



**Journal of Commission Work Session  
2 Park Drive South, Great Falls, MT  
Civic Center Gibson Room 212  
June 5, 2018**

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**1. Call to Order - 5:30 p.m.**

**CITY COMMISSION MEMBERS PRESENT:** Bob Kelly, Bill Bronson, Owen Robinson, Mary Sheehy Moe and Tracy Houck.

**STAFF PRESENT:** City Manager Greg Doyon and Deputy City Manager Chuck Anderson; Public Works Director Jim Rearden; and Deputy City Clerk Darcy Dea.

**2. Public Comment.**

None

**3. Wastewater Master Plan - Jim Rearden/ Coralynn Revis with HDR.**

Public Works Director Jim Rearden introduced Public Works Environmental Division Supervisor Paul Skubinna, Utilities System Manager Mike Judge, and HDR Engineering Inc. Project Manager Coralynn Revis. HDR Project Manager Revis reviewed and discussed the attached PowerPoint presentation that included: Wastewater Treatment Plant (WWTP) Master Plan background; basis of planning; regulations and permitting; collection system evaluation and recommendations; evaluation and recommendations; and, capital cost.

Commissioner Moe received clarification that Biological Oxygen Demand (BOD) is a way to measure the organic content in waste water.

The WWTP was capable of processing 10.5 average daily flow per day in 2010, and that 13.3 is the design for the plant. The organic matter in the wastewater is the main source for nitrogen and phosphorus. The nitrogen and phosphorus sampling at the Missouri River comes from background, agricultural, septic or human causes. The standards for sampling nitrogen and phosphorus are numeric and exact in number. Independent sampling could be used along side of the Department of Environmental Quality (DEQ). Arsenic sampling has a special administrative rule associated with it for protecting the environment, as well as meeting best practices.

Commissioner Moe received clarification that the definition of (RAS) is Return Activated Sludge. She further received clarification that the flow has gone down due to certain industries that are no longer discharging, as well as a reduction in flow.

Commissioner Moe inquired if the proposed food processing plant would have an impact on the WWTP process. Public Works Director Rearden responded that the proposed plant is outside the City limits.

Referring to the capital improvement slide, Public Works Environmental Division Supervisor Skubinna commented that it is important to provide a robust sampling and analysis plan to DEQ.

Mayor Kelly received clarification that Veolia's role was to review the study, as well as being a part of the design and construction of a previous upgrade.

The figures from the capital improvements and operations will be factored into the water and sewer rate studies.

Commissioner Houck received clarification that the DEQ is approximately two years behind with regard to a permit that expired in 2015.

#### **4. City County Health Department Annual Report - Tanya Houston.**

Health Officer Tanya Houston introduced Prevention Services Division Manager Trixie Smith, and Communications & Community Planner Mackenzie Smith. Health Officer Houston provided a brief overview of the 2017 City County Health Department (CCHD) Annual Report and statistic highlights. The CCHD's goal is to prevent disease and illness, ensure a healthy environment, promote healthy choices, and deliver quality services. She commented that assessment, policy development, assurance, and system management are four functions of public health. Ms. Houston reports to the Board of Health and Board of County Commissioners.

Ms. Houston noted that the CCHD is co-housed with the Community Health Care Center; however, they are not the same agency.

She reviewed the services and functions of the Environmental Health Division that includes Rabies Prevention; Family Health Services Division that includes the Cascade Foster Child Health Program, the Parents as Teachers (PAT) Program, Oral Health Education Program, the Suicide Prevention Task Force, and the Women, Infants, Children (WIC) Program; Prevention Services Division that includes the Montana Chronic Disease Program. Ms. Houston also reviewed the sources of funding, revenues and expenses of the CCHD.

Referring to page 8 of the handout, Commissioner Moe inquired about the Montana average radon results being higher than the national average. Ms. Houston replied that she would follow up with more information to the Commission.

Commissioner Moe complimented the CCHD for working collaboratively with the Great Falls Public Schools with regard to providing immunizations.

#### **5. City 101 Citizen Program - Chuck Anderson.**

Deputy City Manager Chuck Anderson reviewed and discussed the attached PowerPoint presentation that included: Government 101 mission statement, goals, benefits, timeline, candidate selection, program advertising, logistics, course supplies, and, course sessions.

The Commission expressed its support with Government 101 moving forward, and

agreed to split up the sessions.

**6. Discussion of Potential Upcoming Work Session Topics.**

City Manager Greg Doyon reported that the next work session will consist of an update from Neighborhood Council 7. A pre-proposed 2019 budget presentation will be on June 27th, and the formal presentation will be on July 3rd.

No one requested that any items be added to the work session topic list.

**7. Adjourn.**

There being no further discussion, Mayor Kelly adjourned the informal work session of June 5, 2018 at 6:39 p.m.



