



City of Leavenworth
100 N. 5th Street
Leavenworth, Kansas 66048

CITY COMMISSION STUDY SESSION
COMMISSION CHAMBERS
TUESDAY, MAY 17, 2022 6:00 P.M.

Welcome to your City Commission Study Session – Please turn off or silence all cell phones during the meeting
Meetings are televised everyday on Channel 2 at 6 p.m. and midnight and available for viewing on YouTube

Study Session:

1. Update on the Wastewater Treatment Plant Condition Assessment (pg. 02)
2. Speed Study on 4th Street - Eisenhower to Metropolitan (pg. 17)
3. Discussion of American Rescue Plan Act (ARPA) Funding (pg. 34)

POLICY REPORT PWD NO. 22-25

**WORK SESSION – UPDATE ON
THE WWTP CONDITION ASSESSMENT**

City Project No. 2021-962

May 17, 2022

Prepared By:

Reviewed By:



Brian Faust, P.E.,
Director of Public Works



Paul Kramer,
City Manager

ISSUE:

Receive an update from HDR on the Waste Water Treatment Plant Condition Assessment.

BACKGROUND:

The City of Leavenworth WWTP was originally constructed in the early 1970s. The facility has had several upgrades and currently consists of the following: influent screening and pumping, aerated grit removal, primary clarification, intermediate pumping (settled sewage), trickling filters, final clarification, sludge dewatering (belt filter press), and UV disinfection.

As the plant and equipment age, the likelihood of failure of individual components and the consequence of a failure increases. Many of the systems have original components that are now obsolete. Finding replacement parts and integrating them into the system can be challenging and costly. Some critical components have no redundancy. In addition, changing regulatory requirements and advancements in treatment methodologies need to be reviewed and the appropriate changes incorporated into the day-to-day plant operations.

The reason for this Condition Assessment is to:

- Identify the various assets/components within the plant and our lift stations,
- Determine the remaining life of the assets, maintenance needs and cost to replace,
- Help staff create a Computerized Maintenance Management System (CMMS) to better manage these assets,
- Define critical components where the consequence of failure and likelihood of failure put the facility's ability to function as designed at risk,
- Help develop a CIP for the facility that works to address these critical components and maintaining fiscal accountability to the rate payers,
- Review pending regulatory proposals that may change discharge limits at the facility (crystal ball), and
- Review options for sludge disposal

After reviewing operations and identifying over 1000 separate assets at the plant, the initial findings are that while the City of Leavenworth has a well-run facility with talented staff, a combination of five (5) decades of operation and limited funding for ongoing maintenance has taken its toll. As a result, there is a need for significant investments in several critical areas of operations. Our initial area of focus is where the likelihood of failure and the consequence of failure are both high and could result in a short or long-term failure to meet discharge limits defined in our permit.

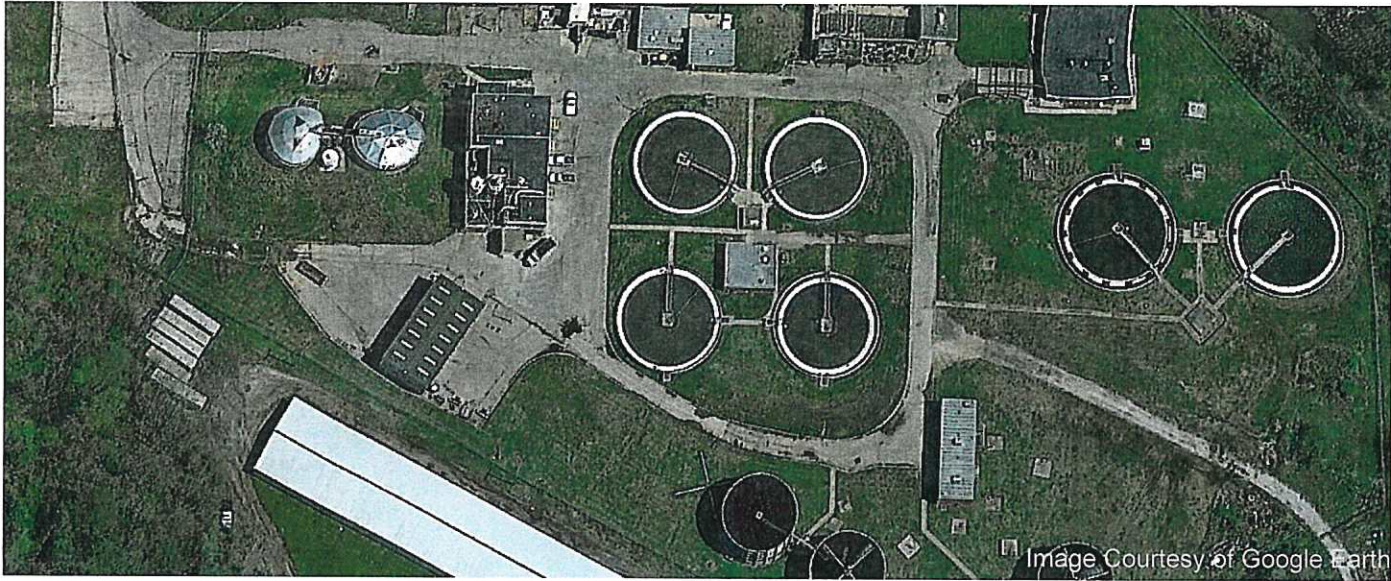
These critical areas include:

Trickling Filters
Belt Press
Bar Screen
Belt Press/Administration Building

This evening, Mr. Charlie Sievert, Associate Vice President of HDR will provide a brief status update on the Condition Assessment.

ATTACHMENT:
PowerPoint Presentation





Wastewater Treatment Plant Condition Assessment

Agenda

- 01 Condition Assessment
- 02 Focus Areas
- 03 Next Steps
- 04 Recommendations



05/17/22

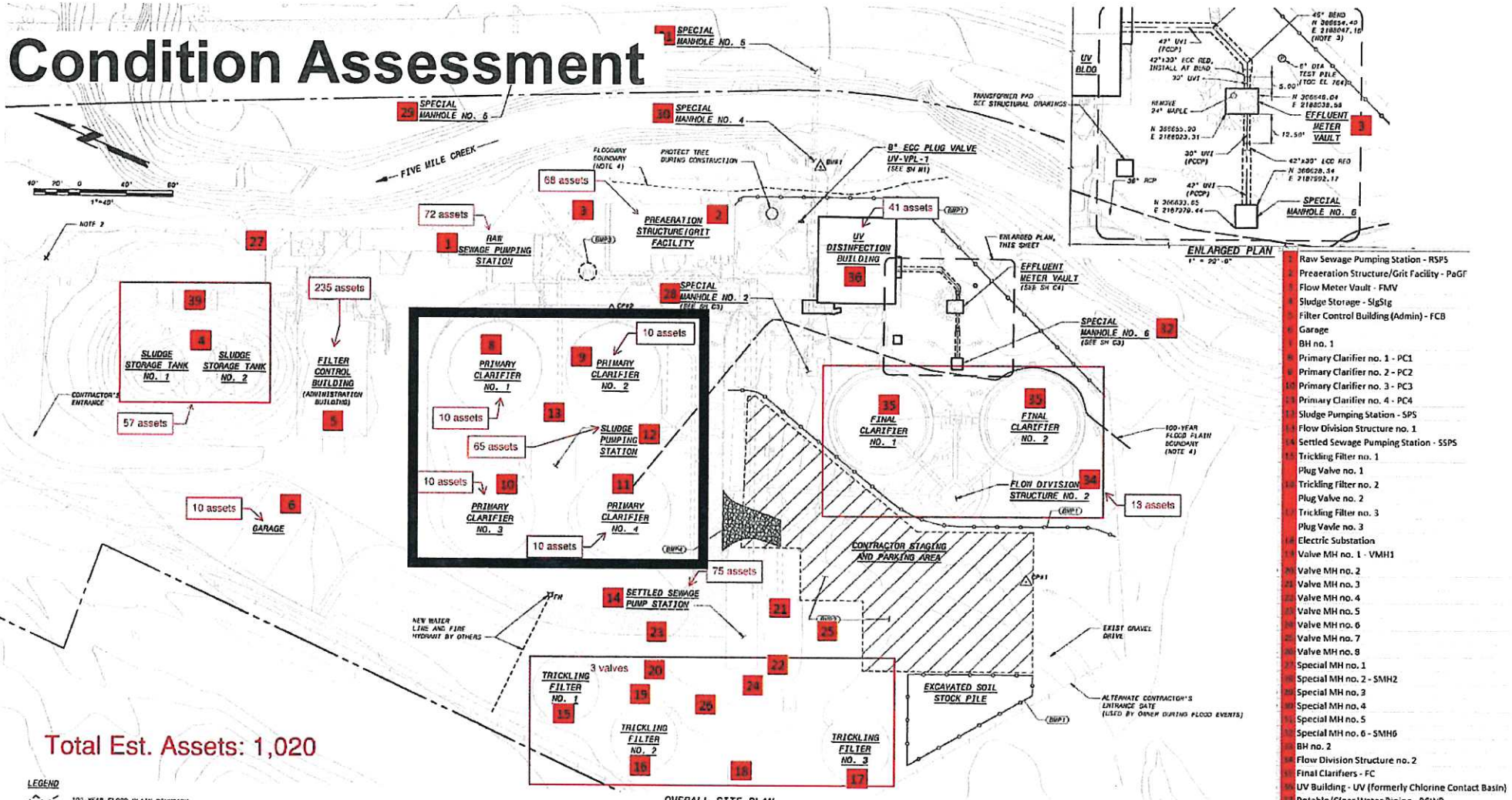




Work Completed to Date

- Condition Assessment
- Asset List
- Repair/Replacement Costs
- Dewatering Bench Testing
- Plant Treatment Review
- Permit Review

