AGENDA
CITY COUNCIL WORK SESSION
August 03, 2020
6:00 PM

City Council Chambers – 1100 37th Street

VIRTUAL MEETING INFORMATION

Please click on this URL to join virtually: https://us02web.zoom.us/j/89675030589

Or join by phone: 1-669-900-9128
Webinar ID: 896 7503 0589

1. **COVID-19 Response Update** (10 minutes)
   James L. Becklenberg, City Manager
2. **Major Revenues Update** (10 minutes)
   James L. Becklenberg, City Manager
   Jacque Troudt, CPA, Finance Director
3. **Wastewater Treatment Plant Capacity Study: Population and Flow Projections** (20 minutes)
   James L. Becklenberg, City Manager
   Randy Ready, Asst. City Manager
   Robby Porsch, Wastewater Superintendent
4. **2020 Work Plan Update** (15 minutes)
   James L. Becklenberg, City Manager
5. **Council Discussion** (5 minutes)

CITY OF EVANS – MISSION STATEMENT
"To deliver sustainable, citizen-driven services for the health, safety, and welfare of the community

---

CITY COUNCIL WORK SESSION REPORT

DATE: **August 3, 2020**

AGENDA ITEM: **Work Session Item #1**

SUBJECT: **COVID-19 Response Update**

NAME & TITLE: James L. Becklenberg, City Manager

ISSUE DESCRIPTION:

The City's response to the COVID-19 virus disaster continues, with continuous Emergency Operations Center (EOC) operations to monitor evolving conditions, coordinate with the Weld County Department of Public Health and Environment, and plan the City's operational response. The structure of the EOC, along with staffing roles, is attached to this report. Response strategies are consistent with the City's Emergency Operations Plan (EOP), which is intended to serve as a high-level guide for all emergencies.

In addition to the broader EOP, staff has developed specific responses to the pandemic conditions presented by COVID-19, which are shown in the attached "Pandemic Response Plan." At the March 17, 2020 staff described the "Operational Response Progression" and noted that at that time, the City was in Phase 3 response. At this time, the City remains in Phase 3, as most City services remain operational, due to capabilities for remote work and social distancing strategies. The remainder of this report provides an update since the July 21st work session on the most significant of the City's response strategies and impacts.

At the work session, the City Manager will provide current updates on public health statistics, the Greeley Area Recovery Fund business response, "Safer and Home" compliance, and City Facility reopening.

FINANCIAL SUMMARY:

None

REQUESTING FROM CITY COUNCIL:

Discussion and questions about the City's COVID-19 response

ATTACHMENTS:

- None

CITY COUNCIL WORK SESSION REPORT

DATE:	**August 3, 2020**
AGENDA ITEM:	**Work Session Item #2**
SUBJECT:	**Major Revenues Update**
NAME & TITLE:	James L. Becklenberg, City Manager Jacque Troudt, CPA, Finance Director

ISSUE DESCRIPTION:

The purpose of this work session item is for City Council to receive an update on potential impacts to major revenue sources due to current public health and economic challenges. Staff has been closely monitoring actual activity and forecasting the anticipated budget impacts, as they relate to the general fund 5-year forecast.

A previous update was provided to City Council on June 16, 2020 to review revenue shortfall projections for 2020 and beyond. Specific expenditure reductions identified for 2020 were discussed, and City Council received information on projected impact to the fund balance of the General Fund, and a potential budget gap the City could face in future years.

FINANCIAL SUMMARY:

This update incorporates revenue collections through June 30, 2020 and sales tax collections through May 31, 2020. Evans is experiencing recovery after economic slowdown noticed from March through April, and sales tax collections from April to May were up 33%. Annual City-wide sales tax collections through May 2020 were 5.7% behind year-to-date May 2019 and the general fund collections were 11% behind 2019 cumulative collections. Collections just for May 2020 were $300 behind May 2019 city-wide and down six percent from May 2019 in the General Fund. June collections are being received and a report is anticipated during the second week of August.

Cautious work continues to identify revenue assumptions that incorporate known and anticipated challenges in the City's main revenue streams. These expectations effect not only remaining 2020 projections, but also impact the budget for 2021 and beyond. The revenue budget for 2021 could range from 17-21% behind the current 2020 adopted revenue budget. This leads to an ongoing budget gap in the City's budget structure of $1.8- 2.5 million.

Staff has identified prudent reductions to be taken in 2020 and planning is underway to identify reductions necessary for 2021 and beyond. As sales tax revenue for June is finalized, these budget ranges for 2021 will be finalized in creation of the annual budget.

REQUESTING FROM CITY COUNCIL:

Feedback and questions relating to the revenue updates.

ATTACHMENTS:

- Major revenue update presentation

MAJOR REVENUE UPDATE

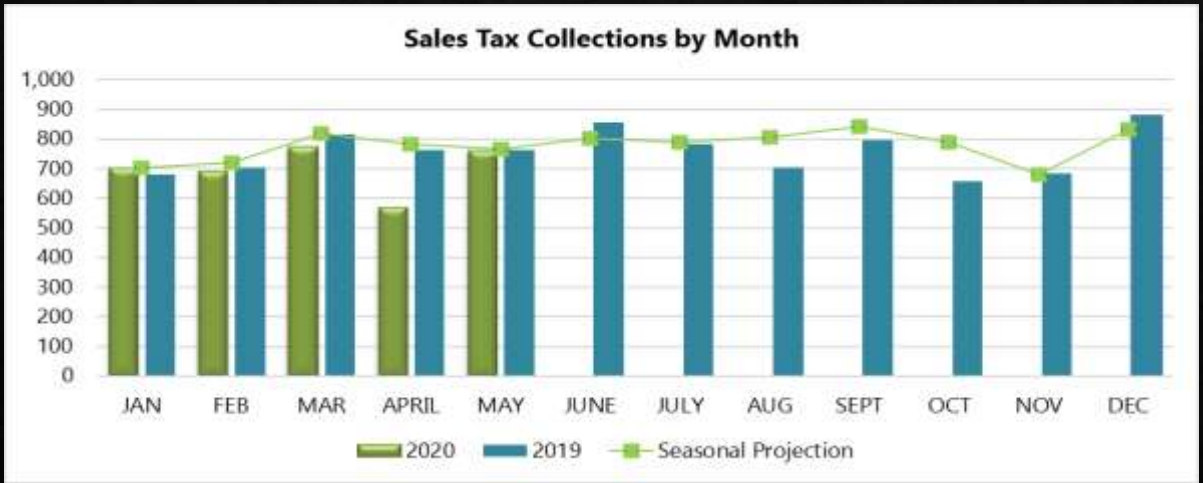
City Council Work Session
August 3, 2020

MAY SALES TAX- CITYWIDE

Annual sales tax budget $9,334,801		
May collections $763,305	$300 behind May 2019	33% ahead of April 2020
Projected annual sales tax 2020: $6.8 M- $8.1M		