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A collage of images used as a background for a presentation slide. It features a large red vertical bar on the left, a black vertical bar on the right, and a blue vertical bar on the far right. The central area is divided into four quadrants: top-left shows a stone arch bridge over a river; top-right is a solid black square; bottom-left shows a wastewater treatment facility with aeration tanks; bottom-right shows a swimming pool with a green light. The HDR logo is positioned in the center of the bottom-left quadrant.

**HDR**

**City of Great Falls**  
Wastewater Facility Plan  
Commission Work Session  
6/5/2018

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# AGENDA

- 01 Background
- 02 Basis of Planning
- 03 Regulations and Permitting
- 04 Collection System Evaluation and Recommendations
- 05 WWTP Evaluation and Recommendations
- 06 Capital Cost



# 01 Background

## Background

- Purpose: To provide planning and engineering required to address existing and future issues related to the Great Falls wastewater collection and treatment facilities to insure compliance with regulatory requirements for a 20-year planning horizon.
- Review current system capacity and predicted capacity at design year 2035
- Effluent from the WWTP discharges to the Missouri River following treatment.
- Discharge is governed by a Montana Pollutant Discharge Elimination System (MPDES) Permit



# 02 Basis of Planning

## Basis of Planning

- 2035 Planning Period
- Update system flow and loading based on new plant data, population projections and industrial flow and load
- Correlate with previous planning work
  - Permit Req'd Upgrades
    - 2006 Water Master Plan
    - 2003 Transportation Plan
  - 2013 Growth Policy
  - 2014 Transportation Plan



## Permit Required Upgrades Population Projections

Area	2010	2015	2020	2025	2030
City of Great Falls	58,505	63,613	63,717	63,813	65,430
Malmstrom AFB	3,472	3,561	3,649	3,743	3,836
Black Eagle	904	927	950	975	999
Total Served Population	62,881	68,101	68,316	68,531	70,265

Based on 2010 Census Data and The Water Facility Plan

## Facility Plan Update Influent Flow and Load Matrix

Year and Condition	Influent Flow and Load Parameters		
	Flow, MGD	BOD <sub>5</sub> , lb/day	TSS, lb/day
<b>2015</b>			
Average Annual	10.1	16,536	13,270
Peak Month	12.12	19,843	17,251
Peak Day	24.24	28,111	26,540
Peak Hour	27.27	NA	NA
Peak Instantaneous	28.28	NA	NA
<b>2025</b>			
Average Annual	11.83	22,128	15,987
Peak Month	14.20	26,553	20,783
Peak Day	28.35	37,618	31,974
Peak Hour	31.94	NA	NA
Peak Instantaneous	33.12	NA	NA
<b>2035</b>			
Average Annual	12.43	23,260	16,806
Peak Month	14.92	27,912	21,848
Peak Day	29.83	39,542	33,612
Peak Hour	33.56	NA	NA
Peak Instantaneous	34.80	NA	NA



# 03 Regulations and Permitting



## Existing MPDES Permit

Parameter	Units	Average Monthly Limitation	Average Weekly Limitation	Maximum Daily Limitation
CBODs	mg/L	25	40	--
	lb/day	4,377	7,005	--
	Percent Removal	85%		
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
	Percent Removal	85%		
pH	s.u.	Within the range of 6.0 to 9.0 (instantaneous)		
E. Coli Bacteria, summer (1)	cfu/100mL	126	252	--
E. Coli Bacteria, winter (1)	cfu/100mL	630	1,260	--
Oil and Grease	mg/L	--	--	<10
Total Residual Chlorine	mg/L	0.026	--	0.035
Total Ammonia as N	mg/L	2.86	--	4.50
Arsenic, Total Recoverable	µg/L	13.7	--	16.0
Copper, Total Recoverable	µg/L	22.5	--	49.4
<sup>1</sup> Summer period is April 1 through October 31, Winter period is November 1 through March 31				

## Regulatory Update

- Creation of In-Stream Criteria for Nitrogen and Phosphorus underway
- DEQ sampled Summer 2014 and Summer 2015
  - Model in 2018
  - Criteria created in 2018-19
- DEQ provided guidance to assume criteria between the Lower Yellowstone River and the wadeable stream standard
  - 0.48 mg/L Total Nitrogen
  - 0.043 mg/L Total Phosphorus

Somewhere between these two values:

Ecoregion <sup>1,2</sup> (level III or IV) and Number	Ecoregion Level	Period When Criteria Apply <sup>3</sup>	Numeric Nutrient Standard <sup>4</sup>	
			Total Phosphorus (µg/L)	Total Nitrogen (µg/L)
Yellowstone River (Bighorn River confluence to Powder River confluence)		August 1–October 31	55	655
Middle Rockies (17)	III	July 1 to September 30	30	300