Condition Assessment



Total Est. Assets: 1,020

- LEGEND**
- 100-YEAR FLOOD PLAIN BOUNDARY
 - FLOODWAY BOUNDARY
 - PROPERTY BOUNDARY
 - SEDIMENT FENCE
 - INLET PROTECTION
 - CONSTRUCTION ENTRANCE

EROSION & SEDIMENT CONTROL STAGING TABLE

PROJECT STAGE	BMP PLAN REF. NO.	BMP DESCRIPTION	REMOVE AFTER STAGE	NOTES
A - PRIOR TO LAND RESTORANCE	1	SEDIMENT FENCE	B	MAINTAIN UNTIL VEGETATION REACHES 80% COVER AND END OF PROJECT
B - SITEWORKING	2	STABILIZER PAPER/STRIPINGS	B	
C - GRADING & STRUCTURE CONSTRUCTION	3	INLET PROTECTION	B	USE GRAVEL FILTER BINS OR EQUIV. MAINTAIN UNTIL VEGETATION REACHES 80% COVER AND END OF PROJECT

- 1 Raw Sewage Pumping Station - RSPS
- 2 Preaeration Structure/Grit Facility - PaGr
- 3 Flow Meter Vault - FMV
- 4 Sludge Storage - SlgSlg
- 5 Filter Control Building (Admin) - FCB
- 6 Garage
- 7 BH no. 1
- 8 Primary Clarifier no. 1 - PC1
- 9 Primary Clarifier no. 2 - PC2
- 10 Primary Clarifier no. 3 - PC3
- 11 Primary Clarifier no. 4 - PC4
- 12 Sludge Pumping Station - SPS
- 13 Flow Division Structure no. 1
- 14 Settled Sewage Pumping Station - SSPS
- 15 Tricking Filter no. 1
- 16 Plug Valve no. 1
- 17 Tricking Filter no. 2
- 18 Plug Valve no. 2
- 19 Tricking Filter no. 3
- 20 Plug Valve no. 3
- 21 Electric Substation
- 22 Valve MH no. 1 - VMH1
- 23 Valve MH no. 2
- 24 Valve MH no. 3
- 25 Valve MH no. 4
- 26 Valve MH no. 5
- 27 Valve MH no. 6
- 28 Valve MH no. 7
- 29 Valve MH no. 8
- 30 Special MH no. 1
- 31 Special MH no. 2 - SMH2
- 32 Special MH no. 3
- 33 Special MH no. 4
- 34 Special MH no. 5
- 35 Special MH no. 6 - SMH6
- 36 BH no. 2
- 37 Flow Division Structure no. 2
- 38 Final Clarifiers - FC
- 39 UV Building - UV (formerly Chlorine Contact Basin)
- 40 Potable/Clear Water Piping - PCWP
- 41 Nonpotable Water System - NPWS
- 42 Filter Feed Pump Station - FFPS
- 43 General Electrical - GenE

- NOTES:**
1. ALL GENERAL NOTES, EROSION AND SEDIMENT CONTROL GENERAL NOTES & ARE LOCATED ON SHEET C2.
 2. CONSTRUCTION TO POST SIGN "ENTRANCE CLOSED TO CONSTRUCTION TRAFFIC" ON EQUAL THIS LOCATION
 3. STAFF AND DEFLECT JOINTS TO PROVIDE REQUIRED PIPE ELEVATIONS AT STRUCTURES.

Asset List

Leavenworth, KS WWTP

#	Building/Facility/Room	Asset	Qty	Qty Removed	Total Qty	Replacement Unit Cost
1	Raw Sewage Pumping Station - RSPS		21	0	21	
	Process		21	0	21	
1	RSPS	Process globe valve (30" from wet well to pump no. 5)	1		1	\$ 40,000.00
1	RSPS	Process globe valve (30" from wet well to pump no. 6)	1		1	\$ 40,000.00
1	RSPS	Process gate valve (24" CIP, preaeration bypass)	1		1	\$ 18,525.00
1	RSPS	Process gate valve (24" CIP, to 42" CIP)	1		1	\$ 18,525.00
1	RSPS	Process gate valve (24" from inc. check valve after pump no. 5)	1		1	\$ 18,525.00
1	RSPS	Process gate valve (24" from inc. check valve after pump no. 6)	1		1	\$ 18,525.00
1	RSPS	Process increasing check valve (20" to 24", from pump no. 5)	1		1	\$ 25,800.00
1	RSPS	Process increasing check valve (20" to 24", from pump no. 6)	1		1	\$ 25,800.00
1	RSPS	Process gate valve (16" from wet well to pump no. 1)	1		1	\$ 12,350.00
1	RSPS	Process gate valve (16" from wet well to pump no. 2)	1		1	\$ 12,350.00
1	RSPS	Process gate valve (16" from wet well to pump no. 3)	1		1	\$ 12,350.00
1	RSPS	Process gate valve (16" from wet well to pump no. 4)	1		1	\$ 12,350.00
1	RSPS	Process increasing check valve (from pump no. 1 to 12" gate valve)	1		1	\$ 6,500.00
1	RSPS	Process increasing check valve (from pump no. 2 to 12" gate valve)	1		1	\$ 6,500.00
1	RSPS	Process increasing check valve (from pump no. 3 to 12" gate valve)	1		1	\$ 6,500.00

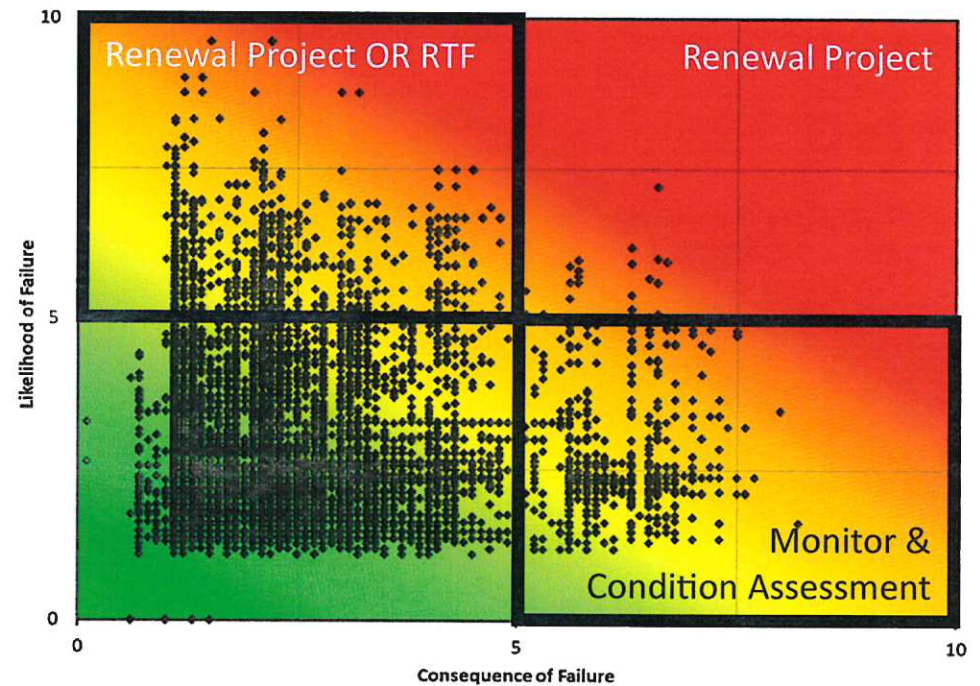
Areas of Focus

- Asset Management & Computerized Maintenance Management System (CMMS)
- Consequence of Failure / Likelihood of Failure
- Odor Control & Life Safety
- Obsolete Equipment / Processes
- Landfill Cost / Availability
- Regulatory



