

DRAFT

For Review and Comment

City of Kalamazoo

FY26 CWSRF Project Plan

March 2025

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Submitted by Jones & Henry Engineers, Ltd. 4791 Campus Drive, Kalamazoo, MI 49008





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1 Introduction

The City of Kalamazoo is the county seat of Kalamazoo County, located in southwestern Michigan. The City is located northeast of the I-94 and US-131 interchange. A location map is shown in Figure 1-1. The City of Kalamazoo municipal wastewater sewer collection system serves properties throughout the City of Kalamazoo as well as surrounding townships and municipalities. The wastewater collection system transports the wastewater to the City of Kalamazoo Water Reclamation Plant (KWRP). The KWRP is located in the northeastern part of the City where it treats wastewater and discharges effluent into the Kalamazoo River. The City is engaged in addressing deficiencies in both the collection system and at the KWRP to ensure that safe and consistent service is provided to system users. Since the 1940s, repeated studies and planning have sought to strategically improve the wastewater collection and treatment infrastructure serving the City of Kalamazoo and surrounding areas.



Figure 1-1: Location Map

The City of Kalamazoo Wastewater Division maintains a five (5) year Capital Improvement Plan (CIP) which addresses deficiencies in the collection system and at the plant and plans the financial outlay to deal with the needed improvements. The City intends to utilize the Clean Water State Revolving Fund

(CWSRF) as a financial instrument to pay for high priority projects from the CIP and immediate needs to maintain level of service. Operations and Maintenance staff were polled as part of the project prioritization to ensure that the most critical improvements were evaluated as part of this Plan. Selected improvements will correct sanitary sewer backups and SSOs in the collection system and provide a more reliable solution to residual biosolids disposal with expanded regional capabilities and contaminates of emerging concern (PFAS) destruction capabilities while complying with the latest EPA guidance. Multiple alternatives were assessed for both cost-effectiveness and long-term viability, with the most optimal option over the course of time being selected.

2 Background – Needs, Alternatives, and Environmental Issues

Study and Service Areas

The service area for the system includes the City itself and townships, municipalities, and suburbs in the surrounding region that send their wastewater through the collection system, to the KWRP, for treatment; a combination of gravity sewers and force mains transports the wastewater. These areas are contained within Kalamazoo, Barry, and Van Buren Counties. A map of the wastewater system service area is shown in Figure 2-1.

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Figure 2-1: Sanitary Service Area Map

Environmentally Detrimental Development Trends

Per- and polyfluoroalkyl substances (PFAS) are noteworthy environmental trends. Western Michigan University, located in Kalamazoo, Michigan, has been performing independent PFAS studies and are receiving funding to develop a treatment profile for abatement. The City is aware of, and supportive of, these research efforts. It is noteworthy that communities within the City's service area have had PFAS emergencies in the past including Parchment and the Kalamazoo/Battle Creek Airport.

Additionally, microplastics, which are likely coming to the KWRP from a nearby industrial pulp and paperboard recycler, Graphic Packaging International (GPI), are an area of ongoing concern. The City is actively working with GPI to study and treat these plastics for removal from the waste stream.

Population

The population for the City of Kalamazoo decreased by 0.9 percent between the 2010 and 2020 censuses and is projected to continue declining through 2045. The surrounding townships and smaller cities are projected to increase slightly. Kalamazoo County is expected to increase in population, as a whole, by roughly seven percent each decade. Since the KWRP serves the vast majority of Kalamazoo County, with small portions of the service area in Barry and Van Buren Counties, the population of Kalamazoo County was used to approximate the population of the service area with US census data from 2020 at 261,670. Census data and estimates for population projections and current populations of smaller cities, towns, and townships are included in Table 2-1 below.

	Census Data		Projected Population		
Local Unit of Government	2010	2020	2025	2035	2045
City of Kalamazoo	74,262	73,598	73,269	72,614	71,965
City of Portage	46,292	48,891	50,263	53,085	56,066
City of Galesburg*	2,009	2,049	2,069	2,111	2,153
City of Parchment*	1,804	1,926	1,991	2,126	2,270
Village of Augusta*	885	864	854	833	814
Village of Climax*	767	712	686	637	592
Village of Richland*	751	946	1,069	1,346	1,696
Village of Schoolcraft*	1,525	1,466	1,438	1,382	1,329
Village of Vicksburg*	2,906	3,706	4,216	5,377	6,857
Alamo Township*	3,762	3,805	3,827	3,870	3,915
Brady Township*	4,248	4,445	4,548	4,759	4,980
Charleston Township*	1,975	1,904	1,870	1,803	1,738
Climax Township*	2,463	2,364	2,316	2,223	2,134
Comstock Township	14,854	15,231	15,424	15,816	16,217
Cooper Township	10,111	10,418	10,576	10,897	11,228

Table 2-1 – Population Data and Projections

Kalamazoo Township	21,918	22,777	23,223	24,133	25,079
Oshtemo Township	21,705	23,747	24,864	27,203	29,763
Pavilion Township	6,222	6,387	6,472	6,643	6,819
Prairie Ronde Township*	2,250	2,369	2,432	2,560	2,696
Richland Township	7,580	8,693	9,331	10,701	12,273
Ross Township*	4,664	4,851	4,948	5,147	5,353
Schoolcraft Township	8,214	9,183	9,725	10,872	12,154
Texas Township	14,697	17,691	19,493	23,464	28,244
Wakeshma Township*	1,301	1,341	1,362	1,403	1,447
Kalamazoo County	250,331	261,670	278,172	300,588	316,423

* Census data for these units was derived from a previous report and was assumed to be correct but could not be verified.

1. Census data sourced from census.gov/quickfacts for populations over 5,000 people.

2. Population projections for Kalamazoo County sourced from the Michigan Department of Technology, Management & Budget Labor Market Information.

(https://milmi.org/datasearch/popproj)

3. Population projections for the remaining units were based on the percent change in the census data between 2010 and 2020.