May 2020			
Category	2019 YTD	2020 YTD	YOY % Change
Storefront Retail	677,747	681,629	1%
Base	800,816	812,004	1%
Industrial	373,976	173,220	-54%
Restaurant	238,430	186,622	-22%
Convenience/Fuel	146,438	131,315	-10%
Utilities	287,058	316,006	10%
Motor Vehicle	746,349	609,560	-18%
Use	9,123	10,980	20%
General Fund Subtotal	**3,279,937**	**2,921,337**	**-11%**
Food Home	446,815	591,734	32%
Total	**3,726,752**	**3,513,072**	**-5.7%**
Lodging	26,596	17,026	-36%
Greeley IGA	501,743	519,323	4%

May 2020 - Month			
Category	2019 May	2020 May	YOY % Change
Storefront Retail	192,202	143,869	-25%
Base	153,145	172,228	12%
Industrial	61,385	30,868	-50%
Restaurant	52,129	38,861	-25%
Convenience/Fuel	31,737	29,557	-7%
Utilities	46,428	52,686	13%
Motor Vehicle	127,842	156,546	22%
Use	1,541	2,129	38%
General Fund Subtotal	**666,410**	**626,744**	**-6.0%**
Food Home	97,455	136,561	40%
Total	**763,865**	**763,305**	**-0.1%**
Lodging	5,766	2,490	-57%
Greeley IGA	105,649	112,468	6%



- Monthly data:
  - Food for home consumption up 40% in May 2020 over May 2019
  - Remaining general fund sales tax down 6% in May 2020 from May 2019.

Sales tax challenges ahead for 2020

- Q3/Q4 2020 expecting months of decline before sustainable recovery trend
- Industrial collections = no anticipated additional revenue
- Deep reductions in storefront (10-25%) and restaurant (15-40%)
- Motor vehicle one-time summer purchases not sustainable
- Greeley sales tax consistent with storefront projections

Other revenue challenges for 2020

Development related revenues:

Building permit fees and use tax, 75% of anticipated units as uncertainty remains

Property tax:

85% or $763,218 collected YTD, 80% was collected in June 2019. Anticipate lower collections in 2021 and 2022.

Facility user fees, rentals, and recreation fees:

Anticipate very little additional revenue for 2020. Reopening challenges remain, and restrictions continue to change.

Court and police fees:

40% of budget, with stay at home order and court proceedings paused

Budgeting Outlook

2020 expectations set the stage for 2021 budget.

Due to evolving assumptions, the 2021 Revenue Budget ranges between 17%-21% behind the current 2020 budget.

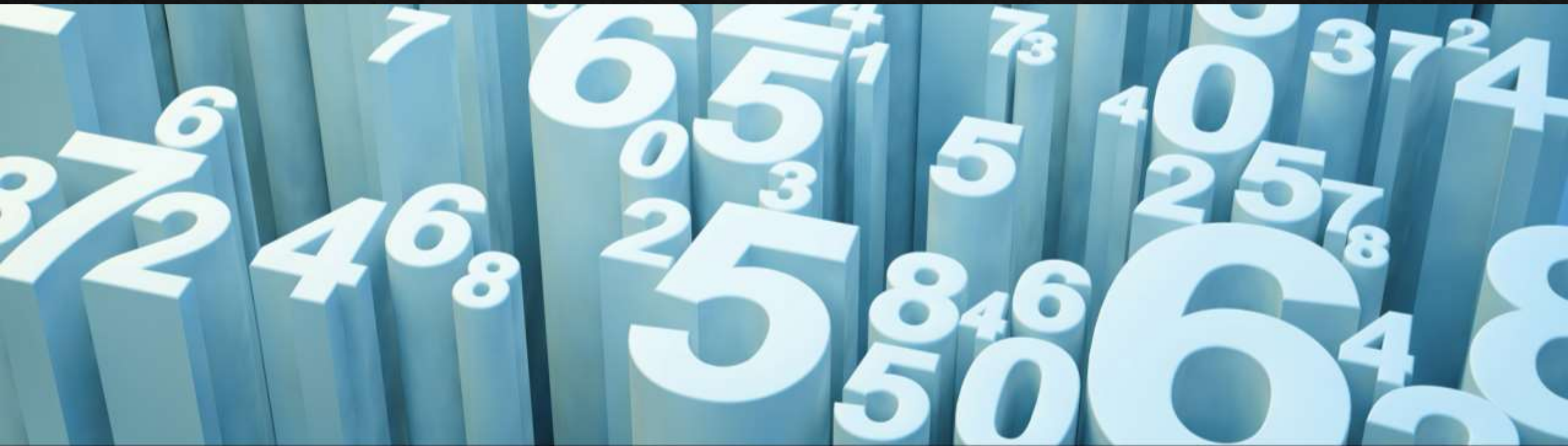
Ongoing budget gap ranges between $1.8- 2.5 Million.

Next Steps

FINALIZE JUNE SALES TAX REPORT

INCORPORATE UPDATES INTO 2021 BUDGET

Questions?



CITY COUNCIL WORK SESSION REPORT

DATE:	**August 3, 2020**
AGENDA ITEM:	**Work Session Item #3**
SUBJECT:	**Wastewater Treatment Plant Capacity Study: Population and Flow Projections**
NAME & TITLE:	James L. Becklenberg, City Manager Randy Ready, Asst. City Manager Robby Porsch, Wastewater Superintendent

ISSUE DESCRIPTION:

The attached technical memorandum and this work session presentation and discussion will focus on the 20-year (2040) projected wastewater flow and load from new population growth projections and recommended next steps for City Council's consideration.

At the December 17, 2019 City Council work session, staff and the consultants from Dewberry Engineering presented the results of a review of plant operations and capacity that indicated that the plant is operating well. However, 18 months into its operation, the plant has reached about 80% of its design capacity for influent organic loading. There are multiple factors contributing to the capacity issues, including population growth that has occurred faster than projected and a greater concentration of organic compounds than expected for the current population as measured by 5-day biochemical oxygen demand (referred to as BOD5 throughout the report).

With regard to the original population projections, the plant's design capacity was based on 2010 Census data indicating 18,537 people in Evans at that time. The best-available information about population growth rates leading into the plant design resulted in a forecast of 2% growth in the Hill-N-Park basin (mostly west of 35th Avenue) and a 0.5% growth projection for the Evans Basin (east of 35th Avenue). The cumulative effect of those two growth assumptions led to a range of growth per year of 1.15% to 1.28% over the 20-year planning horizon. The population was projected to increase overall by 35% from 2010 to 2035, with Evans growing from 18,537 to 25,053 during that time. A population of 25,053 became the design capacity target for the plant.