Next Steps

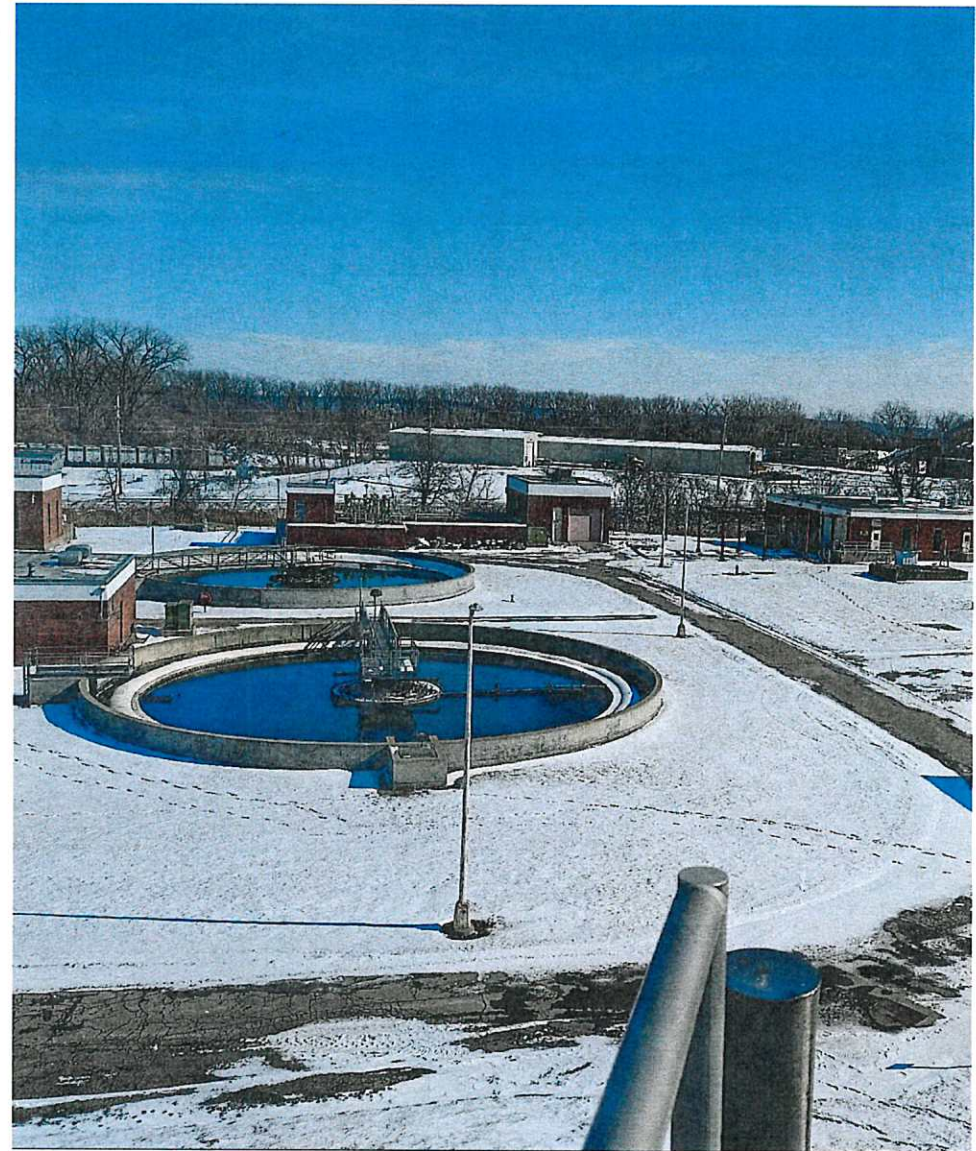
- Identify Computerized Maintenance Manage System (CMMS) package with Staff
- Define Critical assets
- Consequence of Failure /Likelihood of Failure (COF/LOF) workshop with Staff
- CIP
- Sludge disposal optimization
- Permitting



Critical Assets

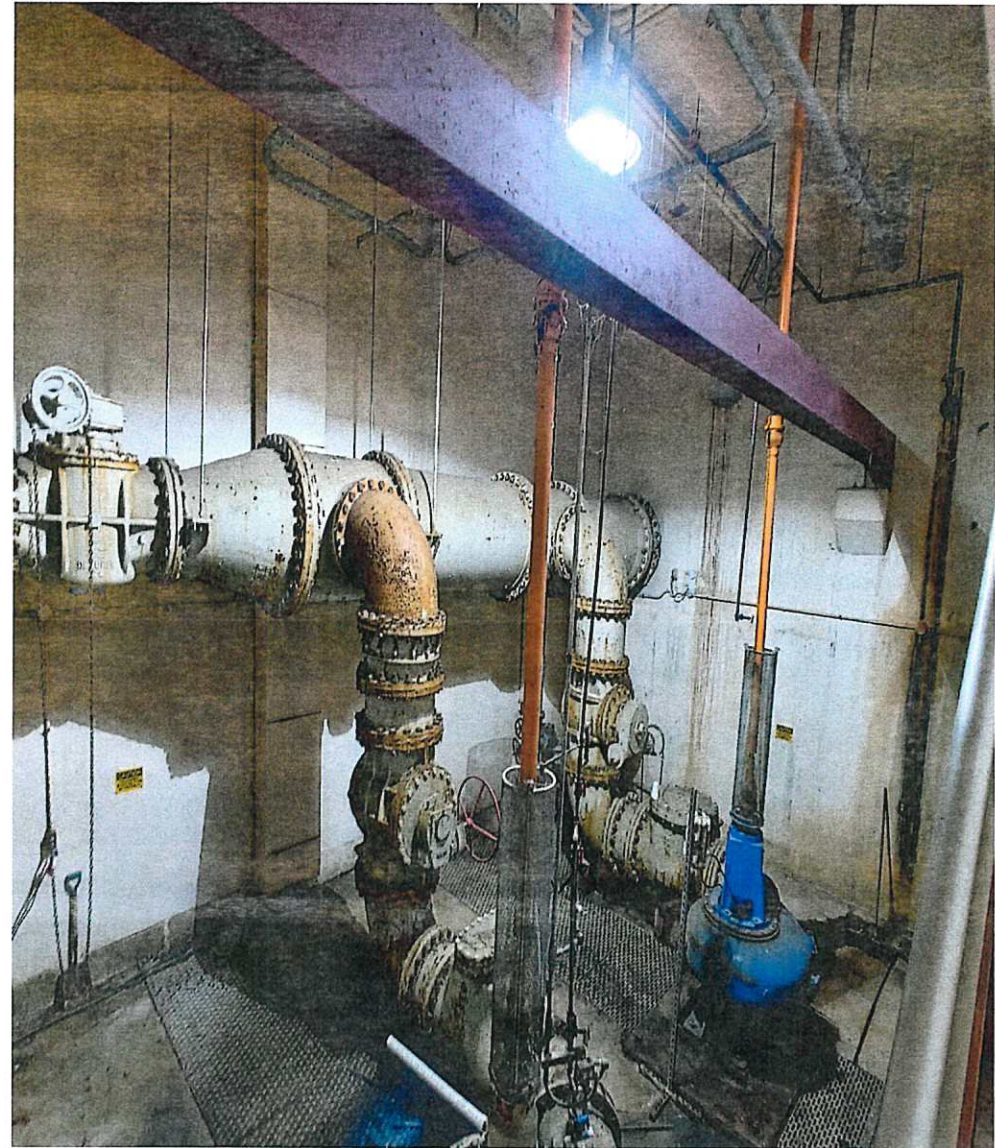
(Examples – not a complete list)

- East bar Screen – obsolete
- East Grit classifier – obsolete
- Trickling Filters
- Belt Press
- Belt press/office space
- Mixing in the holding tank



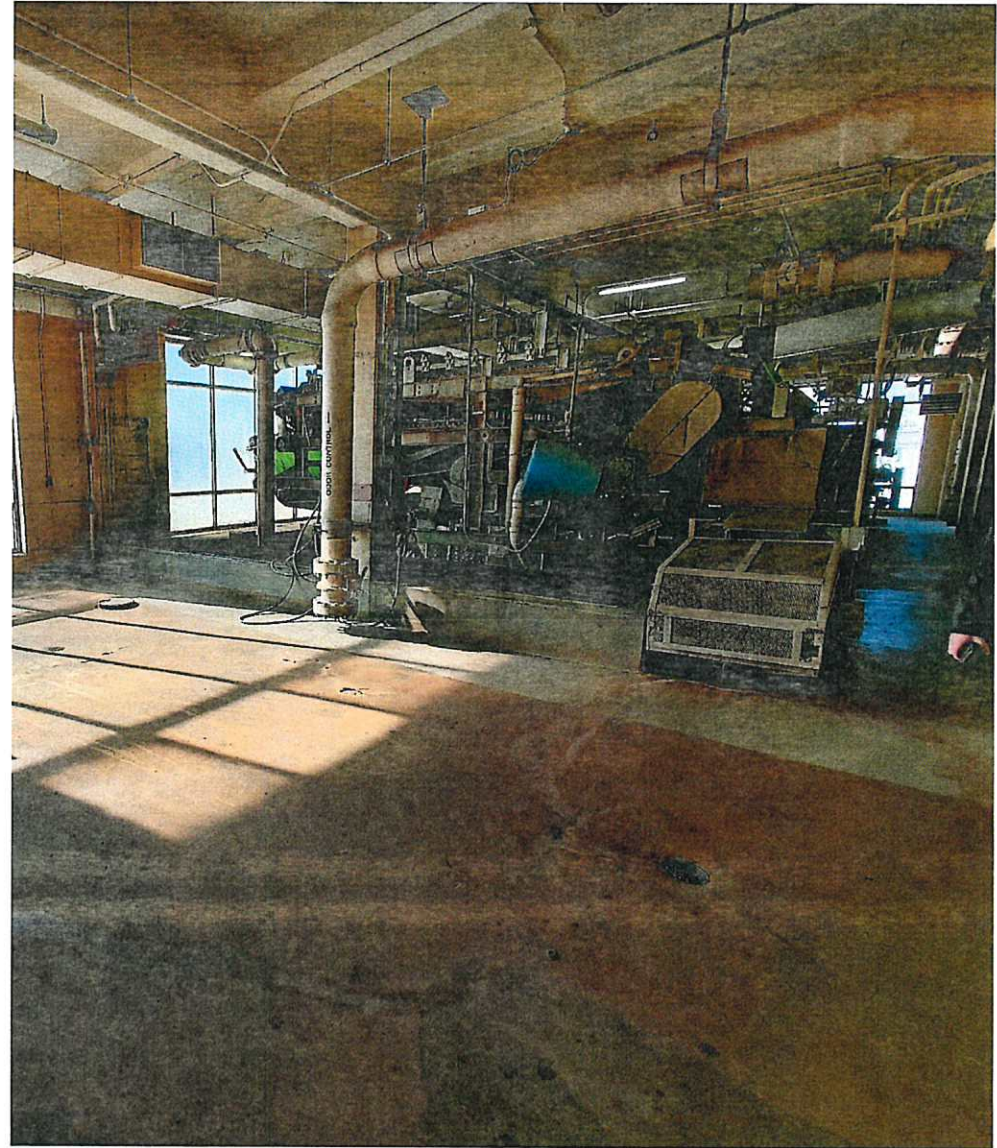
Capital Improvement Projects

- Option 1 –Maintain Existing
 - Replace belt filter press (BFP) and media in trickling filter and other failing equipment only
- Option 2 – Life Safety Upgrades
 - 2a – existing admin. building modifications
 - 2b – BFP in standalone building
 - 2c – Stand alone admin. building