There is one transient population in the Kalamazoo service area for which data could be found. Student populations of local colleges and universities make up this transient population due to their seasonal residency. There are approximately 26,000 students enrolled in institutions of higher learning within the service area. The service area also includes a few lake areas, so increases in population during the warmer months are possible. The City of Kalamazoo attracts conferences and tourists, and in 2021, Kalamazoo saw approximately 786,000 visitors.

Existing Environmental Evaluation

A. Cultural and Historic Resources: Cultural and historic resources include 31 individual sites listed in the National Register of Historic Places, Michigan State Register, Historic Marker, or Kalamazoo Historic District Listings. The City of Kalamazoo has five historic districts. These sites and districts are shown in Figure 2-2.



Figure 2-2: Historical Sites and Districts Map

B. Air Quality: Air quality was measured by the EPA's Air Quality Index (AQI). The AQI is an overall indicator of air quality, which takes into account several air pollutants. The last three years of AQI data for the core based statistical area (CBSA) of Kalamazoo-Portage, Michigan are included in Table 2-2 below. The table shows that the main pollutants of concern for the Kalamazoo area are ozone and particulate matter 2.5 microns and smaller. The Kalamazoo area has an AQI in the lower half of the moderate air quality range 90% of the time. The years of 2021 and 2022 show an uptick in air pollution, which is likely closer to average for Kalamazoo than 2020 and what future air quality is expected to resemble.

It should also be noted that the KWRP and its surrounding neighborhoods have a long history regarding Hydrogen Sulfide and other odor emissions which are believed to be emanating for the plant. EGLE and DHHS are currently working with KWRP to research these emissions to identify sources and provide meaningful solutions to these nuisance odors. The State and County support the proposed emissions projects, and the City's Project Plan submittal, as evidenced by their letters of support found in Appendix A.

Air Q	Air Quality of the Kalamazoo-Portage Core Based Statistical Area					
Davs with:	Teal	2020	2021	2022		
AQI Value	AQI Value Meaning					
AQI >0		323	349	352		
0-50	AQI: Good	269	233	245		
51-100	AQI: Moderate	48	116	104		
101-150	AQI: Unhealthy for Sensitive Groups	6	0	3		
151-200	AQI: Unhealthy	0	0	0		
201-300	AQI: Very Unhealthy	0	0	0		
>300	AQI: Hazardous	0	0	0		
Major Contributing Pollut	tant, Number of Days					
Carbon Monoxide, CO		0	0	0		
Nitrogen Dioxide, NO2		0	0	0		
Ozone, O3		220	132	156		
Particulate Matter 2.5µm, PM2.5		103	217	196		
Particulate Matter 10µm, PM10		0	0	0		
Maximum AQI		115	100	134		
90th Percentile AQI	90th Percentile AQI			67		
Median AQI		38	42	43		

Table 2-2 – Air Quality

Data sourced from: https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report

* Statistics for 2022 not final until May 1, 2023.

C. Wetlands: Wetlands are present throughout the collection system as well as inside of the KWRP. They are mostly adjacent to the Kalamazoo River and its tributaries, but others exist around unconnected lakes and rivers. A map of the wetlands is shown in Figure 2-3. Proposed projects will minimize excavation or fill inside of the wetlands and will submit for and comply with all required State and Federal permits.



Figure 2-3: Kalamazoo County Wetland Map

- D. Great Lakes Shorelands, Coastal Zones, and Coastal Management Areas: There are no coastal areas present in the service area.
- E. Floodplains: Floodplains exist around the Kalamazoo River and its tributaries. A FEMA floodplain map is shown in Figure 2-4.



Figure 2-4: FEMA Floodplain Map

F. Natural or Wild and Scenic Rivers: There are no designated Natural or Wild and Scenic Rivers within the service area. The Kalamazoo River does flow into the Lower Kalamazoo River at the northwest exit from Lake Allegan, which is a designated Natural River.

- G. Major Surface Waters: Major surface waters inside the City of Kalamazoo include the Kalamazoo River, its three main tributaries that join it in the City, and several connected ponds and lakes in the City. The remaining surface waters are unconnected ponds and lakes. The surface waters in the City are mostly used for recreation and industrial purposes. Further, the three main tributaries parallel some of the main interceptor sewers through the City. Drinking water for the City of Kalamazoo and surrounding areas comes from groundwater wells. There are a few other watersheds in the service area outside of the City. These consist of rivers, streams, ponds, and lakes that generally flow south out of the service area or into the Kalamazoo River.
- H. Topography: Elevations range from 750 feet near the Kalamazoo River to 1,050 feet in the northwestern part of the service area.
- I. Geology: The primary geological features of the service area are the glacial drainage channel which the Kalamazoo River currently runs through, the outwash plains surrounding the channel, and the Outer Kalamazoo Moraine in the eastern part of the county. The bedrock below the service area is Coldwater Shale from the Mississippian Age, which is at least 500 feet thick.
- J. Soil Types: Soil types are shown in the below Table 2-3.

City		
Soil Type	Acres	% of Area
Adrian muck, 0 to 1 percent slopes	41.58	0.26%
Brady sandy loam, 0 to 3 percent slopes	7.37	0.05%
Brady sandy loam, 0 to 3 percent slopes	18.8	0.12%
Dowagiac loam, 0 to 3 percent slopes	73.98	0.46%
Gilford sandy loam, 0 to 2 percent slopes, gravelly subsoil	7.8	0.05%
Glendora sandy loam	37.64	0.24%
Houghton and Sebewa soils, ponded	174.83	1.09%
Kalamazoo loam, 0 to 2 percent slopes	157.24	0.98%
Kalamazoo loam, 2 to 6 percent slopes	334.9	2.09%
Kalamazoo loam, 6 to 12 percent slopes	225.09	1.41%
Oshtemo sandy loam, 0 to 6 percent slopes	83.63	0.52%
Oshtemo sandy loam, 6 to 12 percent slopes	36.06	0.23%
Oshtemo sandy loam, 12 to 18 percent slopes	104.23	0.65%
Oshtemo sandy loam, 18 to 35 percent slopes	132.38	0.83%
Pits, gravel	5.22	0.03%
Sleeth loam, 0 to 3 percent slopes	14.71	0.09%
Udipsamments, level to steep	63.1	0.39%
Urban land	4833.56	30.20%

Table 2-3 – Service Area Soils

Urban land-Glendora complex	1053.5	6.58%
Urban land-Kalamazoo complex, 0 to 6 percent slopes	4119	25.73%
Urban land-Kalamazoo complex, 6 to 12 percent slopes	44.54	0.28%
Urban land-Kalamazoo complex, 12 to 18 percent slopes	1558.53	9.74%
Urban land-Oshtemo complex, 12 to 25 percent slopes	2513.26	15.70%
Water	366.03	2.29%
Total	16007	100.00%

- K. Agricultural Resources: Most of the service area is urban or suburban, with no croplands inside City limits. Therefore, agricultural resources are not considered present.
- L. Fauna and Flora: Flora and fauna of special concern or listed Federal or by the State of Michigan are included in the following Table 2-4. Habitats are included in Table 2-5.