However, since Evans emerged from the slow growth period during the recession and the early years of the 2010s, actual growth has surpassed projections. While the results of the 2020 Census will provide a more accurate update of population, there are indications that the current (2020) population served by the plant is approaching 23,000. That level of population was not expected until 2028 under the earlier projections. In addition, based on the number of homes in developments that have been approved and are in the construction pipeline over the next five years, Evans is expected to grow by about 6% per year between 2020 and 2024.

The 7,937 current sewer taps multiplied by a rough average of 2.9 residents (household size) per

tap leads to an estimated 2019 population of about 23,000. Adding the anticipated growth between now and 2024 would result in a population of about 28,000 by that time. Similarly, a demographic analysis published in 2018 for the City of Evans estimated a population of 21,349 in 2017, growing by an average of 2.71% per year to 22,500 in 2019, and over 26,000 by 2024. A third analysis based on the use of building permit data to calculate that the 950 residential units of growth between 2014 and 2019 would yield similar results with an estimated population over 22,000 in 2019.

One other factor complicating future growth projections was an increase in the average household size in Evans over time. The 2013 Wastewater Utility Plan population estimates were based on an average household size of 2.5 occupants. Current estimates by both the U.S. Census Bureau and DOLA show the average number of persons per household in Evans to be 2.9 to 3.0.

The first report and presentation pointed out other anomalies in the current wastewater flows and BOD5 loading data that need further research in order to understand and act upon. The current flow per capita is lower than expected and the current organic loading per capita is significantly higher than both historic numbers and the data from similar communities.

Based on the cumulative WWTP service area population in 2020 of 22,437, including people in some unincorporated portions of Weld County adjacent to Evans and temporarily including the St. Michael's subdivision in Greeley, the 20-year planning population for the Year 2040 grows to 38,323 people. During the work session presentation staff will discuss the resulting flow and load projections of that level of population. The population growth figures are based on the best-available data and projections from the U.S. Census Bureau, the State Department of Local Affairs and Weld County. Evans is expected to grow by an annual average growth rate of 3.04 percent per year and Weld County is expected to grow by a similar 3.05 average annual growth rate, resulting in cumulative growth of about 70 percent over the twenty years.

The current plant has insufficient capacity to handle the projected growth in flow and organic solids load. The findings of the projections regarding population, flow, and organic load lead to the next step for council's consideration to evaluate WWTP capacity expansion alternatives that will accommodate the wastewater flows and loads anticipated over the next twenty years as a result of projected population growth. The Plant Expansion Alternatives Analysis will look into both process intensification and plant expansion.

Staff and the consultants will return to Council later this year with a description of the alternatives along with the operating and capital costs and life-cycle considerations of the various alternatives. Triggers for incremental plant expansion will be based on the WWTP reaching certain increased flow and load levels, NOT on certain dates. In that manner, population growth will help to pay its own way toward the cost of WWTP expansion.

FINANCIAL SUMMARY:

It is difficult to estimate and compare the financial impacts of various treatment plant capacity increase alternatives without proceeding with the next step: A Plant Expansion Alternatives Analysis. The purpose of that analysis will be to explore available technologies and estimate their capital and operating costs over an extended period. Both process intensification technologies and plant infrastructure expansion alternatives will be considered, with the results of that analysis to

be delivered to City Council for further discussion within the next few months.

REQUESTING FROM CITY COUNCIL:

Feedback and questions pertaining to the WWTP Population and Flow Projections. Direction to proceed with the projections being used for the analysis.

ATTACHMENTS:

- WWTP Population, Flow and Loading Projections

Dewberry

MEMORANDUM

Date: June 25, 2020

To: City of Evans

From: Patrick Radabaugh, PE and Allie Beikmann, PE - Dewberry Engineers

Subject: City of Evans WWTP - Population, Flow, and Loading Projections

EXECUTIVE SUMMARY

The City of Evans Consolidated Wastewater Treatment Plant (WWTP) was constructed in 2018 and recent plant operations data from 2019 shows the WWTP is operating at approximately 60 percent of hydraulic capacity and almost 80 percent of organic capacity. The average day (AAF), maximum month (MMF), and peak day flow rates for 2019 were 1.65 million gallons per day (MGD), 1.81 MGD, and 2.08 MGD, respectively. The average day and maximum month organic BOD_5 loading rates for 2019 were 4,629 pounds per day (ppd) and 5,224 ppd, respectively. This max month loading rate is at 79 percent of the design capacity for the WWTP. At 80 percent treatment capacity, the EPA and CDPHE state the permittee is required to initiate engineering and financial planning for expansion of the domestic wastewater treatment works. The current wastewater flows and loads were not projected to occur until approximately year 2028, but greater than anticipated population growth has occurred in the City which resulted in faster use of the available wastewater treatment capacity. The goal of this technical memorandum is to document the impacts from new 20-year projected wastewater flow and load from new population growth projections on the existing WWTP infrastructure. A future technical memorandum will evaluate alternatives to accommodate the new 20-year planning horizon wastewater flows and loads developed as part of this technical memorandum.

The City of Evans Consolidated WWTP served an estimated 21,133 people in 2018. City of Evans population projections were developed utilizing the current population and growth rates of 3.04 percent and 3.05 percent for the City and Weld County, respectively. The 20-year planning population for Year 2040 for the Consolidated WWTP is 38,323 people. This corresponds to projected flow rates of 3.4 (AAF), 4.1 (MMF), and 8.6 MGD (peak hourly flow, PHF) and projected max month BOD_5 loading is 11,930 ppd.

Most unit processes at the plant will need to be upgraded to accommodate the 2040 projected wastewater flow and BOD_5 load. A succeeding memorandum will be provided to recommend individual process updates based on the outcomes of this evaluation. The following is a summary of the projected, recommended improvements to the liquid stream and solids handling processes. Costs and alternatives analysis will be performed in a future technical memorandum.

1. Headworks
    a. Mechanical Screening: Insufficient hydraulic capacity to accommodate projected 2040 PHF. Add a second mechanical screen to available channel.
    b. Grit Screening: Insufficient hydraulic capacity to accommodate projected 2040 PHF. Add a second grit screening and washing process north of GCC 1201.

c. Lift Station: Insufficient hydraulic capacity to accommodate projected 2040 PHF. Increase capacity by adding a third wet well chamber and upgrading pump operation to 6 pumps (5 duty, 1 standby) to meet 9 MGD.