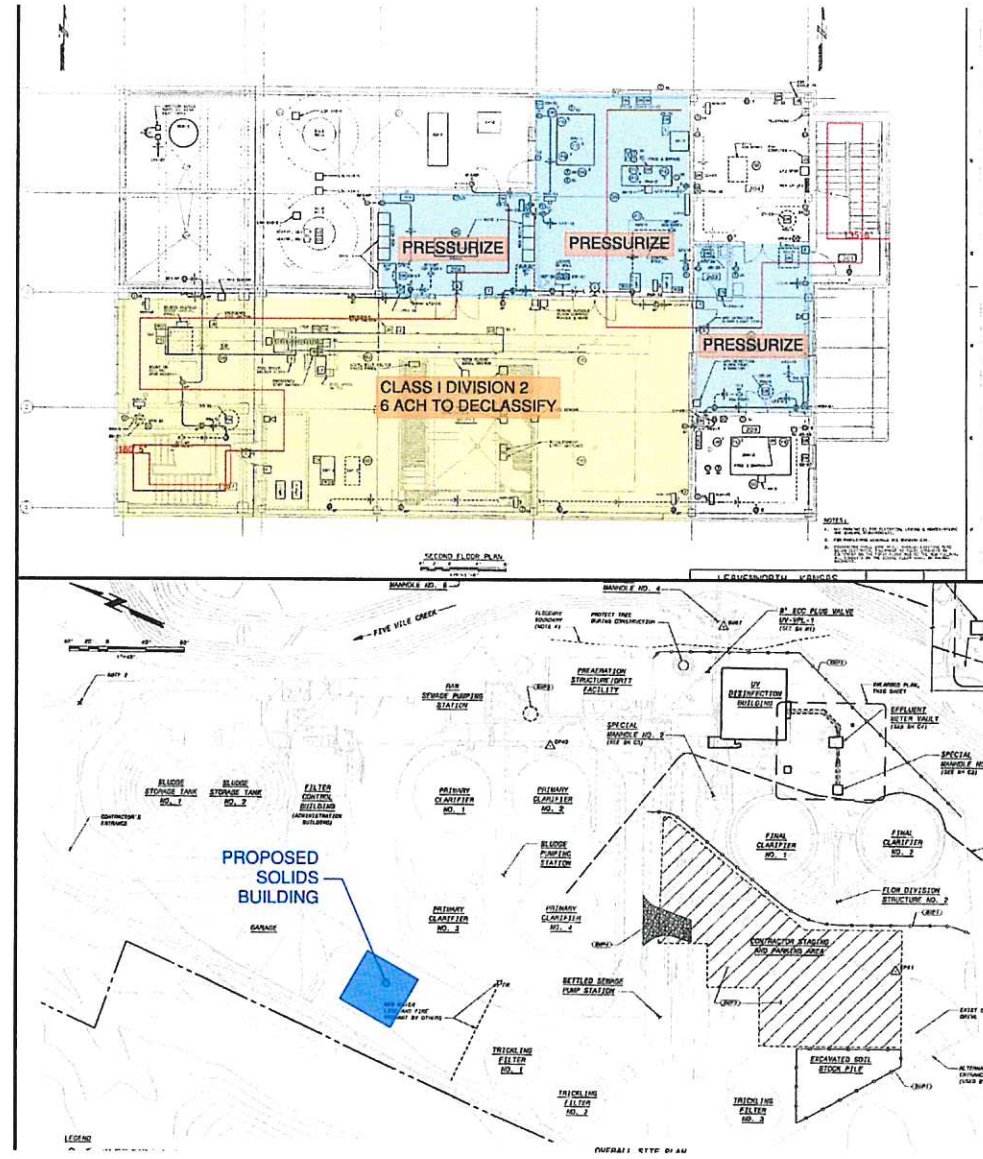
CIP Option 1 – Maintain Existing

- Major asset replacements – Years 1 - 3
 - Belt Filter Press
 - Mechanical Bar Screen
 - Grit Classifier
 - Media in Trickling Filter (1 filter at a time)
 - Replace broken/faulty equipment



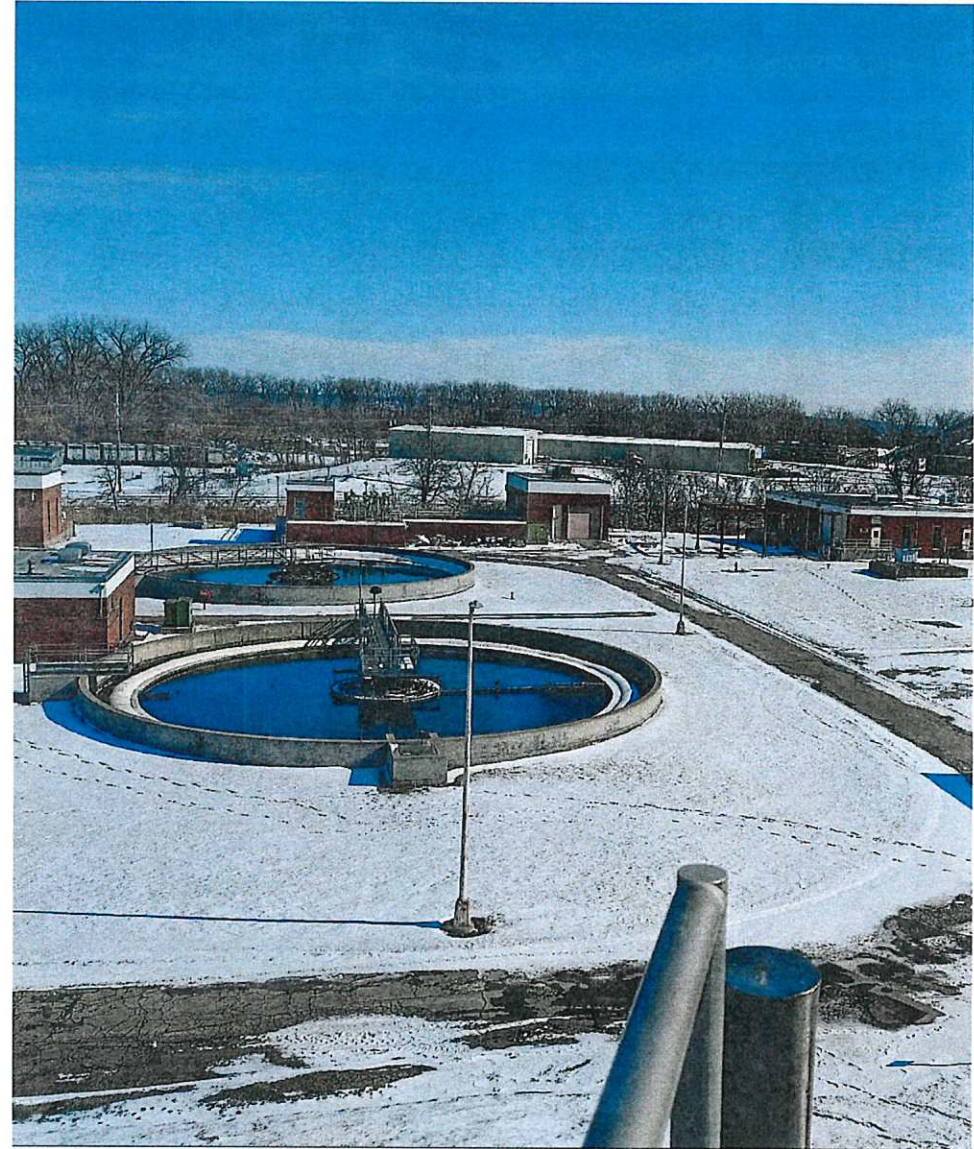
CIP Option 2 – Life Safety

- Existing building upgrades
 - Utilize existing facility
 - Separate space for caustic material (shed)
 - Separate entrances for admin and process
- New building for solids
 - Separation of admin and process
 - Separate space for caustic material
 - Space for future lime stabilization
- New admin building
 - Separation of admin and process
 - Separate space for caustic material



Next Steps

- Identify Computerized Maintenance Manage System (CMMS) package with Staff
- Define Critical assets
- Consequence of Failure /Likelihood of Failure (COF/LOF) workshop with Staff
- CIP
- Sludge disposal optimization
- Permitting





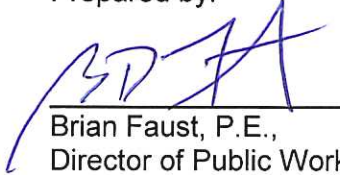
© HDR, all rights reserved

POLICY REPORT PWD NO. 22-26

WORK SESSION – SPEED STUDY ON 4TH STREET
EISENHOWER TO METROPOLITAN

May 17, 2022

Prepared by:


Brian Faust, P.E.,
Director of Public Works

Reviewed by:


Paul Kramer
City Manager

ISSUE:

Review recommendations from the Speed Study conducted on 4th Street between Eisenhower and Metropolitan.

DISCUSSION:

The posted speed limit on 4th Street between Eisenhower and Metropolitan varies between 45mph and 20mph depending on location. Based on staff's observation of traffic along 4th Street, the posted speeds may not fit the actual conditions and speed limits posted incorrectly are often ignored by the public. The number of accidents can increase if a street is posted too low or too high.

During the July 20, 2021 work session, staff received direction to have a speed study conducted on 4th Street. The study would determine if the posted speeds were appropriate for the given road conditions or if changes are recommended.