## Theoretical Limit Calculation

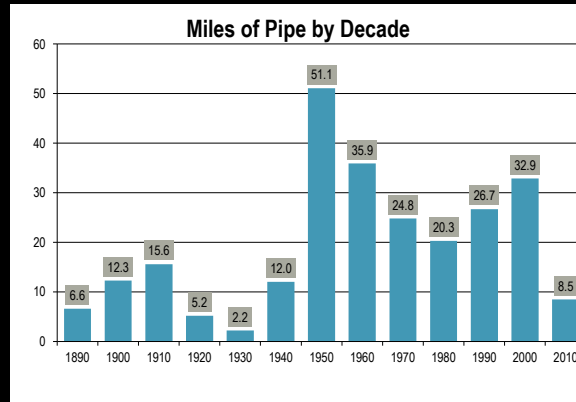
- Will the stream's concentration after mixing be greater than the applicable nutrient standard
- Ambient upstream of the WWTP
  - Nitrogen: 0.31 mg/L
  - Phosphorus: 0.036 mg/L
  - Appears Assimilative Capacity Exists
- What would the limits be?
- Highly variable based on in-stream data
- With existing data points (2 samples):
  - 15 mg/L TN
  - 0.50 mg/L TP



## 04 Collection System Evaluation and Recommendations

## Gravity Sewers

- 271 Miles of Sewer Main
- Condition Assessment
  - Based on review of CCTV tapes/logs
  - Detailed assessment
  - Findings/Conclusions
  - Recommendations.
    - » Focus on Concrete Pipes after other identified priorities – i.e. FOG and Roots.
    - » Monitor for H<sub>2</sub>S where concrete pipes show corrosion.
    - » Include Manholes in inspection program.



## Lift Stations/Force Mains

- Lift Station Descriptions
  - Physical
  - Control system
  - Force Main
  - Infiltration/Inflow
  - Power Outage/Pump Failure Contingency
- Condition, Reliability and Capacity
  - Pumps
  - Motors
  - Control Systems
  - Electrical Systems
  - Physical Facilities
  - Pipes and Valves
  - Maintenance History
- Recommendations
  - Develop comprehensive Contingency Plan
  - Program to examine condition of Force Mains
  - Plan for replacement of Control System Components.



## Lift Station Summary

Lift Station Number, Address	Number of Pumps	Firm Pump Capacity (MGD) <sup>1</sup>	Estimated Dry Weather Flow <sup>2</sup>	Emergency Power Source	Year Installed or Upgraded	Comments
1. 800 River Drive North	4 WW 3 storm	24	3.5 MGD	Dual Utility Source	1959/1976	Major conventional station with bar screen; pumps directly to WWTP Primary Division Structure
2. 611 River Drive North	2	0.20	8,000 gal/day	Portable 50 Kw generator	1972/2015	Submersible station
4. 23 River Drive South.	2	0.14	4,600 gal/day	Portable 50 Kw generator	1977	Package station serving Electric City Water Park only
5. 1705 39 <sup>th</sup> St. South	2	0.29	4,600 gal/day	On-site 12.5 Kw generator	1980	Package station with emergency generator
6. 4616 13 <sup>th</sup> Ave. South	2	0.47	Unknown <sup>3</sup>	Portable 50 Kw generator	2015	Submersible Station
7. 3500 15 <sup>th</sup> Ave. South	3	2.0	0.11 MGD	Dual Utility Sources	1970	Medium sized conventional lift station with grinder
8. 406 20 <sup>th</sup> Ave. South	2	0.14	3,900 gal/day	Portable 50 Kw generator	1978	Package station, scheduled for removal
9. 5100 1 <sup>st</sup> Ave. South	2	0.14	9,000 gal/day	Portable 50 Kw generator	1973	Package station
10. 4600 7 <sup>th</sup> Ave. North	3	2.88	1.2 MGD	On-site 125 Kw generator	1985	Large package station with emergency generator
11. 6503 18 <sup>th</sup> Ave. North	2	0.34	Unknown <sup>3</sup>	Portable 50 Kw generator	2016	Submersible station
12. 503 River Drive South	2	0.30	16,000 gal/day	Portable 50 Kw generator	1991/2012	Package station