2. Secondary Process
    a. Johannesburg Process: Insufficient treatment capacity 2040 BOD_5 and ammonia loads. Will need to increase secondary process treatment capacity by adding additional Johannesburg process trains or incorporating Biomag (a process intensification process)
    b. Secondary Process Pump Station:
        i. Process Pumps (RAS, WAS) – Insufficient capacity to meet 2040 flows. Incorporate additional process pumps and/or building space to accommodate future secondary process requirements.
        ii. Blowers – Insufficient capacity to meet projected 2040 loads. Incorporate additional blower in the available space.
        iii. Construct new scum pump station. Scum currently flows by gravity to the anaerobic sludge lagoons
    c. Secondary Clarifiers – Insufficient capacity to meet projected 2040 flows and loads. Either incorporate additional secondary clarifiers or upgrade to Biomag (process intensification process).
3. Disinfection and Effluent System
    a. UV Disinfection has insufficient capacity to accommodate 2040 flows. Add modules to channel UVG 7003.
4. Solids Handling – Anaerobic sludge lagoons have insufficient capacity to accommodate 2040 loads.
    a. Incorporate WAS thickening and biosolids dewatering.
    b. Incorporate aerobic digestion or ATAD (AutoThermal Thermophillic Aerobic Digestion).

WWTP DESIGN: POPULATION PROJECTIONS, REVISITED

The City of Evans experienced a growth in population in the last few years that well exceeded the population estimates utilized in the initial planning of the Consolidated WWTP. A direct result of the growth is that the WWTP is currently operating near 80 percent organic (BOD_5) capacity. At 80 percent capacity, the EPA and CDPHE recommend the facility initiate planning efforts to upgrade the facility to treat additional flows and loads.

The WWTP primarily serves residential, commercial, and industrial units in Evans city proper, but also serves some additional residents in Greeley and unincorporated Weld County. A total of 7,188 dwelling units were estimated to be served by the plant in 2018: 6,090 dwelling units in the City of Evans, 657 units in unincorporated Weld County, and 441 units in Greeley. Based on historical City data,

approximately 2.94 persons per dwelling unit is a good estimate for calculating population. This yields an estimated 2018 population of 21,133 people served by the plant. A summary of the current service area information is provided in **Table 1**.

Table 1 – Residential Population Served by the Evans WWTP in 2018

Item	City of Evans	Weld County	Greeley	Cumulative
Dwelling Units[1]	6,090	657	441	7,188
Population per Unit[2]	2.94	2.94	2.94	-
Population	17,905	1,932	1,297	21,133

[1] Number of dwelling units served by the Evans WWTP are from the City of Evans and Greeley City of Evans is based on correspondence with Greeley. Back-calculated to get Weld DUs.
[2] Population per unit obtained from City of Evans' estimates. Used this value for Weld and Greeley.

During the WWTP planning phase in 2014, the population of Evans was projected to increase from 19,865 to 25,053 over a 20-year planning horizon of the project (2016 to 2035) which corresponds to an annual growth rate of 1.23 percent. The actual population growth rate was more than two percent. Refer to **Table 2** for the annual growth rates from 2015 to 2018, from the US Census Bureau.

Table 2 – Weld County, Annual Growth Rate 2015 through 2018 (U.S Census Bureau)

Year	Growth Rate
2015	2.2%
2016	2.6%
2017	2.8%
2018	3.3%

For the next 20 years, the City is projecting an average annual population growth of 3.04 percent within the City limits and 3.05 percent outside the City but within the service area. Additionally, the City estimates that in five years, the St. Michael's area will be served by Greeley's wastewater infrastructure following construction of a local lift station, thus the wastewater from these residents will no longer be collected and treated by the Evans Consolidated WWTP. Refer to **Table 3** for population projections for 2020 through 2040.

Table 3 – Population Projections, Year 2020 through 2040

Year	City of Evans	Weld County	Greeley	Cumulative
2020	19,009	2,051	1,377	22,437
2025	22,077	2,383	1,600	26,060
2030	25,640	2,769	N/A	28,409
2035	29,778	3,217	N/A	32,996
2040	34,584	3,738	N/A	38,323

2019 OPERATIONS DATA

Influent data from 2019 is presented in **Table 4** and **Table 5**. Operations staff at the WWTP take influent BOD_5 and TSS measurements approximately three times per week and influent ammonia and phosphorus readings approximately once a week. Average and max month 2019 BOD_5 loadings were 4,628 and 5,224 ppd, respectively, while average day influent flow was 1.66 MGD and max month flow was 1.81 MGD. The 2019 service area population was 21,775 people.

Table 4 – Average and Max Month Flow and Load Summary for Year 2019

Parameter	AA	MM
Flow, MGD	1.65	1.81
BOD_5, ppd	4,629	5,224
TSS, ppd	3,424	4,098
NH_3, ppd	556	599
Total P, ppd	91	105

The 2019 average influent BOD_5 is approximately 336 mg/L. This is higher than the average of 293 mg/L during 2005-2014, and higher than the WWTP design values of 259 mg/L average and 320 mg/L max month (Dewberry, 2015). The average influent concentrations for ammonia and Total P are 40.4 mg/L and 6.6 mg/L, respectively.

Table 5 – Influent Concentrations Summary for Year 2019, mg/L

Parameter	AA	MM
BOD_5	336	379
TSS	248	297
NH_3	40.4	43.5
Total P	6.6	7.6

PROJECTION RATIONAL AND ASSUMPTIONS

Based on 21,775 residents served in 2019, the average day per capita flow rate was 75.8 gallons per capita per day (gpcd). Refer to **Table 6** for the per capita flow and loading rates (pounds per capita per day – ppcd) for Year 2019.

Table 6 – Per Capita Flow and Loading Rates for Year 2019 and Selected Rates for Projections, gpcd and ppcd

Parameter	2019 Average Day	Selected Rate for Projections
Flow Rate (gpcd)	75.8	75.8
BOD_5	0.21	0.21
TSS	0.16	0.19
NH_3	0.026	0.026
Total P	0.0042	0.0042

The average day values are used in the follow sections for projected flow and loading rates. By comparison to historical data, the BOD_5 rate is slightly higher than what was observed between 2005 and 2014, which was 0.19. However, it falls in the typical range.

The estimated loading rate for TSS was 0.16 ppd per capita for the year 2019, which is at the extreme low range when compared to the 2005-2014 data. The average for this period was 0.19, with a range of 0.16 to 0.24 annually (Dewberry, 2015, pp. Table 4-22). Since this year of data may be an outlier for typical solids content, 0.19 will be used for flow and loading projections.

During development of the WWTP assessment, measurements of ammonia were not taken at either WWTP, thus historical data is only available for Year 2019. Typical values for ammonia are between 0.011 and 0.026, thus the ammonia measured is at the high end of the spectrum (Metcalf & Eddy, Inc., 2003). Although it is currently unknown if the year 2019 was a high year for ammonia or typical of the wastewater, the 46 samples taken throughout the year is the best available data, thus, 0.026 ppcd will be used for projections.

Finally, for the same reasoning provided for the ammonia loads, a per capita loading rate of 0.0042 will be used for total phosphorus.

PEAKING FACTOR (PF) EVALUATION

To determine whether the existing treatment processes were sufficiently sized for future use, peaking factors for the maximum month and peak hourly conditions were evaluated. The maximum month peaking factor was determined for influent flow rate and the following loads: 5-day biological oxygen demand (BOD_5), soluble ammonia (NH_3), total suspended solids (TSS), and total phosphorus (total P). And in addition, a peak hourly peaking factor was determined for influent flow rate.

