance Cost Ratios	2007	\$0	90%
8.1.1.16. Planned Maintenance Ratio	2007	\$0	100%
8.1.1.17. Wastewater Overflow Rate	2006	\$0	100%
8.1.1.18. Collection System Integrity	2007	\$0	50%
8.1.1.19. Wastewater Treatment Effectiveness Rate	2008	\$0	70%

**8.1.2.** Strengthen accounting functions in the area of asset tracking, depreciation and replacement costs. The specific model for this objective is the GASB Statement 34 and 45.

8.1.2.1. Replacement costs including time and materials	2008	\$0	95%
8.1.2.2. Component life-cycle	2007	\$0	99%
8.1.2.3. Expended maintenance costs versus replacement	2008	\$0	80%
8.1.2.4. Rebates, incentives, and seasonal pricing	2008	\$0	100%
8.1.2.5. Extended warranties	2007	\$0	100%
8.1.2.6. Operating costs	2006	\$0	90%
8.1.2.7. Standard reports for items in 7.1.1.	2007	\$0	90%
8.1.2.8. Work order reference	2007	\$350	95%

**8.1.3.** Establish a digital archive system for all documents. 2008 \$2,000 100%

**8.1.4.** Staff with a field inspector (license not required). Cost to be reflected in field operations budget. 2011 \$22,000

**8.1.5.** Upgrade billing system software and printing (**complete**) FY13-14 \$4,000 100%  
Annually \$500

**8.1.6.** Eliminate bond indebtedness (**complete**) FY07-16 \$0 100%

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- 8.1.7.** Complete Asset Management Schedule and establish Purchase Point for all District assets FY07-15      \$0    100%
- 8.1.8.** Extend the usefulness of the work order system to include tracking of time and material costs associated with the performance of all field operations. FY08-15    \$2,000    100%

**8.2. Maintenance Goals (Recurring) – Water Production**

The water production and treatment facilities investment for the District equals \$4,113,900 (current replacement value) with a GASB nominal life expectancy of 50 years. Straight-line depreciation (SLD) for this asset equals \$171,900 per year with approximately 21 years of the life expectancy remaining. In FY09-10 an additional \$180,000 was spent to build out these facilities to meet TCEQ requirements. SLD of the additions equals \$6,000 per year. The current concerns in this area are (1) pressure tank capacity; (2) energy demand levels; (3) “red” water.

- 8.2.1.** Develop a proactive maintenance program for water production including a RUF budget item to provide for the cost of testing and repairs dedicated to wells, disinfection systems, storage, and pressure tanks. Annually      \$20,000

**8.3. Maintenance Goals (Recurring) – Water Distribution**

The water distribution infrastructure investment for the District equals \$9,535,000 (current replacement value) with a GASB life expectancy of 50 years. The life expectancy numbers are skewed somewhat toward production rather than distribution. Historical data gives pipe in the ground a life expectancy of over 100 years. Straight-line depreciation (SLD) for these assets equals \$448,000 per year with no requirement to build out these facilities to meet maximum population demand. Two problems do exist with this asset: (1) leaks in cement based pipe and (2) dead ends and lack of valves that would enhance directional flow and help reduce flushing times. Goals for this area includes:

- 8.3.1.** A proactive maintenance program for water distribution infrastructure including a RUF budget item to provide for the cost of testing and repair of hydrants and PRV’s. Annually      \$26,000
- 8.3.2.** Replace 1,000 feet of AC pipe with C900 plastic annually. The plastic pipe will be sand bedded to help prevent leaks due to ground shift. Annually      \$70,000
- 8.3.3.** Elimination of dead ends by extending supply piping to form a loop off of the feeder main. Valves should be placed to minimize service interruption during repairs and to allow the reversal of flow through the loop. Annually      \$70,000

**8.4. Maintenance Goals (Recurring) – Wastewater Treatment**

The wastewater treatment investment for the District equals \$1,955,000 (current replacement value) with a GASB life expectancy of 50 years. The SLD for this asset equals \$115,650 per year with approximately 10 years of the life remaining. No additional investment would be needed to build out these facilities to meet maximum requirements. The major concern regarding this area is flow volumes experienced during heavy rain and/or high lake level.