## Lift Station Summary

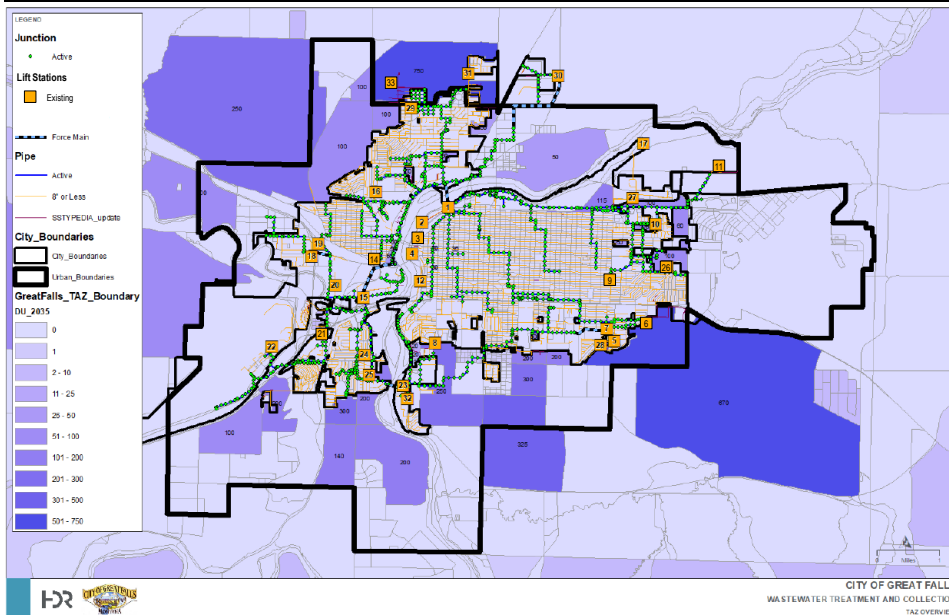
Lift Station Number, Address	Number of Pumps	Firm Pump Capacity (MGD) <sup>1</sup>	Estimated Dry Weather Flow <sup>2</sup>	Emergency Power Source	Year Installed or Upgraded	Comments
15. 810 10 <sup>th</sup> Ave. S.W.	3	11.5	1.80 MGD	Dual Utility Source	1977	Large conventional station with bar screen on influent channel
16. 1326 5 <sup>th</sup> St. N.W.	2	0.075	2,500 gal/day	Portable 50 Kw generator	1994	Submersible station
17. 4199 Giant Springs Road	3	0.26	680 gal/day	Portable 50 Kw generator	1997	Submersible station
18. 1716 3 <sup>rd</sup> Ave. S.W.	3	3.0	69,000 gal/day	On-site 100 Kw generator	1991	Medium sized conventional station with emergency generator.
19. 1601 2 <sup>nd</sup> Ave. S.W.	1	0	600 gal/day	Portable 50 Kw generator	1970	Submersible station
20. 833 13 <sup>th</sup> St. S.W.	2	0.34	11,000 gal/day	Portable 50 Kw generator	1970/2015	Submersible station
22. 2801 Terminal Drive	2	0.22	1,500 gal/day	Portable 50 Kw generator	1974	Package station
23. 3114 S. Lower River Road	3	6.9	0.71 MGD	On-site 125 Kw generator	1986	Medium sized conventional station with comminutors and emergency generator
24. 704 Juniper Ave.	2	0.34	23,000 gal/day	Portable 50 Kw generator	1975/2015	Submersible station
25. 2619 Coyote Lane	2	0.17	27,000 gal/day	Portable 50 Kw generator	1985/2012	Package station

# Lift Station Summary

Lift Station Number, Address	Number of Pumps	Firm Pump Capacity (MGD) <sup>1</sup>	Estimated Dry Weather Flow <sup>2</sup>	Emergency Power Source	Year Installed or Upgraded	Comments
27. 4122 North Star Blvd.	2	0.79	29,000 gal/day	Portable 50 Kw generator	1977/2007	Package station
28. 1715 Whispering Ridge Dr.	2	0.22	4,800 gal/day	Portable 50 Kw generator	2004	Package station
29. 3503 2 <sup>ND</sup> St. N.E.	2	0.22	21,000 gal/day	Portable 50 Kw generator	2004	Package station
30. 122 Black Eagle Road	3	4.6	1.4 MGD	On-site 375 Kw generator	2004	Large package station with emergency generator
31. 4403 9 <sup>th</sup> St. N.E.	2	0.37	45,000 gal/day	Portable 50 Kw generator	2007	Package station
32. 3314 Lower River Road	2	0.58	16,000 gal/day	Portable 50 Kw generator	2007	Package station
33. 36 43 <sup>rd</sup> Ave. N.E.	2 (3 future)	0.38 (0.76 future)	Unknown <sup>3</sup>	Portable 50 Kw generator	2016	Submersible station

<sup>1</sup> Maximum pumping rate with the largest pump out of service.  
<sup>2</sup> Median of estimated daily flows measured between August 2014 through June 2015. Lift Stations 2, 15, 23 and 30 have flow meters. Other station flow was calculated using pump operation and wet well volume information. Flows for LS#4 were calculated for the period while the water park was in operation.  
<sup>3</sup> This station is new – no data is available.