Maximum Month

Flow and loading data from 2019 yielded peaking factors (PFs) that were lower than historical values. To account for the short period of data, the selected PFs for all design criteria are the 99th percentile values determined from data collected in Years 2005 to 2014. Influent phosphorus data was not collected prior to 2018. Due to the limited amount of influent phosphorus data and that fact that phosphorus loads typically track with ammonia loads, a value of 1.35 was selected. Refer to **Table 7** for a summary of the maximum month peaking factors for flow and loading rates.

Table 7 – Per Capita Loading Rates for Year 2019, gpcd and ppcd

Parameter	AA	MM	2019 MM Peaking Factor	Historical 99th Percentile
Flow Rate (gpcd)	75.8	83.0	1.09	1.19
BOD_5	0.21	0.24	1.13	1.24
TSS	0.16	0.19	1.20	1.24
NH_3	0.026	0.028	1.08	1.35
Total P	0.0042	0.0048	1.15	1.35

Peak Hourly

In lieu of multi year hourly flow data, the projected peak hourly flow PF was calculated using Figure 3.1 from CDPHE Regulation WPC-DR-1 (2012). Based on the estimated population for 2020 of 22,437, the estimated peak hourly flow PF is 2.6. The lowest limit of the peak hourly PF is 2.5, which is only slightly less than the estimated PF for 2020. To simplify estimates and add a small degree of conservativity, 2.6 was used as the peak hourly peaking factor for all future flow rate scenarios.

INDUSTRIAL AND COMMERCIAL FLOWS

Although the City has few existing industrial and commercial users connected to the wastewater collection system, there is a possibility of future users moving in within the next twenty (20) years. This potential increase in required wastewater treatment system capacity has a moderately high degree of uncertainty and was discussed between Dewberry and City personnel. It was decided that future industrial/commercial wastewater contribution would be 20 percent of the City's residential wastewater flow and load. Thus, for flow and mass loading rates, the projected populations were multiplied by 1.2 before calculating final quantities. See **Table 8** for an example of how projected flow and loading estimates for 2020 through 2040 consider the addition of industrial and commercial users.

Table 8 – Example: Average Day Influent Flows and Loads For 2019, Adjusted for Industrial/Commercial Inputs

Parameter	Residential	Industrial/ Commercial	Total
Flow Rate (MGD)	1.65	0.28	1.9
BOD_5 (ppd)	4,629	784	5,414
TSS (ppd)	3,424	580	4,004
NH_3 (ppd)	556	94	651
Total P (ppd)	91	15	107

PROJECTED FLOW AND LOADING RATES

Projected influent flow and loading rates going to the Consolidated WWTP were estimated for years 2020 through 2040. The current permitted capacity of the Consolidated WWTP is 2.88 mgd and 6,624 ppd BOD_5, respectively.

FLOW RATES

Projected flow rates indicate an average day flow of 3.4 MGD, a max month flow of 4.08 MGD, and a peak hourly flow of 8.58 MGD for Year 2040. The peak hourly flow is an important factor in design capacity for wastewater treatment processes and the 2040 projection numbers are compared to existing design capacity in a later section. With these hydraulic projections, the plant will exceed the permitted hydraulic capacity in approximately Year 2026. Based upon these projections and the EPA/CDPHE requirement that construction of improvements to expand capacity should begin when the WWTP is at 95 percent of (current) capacity, the new improvements are projected to be recommended to be online in 2024. If the 20 percent commercial and industrial contribution is not included, the new improvements are

not projected to be online until 2032. These timeline estimates are based upon hydraulic capacity only. See organic capacity summary later in this memorandum.

Table 9 – Projected Flow Rates for 2020 through 2040 (MGD)

Year	AAF		MMF		PHF	
	Residential	+ 20%	Residential	+ 20%	Residential	+ 20%
2020	1.7	2.0	2.0	2.4	4.4	5.2
2025	2.0	2.3	2.4	2.8	5.0	5.9
2030	2.2	2.5	2.6	3.0	5.4	6.4
2035	2.5	3.0	3.0	3.5	6.3	7.4
2040	2.9	3.4	3.5	4.1	7.3	8.6

LOADING RATES

Loading rates are projected through 2040 for BOD_5, TSS, ammonia (NH_3), and total phosphorus (total P). Projected BOD_5 loading for 2040 is 11,926 ppd which is compared to the existing design capacity (6, 624 ppd) for the secondary process and process air flow in the next section. With these new projections, the organic loading capacity of the existing WWTP will be exceeded in 2020. Note this value includes the 20 percent industrial/commercial contribution for the City of Evans to accommodate potential growth in this sector, as discussed in the previous section. Assuming no additional industrial/commercial wastewater load, the organic capacity of the WWTP Is not projected to be exceeded until approximately Year 2024, and the 95 percent level for start of construction occurs in year 2022-23.

Table 10 – Projected Residential Loading Rates (ppd)

Year	BOD_5		TSS		NH_3		Total P	
	AA	MM	AA	MM	AA	MM	AA	MM
2020	4,770	5,915	4,263	5,286	573	774	94	127
2025	5,540	6,870	4,951	6,140	666	899	109	148
2030	6,040	7,489	5,398	6,693	726	980	119	161
2035	7,015	8,698	6,269	7,774	843	1,138	139	187
2040	8,147	10,103	7,281	9,029	979	1,322	161	217

Table 11 – Projected Loading Rates w/ Industrial/Commercial [+20 Percent] (ppd)

Year	BOD_5		TSS		NH_3		Total P	
	AA	MM	AA	MM	AA	MM	AA	MM
2020	5,578	6,917	4,985	6,182	670	905	110	149
2025	6,479	8,034	5,790	7,180	779	1,051	128	173
2030	7,130	8,841	6,372	7,901	857	1,157	141	190
2035	8,281	10,268	7,401	9,177	995	1,344	164	221
2040	9,618	11,926	8,596	10,658	1,156	1,561	190	256

The summarized planning criteria for the plant is shown in **Table 12** and include the estimated industrial/commercial future loads.

Table 12 – Proposed Planning Criteria for the City of Evans Consolidated WWTP

Parameter	Year 2020			Year 2030			Year 2040		
	AA	MM	PHF	AA	MM	PHF	AA	MM	PHF
Flow Rate (MGD)	2.0	2.4	5.2	2.5	3.0	6.4	3.4	4.1	8.6
BOD_5 (ppd)	5,578	6,917	-	7,130	8,841	-	9,618	11,926	-
TSS (ppd)	4,985	6,182	-	6,372	7,901	-	8,596	10,658	-
NH_3 (ppd)	670	905	-	857	1,157	-	1,156	1,561	-
Total P (ppd)	110	149	-	141	190	-	190	256	-

The criteria shown above will be considered the following phase of this planning project, analysis and recommendation of alternatives.