4th Street Study locations:

- Segment 1: S. Eisenhower to Oregon (to capture 45mph speed limit)
- Segment 2: S. Oregon to Limit (to capture 35mph speed limit)
- Segment 3: S. Limit to Poplar (to capture 30mph speed limit)
- Segment 4: S. Poplar to Spruce (to capture 30mph speed limit)
- Segment 5: S. Spruce to Choctaw (to capture 30mph speed limit)
- Segment 6: S. Miami to Metropolitan (to capture 30mph speed limit)

The area in downtown Leavenworth that is currently posted at 20mph was not included with this study.

SUMMARY OF FINDINGS/RECOMMENDATIONS:

The Study did recommend several changes in the posted speed limit.

- Segment 1: The current posted speed of 45 shows a reduction to 40mph if crash data is taken into account.
- Segment 2: Increase the existing posted speed from 35mph to 40mph.
- Segment 3: Increase the existing posted speed from 30mph to 35mph.
- Segment 4: Increase the existing posted speed from 30mph to 35mph.
- Segment 5: Retain the current posted speed at 30mph.
- Segment 6: Increase the existing posted speed from 30mph to 35mph.

ATTACHMENTS:

Final Speed Study Report – Merge Midwest
Speed Limit Basics – Federal Highway Administration
Map of Speed Study Locations – 4th Street

4TH STREET SPEED STUDY

LEAVENWORTH, KANSAS

Prepared For:
The City of Leavenworth

Prepared By:
Mark Stuempel, PE, PTOE

November 1, 2021



Table of Contents

- INTRODUCTION2
- PROJECT PURPOSE.....2
- PROJECT DESCRIPTION2
- SETTING SPEED LIMITS3
- DATA COLLECTION.....5
- SEGMENT SUMMARIES6
- SUMMARY & RECOMMENDATIONS.....12

INTRODUCTION

The City of Leavenworth - Public Works Department has requested Merge Midwest Engineering, LLC conduct a speed study for 4th Street from Eisenhower Road to Metropolitan Avenue.

PROJECT PURPOSE

A speed study on 4th Street was conducted between Eisenhower Street and Metropolitan Avenue to determine if the current posted speed limits are reasonable and perhaps should be modified based on factors such as:

- The current 50th and 85th percentile speeds
- The Average Daily Traffic (ADT) volume
- 3-year crash rates
- Lane configurations
- Pedestrian and bicycle usage and facilities
- On-street parking

PROJECT DESCRIPTION

This speed study presents the results of traffic analysis completed along 4th Street (US-73/K-7) in Leavenworth, Kansas. The downtown area was not included in the study, as the City has stated the current 20 mph speed is appropriate based on the narrow lanes and high pedestrian activity. The location of the study area is shown in the Google Earth image below.



Within the study area, the existing speed limits vary between 45 miles per hour (mph) and 30 mph.

SETTING SPEED LIMITS

The Kansas Department of Transportation (KDOT) has published a brochure on establishing speed limits. It states establishing reasonable and safe speed limits for a given section of roadway is based on an engineering study. The most widely accepted method is to set the speed at which 85 percent of the traffic is moving at or below. This 85th percentile speed reflects the safe speed as determined by a large majority of drivers. Research has also shown that the 85th percentile speed is the speed where accident involvement is the lowest.

Kansas Statutes, Section 8-1559 allows the establishment of speed limits on the State Highway System “upon the basis of an engineering and traffic investigation.” Speed zoning in Kansas is based on the widely accepted principle of setting speed limits as near as practicable to the speed at or below which 85 percent of the drivers are traveling. According to a Federal Highway Administration study, all states and most local agencies use the 85th percentile speed of free-flowing traffic as the basic factor in establishing speed limits. This speed is subject to revision based upon such factors as: crash experience, roadway geometries, parking, pedestrians, curves, adjacent development, and engineering judgment. This practice is in accordance with the Manual on Uniform Traffic Control Devices which has been adopted by the State of Kansas.

The current 2009 [*Manual on Uniform Traffic Control Devices*](#) MUTCD also states that the speed limit should be within 5 miles per hour (mph) plus or minus of the 85th percentile speed. The MUTCD does recognize that other road characteristics, such as alignment, parking practices, pedestrian activity, etc., are factors in setting safe speed limits. Additionally, a Vision Zero approach encourages setting speeds to also take into consideration other factors such as surrounding land use, the history of traffic crashes, injuries and fatalities, and existence of other permissible travel modes such as bicycling, walking, or riding transit. The selection of the speed limit for any particular section of a road type is an exercise in weighing the objectives of safety and operational efficiency.

The Federal Highway Administration (FHWA) describes three approaches for setting speed limits in “Methods and Practices for Setting Speed Limits: An Informational Report.” The Engineering Approach, The Expert System Approach, and The Safe System Approach. The Engineering & Expert System approaches were utilized in this study for determining the most appropriate speed limit and are described below:

Engineering Approach – A two-step process where a base speed limit is set according to the 85th percentile speed, the design speed for the road, or other conditions. This base speed limit is adjusted according to traffic and infrastructure conditions such as pedestrian use, median presence, etc. Within the engineering approach there are two approaches: The Operating Speed Method is set within 5 mph of the 85th percentile speed determined from speed surveys and then appropriate changes plus or minus are made based on other considerations. Under the Road Risk Method, the level of roadside development and the function of a road are the primary determinants of the appropriate speed limit.

Expert System Approach - Speed limits are suggested by a computer program that uses knowledge and inference procedures that simulate the judgment and behavior of speed limit experts. Typically, this system contains a knowledge base containing accumulated knowledge and a set of rules for applying the knowledge to each particular situation. The FHWA-developed [USLIMITS2](#) is an expert system. USLIMITS2 is designed to determine speed limits in speed zones on all types of roads, from rural two-lane segments to urban freeway segments. Based on input from the user, USLIMITS2 uses a decision algorithm to advise the user of the speed limit for the specific road section. Input into USLIMITS2 includes: surrounding development; access points; road function; road characteristics (e.g., divided or undivided, number of lanes, annual average daily traffic (AADT), roadside hazards, and section length) or freeway characteristics (e.g., number of interchanges, section length, and AADT); existing vehicle operating speeds (50th and 85th percentile); pedestrian activity; crash history; and special conditions (e.g., adverse alignment, transition zones, and parking). There is current industry discussion that an expert system, such as USLIMITS2, should be used to validate an engineering approach to speed limits. This USLIMITS2 program was utilized for this study and the calculations can be found in the Appendix.

DATA COLLECTION

Crash data for the project corridor was obtained from the Kansas Department of Transportation for the years 2018 - 2020. During this three-year period, 278 crashes were reported along the total corridor segment. Of the 278 crashes, 85 were classified as injury, 190 were classified as property damage only (PDO), and 3 were classified as fatal crashes.

24-hour traffic counts (Average Daily Traffic; ADT) and speed data were collected by Gewalt-Hamilton Associates (GHA) via road tube counters on Tuesday, September 21st, 2021 at the following six locations along 4th Street:

- Segment #1: Approximately 300' south of Commercial Street
- Segment #2: Approximately 200' south of Montana Street
- Segment #3: Between Santa Fe Street and Evergreen Street
- Segment #4: Between Elm Street and Vine Street
- Segment #5: Between Chestnut Street and Walnut Street
- Segment #6: Between Kickapoo Street and Kiowa Street

The crash data, ADT (in vehicles per day), and existing speed limits for the six locations above are listed below:

	Road Segment	PDO Crashes	Injury and Fatal Crashes	ADT (vpd)	Existing Speed Limit (mph)
Segment #1	Eisenhower Rd – Oregon St	67	38	20386	45
Segment #2	Oregon St – Limit St	14	4	20184	35
Segment #3	Limit St – Poplar St	61	26	22590	30
Segment #4	Poplar St – Spruce St	14	7	17210	30
Segment #5	Spruce St – Choctaw St	7	2	13730	30
Segment #6	Miami St – Metropolitan Ave	27	11	11425	30

Table 1
Existing Crashes, Traffic Volumes, and Posted Speed Limits

The traffic count and speed data are located in the Appendix.

The roadway segments for the speed study are described in more detail below, beginning with the southernmost portion of the corridor at Eisenhower Road and terminating at Metropolitan Avenue. Each study segment includes descriptions of roadside environment, access points, and photographs of existing conditions.