# Existing Lift Stations



## Lift Station CIP

- Lift Station Replacement underway- #9,
- Lift Station Rehab in the future- #19, #31
- Replace single phase motors with 3 phase - #5, #29
- Replace Pumps and Motors - #1 and #15
- Upgrade, rehab and new river crossing LS#1
- Replace FM for LS #2
- Concrete repair and instrumentation replacement for LS#23
- Repairs in LS #4
- Remove #8

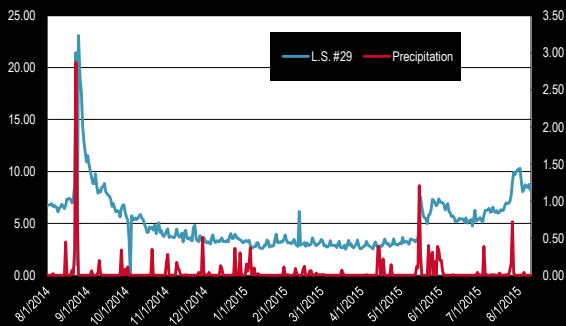
### Question:

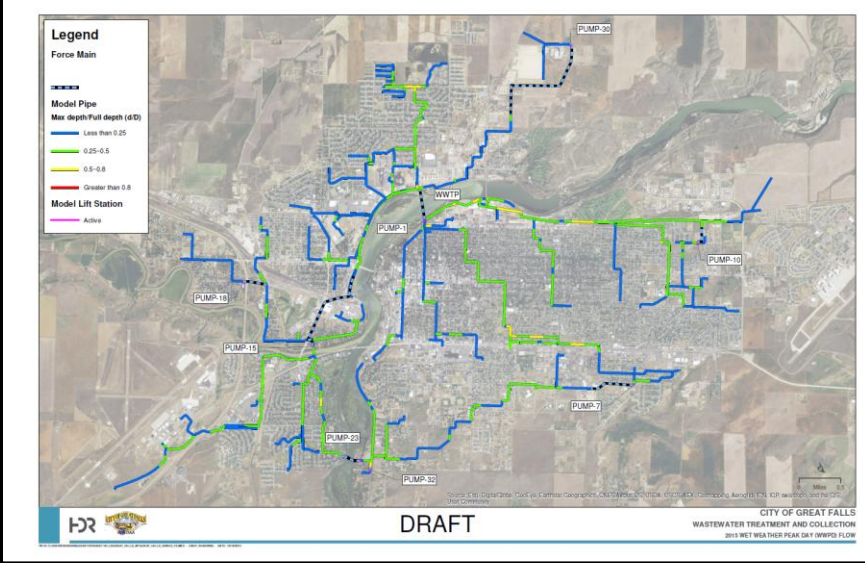
- Remove #5 for gravity?
- Wet well capacity for #7?



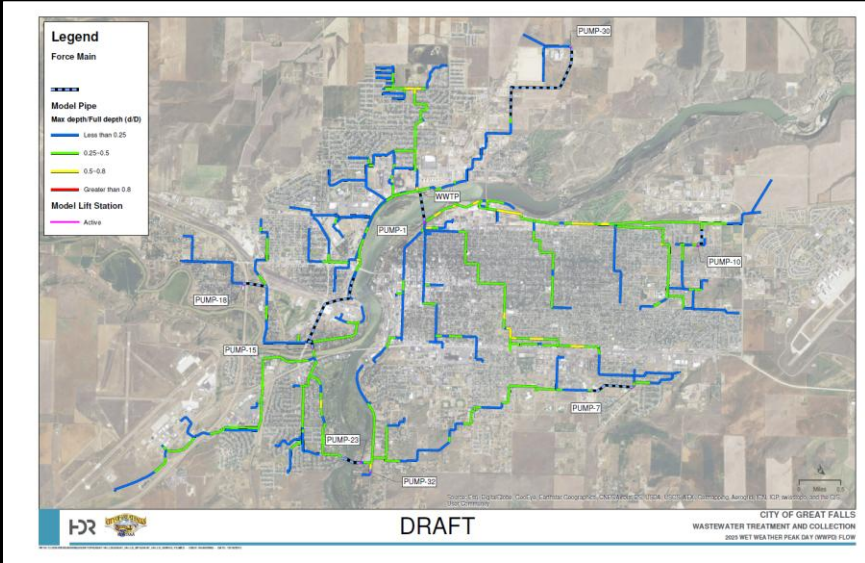
## Infiltration/Inflow

- Update analysis from 1996 Wastewater Facility Plan
  - Compare WTP and WWTP flows
    - 1996 = 3.5 MGD
    - 2015 = 2.5 MGD
  - Compare measured base flows at the WWTP to the size of the collections system.
    - 1996 = 2013 gallons/day/inch dia. mile
    - 2015 = 1770 gallons/day/inch dia. mile
- Summarize Excess Infiltration and Inflow Study.