TREATMENT PROCESS CAPACITY EVALUATION

To determine which processes will need to be upgraded to accommodate projected 2040 flow and loading estimates, the 2015 design criteria for each unit process was compared to the new projections. The design criteria are included in the 2015 Wastewater Treatment Plant Process Design Report (Dewberry, 2015). **Table 13** details the current capacities for each process and the required capacities for 2040.

Table 13 – Treatment Plant Unit Process Evaluation, 2015 Design Capacity vs. 2040 Projection

Process Design Parameter (units)	Design Capacity[1]	CDPHE Design Criteria	2040 Projection
Mechanical Screening and Washer Equipment			
Hydraulic capacity, each (MGD)	5.86	PHF	8.58
Grit Equipment			
Hydraulic capacity, each (MGD)	5.86	PHF	8.58
Flow Measurement Equipment			
Hydraulic capacity (MGD)	6	PHF	8.58
Influent Lift Station			
Firm capacity w/ largest pump out (MGD)	5.86	PHF	8.58
Secondary Process (aeration basin, process pumps and secondary clarifiers)			
Average day flow rate (MGD)	2.26	-	3.43
Max month flow rate (MGD)	2.88	-	4.08
Max month BOD_5 load (ppd)	6,624	-	11,926
Process Air Flow			
Max month BOD_5 load (ppd)	6,624	-	11,926
Alum Chemical Feed System			

Chemical dose (mg/L)	96	-	48
Number of days of storage (days)	14	CDPHE	14+
UV Disinfection System			
Hydraulic capacity per channel (MGD)	5.86	PHF	8.58
Effluent Flow Measurement Equipment			
Hydraulic capacity (MGD)	10.41	PHF	8.58
Anaerobic Sludge Lagoons			
Hydraulic capacity (MGD)	2.88	MMF	4.08

[1] From Wastewater Treatment Plant Process Design Report (Dewberry, 2015)

As shown, most liquid stream processes do not currently meet the projected 2040 capacities, except for the effluent flow measurement equipment. A discussion of costs and evaluation of the treatment infrastructure needed to accommodate the Year 2040 projected flows and loads will be discussed in a future technical memorandum.

CONCLUSIONS AND RECOMMENDATIONS

This memorandum finds that the hydraulic capacity for all liquid stream unit processes, except for alum storage and effluent flow measurement equipment, are insufficient to meet the 2040 peak hourly flow rate of 8.6 MGD. In addition, two plant processes, the secondary process and process air flow, are designed for a lower BOD loading rate than the projected 11,900 pounds per day (ppd) for year 2040. Dewberry will recommend unit process upgrades to meet the projected conditions in a succeeding memorandum to the City of Evans. The following is a summary of the projected, recommended improvements to the liquid stream and solids handling processes:

1. Headworks
    a. Mechanical Screening: Insufficient hydraulic capacity to accommodate projected 2040 PHF. Add a second mechanical screen to available channel.
    b. Grit Screening: Insufficient hydraulic capacity to accommodate projected 2040 PHF. Add a second grit screening and washing process north of GCC 1201.
    c. Lift Station: Insufficient hydraulic capacity to accommodate projected 2040 PHF. Increase capacity by adding a third wet well chamber and upgrading pump operation to 6 pumps (5 duty, 1 standby) to meet 9 MGD.
2. Secondary Process
    a. Johannesburg Process: Insufficient treatment capacity 2040 BOD_5 and ammonia loads. Will need to increase secondary process treatment capacity by adding additional Johannesburg process trains or incorporating Biomag (a process intensification process)
    b. Secondary Process Pump Station:

i. Process Pumps (RAS, WAS) – Insufficient capacity to meet 2040 flows. Incorporate additional process pumps and/or building space to accommodate future secondary process requirements.

ii. Blowers – Insufficient capacity to meet projected 2040 loads. Incorporate additional blower in the available space.

iii. Construct new scum pump station. Scum currently flows by gravity to the anaerobic sludge lagoons

c. Secondary Clarifiers – Insufficient capacity to meet projected 2040 flows and loads. Either incorporate additional secondary clarifiers or upgrade to Biomag (process intensification process).

3. Disinfection and Effluent System

   a. UV Disinfection Insufficient hydraulic capacity to accommodate 2040 flows. Add modules to channel UVG 7003.

4. Solids Handling – Anaerobic sludge lagoons have insufficient capacity to accommodate 2040 loads.

   a. Incorporate WAS thickening and biosolids dewatering.

   b. Incorporate aerobic digestion or ATAD (AutoThermal Thermophillic Aerobic Digestion).

REFERENCES

Dewberry. (2015). *Consolidated Wastewater Treatment Plant Needs Assessment.* City of Evans.

Dewberry. (2015). *Wastewater Treatment Plant Process Design Report.* City of Evans.

Metcalf & Eddy, Inc. (2003). Wastewater Engineering Treatment and Reuse. (pp. 183; 201-202). New York: McGraw-Hill.

CITY COUNCIL WORK SESSION REPORT

DATE: **August 3, 2020**

AGENDA ITEM: **Work Session Item #4**

SUBJECT: **2020 Work Plan Update**

NAME & TITLE: James L. Becklenberg, City Manager

ISSUE DESCRIPTION:

In February, 2020, the City Council provided direction on the 2020 staff work plan. Key initiatives for the year include major road improvement and storm water projects, facilitation of development, facilitation of the 2020 municipal election, utility rate studies, traffic safety improvements, and many other projects: 56 deliverables, in fact. The original 2020 work plan is attached for reference.

The onset of the COVID-19 virus crisis has significantly changed the context for City operations. The cumulative economic impacts of the crisis and the current oil and gas sector recession have prompted the "freezing" of more than 10 positions and budget savings of more then $2 million. Additionally, some staff, such as the City manager's Office and Finance, have had to reallocate time from projects initially planned to budget management, budget planning, and emergency management. The purpose of this work session is to update the City Council on the work plan and recommend changes, based on current resources and COVD-19 management demands.

FINANCIAL SUMMARY:

None

REQUESTING FROM CITY COUNCIL:

Direction regarding desired changes in the work plan as presented.

ATTACHMENTS:

- 2020 Work plan Recommended Modifications
- 2020 Work Plan (as originally adopted)

2020 City of Evans Work Plan
February, 2020
Presented by: James L. Becklenberg, City Manager

City Council's Vision

Evans – A growing City with small town roots providing a safe, family-friendly community.

Well-Maintained Infrastructure with the Capacity to Grow - Evan's thoughtfully planned and well-maintained infrastructure enables the City to serve existing and future development. The City has planned for sufficient water for future populations and industries. The road network is well-maintained and signed and additional connectivity among neighborhoods is accomplished through a network of sidewalks and trails.