SEGMENT SUMMARIES

SEGMENT 1: 4TH STREET BETWEEN EISENHOWER ROAD AND OREGON STREET



This segment of the study area consists of two through lanes in each direction, with a two-way left-turn lane in the center of the roadway. All lanes are 12' wide. Sidewalks and curb & gutter exist on both sides of the roadway. The land use along the roadway in this segment would be considered commercial, and there are 28 total access points. Below is a photo showing the cross-section:



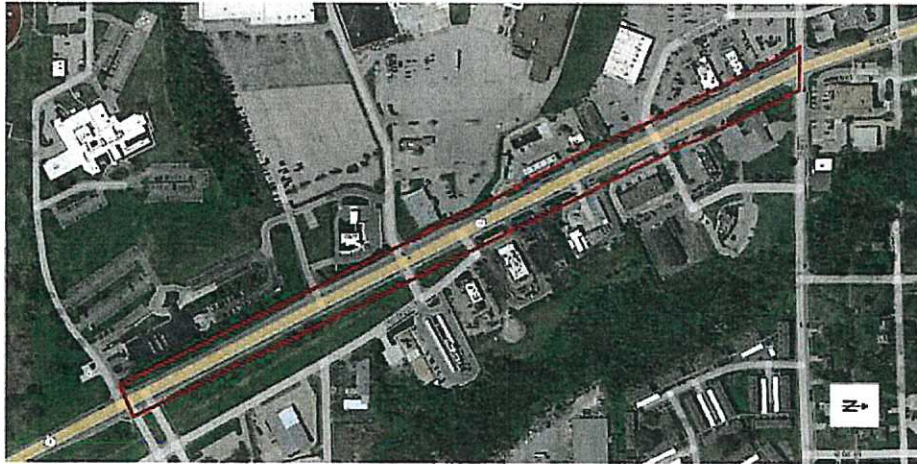
Segment #1 – Looking north from 700' north of Eisenhower Road

Results of the speed study for Segment 1 are listed below:

Segment #1 (Posted Speed 45 mph)	NB	SB	Total (Weighted Average)
Average Speed (mph)	38.8	33.8	36.4
50th Percentile Speed (mph)	39.0	36.4	38.0
85th Percentile Speed (mph)	44.0	43.4	43.8

*Table 2
Segment #1 Speed Study Results*

SEGMENT 2: 4TH STREET BETWEEN OREGON STREET AND LIMIT STREET



This segment of the study area consists of two through lanes in each direction, with a two-way left-turn lane in the center of the roadway. All lanes are 12' wide. Sidewalks and curb & gutter exist on both sides of the roadway. The land use along the roadway in this segment would be considered commercial, and there are 19 total access points. Below is a photo showing the cross-section:



Segment #2 – Looking north from 500' north of Idaho Street

Results of the speed study for Segment 2 is listed below:

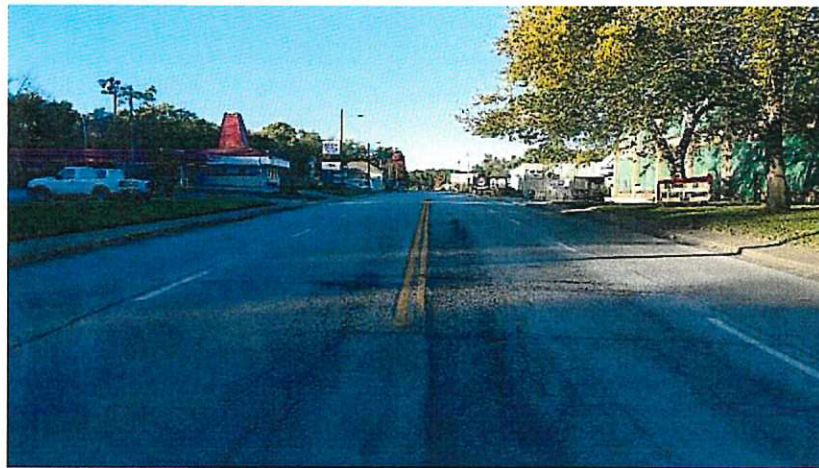
Segment #2 (Posted Speed 35 mph)	NB	SB	Total (Weighted Average)
Average Speed (mph)	35.7	33.3	34.5
50th Percentile Speed (mph)	35.9	33.2	34.4
85th Percentile Speed (mph)	40.1	38.0	39.3

*Table 3
Segment #2 Speed Study Results*

SEGMENT 3: 4TH STREET BETWEEN LIMIT STREET AND POPLAR STREET



This segment of the study area consists of two through lanes in each direction, and no center turn lane or median. All lanes are 12' wide. Sidewalks and curb & gutter exist on both sides of the roadway. The land use along the roadway in this segment would be considered commercial, and there are 55 total access points. Below is a photo showing the cross-section:



Segment #3 – Looking north at Rees Street

Results of the speed study for Segment 3 is listed below:

Segment #3 (Posted Speed 30 mph)	NB	SB	Total (Weighted Average)
Average Speed (mph)	34.7	35.7	35.2
50th Percentile Speed (mph)	35.9	36.2	36.0
85th Percentile Speed (mph)	40.8	40.8	40.8

*Table 4
Segment #3 Speed Study Results*

SEGMENT 4: 4TH STREET BETWEEN POPLAR STREET AND SPRUCE STREET



This segment of the study area consists of two through lanes in each direction, with no center turn lane or median. All lanes are 12' wide. Sidewalks and curb & gutter exist on both sides of the roadway. The land use along the roadway in this segment would be considered residential, as that is the primary use, although some commercial is contained in the corridor. There are 36 access points on this segment. Below is a photo showing the cross-section:



Segment #4 – Looking north at Arch Street

Results of the speed study for Segment 4 is listed below:

Segment #4 (Posted Speed 30 mph)	NB	SB	Total (Weighted Average)
Average Speed (mph)	36.2	35.4	35.8
50th Percentile Speed (mph)	36.4	35.8	36.1
85th Percentile Speed (mph)	41.1	39.9	40.5

*Table 5
Segment #4 Speed Study Results*

SEGMENT 5: 4TH STREET BETWEEN SPRUCE STREET AND CHOCTAW STREET



This segment of the study area consists of two through lanes in each direction, with no center turn lane or median. All lanes are 9.5' wide for the majority of this segment. Sidewalks and curb & gutter exist on both sides of the roadway. The land use along the roadway in this segment would be considered residential, as that is the primary use, although some commercial is contained in the corridor. There are 14 access points on this segment. Below is a photo showing the cross-section:



Segment #5 – Looking north at Chestnut Street

Results of the speed study for Segment 5 is listed below:

Segment #5 (Posted Speed 30 mph)	NB	SB	Total (Weighted Average)
Average Speed (mph)	32.0	31.2	31.6
50th Percentile Speed (mph)	32.1	31.5	31.8
85th Percentile Speed (mph)	37.0	35.2	36.2

*Table 6
Segment #5 Speed Study Results*

SEGMENT 6: 4TH STREET BETWEEN MIAMI STREET AND METROPOLITAN AVENUE



This segment of the study area consists of two through lanes in each direction, with no center turn lane or median. All lanes are 11' wide except for the last two blocks on northern end (12'). Sidewalks and curb & gutter exist on both sides of the roadway. The land use along the roadway in this segment would be considered residential, as that is the primary use, although some commercial is contained in the corridor, along with a school and hotels. There are 31 access points on this segment. Below is a photo showing the cross-section:



Segment #6 – Looking south at Kickapoo Street

Results of the speed study for Segment 6 is listed below:

Segment #6 (Posted Speed 30 mph)	NB	SB	Total (Weighted Average)
Average Speed (mph)	33.7	36.2	35.0
50th Percentile Speed (mph)	33.7	36.5	35.1
85th Percentile Speed (mph)	38.6	41.4	39.7

*Table 7
Segment #6 Speed Study Results*

SUMMARY & RECOMMENDATIONS

The Engineering Approach to determining the speed limit was conducted by reviewing the 85th percentile speeds and comparing them to existing posted speed limits. The character of the general area was also reviewed to determine if the 85th percentile speed was appropriate for the area. In addition, the Expert Approach was utilized by entering existing conditions into the FHWA-developed USLIMITS2 program, and recommended speed limits were determined for each of the segments along 4th Street. USLIMITS2 analysis was completed with and without crash data input, to compare the effects when taking crashes into account. Results are shown in the table below with the final recommended posted speed highlighted in gray:

	Road Segment	Existing Speed Limit	85 th Percentile Speed (mph)	Recommended Speed (No Crash Data)	Recommended Speed (with Crash Data)
Segment #1	Eisenhower Rd – Oregon St	45	43.8	45	40
Segment #2	Oregon St – Limit St	35	39.3	40	40
Segment #3	Limit St – Poplar St	30	40.8	35	35
Segment #4	Poplar St – Spruce St	30	40.5	35	35
Segment #5	Spruce St – Choctaw St	30	36.2	30	30
Segment #6	Miami St – Metropolitan Ave	30	39.7	35	35

*Table 8
Speed Study Results*

As can be seen in Table 8, most segments along the 4th Street corridor are currently signed for too low of a speed limit according to the USLIMITS2 software. Segment #5 is the only one where the program believes the current speed limit is appropriate. Crash data did not alter the recommended speed limit except along Segment #1, where the crash rate was determined to be well above expected levels for this type of roadway with the current volume of traffic. Considering the posted speed limit on 4th Street south of Eisenhower Road (Main Street in Lansing) is also posted at 40 mph, a 40-mph speed limit would be consistent with the corridor in that area.

We appreciate the opportunity to serve you on this very important project. Please feel free to contact us if you should have any questions.

Respectfully submitted,

Merge Midwest Engineering, LLC



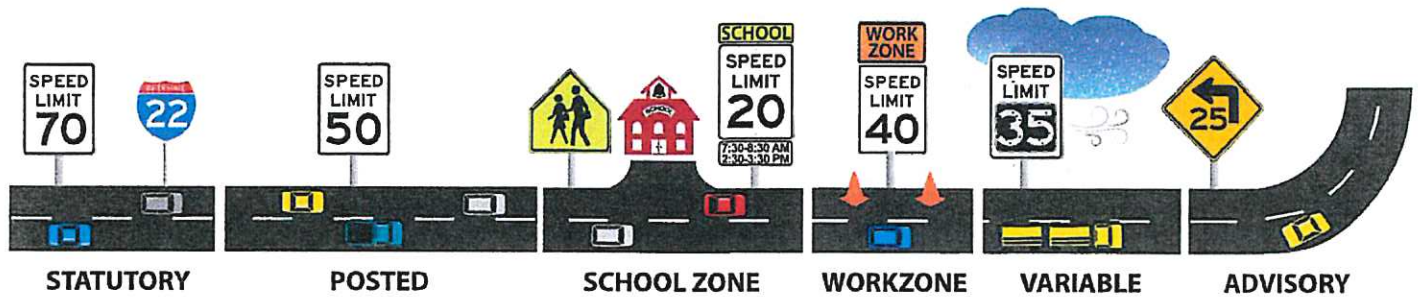
Mark Stuenkel, P.E., PTOE
Senior Engineer / Co-Owner

SPEED LIMIT Basics



U.S. Department of Transportation
Federal Highway Administration

Speed limits frame expectations for drivers and other roadway users. Properly set speed limits provide a safe, consistent, and reasonable speed to protect drivers, pedestrians, and bicyclists along the roadway. At the same time, speed limits can be a source of frustration and confusion; for example, not all drivers like to travel at the same speed, and some people may not understand why the speed limit changes on a particular road. In addition, community residents often have concerns that traffic is moving too fast through their neighborhoods. Understanding the engineering principles and processes used to set speed limits and learning the terminology used to describe them are the first steps in reducing drivers' frustration or confusion and encouraging compliance.