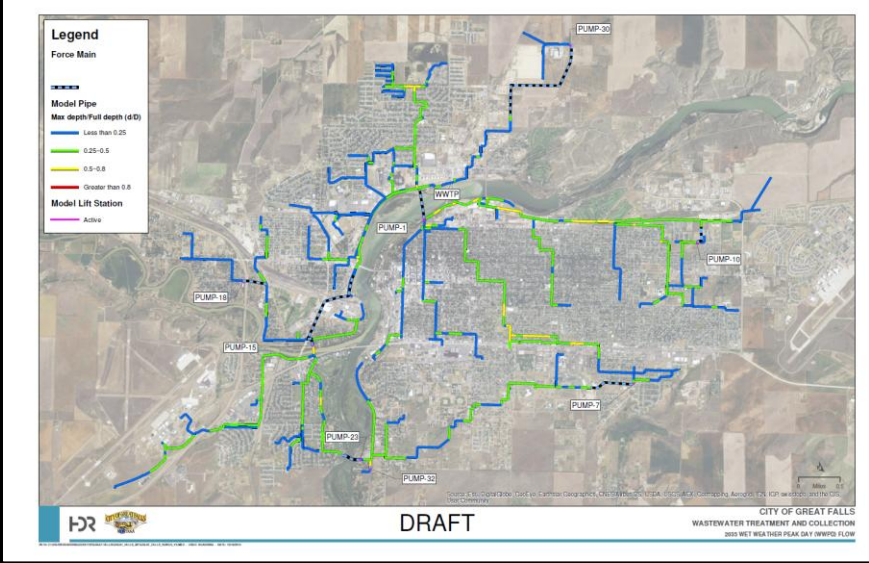




2015 Peak Hour Flow

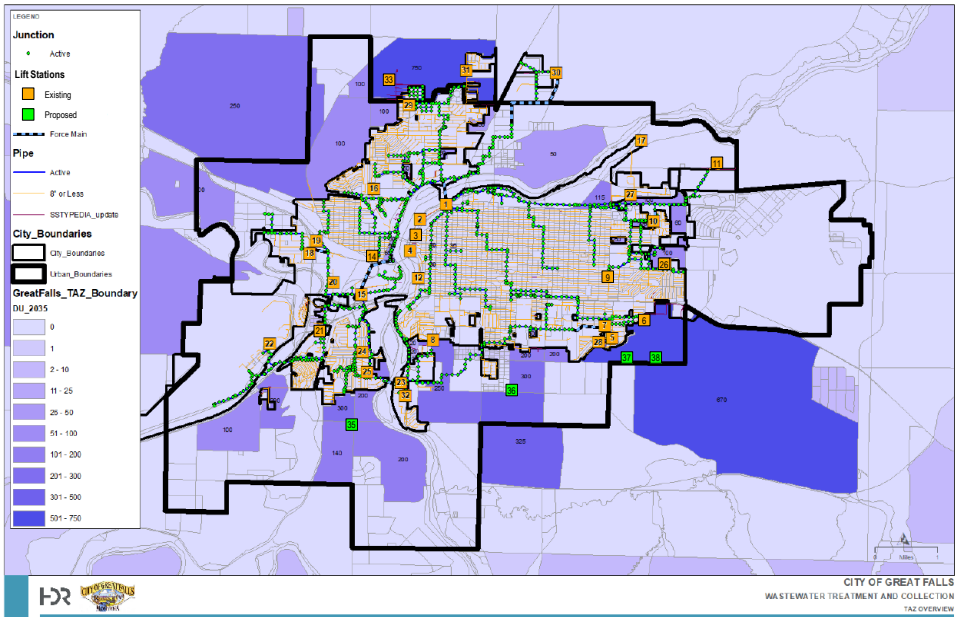


2025 Peak Hour Flow



2035 Peak Hour Flow

Future Lift Station Locations







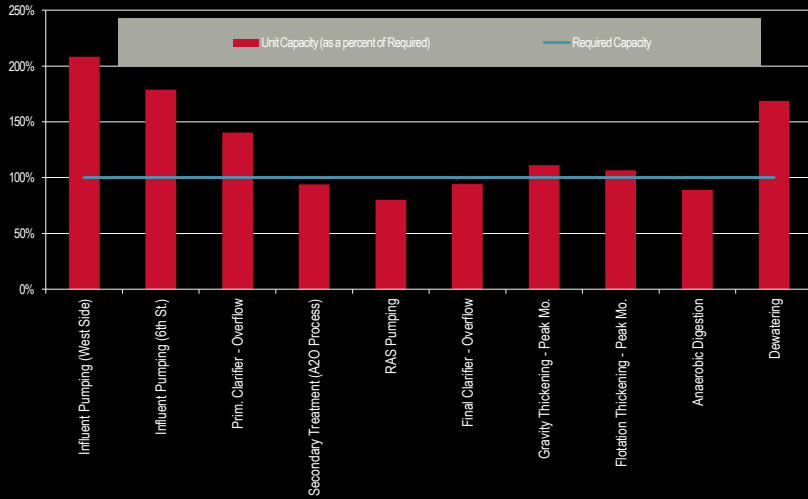
# 05 WWTP Evaluation and Recommendations