Scientific Name	Common Name	Federal Status	State Status
Bombus affinis	Rusty-patched bumble bee	LE	E
Epioblasma triquetra	Snuffbox Mussel	LE	E
Myotis sodalis	Indiana bat	LE	E
Neonympha mitchellii mitchellii	Mitchell's satyr butterfly	LE	E
Nicrophorus americanus	American burying beetle	LE	х
Platanthera leucophaea	Prairie white-fringed orchid	LT	E
Sistrurus catenatus	Eastern massasauga	LT	Т
Agalinis gattingeri	Gattinger's gerardia		E
Baptisia leucophaea	Cream wild indigo		E
Besseya bullii	Kitten-tails		E
Bombus pensylvanicus	American bumble bee		E
Calephelis muticum	Swamp metalmark		E
Carex straminea	Straw sedge		E
Centronyx henslowii	Henslow's sparrow		E
Clonophis kirtlandii	Kirtland's snake		E
Coreopsis palmata	Prairie coreopsis		E
Erimyzon claviformis	Creek chubsucker		E
Eryngium yuccifolium	Rattlesnake-master or button snakeroot		E
Gentiana alba	White gentian		E
Glyceria acutiflora	Manna grass		E

Table 2-4 – Flora-Fauna

Lygodium palmatum	Climbing fern	E
Microtus ochrogaster	Prairie vole	E
Notropis anogenus	Pugnose shiner	E
Platanthera ciliaris	Orange- or yellow-fringed orchid	E
Populus heterophylla	Swamp or Black cottonwood	E
Scleria pauciflora	Few-flowered nut rush	E
Silphium laciniatum	Compass plant	E
Stellaria crassifolia	Fleshy stitchwort	E
Valerianella chenopodiifolia	Goosefoot corn salad	E
Viola pedatifida	Prairie birdfoot violet	E
Accipiter gentilis	Northern goshawk	Т
Acris blanchardi	Blanchard's cricket frog	Т
Alasmidonta viridis	Slippershell	Т
Antrostomus vociferus	Eastern whip-poor-will	Т
Asclepias hirtella	Tall green milkweed	Т
Asclepias purpurascens	Purple milkweed	Т
Baptisia lactea	White or prairie false indigo	Т
Boechera missouriensis	Missouri rock-cress	Т
Calamagrostis stricta ssp. stricta	Narrow-leaved reedgrass	Т
Callophrys irus	Frosted elfin	Т
Carex albolutescens	Sedge	Т
Carex festucacea	Fescue sedge	Т
Carex lupuliformis	False hop sedge	Т
Carex oligocarpa	Eastern few-fruited sedge	Т
Carex seorsa	Sedge	Т
Chlidonias niger	Black tern	Т
Clemmys guttata	Spotted turtle	Т
Collinsia verna	Blue-eyed Mary	Т
Cordulegaster erronea	Tiger spiketail	Т
Coregonus artedi	Lake herring or Cisco	Т
Corydalis flavula	Yellow fumewort	Т
Cryptotis parva	Least shrew	Т
Cyclonaias tuberculata	Purple wartyback	Т
Cyperus acuminatus	Cyperus, Nut grass	Т
Cypripedium candidum	White lady slipper	Т
Dichanthelium leibergii	Leiberg's panic grass	Т
Draba reptans	Creeping whitlow grass	 Т
Dryopteris celsa	Small log fern	Т
Eleocharis compressa	Flattened spike rush	 Т
Erynnis persius persius	Persius dusky wing	Т
Eupatorium sessilifolium	Upland boneset	Т

Falco peregrinus	Peregrine falcon	т
Filipendula rubra	Queen-of-the-prairie	Т
Flexamia reflexa	Leafhopper	Т
Fuirena pumila	Umbrella-grass	Т
Galearis spectabilis	Showy orchis	Т
Gallinula galeata	Common gallinule	Т
Gentianella guinguefolia	Stiff gentian	Т
Helianthus mollis	Downy sunflower	Т
Hydrastis canadensis	Goldenseal	Т
Ipomoea pandurata	Wild potato vine or man-of-the-earth	Т
Isotria verticillata	Whorled pogonia	Т
Juncus scirpoides	Scirpus-like rush	Т
Lechea minor	Least pinweed	Т
Lechea pulchella	Leggett's pinweed	Т
Linum virginianum	Virginia flax	Т
Mertensia virginica	Virginia bluebells	Т
Morus rubra	Red mulberry	Т
Muhlenbergia richardsonis	Mat muhly	Т
Panax quinquefolius	Ginseng	Т
Parkesia motacilla	Louisiana waterthrush	Т
Perimyotis subflavus	Eastern pipistrelle	Т
Potamogeton pulcher	Spotted pondweed	Т
Sabatia angularis	Rosepink	Т
Setophaga cerulea	Cerulean warbler	Т
Silene stellata	Starry campion	Т
Silphium integrifolium	Rosinweed	Т
Silphium perfoliatum	Cup plant	Т
Symphyotrichum sericeum	Western silvery aster	Т
Terrapene carolina carolina	Eastern box turtle	 Т
Trichostema dichotomum	Bastard pennyroyal	Т
Trillium sessile	Toadshade	 Т
Triphora trianthophora	Nodding pogonia or three birds orchid	Т
Valeriana edulis var. ciliata	Edible valerian	 Т
Zizania aquatica	Wild rice	Т
Agrimonia rostellata	Beaked agrimony	 SC
Alasmidonta marginata	Elktoe	SC
Ammodramus savannarum	Grasshopper sparrow	SC
Amorpha canescens	Leadplant	 SC
Angelica venenosa	Hairy angelica	SC
Arnoglossum plantagineum	Prairie indian-plantain	SC
Astragalus canadensis	Canadian milk vetch	SC