TYPES OF SPEED LIMITS

STATUTORY SPEED LIMITS

Statutory speed limits are established by State legislatures for specific types of roads (e.g., Interstates, rural highways, urban streets) and can vary from State to State. They are enforceable by law and are applicable even if the speed limit sign is not posted. Examples of statutory speed limits include:

- > 25 mph in residential or school districts,
- > 55 mph on rural highways, and
- > 70 mph on rural Interstate highways.

POSTED SPEED LIMIT

Posted speed limits (sometimes called regulatory speed limits) are those that are sign-posted along the road and are enforceable by law. A posted speed limit could be the same as the statutory speed set by the State legislature, or it could be established by a city, county, or State transportation agency as an adjustment to the statutory speed limit. Some cities and counties will establish a blanket speed limit for roads in their jurisdictions. Those limits are generally posted at the city limits or county lines. The posted speed limit can differ from the statutory speed limit; in these cases, the posted speed limit is determined using an engineering speed study and takes priority over the established statutory speed limit.

"SPECIAL CONDITIONS" SPEED LIMITS

School zone speed limits are used in specific locations during the hours when children are going to and from school. Most States use a school zone speed limit of 15 to 25 mph in urban and suburban areas.

Work zone speed limits are set as part of the work zone's traffic control plan, which is used to help facilitate safe and efficient movement of traffic through a work zone. Factors that influence work zone speed limits can include:

- > The posted speed limit when the work zone is not present,
- > The location of the work zone and workers in relation to traffic,
- > The type of traffic control (e.g., cones, barrels, concrete barriers), and
- > The complexity of the work zone (e.g., lane shifts, narrowed lanes).

Variable speed limits are displayed on changeable message signs (CMS) at locations where roadway conditions regularly require speeds to reduce more than 10 mph below the posted speed limit. These instances typically occur due to weather conditions, congestion, traffic incidents, and/or work zones.

Advisory speeds are a non-regulatory speed posted for a small portion or isolated section of a roadway (e.g., a sharp curve, an exit ramp) to inform a driver of a safe driving speed. They are set using an engineering speed study and in accordance with guidance in the *Manual on Uniform Traffic Control Devices (MUTCD)*.

What is included in an engineering speed study?

- Speeds of motorists in normal conditions
- Traffic volume
- Roadway type (e.g., interstate, freeway, city street)
- Roadway features (e.g., curves, hills, number of lanes)
- Roadway setting (e.g., urban, rural, residential, woodland, farmland)
- Number and spacing of driveways or intersections
- Sight distances
- Presence of on-street parking
- Pedestrian or bicyclist activity
- Crash history
- Pavement condition

ESTABLISHING SPEED LIMITS

State and local transportation agencies recommend and set appropriate speed limits by completing engineering speed studies and following the guidance presented in the [MUTCD](#). Practitioners may also use a supporting web-based tool called [USLIMITS2](#), which provides an objective second opinion and helps support speed-limit-setting decisions. At times, agencies may need to implement speed management countermeasures to achieve the desired speed for a particular roadway (e.g., in areas with high pedestrian and bicyclist activity). Review FHWA's *Speed Management Countermeasures: More than Just Speed Humps* for more information on speed management countermeasures.

SPEED CONCEPTS

Besides the types of speed limits, there are concepts relating to speed that are important to understand.

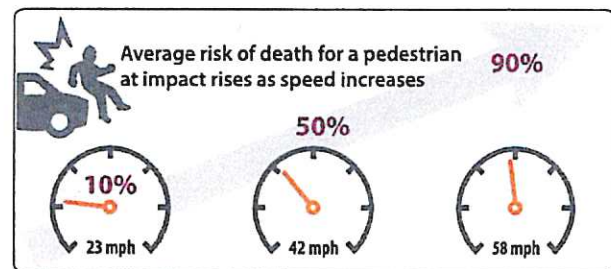
- Before a new road is built, engineers choose a **design speed** in order to guide their design decisions and prepare the plans.
- Once the road is built, engineers will evaluate the existing speeds by measuring the **operating speed**. They often do this by measuring the speed that 85 percent of drivers are travelling at or below, called **85th percentile speed**.
- Used extensively in the traffic engineering field, the **85th percentile speed** is based on the premise that the majority of drivers choose reasonable speeds for given road conditions and should be accommodated.

CORRECTING COMMON MISCONCEPTIONS

- The Federal Government does NOT set or enforce speed limits; this authority belongs to the State and local agencies that have jurisdiction over the road.
- The 85th percentile speed is not the only factor practitioners evaluate when determining an appropriate speed limit; they complete engineering speed studies and often utilize supporting tools like [USLIMITS2](#).
- Simply lowering the speed limit does not guarantee motorists will drive slower; speed management countermeasures may have to be implemented along the roadway.

SPEED SAFETY FACTS

- Drivers who exceed the posted speed limit or drive too fast for conditions are involved in nearly one-third of all fatal crashes.
- Only 13 percent of speeding-related fatalities occur on interstate highways.
- More than 40 percent of speeding drivers in fatal crashes were considered to be alcohol-impaired.



SOURCE: AAA Foundation for Traffic Safety, *Impact Speed and a Pedestrian's Risk of Severe Injury or Death*, September 2011.

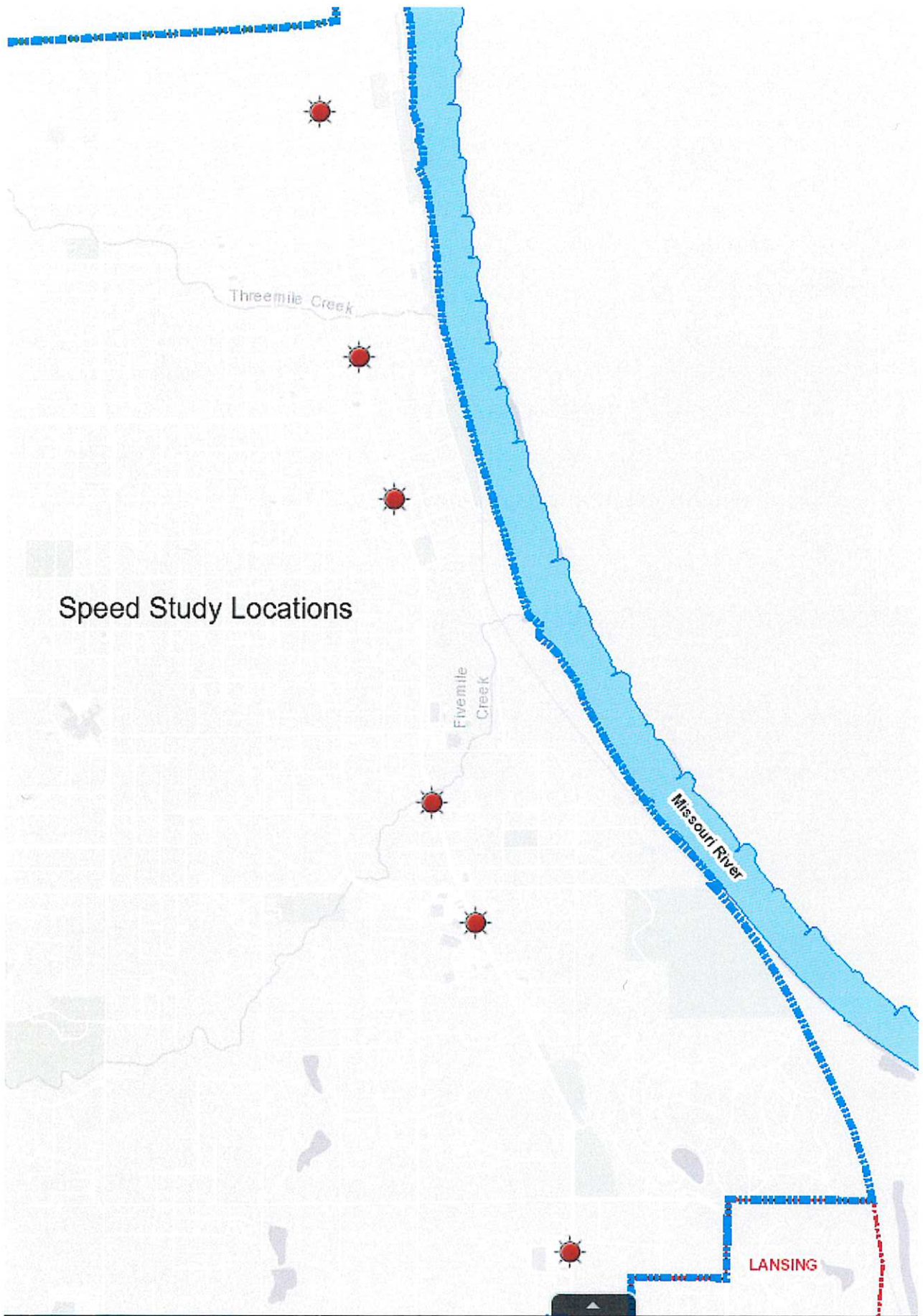
FOR MORE INFORMATION



To learn more about speed management, visit [FHWA's Speed Management Safety web page](#).