## WWTP Evaluation

- Evaluated all unit processes for future capacity
- 2010 Flow: 10.5 MGD
- 2015 Flow: 10.1 MGD
- 2035 Flow: 12.4 MGD



## Existing Plant Capacity Summary



## Biological Process Improvements

- Year 2022
  - Upgrade to A2O process for biological phosphorus removal.
  - Consider sidestream treatment for phosphorus recycle loading or alum/ferric dosing for polishing
- Year 2027 (or whenever capacity is needed)
  - Build 4<sup>th</sup> bioreactor with A2O process
- Future
  - Convert to MBR BNR if needed for further nutrient treatment or
  - Upgrade clarifiers to meet capacity requirements





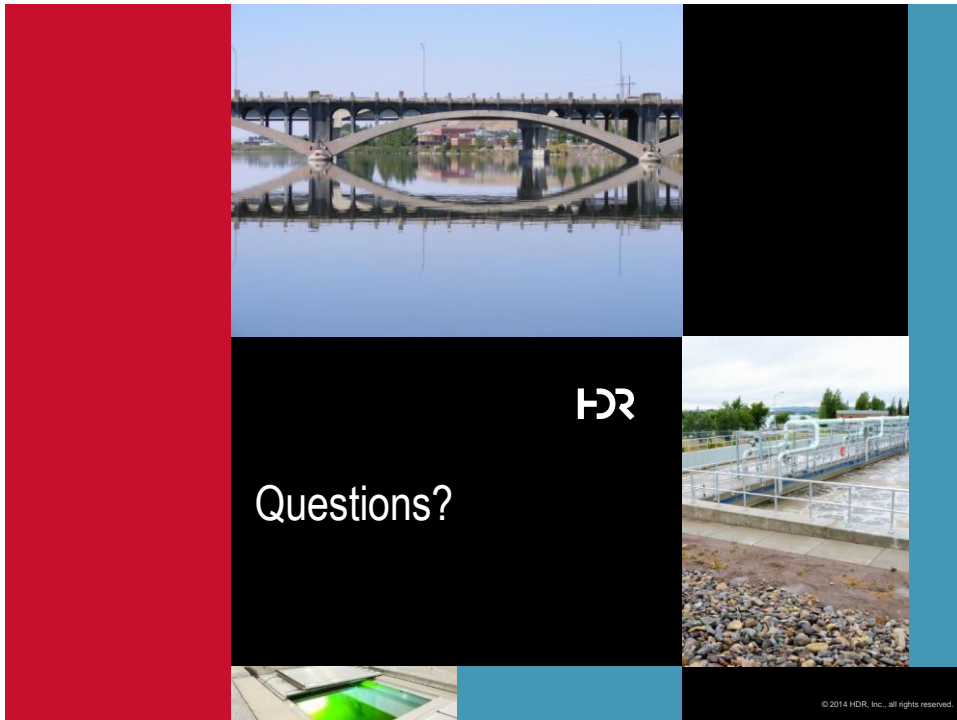
# 06 Capital and O&M Cost

## Capital Improvement Collection

Unit Process	Year Expected	Capital Cost Estimate
Upgrade Lift Station Controls	2018-2020	\$100,000
Emergency Generators	2018	\$500,000
6th Street Upgrade LS#1	2020	\$3,100,000
Annual Rehab- Manholes	Annual	\$100,000/year
Annual Rehab- Sewer Pipe	Annual	\$1,000,000/year

## Capital Improvement – Treatment Plant

Unit Process	Year Expected	Capital Cost Estimate
Missouri River Sampling and Modeling	2018-2021	\$250,000
Upgrade Bioreactors to A2O Process	2022	\$1,500,000
Add Sidestream Treatment or Chemical Dosing	2022	\$3,000,000
Build 4 <sup>th</sup> Bioreactor	2027	\$10,000,000
Improve Clarifiers	2027 or Possible Future	\$2,000,000
Upgrade to MBR	Possible Future	\$63,000,000



HDR

Questions?

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## Great Falls Government 101 Mission Statement

The mission of the Great Falls Government 101 program is to familiarize citizens with the function and purpose of the City of Great Falls government.



## Great Falls Government 101 Goals

### Class Members:

- Become acquainted with Mayor, City Commission, City Manager, Department Directors, and other City staff.
- Learn about City of Great Falls form of government.
- Gain an understanding of how each Department supports the City of Great Falls and it's citizens:
  - To provide outstanding services and facilities, through cooperative efforts with our citizens, that contribute to the quality of life in our community.