Astragalus neglectusCooper's milk vetchSCBerula erectaCut-leaved water parsnipSCBerula populifoliaGray birchSCBombus suricomusBlack and gold bumble beeSCBombus borealisNorthern amber bumble beeSCBombus borealisNorthern amber bumble beeSCBorbus borealisNorthern amber bumble beeSCBorbus borealisAmerican bitternSCBrickellia eupatorioidesFalse bonesetSCBrickellia eupatorioidesRed-shouldered hawkSCCambarunio irisReinbowSCCambarunio irisBig water crayfishSCCatocala dulciolaQuiet underwingSCCatocala dulciolaQuiet underwingSCCatocala dulciolaQuiet underwingSCCuscuta campestrisField dodderSCCuscuta campestrisField dodderSCCuscuta polygonorumKnotweed dodderSCCuscuta polygonorumKnotweed dodderSCCuscuta polygonorumKnotweed dodderSCEleocharis engelmanniaEngelmann's spike rushSCEleocharis eugeistoidesHorstail spike rushSCEleocharis eugeistoidesGertan-leaved stupSCFalco oplumstaMottel duskywingSCEuxoa inmitaMottel duskywingSCEuxoa inmitaMixed dart mothSCFalco oplumstaGertan-leaved st. John's-wortSCHalaeetus leucocephalusBald eagleSC </th <th></th> <th></th> <th></th>			
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Betula populifoliaGray birchSCBombus borealisNorthern amber bumble beeSCBombus borealisNorthern amber bumble beeSCBombus terricolaYellow banded bumble beeSCBotarus lentiginosusAmerican bitternSCBrickellia eupatorioidesFalse bonesetSCBrickellia eupatorioidesRed-shouldered hawkSCCambarus robustusRed-shouldered hawkSCCambarus robustusSig water crayfishSCCatocala dulciolaQuiet underwingSCCatocala dulciolaQuiet underwingSCCatocala dulciolaMargalen underwingSCCatocala dulciolaMargalen underwingSCCuscuta campestrisField dodderSCCuscuta polygonorumKnotweed dodderSCCuscuta polygonorumKnotweed dodderSCCygnus buccinatorTrumpeter swanSCEleocharis equisetoidesHorsetail spike rushSCEuroymus atropurpureusWahooSCEuroymus atropurpureusWahooSCEuroymus atropurpureusGertain-leaved St, John's-wortSCHalaectus EuropurpureusGertain-leaved St, John's-wortSCLuonymus atropurpureusGertain-leaved St, John's-wortSCEuroparia anguifferaGertain-leaved St, John's-wortSCEuroparia anguifferaGertain-leaved St, John's-wortSCEuroparia anguifferaGertain-leaved St, John's-wortSCLasmigona constaaGertain-leaved	Berula erecta	Cut-leaved water parsnip	SC
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Lithobates palustrisPickerel frogSCLycopodiella subappressaNorthern appressed clubmossSC	Lipocarpha micrantha	Dwarf-bulrush	SC
Lycopodiella subappressa Northern appressed clubmoss SC	Lithobates palustris	Pickerel frog	SC
	Lycopodiella subappressa	Northern appressed clubmoss	SC

Lycopus virginicus	Virginia water-horehound		SC
Mesomphix cupreus	Copper button		SC
Microtus pinetorum	Woodland vole		SC
Necturus maculosus	Mudpuppy		SC
Nelumbo lutea	American lotus		SC
Oecanthus laricis	Tamarack tree cricket		SC
Pandion haliaetus	Osprey		SC
Pantherophis spiloides	Gray rat snake		SC
Papaipema cerina	Golden borer		SC
Papaipema speciosissima	Regal fern borer		SC
Patera pennsylvanica	Proud globelet		SC
Pleurobema sintoxia	Round pigtoe		SC
Poa paludigena	Bog bluegrass		SC
Polygala cruciata	Cross-leaved milkwort		SC
Potamilus alatus	Pink heelsplitter		SC
Protonotaria citrea	Prothonotary warbler		SC
Pygarctia spraguei	Sprague's pygarctia		SC
Rhexia virginica	Meadow beauty		SC
Rhynchospora macrostachya	Tall beakrush		SC
Rhynchospora scirpoides	Bald-rush		SC
Scleria triglomerata	Tall nut rush		SC
Scutellaria elliptica	Hairy skullcap		SC
Setophaga citrina	Hooded warbler		SC
Smilax herbacea	Smooth carrion-flower		SC
Sphaerium fabale	River fingernail clam		SC
Spiranthes ovalis	Lesser ladies'-tresses		SC
Spiza americana	Dickcissel		SC
Sporobolus heterolepis	Prairie dropseed		SC
Stenelmis douglasensis	Douglas stenelmis riffle beetle		SC
Striatura meridionalis	Median striate		SC
Stylurus laurae	Laura's snaketail		SC
Utterbackia imbecillis	Paper pondshell		SC
Venustaconcha ellipsiformis	Ellipse		SC
Vertigo tridentata	Honey vertigo		SC

All data from https://mnfi.anr.msu.edu/resources/county-element-data

Code Definitions:

LE = Listed Endangered (Federal) LT = Listed Threatened (Federal) E = Endangered T = Threatened SC = Special Concern X = Extirpated