For more information on speed management, check out FHWA's *Speed Management Countermeasures: More than Just Speed Humps* fact sheet.

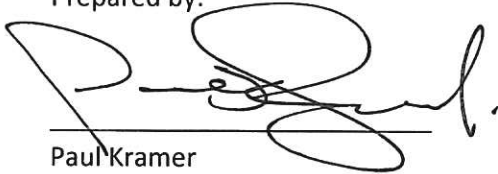


Policy Report

Discussion of American Rescue Plan Act (ARPA) funding

May 17, 2022

Prepared by:



Paul Kramer
City Manager

Issue

Discuss planning and options related to funding provided by the American Rescue Plan Act (ARPA).

Background

The City of Leavenworth is set to receive \$8,549,063 in ARPA funding from the U.S. Treasury Department. The award was divided into two equal tranches, the second of which the City Manager's Office registered for earlier this month, but has yet to receive.

From the initial tranche of \$4,274,531.50, the City expended \$1,152,219.83 in 2021 for expenses beyond revenues, which was one of the original intents of the funding. Fortunately, based on a combination of revenues returning to pre-pandemic levels and operational adjustments, there have been no ARPA funds drawn for 2022, nor does staff expect to draw any ARPA funds for these issues going forward. Based on that, the amount available and under discussion is \$7,396,843.17.

Fund use and general discussion

The City has wide discretion on use of these funds, with two exceptions. Funds cannot be used to: 1) directly or indirectly offset or reduce taxes, or delay a tax increase; and 2) funds cannot be deposited into any pension funds nor into reserves.

The entirety of the funds must be obligated by December 31, 2024 and spent by December 31, 2026. While many project options can be accommodated within this time frame, if the Commission elects any type of complex infrastructure project or expansion, time could become an issue. When considering potential uses of the funds, the Government Finance Officers Association (GFOA), of which the City is a member, offers the following guidance:

- Investment in critical infrastructure is particularly well suited use of ARPA funds because it is a non-recurring expenditure that can be targeted to strategically important long- term assets that provide benefits over many years. However, care should be taken to assess any on-going operating costs that may be associated with the project.
- Use of ARPA funds to cover operating deficits caused by COVID-19 should be considered temporary and additional budget restraint may be necessary to achieve/maintain structural balance in future budgets.

- Care should be taken to avoid creating new programs or add-ons to existing programs that require an ongoing financial commitment.

As a starting point for discussion, City staff has put together a framework of potential uses of the funds. Uses were reviewed and included based on the following:

- Known and immediate public infrastructure projects;
- Items that appear in the City Commission adopted 2030 Comprehensive Land Use Plan
- Items that appear in the City Commission adopted 2022-2023 goals
- Items that are one-time expenditures designed to have a positive impact on city operations and resident experience
- Items that could have long-term strong return on investment, but high initial costs that make them less viable
- Projects or uses that fit the expenditure deadlines
- Items that improve quality of life in the community or help businesses remove hurdles to growth and prosperity
- Items with significant cost that will have to be addressed in the near future

Funding categories

In the interest of organizing the discussion and attempting to create a framework to assign funds, below is a draft outline of funding categories, with potential projects/uses included.

1. Critical Infrastructure

- Wastewater Treatment Plant:

There is no more critical piece of City infrastructure than the 50-year old facility that intakes and treats wastewater for the entire City of Leavenworth, as well as Fort Leavenworth and the VA Eastern Regional Medical Center. In general, the plant is in good shape with the exception of three critical pieces of infrastructure. The replacement of those items is essential for plant operations and would most likely be funded by a wastewater rate increase if ARPA funds are not allocated.

(Other: ADA upgrades, replacement of known failing sewer lines, etc.)

2. Community/Business Investment

- Boys and Girls Club

The City Commission included “(e)xplore a partnership with the Boys and Girls Club or similar organization to promote activity and opportunity for Leavenworth youth” in the most recent Commission goals document. The Boys and Girls of Kansas City, which operates 13 locations in the area, is interested in pursuing a location in Leavenworth. The primary hurdle would be a location. While the City does not intend to own or operate a facility for an organization like this, the initial location is often the responsibility of the community until the organization can begin to operate and create a model to accommodate ongoing costs.

- Fire suppression and ADA upgrade grants

A significant hurdle for downtown businesses, as well as other businesses citywide, has been meeting fire safety codes for renovation projects. A very specific grant program to address this, along with ADA facility upgrades could be a valuable asset to our historic downtown.

(Other: Grants for non-profit agencies, grants geared toward workforce development)

3. City facility investment

- City Hall

In 2024, City Hall will turn 100 years old. Overall, the building is in sound structural shape, however there are mechanical/plumbing and exterior/water infiltration issues that remain unaddressed. Related to the mechanical and plumbing components, the hydronic and mechanical condensate piping needs to be replaced. These elements were not addressed in the 2004 renovation and are well-past their expected life.

- Riverfront Community Center

The administrative and public facing office for the Leavenworth Parks and Recreation Department located in the basement of the Riverfront Community Center. The offices have no meeting space, no front desk or reception area and are only marked by a single door. They are not inviting or conducive to conduct operations, nor do they provide an image consistent with a full service Parks and Recreation Department. Staff has explored moving the offices to the south end of the main floor of the Community Center. The goal would be to create administrative offices and a functional reception area and add a small conference room to meet with prospective conferences, wedding planners, tour group, contractors, vendors, visitors, coaches, parents, etc.

(Other: City Hall parapet and water line work, updates to the Municipal Service Center)

4. Long-term efficiency/investment projects

- Energy sustainability at the Riverfront Community Center

Renewable energy or upgrading existing systems appears in multiple places in the 2030 Comprehensive Plan, including two relevant strategies: 1) "Explore solar, battery and wind opportunities to diversify the City's power supply mix" (pg. 61); and 2) "Upgrade and maintain existing infrastructure and facilities to meet future needs and demands" (pg. 59). In this case, staff could explore the implementation of solar power at the Riverfront Community Center. The average annual cost of providing electricity at the RFCC is approx. \$100,000. The industry standard to see a return on investment for conversion to solar is 5-15 years, which is based off the initial investment. The use of ARPA funding would allow savings to be realized immediately.

(Other: Look at other energy efficiency upgrades at all City facilities)

5. Other/Commission discretion

- The purchase of one replacement fire truck.

The City has a fleet of seven (7) fire trucks. Four of them have been replaced in the last six years with the remaining three needing to be replaced at a later date by issuing bonds over

a 10-20 year period. The City could replace the worst of the remaining three, pushing off the issuance of debt and reducing the overall debt amount at such time that the full replacement was done.

- Refuse changes

The City's Solid Waste Task Force is currently working on recommendations for future operations of refuse pick up. The Committee may suggest a status quo approach, they may suggest a major shift, or something in the middle. Either way, any costs associated with a change would be passed on via rate increase. Until those recommendations are made, there may be value in reserving a portion of ARPA for implementing any changes.

- Housing

Pursuing a housing project is mentioned several times in the ARPA final rule, as well as in the guidance provided by the GFOA. There are no current projects that would fit City involvement, but could include something like land accumulation and site preparation with a bidding process for housing fitting the City's overall housing goals.

- Trails, playgrounds, park amenities, etc.

Staff would prepare a list of possible projects if the Commission wanted to move in this direction.

Beyond what is listed, staff evaluated:

- Road expansion projects (i.e. Muncie Road west of 10th Ave)
- Road rebuild projects (New Lawrence Road, Lakeview, Muncie west of Fourth Street)
- Expansion of sewer infrastructure
- A one-time expansion of the annual pavement management project
- Retiring old debt
- A community art project
- Funding a pilot internship program with the City (Fire, Police or other areas)
- Improvements along key corridors (i.e. a sign consolidation project)
- Enhanced funding over a two year period for a specific program (sidewalk replacement or curb replacement)

Next steps

There is no precedent for how to use these funds. To date, local government allocation of these funds nationwide is spread to many different areas:

Government operations	37.6 percent
Housing	12.5 percent
Community aid	12.3 percent
Public health	12.2 percent
Infrastructure	11.9 percent
Economic workforce dev	11.1 percent
Public safety	2.3 percent

There is time for careful consideration, within the lens of being fully aware of spending deadlines. I believe it is important to start forming a consensus around a few items so that staff can start working on project scope, design, bidding, award, implementation and completion.

American Resuce Plan Act sample funding matrix		
Category	Project	Estimate Cost
Critical infrastruture		
	Complete replacement of three identified, mission-critical elements at the WWTP	\$3,000,000
Community Investment		
	Initial investment related to a facility and Year 1 operating funding for the Boys and Girls Club	\$750,000
	Fire suppression and ADA upgrade grants for Leavenworth businesses	\$500,000
City Facility Investment		
	City Hall comprehensive plumbing and piping replacement project	\$350,000
	Relocation and creation of a Parks and Recreation central office.	\$375,000
Long-term efficiency/investment projects		
	Energy sustainability at the RFCC, potential including intallation of solar panels	\$375,000
Total		\$5,350,000
Other		
	Replacement Fire Truck	\$750,000
	Refuse change reserve	\$600,000
	Housing project	\$500,000
	Trails playground amenities	\$200,000
Total		\$7,400,000