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- 8.4.1.** Develop a proactive maintenance program for wastewater treatment facilities including a RUF budget item to provide for the cost of testing and repairs of tanks, filters, blowers, pumps, valves, etc. Annually      \$28,000

**8.5. Maintenance Goals (Recurring) – Wastewater Collection**

The wastewater collection infrastructure investment for the District equals \$25,558,000 (current replacement value) with a GASB life expectancy of 100 years. The SLD for this asset equals \$972,600 per year with approximately 60 years of the life expectancy remaining. No further upgrade is required to meet maximum population requirements. Inflow and infiltration are the major concerns in this category, with the result of maintenance efforts impacting the total gallons per day treated at the WWTP and delaying the need for PUF investment in wastewater treatment expansion.

- 8.5.1.** Develop a proactive maintenance program for wastewater collection infrastructure including a RUF budget item to provide for the cost of testing and repairs. Items include lift stations, force mains, manholes and piping. Annually      \$60,000

**8.6. Maintenance Goals (Recurring) – Solid Waste Disposal**

The District's investment in assets directly associated with solid waste disposal is minimal. A previous study done to estimate the costs of consolidating the household garbage and brush sites concluded that an investment of \$41,650 would be required. The combination of the two sites would offer the advantage of monitoring misuse, and land space is available that would accommodate the consolidation. It is suggested that the District attempt to monitor the garbage site [see Sec. 5.3.] before any other additions or modifications are attempted.

**8.7. Maintenance Goals (Recurring) – Storm Water Drainage**

The storm water collection infrastructure investment for the District equals approximately \$1,200,000 (current replacement value) with a GASB life expectancy of 20 years. The SLD for this asset equals \$44,400 per year. Maximum population density has no bearing on future construction. The equivalent of five cross-street culverts are planned for replacement each year.

- 8.7.1.** Develop a proactive maintenance program for storm water drainage facilities including a RUF budget item to provide for the cost of culvert replacement and ditch grading.

Annually      \$25,000

- 8.7.2.** Establish a video inspection routine of storm water drainage structures [see Sec. 9.4.1.]

Annually      \$0

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**9. Planned Upgrade Investments**

It should be noted that some projects extend over the span of more than one fiscal year. The Cash Flow Projection (Sec. 10) should reflect the anticipated total expenditures for a particular investment while listing each fiscal year's budgeted amount.

**9.1. Water Production**

<b>9.1.1.</b> Rehabilitation of Well No. 1 <b>(complete)</b>	FY14-15	\$25,000
<b>9.1.2.</b> Additional storage tank at Plant No 1 <b>(complete)</b>	FY09-11	\$160,000
<b>9.1.3.</b> Replacing the 5,000 gallon pressure tank at WTP 2 with a 10,000 gallon tank. [Sec. 5.1.8.]	FY16-17	\$85,000
<b>9.1.4.</b> Engineering review and modifications of the water plant controls and piping to allow utilization of both plants in a complete "loop" configuration. <b>(complete)</b>	FY11-12	\$40,000
<b>9.1.5.</b> Replacing Well #1 with a deeper well that produces less red water, and increases production by 500 GPM.	FY21-22	\$1,200,000
<b>9.1.6.</b> Install 8 ft fence at Water Plant No 2	FY16-17	\$10,000

**9.2. Water Distribution**

<b>9.2.1.</b> Investigate alternative disinfection methods rather than chlorine injection. <b>(complete)</b>	FY11-12	\$0
<b>9.2.2.</b> System Control and Data Acquisition (SCADA) in combination with distribution branch metering.	FY17-18	\$30,000

**9.3. Wastewater Treatment**

<b>9.3.1.</b> Erection of a new 8 ft. fence at the plant. <b>(complete)</b>	FY15-16	\$20,000
<b>9.3.2.</b> Tank coating and repainting <b>(complete)</b>	FY14-15	\$190,000
<b>9.3.3.</b> Refurbish Kings Ridge Lift Station <b>(complete)</b>	FY15-16	\$190,000
<b>9.3.4.</b> Installation of a 50,000+ gallon holding tank	FY19-20	\$200,000