Community Name	State Rank	Occurrences in County	Last Observed in County
Mesic Prairie	S1	2	2004
Mesic Sand Prairie	S1	1	2020
Oak Barrens	S1	1	2020
Coastal Plain Marsh	S2	3	2010
Dry-mesic Southern Forest	S3	2	2020
Floodplain Forest	S3	1	2012
Hardwood-Conifer Swamp	S3	1	
Inundated Shrub Swamp	S3	1	2021
Mesic Southern Forest	S3	2	2008
Prairie Fen	S3	10	2020
Rich Tamarack Swamp	S3	1	
Southern Hardwood Swamp	S3	1	2020
Southern Wet Meadow	S3	3	2018

Table 2-5 – Habitats

Data for sensitive environments as defined by the State of Michigan from https://mnfi.anr.msu.edu/resources/county-element-data

Existing System

As previously described, the City's collection system includes several surrounding townships and communities and touches parts of three counties. All of the collected water ultimately flows to the KWRP for treatment before discharge to the Kalamazoo River. KWRP is located on the west bank of the Kalamazoo River between East Patterson Street and East Mosel Avenue. The treatment plant has been in operation since 1955. The facility and processes within have been upgraded and/or expanded upon many times, beginning in 1967.

In recent years, the plant has seen several significant improvements to its treatment processes designed to improve operational efficiency and ensure permit compliance. The KWRP recently underwent a tertiary treatment improvements project, which included the construction of a new tertiary treatment building and was substantially completed in 2024. Additionally, the City has included two (2) projects in their CIP scheduled for the years 2026-2028. These include a Dryer and Energy Recovery System (ERS) or Dryer Only Facility to address biosolids disposal challenges and replacement of the 6-inch Sanitary Sewer at Farmers Alley to resolve capacity and structural issues. The Kleinstuck Preserve Sanitary Sewer Overflow (SSO) rehabilitation project, crucial for addressing sanitary sewer overflows in a sensitive environmental area, has been added to the proposed project needs later in this report, despite not being listed in the CIP and AMP. Details of these items will be discussed further in later sections of this Plan.

- A. Sludge/Residuals Management: Due to the industrial constituents of its biosolids, KWRP can only dispose of their residuals at landfill. The City is paying a significant amount for hauling costs and increasing tipping fees. Additionally, several discharges of PFAS in the collection system have occurred in the past which increases the likelihood of future compliance issues regarding contaminates of emerging concern. Finding a reliable alternative with lower costs is a goal the City is working towards.
- B. Collection System: The number of new sewers and sanitary sewer connections in Kalamazoo has increased most years. As of around 15 years ago, all sewers were over 50 years old and over half were over 85 years old. A program was created to monitor the integrity of sewers and repair and replace severely damaged portions as needed. There have been no issues with the collection system since. In years to come, the size of the collection system will be dependent on urban growth.
- C. Industrial Users: Kalamazoo has an Industrial Pretreatment Program (IPP) in place to monitor industrial users. Significant Industrial Users (SIUs) in the area include Pfizer, Kalsec, Cytech, Zoetis, GPI, and Bell's Brewery.
- D. Pump Stations: Kalamazoo's wastewater collection system has 193 pumping stations. Additionally, the City operates and maintains 56 other pumping stations in the following jurisdictions:
 - 1. City of Parchment 3 stations
 - 2. Village of Augusta 2 stations
 - 3. Charlestown Township 2 stations
 - 4. Comstock Township 10 stations
 - 5. Kalamazoo Township 8 stations
 - 6. Oshtemo Township 11 stations
 - 7. Pavilion Township 7 stations
 - 8. Texas Township 13 stations
- E. Inflow & Infiltration (I&I) Concerns: A few years ago, Texas Township experienced flooding from Eagle Lake and Crooked Lake, and many homes were impacted. Hydraulic flow was routed to a lift station, and work was done on that lift station to accommodate the higher level of flow. Levels have since returned to normal. Other sources of I&I are the City's interceptor sewers which run along creeks and rivers and are subject to groundwater pressure. The City continues a targeted approach to address collection system I&I.
- F. KWRP Storm Water System: The City has a goal of eliminating the KWRP site storm water plan. This will take moderate rehab to the yellow and orange storm water abandonments, as existing hydraulics cannot physically route these to treatment. A redesign would get the flow routed to a point of treatment and effectively eliminate the need for a storm water pollution prevention site plan.

- G. KWRP Operation and Maintenance Problems: There are many pieces of equipment at the plant that are reaching or exceeding their expected useful life, and optimization is no longer a viable option for these. Replacement is necessary for these items. In 2025, the City has planned to replace the secondary clarifier equipment in clarifiers 5-8. In 2028, the City is planning to replace their fine screens. This should eliminate the existing operation and maintenance problems for these critical treatment processes.
- H. Climate resiliency: To continue to provide sustainable and safe service, ensuring that climate changes are considered when long term goals are developed is paramount. In planning for the future, climate changes are considered when developing long-term goals for the KWRP. This includes the quality of the receiving discharge body of water, cleaned waste streams, and ensuring the collection system does not negatively impact the water supply or surrounding water resources. Climate considerations will be discussed in several cases outlined in this Plan.

Needs

The System's needs are guided by the City's Asset Management Plan (AMP), current Capital Improvement Plan (CIP), and sewer integrity monitoring. The AMP and CIP can be reviewed in Appendix B. The following projects have been scored by Maintenance and Operations staff, as seen in Figure 2-5, as the top priorities to ensure safety at the plant and maintain the current quality of service for citizens of Kalamazoo and system users within other jurisdictions. See Table 2-6 below for a description of the proposed projects for 2026-2028. Additionally, the history and an ongoing threat of SSOs has raised additional projects into priority status, highlighting the need for continued infrastructure improvements to mitigate environmental and operational risks. As required by law, the City notifies EGLE's Kalamazoo District Office and the Kalamazoo County Environmental Health Unit of SSOs and documents these occurrences, which are available in Appendix C.