2020 Deliverables	Lead		2-3 Year Deliverables	Lead
Objective: Develop Evans' transportation infrastructure to enhance safety and meet future demands				
Key projects:				
37th Street Overlay	Public Works			
47th Avenue widening (utilities portion)	Public Works		47th Avenue widening (roadway portion)	Public Works
23rd Avenue construction (37th St. south to PV Dr.)	Public Works		Widen 23rd Avenue to 4-lane arterial standard	Public Works
East side stormwater project(s) design	Public Works		Complete highest priority east side storm water projects	Public Works
37th St. widening (35th Ave to 65th Ave.) design	Public Works		Begin widening 37th Street to 4-lane arterial	Public Works
Complete the Transportation Master Plan Update including a trails component and action plan for implementation.	Comm Dev.		Compete for grant funding and begin completing large segments of trail connection through Evans and to regional trails	Public Works
Objective: Secure additional dedicated funding for street maintenance to improve average pavement condition to good condition.				
Conduct public information and engagement campaign regarding need for street maintenance funding to include print media, social media, and public meetings.	City Mgrs. Office			
Facilitate City Council decisions about a potential election regarding street maintenance revenues.	City Mgrs. Office		If/when sales tax measure passes, triple resurfacing and maintenance of streets and pavement of dirt roads.	Public Works

2020 City of Evans Work Plan
February, 2020
Presented by: James L. Becklenberg, City Manager

Objective: Plan for Evans' land use, transportation, and utilities future				
Begin Comprehensive Plan Update. 2020 work to include: demographics review , physical "present state" attributes, engage community and staff, and update the vision for future Evans.	Comm. Dev.		Complete the Comprehensive Plan with all levels of detail based on work completed in 2020.	Comm. Dev.
Update the land use code and development guidelines to ensure current development best practices and clarity for the development community.	Comm. Dev.			
Determine feasibility of water treatment partnership with Central Weld County Water District	Public Works/ Comm Dev.			
Complete a feasibility analysis for expanding water and sewer services to areas in Evans south of the river	Public Works/ Comm Dev.			
Research and explore status of municipal broadband in region and opportunities to partner with neighboring communities on future investments.	Info. Technology		If Council desires, place measure on election ballot to gain voter permission to begin building broadband solution.	Information Technology
			Complete annexation plan, to include utility plans	Public Works/ Comm Dev.
			Establish a facilities asset management plan to enable long-term budgeting for facilities system replacement planning (roofs, HVAC, mechanical, etc).	Public Works
Objective: Follow through with long-standing neighborhood infrastructure commitments and foster neighborhood social activity				
Construct Tuscany non-potable irrigation system	Public Works / Comm. Dev.			
Complete preliminary quiet zones analysis for Evans RR crossings	Public Works / Comm. Dev.			
Complete Neville's crossing non-potable system improvement	Public Works / Comm. Dev.			
Implement block party trailer program	Public Works / Comm. Dev.			

2020 City of Evans Work Plan
February, 2020
Presented by: James L. Becklenberg, City Manager

Objective: Ensure sufficient, secure, and affordable water supply, treatment, and wastewater operations				
Complete evaluation and potential purchase of Willowbrook Water Association non-potable water system	Public Works/ Comm Dev.			
Complete water rate study to help ensure appropriate balance of adequate funding for system needs and equity among rate classes	Public Works/ Comm Dev.			
Complete wastewater rate study to help ensure appropriate balance of adequate funding for system needs and equity among rate classes	Public Works/ Comm Dev.			
Develop a water conservation public engagement program	Public Works/ Comm Dev.		Continue reducing potable water use to conserve as much as possible for future needs.	
Flush and inspect 25% of storm water infrastructure and track results in GIS system for future maintenance planning.	Public Works/ Comm Dev.			
Complete industrial wastewater pre-treatment program to reduce the bio-solids load on the treatment plant	Public Works/ Comm Dev.			
Complete study of WWTP exploring planning alternatives and facilitate related City Council decisions.	Public Works/ Comm Dev.			
Complete old wastewater treatment lagoon decommissioning plan.	Public Works/ Comm Dev.			
			Negotiate updated water treatment agreement with City of Greeley that ensures reliable, cost-competitive water treatment services.	Public Works/ Comm Dev.
			Negotiate water treatment agreements with other appropriate water treatment providers to ensure cost-effective supply for existing users and new development.	Public Works/ Comm Dev.

2020 City of Evans Work Plan
February, 2020
Presented by: James L. Becklenberg, City Manager

Objective: Complete decommissioning of (old) Evans Wastewater Treatment Plant site				
Develop plan for decommissioning the old wastewater treatment plant and determination of desired future land use of site.	Public Works/ Comm Dev.		Complete decommissioning of (old) Evans Wastewater Treatment Plant and formalize land use plan for site.	Public Works/ Comm Dev.

Safe and Desirable Neighborhoods with Engaged Residents - Evans has attractive and well-maintained housing stock that is ensured through proactive code enforcement which protects the livability of our neighborhoods. Our parks and recreation amenities are clean and well-maintained and residents actively use our bike and pedestrian trails. Our community's sense of safety is enhanced by police presence and lighting in public spaces. Residents engage with their neighbors and the City as a natural extension of community life.

2020 Deliverables	**Lead**		**2-3 Year Deliverables**	**Lead**
Objective: Establish and enforce standards for attractive and safe neighborhoods				
Work with property owners in the industrial zone to gain compliance with land use and nuisance abatement regulations through information, voluntary compliance, and increased enforcement as necessary.	Comm. Dev.		Develop a collaborative plan with industrial businesses to improve aesthetics and increase investment in Evans industrial zone.	
Objective: Ensure professional and state-of-the-art law enforcement services				
Once new Traffic unit is fully staffed, increase stops for unsafe driving by 25% with the goal of reducing traffic crashed by at least 15%.	Police			
Within existing staffing levels, establish a special investigations team to increase investigative coordination with other agencies and increase monitoring of local career criminals.	Police		Enable more proactive neighborhood support and policing with enhanced crime analysis capacity/staffing.	Police
Improve evidence management operations by quadrupling the rate of evidence property disposed annually in the first year.	Police			
Update impact fee study to ensure that new development pays its fair share for future police staffing and facilities.	Police		Develop a plan to design and construct necessary Police facilities.	Police
Based on 2019 facility needs study begin to identify potential facility sites and cost for design.	Police			

Identify plan for short-term facility shortage to enable adequate space for headquarters operations	Police			

Family-Friendly, Attractive Amenities -

Families are attracted to Evans because of the outstanding recreation amenities and signature events that promote community pride and a sense of place. Commercial development includes restaurants and entertainment venues that ensure residents can live and play in their community. The City actively promotes and communicates about recreation and leisure opportunities in the community.