# Benefits

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## Citizen, Community & City

### Promotes:

- Citizen Education
  - Government Operations
- Community Interest
  - Awareness
- City Involvement
  - Boards, Commissions and other committees



# Timeline

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- June 5, 2018– Brief City Commission on concept.
- June – 15 July 2018– Advertise and recruit candidates for the class.
- July 26, 2018 – First Great Falls Government 101 class is launched.

# Great Falls Government 101 Candidate Selection

- Current resident of City of Great Falls.
- 18 years of age or older.
- Can commit to attending 6 monthly sessions, held on the last Thursday of each month; 6-8:30p.m.



## Program Advertising

- Tri-fold informational brochure (including application) is printed in-house and made available at various City facilities.
- City website pages displays info & printable application under Community Outreach section.
- City cable television and City Manager Facebook page displays information about enrollment.
- Feedback is obtained via surveys conducted with each session.



# Logistics

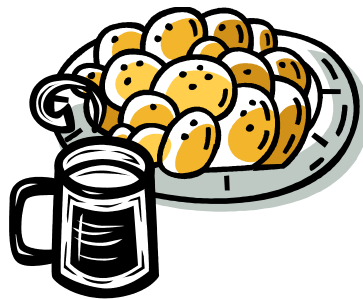
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- Deputy City Manager is the “class coordinator” that oversees the program.
- City Manager’s Executive Assistant helps with organization, reminders, and other clerical tasks associated with the course.
- Directors and/or their immediate managers are expected to make their department’s presentation.

# Logistics Continued

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- Initial class will be kept to a maximum of 25 after input and best practice recommendations
- Each presentation session will include a question and answer period.
- Light refreshments (coffee, water, and cookies) are provided during each session.



## Logistics Continued

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# Budget

- One course held per year, free of charge.
- Personnel costs are absorbed by each participating Department.
- Funding for supplies, operation and graduation is procured through the City Managers office budget at a cost of approximately \$2,000 per course.
- Course can be tailored as needed to meet budget or citizen suggestions. Costs can be reduced by limiting class members, number of sessions held, supplies, refreshments and/or graduation mementos.

## Course Supplies

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- At first session, a 3" notebook initially stocked with course syllabus and session dividers, mission statement, contact info, maps to facilities, and business card holders is provided.
- At each subsequent session, brochures, booklets and handouts are provided by each City department to "build" and ultimately complete the notebook as a keepsake and valuable reference tool.



# Great Falls Government 101

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## Course Sessions

**Sessions will be on the last Thursday of  
each month from 6:00-8:30 in the Gibson Room**

- Session 1: JUL 26<sup>TH</sup>
- Overview of City Commission/City Manager Form of Government – 1 hr (Mayor/CM)
- City Clerk Responsibilities – 20 minutes (Clerk)
- Volunteering within the City Government/Citizens Roles on City Advisory Boards and Commissions – 20 minutes (Clerk)
- Neighborhood Council – 20 minutes (Neighborhood Council Coordinator)
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- Session 2: AUG 30<sup>TH</sup>
- Finance Responsibilities - 30 minutes (Director)
- City Budget – 1 hour (Director/Budget Analyst)
- Animal Shelter – 20 minutes (Manager)
- Mansfield Events Center – 20 minutes (Manager)
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# Great Falls Government 101

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## Course Sessions

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- Session 3: SEP 27<sup>TH</sup>
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- Planning and Community Development Responsibilities– 1 hour (Director, Deputy, Bldg Official)
- Legal Responsibilities– 1 hour (City Attorney/Deputy)
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- Session 4: OCT 25<sup>TH</sup>
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- Fire and Emergency Services Responsibilities– 1 hr (Fire Chief/Deputy)
- Parks and Recreation Responsibilities– 1 hour (Director/Deputy)

# Great Falls Government 101

## Course Sessions

**Sessions will be on the last Thursday of  
each month from 6:00-8:30 in the Gibson Room**

- Session 5: NOV 29<sup>TH</sup>
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- Public Works Responsibilities- 1.0 hours (Director)
- Human Resources Responsibilities - 45 minutes (Director)
- Great Falls Housing Authority Responsibilities- 20 minutes (Director)
- 
- Session 6: DEC 27<sup>TH</sup>
- 
- Police Services Responsibilities - 1 hour (Chief)
- Great Falls Library Responsibilities- 20 minutes (Director)
- Graduation - 30 minutes; Mayor/CM and certificate presentation
- 



## Session 7: Graduation

- Graduates and their families are honored by the Mayor, City Commission, City Manager and City staff with a ceremony and reception.
- Graduates receive a certificate and a small gift for their service and interest in our City.

## For more information . . .

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### Contact



City of Great Falls

(406) 455-8450

or

[canderson@greatfallsmt.net](mailto:canderson@greatfallsmt.net)

## Items for Clarification

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- ❑ Does a member of the Commission want to be involved in each session?