- A. Compliance Status: The current NPDES permit for the City of Kalamazoo Water Reclamation Plant came into effect on September 1, 2021. It is set to expire on October 1, 2025. The NPDES discharge permit is included in Appendix D.
- B. Plant Performance vs. Discharge Permit: The KWRP is currently in the middle of a tertiary treatment improvements project. With completion of this project, the KWRP continues to be on track to meet permit requirements. This project was substantially completed in 2024.
- C. Orders: The City of Kalamazoo's sanitary sewer system, including the KWRP, is not currently under any Court, State, or Federal enforcement orders or administrative consent orders, at this time.
- D. Concerns with aging infrastructure/components that need to be replaced.
 - 1. Water Quality Problems: The water quality is monitored in and around the City. The Kalamazoo River is of high importance to the community and used for recreation and commerce by many users. Both BOD and fecal coliform levels are major concerns

because of the negative impact they can have on the environment and the use of the river. There are no reported water quality issues from the City of Kalamazoo.

2. Stormwater Projects: There are no stormwater projects planned for at this time.

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Project Identifier	CIP Item/Project Name	Project Location	Reason For Project
A1	Dryer and Energy Recovery System (ERS)	Biosolids Management	Improve sludge handling efficiency, reduce sludge volume, as well as cost associated with biosolids disposal. Reduced odors and carbon footprint. Destruction of contaminates of emerging concern expansion of regional capabilities.
A2	Dryer Only Facility	Biosolids Management	Improve sludge handling efficiency, reduce sludge volume, as well as cost associated with biosolids disposal.
B1	Replacement of 6- inch Sanitary Sewer at Farmers Alley	Collection System	Improve sewer capacity, reliability, and prevent backups on private property.
C1	Kleinstuck Preserve SSOs	Collection System	Eliminate SSOs, protect the environment, and enhance system reliability.

Table 2-6 – Project Needs

3 Project Descriptions

Proposed Project Needs

Project A1 – Dryer and Energy Recovery System (ERS)

Need:

The City of Kalamazoo faces critical challenges in managing biosolids produced by the wastewater treatment process, where 60-70% of the organic load originates from industrial sources. This results in biosolids that are unsuitable for agricultural applications due to contaminants of emerging concern (CECs) and unfavorable physical properties. Landfill disposal has become the primary option, but landfill operators are increasingly hesitant to accept the material as evidenced by the lack of respondents on recent disposal contract bids. This has driven costs to unsustainable levels, with disposal expenses exceeding \$13.5 million annually and tipping fees climbing from \$92.71/wet ton in 2022 to \$172.54/wet ton by 2025. The City's current disposal contract expires in 2025, leaving no guarantee of future agreements. These escalating costs and limited disposal options place a substantial financial and operational burden on the City, necessitating a sustainable long-term solution. Additionally, the looming threat of PFAS and other contaminates of emerging concern in the collection system may further impact both disposal costs and potential sites. With reported discharges to the collection system, and ultimately the KWRP, in the past it is imperative that the Plant prepare itself to deal with future exceedances and violations. Additionally, surrounding communities are facing similar PFAS challenges, and the City is looking to expand its capabilities to provide relief in the future to the larger Region if called upon.

Description of Planned Project

The project involves upgrading the City's biosolids management system to process 106,000 wet tons per year at 23% dry solids (DS) using Veolia's BioCon dryers and Energy Recovery Systems (ERS). Sufficient dryers and thermal oxidation equipment will be installed to meet the design loads while maximizing energy efficiency and minimizing operational costs. The dryers will reduce moisture content, achieving up to 70% mass reduction, making the biosolids easier to handle and dispose of. The dried biosolids will then be thermally oxidized using a reciprocating grate system, converting the material into ash and further reducing the volume by more than 93%. This thermal oxidation process will also capture and reuse heat, significantly lowering energy consumption and operational costs.

The ERS will provide additional flexibility by operating in two modes: a lower temperature mode for volume reduction and a higher temperature mode for PFAS treatment, addressing evolving regulatory requirements. The modular design of the system allows for phased expansion to accommodate future sludge intake, regulatory changes, and system upgrades. This critical project will enable the City to mitigate risks from reliance on external landfill contracts, achieve significant cost savings, reduce environmental impacts, and handle contaminates of emerging concern, while addressing the biosolids management needs of the KWRP.

Additionally, the project will enhance the City's role as a reserve biosolids processing site for surrounding communities facing emerging PFAS issues that threaten their biosolids disposal options. The upgraded system will include the ability to receive liquid biosolids, integrating them into the biosolids process upstream of the dewatering process. This capability provides a regional solution for municipalities in need of assistance due to evolving environmental challenges.

To support this regional initiative, the City has entered discussions on mutual aid-style agreements with surrounding communities. These letters of intent and agreements, currently in negotiation, will establish cooperative frameworks for biosolids management in response to potential PFAS contamination risks. The upgraded receiving facilities will be designed to accommodate emerging-concern contaminants, ensuring compliance with future regulatory requirements and providing a sustainable, long-term biosolids disposal solution for both Kalamazoo and its neighboring communities.



Figure 3-1: Project A1 Location and Design



Figure 3-2: Dosing Pumps for Dryers



Figure 3-3: Dryer



Figure 3-4: ERS

Project A2 – Dryer Only Facility

Need:

The City is seeking a cost-effective and sustainable solution for managing its biosolids, which are primarily disposed of in landfills due to contaminants of emerging concern (CECs) and unfavorable physical properties. To mitigate these challenges, the City is evaluating alternatives that reduce biosolids volume and associated costs while considering long-term regulatory and environmental risks.

Description of Planned Project

The City of Kalamazoo is considering a biosolids management upgrade known as Project A-2, which involves installing biosolids dryers capable of processing 106,000 wet tons per year at 23% dry solids (DS). These dryers will significantly reduce moisture content, achieving up to 70% mass reduction. This volume reduction will lead to substantial cost savings by lowering transportation and disposal expenses

while also reducing odor concerns associated with wet biosolids. The dried material will be easier to handle and store, improving operational efficiency and flexibility in managing biosolids disposal.