2020 Deliverables	Lead		2-3 Year Deliverables	Lead
Objective: Ensure well-developed bicycle, trail, and recreation systems				
Implement safety measures (e.g., water fencing/signage) for new City open space adjacent to Arrowhead Lake (37th St &47th Avenue)	Public Works/ Comm Dev.		Develop new open space adjacent to Arrowhead lake into passive recreation space with walking trail, parking, and picnic facilities	Public Works/ Comm Dev.
Develop and implement a plan for Tract O (Tuscany) open space to complement non-potable irrigation system	Public Works/ Comm Dev.		Develop Tract O open space into neighborhood amenity with walking trail	Public Works/ Comm Dev.

Resilient Local Economy -

The Evans local economy includes a variety of businesses that provide quality employment and a diverse revenue stream for City services. The City has a business-friendly reputation and follows a thoughtful system of planning.

2020 Deliverables	Lead		2-3 Year Deliverables	Lead
Objective: Facilitate and assist high-quality development				
Facilitate Solstice subdivision zoning, platting, development agreement, and first permits	Public Works/ Comm Dev.			
Facilitate Tuscany corner re-zoning request, decision, and subsequent permitting, as applicable.	Public Works/ Comm Dev.			
Facilitate Tuscany multi-family residential (Wildhorse) application and permits	Public Works/ Comm Dev.			
Objective: Improve City readiness for future, high quality development				
Create Economic Development Strategic Plan	Economic Development			

Develop a plan for optimizing development opportunities in the Stonegate Industrial Park	Economic Development		Ensure critical property information available to developers for development-ready properties on website	Public Works/ Comm Dev.
Develop web-based tool for marketing Evans properties to feature: customized GIS site data, property search functions, and map of current projects.	Economic Development			
			Complete an inventory of undeveloped property	Economic Development
			Complete Phase 2 of Hwy 85 study regarding optimal land uses.	Economic Development
			Implement Hwy 85 corridor improvements, beginning with east-side opportunities between 31th St. and 39th St.	Public Works/ Comm Dev.
Objective: Redevelop ERA-owned properties along Hwy. 85				
Complete development agreement for SEC of Hwy 85 and 31st St.	Economic Development			
Issue RFQ for a development partner for the SWC of Hwy 85 and 31st St. and select partner	Economic Development			

2020 City of Evans Work Plan
February, 2020
Presented by: James L. Becklenberg, City Manager

Fiscally Responsible Government - Evans City Government is a trusted steward of taxpayer resources. The City lives within its means and carefully examines debt financing before obligating the community. The City seeks grant funds and quality contractors for City projects and ensures that resources exist to appropriately fund service levels.

2020 Deliverables	Lead		2-3 Year Deliverables	Lead
Objective: Ensure that utility funds are self-supporting (through corresponding revenues) and sustainable for long-term				
Conduct water rate study with emphasis on addressing long-term capital replacement and system expansion	Finance		Update storm water rate methodology to model based on impervious surface area.	Finance
Update impact fees to ensure that bases for fees are consistent with current infrastructure policy goals	Finance			
Secure low-interest loan financing for highest-priority SW capital projects from SW master plan	Finance			

Responsive City Services - Evans City employees provide quality services and are accountable to the City Council and community for being responsive as they execute their duties. The City is appropriately staffed to meet the service level expectations of the community. Evans is outcome-oriented and City government is engaged with the community and communicates using a variety of contemporary methods.

2020 Deliverables	Lead		2-3 Year Deliverables	Lead
Objective: Improve convenience of citizen access to services				
Coordinate the City's biennial municipal election	City Clerk			
Redesign the City website to ensure easier navigation to more information and services	Communications			
Create a public website portal for cemetery maps and directory	City Clerk			
Implement electronic permit submittal and processing	Public Works/ Communication			
Objective: Ensure Human Resources systems that help ensure recruitment and retention of great employees in most efficient way possible				
Complete the biennial compensation and classification study and facilitate related City Council decisions	Human Resources			
Develop and implement a supervisory training program to ensure effective management succession and limit risk to the organization.	Human Resources			

2020 City of Evans Work Plan
February, 2020
Presented by: James L. Becklenberg, City Manager

Objective: Ensure IT infrastructure risks are mitigated				
Complete biennial IT security audit and testing	Information Technology			
Objective: Ensure emergency preparedness				
Review the Emergency Operations Plan (EOP) and update to ensure compatibility with current organization and best practices	Emergency Operations			
Evaluate emergency (public) notification system and update to ensure consistency with community growth and best practices.	Emergency Operations			
Conduct Incident Command Center function and tabletop staff training exercises.	Emergency Operations			

City of Evans 2020 Work Plan
Recommended Modifications
August 3, 2020

Deliverable	Lead	Rationale
1. Complete a feasibility analysis for expanding water and sewer services to areas in Evans south of the river	Public Works/ Comm Dev.	Plan for 2021. Will benefit from info developed in Master Plan progress.
2. Implement block party trailer program	Public Works/ Comm. Dev.	Trailer has been constructed. COVID-19 restrictions preclude community use now.
3. Develop a water conservation public engagement program	Public Works/ Comm Dev.	Plan for 2021. Postponed due to frozen Management Analyst Vacancy. Will benefit from info developed in Master Plan progress.
4. Once new Traffic unit is fully staffed, increase stops for unsafe driving by 25% with the goal of reducing traffic crashed by at least 15%.	Police	Postponed from 2020 due to frozen Police Officer vacancies
5. Improve evidence management operations by quadrupling the rate of evidence property disposed annually in the first year.	Police	Plan for 2021. Postponed due to delayed staffing transition related to budget uncertainty.
6. Based on 2019 facility needs study, begin to identify potential facility sites and cost for design.	Police	Postponed due to 2021 budget reductions.
7. Identify plan for short-term facility shortage to enable adequate space for headquarters operations	Police	Postponed due to 2021 budget reductions.
8. Develop web-based tool for marketing Evans properties to feature: customized GIS site data, property search functions, and map of current projects.	Economic Development	Postponed due to frozen ED Admin. Assistant vacancy.
9. Update impact fees to ensure that bases for fees are consistent with current infrastructure policy goals	Finance	Plan for 2021. Finance staff resources reallocated to COVID-19-related budget process.
10. Complete water rate study to help ensure appropriate balance of adequate funding for system needs and equity among rate classes	Finance	Plan for 2021. Finance staff resources reallocated to COVID-19-related budget process.
11. Complete the biennial compensation and classification study and facilitate related City Council decisions	Human Resources	Postponed due to 2021 budget reductions.
12. Develop and implement a supervisory training program to ensure effective management succession and limit risk to the organization.	Human Resources	Postponed due to 2021 budget reductions.
14. Review the Emergency Operations Plan (EOP) and update to ensure compatibility with current organization and best practices	Emergency Operations	Postponed due to frozen Emergency Manager position.
15. Evaluate emergency (public) notification system and update to ensure consistency with community growth and best practices.	Emergency Operations	Postponed due to frozen Emergency Manager position.