**9.4. Wastewater Collection**

<b>9.4.1.</b> Contract for slip-lining of collection piping	FY16-20	\$480,000
<b>9.4.2.</b> Inspection video system <b>(complete)</b>	FY09-10	\$49,000
<b>9.4.3.</b> Install quick-connects at all lift stations <b>(complete)</b>	FY10-11	\$25,000

**9.5. Storm Water Drainage**

**9.5.1.** No planned upgrade at this time

**9.6. Garbage and Trash Disposal**

<b>9.6.1.</b> Exploration of recycling and use of compactor	FY12-17	\$0
<b>9.6.2.</b> Expansion of paved area to accommodate more dumpsters <b>(complete)</b>	FY15-16	\$15,000

**9.7. Equipment, Buildings and Miscellaneous**

<b>9.7.1.</b> Installation of generator at Admin. Building <b>(complete)</b>	FY12-13	\$10,000
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<b>9.7.2.</b> Purchase new pick-up truck	FY20-21	\$30,000
<b>9.7.3.</b> Additional storage barn for mobile equipment	FY20-21	\$40,000
<b>9.7.4.</b> Purchase of new back hoe	FY17-18	\$50,000
<b>9.7.5.</b> Office building renovation to provide direct access to the conference room and provide more efficient work flow	FY16-17	\$45,000

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**Cash Flow Projection**

<b>M&amp;O Reserves</b>	<b>FY16-17</b>	<b>FY17-18</b>	<b>FY18-19</b>	<b>FY19-20</b>	<b>FY20-21</b>	<b>Comments</b>
Beginning GF Balance	400,000	390,302	336,394	425,942	650,155	Sec. 7.1.2.
Interest	600	650	700	750	800	
<b>M&amp;O Revenues</b>						
M&O Taxes	696,722	721,345	746,312	772,153	798,898	Sec. 7.1.2.
Water Sales & Fees	567,180	581,185	595,513	610,174	625,179	Sec. 7.1.3.
<b>Total Funds Available</b>	<b>1,664,502</b>	<b>1,693,482</b>	<b>1,678,918</b>	<b>1,809,019</b>	<b>2,075,033</b>	Sec. 7.1.4.
<b>M&amp;O Expenses</b>						
Daily Operating Expense	928,200	939,088	949,976	960,864	971,752	Sec. 7.2.
<b>Net Funds Available</b>	<b>736,302</b>	<b>754,394</b>	<b>728,942</b>	<b>848,155</b>	<b>1,103,281</b>	
<b>M&amp;O Recurring Upgrades</b>						
						<b>Acct No</b>
8.2. Water production	0	10,000	10,000	10,000	10,000	815
8.3. Water distribution	0	10,000	10,000	10,000	10,000	815
8.4. WW treatment	0	28,000	28,000	28,000	28,000	817
8.5. WW collection	0	30,000	30,000	30,000	30,000	816; 819
8.7. Storm water drainage	20,000	20,000	20,000	20,000	20,000	446
<b>Subtotal</b>	<b>20,000</b>	<b>98,000</b>	<b>98,000</b>	<b>98,000</b>	<b>98,000</b>	
<b>Planned Upgrades</b>						
9.1.3. Pressure tank installation	81,000	0	0	0	0	
9.1.5. New well	0	0	0	0	0	
9.2.2. Water Controls/SCADA	40,000	0	0	0	0	
9.3.3. Lift Station Rehab	0	100,000	0	100,000	0	
9.3.4. Holding tank at WWTP	0	0	0	0	0	
9.4.1. Slip lining wastewater collection lines	160,000	160,000	160,000	0	0	
9.7.2. Truck purchase	0	0	0	0	30,000	802
9.7.3. Mobile equipment storage barn	0	0	45,000	0	0	
9.7.4. Backhoe purchase	0	50,000	0	0	0	
9.7.5. Admin bldg renovation	45,000	10,000	0	0	0	
<b>Subtotal</b>	<b>326,000</b>	<b>320,000</b>	<b>205,000</b>	<b>100,000</b>	<b>30,000</b>	
<b>Recurring and Planned Upgrades Total</b>	<b>346,000</b>	<b>418,000</b>	<b>303,000</b>	<b>198,000</b>	<b>128,000</b>	
<b>Ending GF Balance</b>	<b>390,302</b>	<b>336,394</b>	<b>425,942</b>	<b>650,155</b>	<b>975,281</b>	