However, unlike Project A-1, which includes an ERS, Project A-2 lacks a mechanism to destroy PFAS and other CECs. While the dryers will significantly reduce biosolids volume and disposal costs, the remaining material will still contain contaminants, limiting long-term disposal options. With increasing regulatory scrutiny on PFAS in landfill and land-applied biosolids, there is a risk that disposal restrictions will tighten, potentially leaving the City with escalating costs or the need for future investment in advanced treatment. Additionally, a dryer only project does not provide any additional benefits to the surrounding region who may be incapable of meeting future contaminate challenges on their own. Although Project A-1 has a higher initial capital cost, its ability to destroy PFAS and CECs makes it a more viable long-term solution. Project A-2 offers immediate cost savings but does not mitigate the risks associated with evolving disposal regulations. The decision between the two approaches must weigh short-term financial benefits against the potential for increased future costs and regulatory challenges.

Project B1 – Replacement of 6-inch Sanitary Sewer at Farmers Alley

Need:

The existing 6-inch sanitary sewer at Farmers Alley, originally installed in 1882, has a history of failures and capacity limitations that no longer meet modern usage demands and standards. The sewer has experienced multiple backups and structural deterioration, leading to service interruptions and potential public health risks. Previous attempts to rehabilitate the line through lining were unsuccessful due to service lateral taps that could not be reinstated using available methods at the time. Additionally, the current undersized sewer operates at a reduced slope, further compromising its efficiency and increasing the likelihood of future failures. Given these challenges, replacement with an appropriately sized 8-inch sanitary sewer is necessary to improve system reliability, enhance operational efficiency, and prevent further disruptions to the community and adjacent property owners.

Description of Planned Project

The Farmers Alley sanitary sewer replacement project involves replacing approximately 70 linear feet of the existing 6-inch sewer with a new 8-inch sanitary sewer from Manhole KC15571 to Manhole KC15572, designed to meet current design standards and accommodate existing and future wastewater flows. The project scope includes the installation of two to three new manholes, reconnection of five to ten service laterals, and coordination with other utilities, including stormwater, water, electrical, and telecommunications infrastructure. Given the tight construction limits and the presence of multiple underground utilities, careful planning and execution will be required to minimize disruptions to adjacent businesses and property owners. This project will restore the sewer's capacity and reliability, addressing critical infrastructure needs in Downtown Kalamazoo.



Figure 3-5: Project B1 Location and Description

Project C1 – Kleinstuck Preserve SSOs

Need:

The Kleinstuck Preserve has experienced SSOs due to structural deficiencies in the existing sewer system, including drop pipes, backfall in pipe sections, root intrusion, and vandalism. These overflows pose environmental risks to the protected and sensitive region, requiring a solution that minimizes ecological impact while ensuring long-term sewer system reliability. Current maintenance and monitoring efforts have helped mitigate issues but do not provide a permanent engineered solution.

Description of Planned Project

This project aims to rehabilitate the existing sanitary sewer infrastructure within the Kleinstuck Preserve by addressing localized pipe sags, backfall, and structural defects. The selected approach, pipe and manhole rehabilitation, will minimize environmental disruption while improving system functionality. To enhance access routes for easier maintenance, a 12-foot wide aggregate path will be constructed. This project will provide a sustainable and minimally invasive solution to prevent future SSOs in the area.



Figure 3-6: Project C1 Location and Description

Projected Future Needs (for the next 20 years minimum)

The City of Kalamazoo is currently designed to operate between 10 MGD and 76.6 MGD (existing secondary clarifiers are the limiting process as the rest of the plant is capable of treating 96 MGD). The average daily flow at current is 28 MGD with a Max Day flow of 53.3 MGD. The KWRP has sufficient treatment capacity based on the given flow data.

- A. Flow Data: The current base flows in the system are estimated to be around 27.06 MGD based on a study completed in 2017. The volume can fluctuate with wet weather I&I. The treatment plant is designed and permitted to operate an annual average daily flow of rate of 28 MGD, with a peak hourly flow of approximately 65 MGD.
 - 1. See Table 3-1 below for a breakdown of existing flow estimates.

Line	Characteristic Flow	Flow Rate
1	Average KWRP Inflow	28.0 MGD
2	Average Dry Weather KWRP Flow	25.0 MGD
3	Average Wet Weather Infiltration Inflow (Line 1-Line 2)	3.0 MGD
4	Average Commercial/Industrial Flow	10.0 MGD
5	Dry Weather Residential Flow (Line 2-Line 4)	15.0 MGD
6	Per Capita Dry Weather Flow (Line 5/150,000)	100 GPCD
7	Average Daily Residential Flow (Line 1-Line 4)	18.0 MGD
8	Per Capita Average Residential Flow (Line 7/150,000)	120 GPCD

Table 3-1 – Current Sanitary System Flows

 Future flow estimates for the system have been created by increasing current flows proportionally by the anticipated population increase. Based on these projections, Table 3-2 below shows the anticipated system flows for the projected population in 2045.

Line	Characteristic Flow	Flow Rate for 2045 (MGD)
1	Future Dry Weather Flow	28.56
2	Future Industrial/Commercial Flow	11.42
3	Average Wet Weather Infiltration/Inflow	3.43
4	Total Average KWRP Flow	31.99

Table 3-2 – Projected Sanitary System Flows

- 3. The KWRP has sufficient treatment capacity to accept the anticipated peak flows from the collections system, as reflected by the flow metering.
- B. Future Environment without the Proposed Projects: The projects outlined in this plan are focused on safety for the operators, sufficient and reliable operations within the plant, and environmental stewardship/justice for the adjacent neighborhoods. Without correcting these issues, the system cannot safely provide the needed level of service for wastewater flows, and the risks of failure in different parts of the system are increased.

4 Analysis of Alternatives

Described below are the potential alternatives that have been identified. They will be discussed as they relate to the proposed project plan. See Appendix E for documentation from the Kalamazoo Residual Biosolids Sustainable Alternatives Second Stakeholder Conference, outlining the rationale behind biosolids management decisions.

- A. No Action: The existing KWRP generally complies with its NPDES permit. However, as the system ages, it will become more susceptible to conditions which may limit the capacity of the system to operate as designed, may put workers at higher risk of injury, and may cause significant issues with the surrounding community.
 - Project A1 Dryer and Energy Recovery System (ERS) While the current biosolids management process at the KWRP remains functional, it faces significant challenges due to the production of unsuitable biosolids from industrial sources. These biosolids cannot be used for agricultural purposes, leading to an increased reliance on landfill disposal. Taking no action will not address escalating disposal costs, projected to exceed \$13.5 million annually, and it will also fail to mitigate the anticipated rise in tipping fees. Additionally, this approach fails to provide a sustainable long-term solution for biosolids management and leaves the City vulnerable to operational and financial risks. No Action will not be examined further.
 - Project A2 Dryer Only Facility Similar to Project A1, taking no action will not address escalating disposal costs, and it will also fail to mitigate the anticipated rise in tipping fees.
 - Project B1 Replacement of 6-inch Sanitary Sewer at Farmers Alley Taking no action will not address the sewer's inability to meet current demands or prevent future failures, leaving the system vulnerable to continued operational and public health risks. No Action will not be examined further.
 - 4. Project C1 Kleinstuck Preserve SSOs The No Action alternative would leave the existing sewer infrastructure unchanged, allowing ongoing SSOs due to structural issues like drop pipes, backfall, and root intrusion. The ecological integrity of the Kleinstuck Preserve would remain at risk, and maintenance access would not improve.
- B. Optimize Performance of Existing System: The KWRP has been expanded upon and maintained over the last 67 years. Projects are identified in the City's Asset Management Plan and Capital Improvement Plan as described above.
 - Project A1 Dryer and Energy Recovery System (ERS) The project as proposed will optimize the performance of existing biosolids management systems. Implementing dryers with ERS reciprocating grate thermal oxidizer will replace the current landfilldependent disposal method with an integrated, energy-efficient solution. The dryers will reduce biosolids mass by up to 70%, improving handling efficiency, while the ERS will recover heat from thermal oxidation to power the drying process. This will enhance operational reliability, reduce long-term disposal costs, destroy PFAS and other contaminates of emerging concern, and eliminate dependence on external landfill contracts, optimizing the sustainability of the biosolids treatment process at the KWRP.
 - Project A2 Dryer Only Facility The project as proposed will optimize the performance of existing systems. The dryers will reduce biosolids mass by up to 70%, improving handling efficiency. This will enhance operational reliability and reduce long-term

disposal costs, optimizing the sustainability of the biosolids treatment process at the KWRP.

- 3. Project B1 Replacement of 6-inch Sanitary Sewer at Farmers Alley The project as proposed will optimize the performance of existing systems. Replacing the existing 6-inch sanitary sewer with a new 8-inch sewer will enhance system reliability and restore capacity to accommodate current and future wastewater flows. This upgrade will improve the efficiency of the sanitary sewer system by reducing the likelihood of failures, backups, and service disruptions, ultimately improving the overall performance of the infrastructure in Downtown Kalamazoo.
- 4. Project C1 Kleinstuck Preserve SSOs The proposed project will optimize the performance of the existing sanitary sewer system by rehabilitating infrastructure to address structural deficiencies such as drop pipes, backfall, root intrusion, and vandalism. Trenchless rehabilitation methods, including pipe and manhole lining, will minimize environmental disruption while improving system reliability and preventing future SSOs in the Kleinstuck Preserve area.
- C. Water and Energy Efficiency: The conservation of natural water resources and energy usage is a key proponent in ensuring sustainable wastewater operations in the future. All of the proposed projects will maintain/improve upon current conditions through the replacement of antiquated equipment with modern, more efficient.
 - Project A1 Dryer and Energy Recovery System (ERS) Incorporating ERS into the biosolids treatment process will capture and reuse heat, lowering external energy needs for drying. The project will also reduce biosolids volume, reducing transportation and disposal costs, and eliminating leachate concerns, contributing to environmental sustainability. It does not involve changes or upgrades specifically aimed at optimizing water or energy use.
 - 2. Project A2 Dryer Only Facility The project will reduce biosolids volume, reducing transportation and disposal costs, and eliminating leachate concerns, contributing to environmental sustainability. It does not involve changes or upgrades specifically aimed at optimizing water or energy use.
 - Project B1 Replacement of 6-inch Sanitary Sewer at Farmers Alley This proposed project improves the reliability and performance of the existing sewer system. While the replacement may indirectly enhance efficiency by reducing the likelihood of system failures and disruptions, it does not involve changes or upgrades specifically aimed at optimizing water or energy use.
 - 4. Project C1 Kleinstuck Preserve SSOs This project primarily focuses on addressing SSOs through infrastructure rehabilitation, not on water or energy efficiency. As such, it will not be examined further.
- D. Regionalization: The City of Kalamazoo is the core of the regional utility systems for the surrounding areas, including parts of Van Buren and Barry Counties that are dependent on the

KWRP to handle their waste. In addition, the septage receiving facilities at the plant accept waste from a 25-mile radius from the plant, which serves portions of the Barry, Kalamazoo, and Van Buren Counties. KWRP provides service to both the City and much of the surrounding areas. The City is working on regionalization agreements with surrounding areas, with a draft provided in Appendix F.

- 1. Project A1 Dryer and Energy Recovery System (ERS) Expanding KWRP's role to accept biosolids for emergency disposal will support smaller WWTPs facing equipment failures, contamination exceedances, weather challenges, or shutdowns. The dryer and energy recovery system (ERS) will increase processing capacity, reduce costs through energy-efficient drying, and enhance system resilience for regional partners. The project will also establish the City as a reserve disposal site for communities dealing with PFAS-related biosolids challenges. Upgrades will allow KWRP to receive liquid biosolids and integrate them into the treatment process upstream of dewatering, providing a critical regional solution for evolving environmental regulations.
- 2. Project A2 Dryer Only Facility While this project does not include an ERS, it will significantly improve operational efficiency and sustainability by reducing transportation and disposal costs for KWRP and its regional partners.
- 3. Project B1 Replacement of 6-inch Sanitary Sewer at Farmers Alley KWRP is already the Regional Alternative so this will not be examined further.
- 4. Project C1 Replacement of Intersection of Interceptor KWRP is already the Regional Alternative so this will not be examined further.
- E. Monetary Evaluation: The monetary evaluation for if the KWRP were to optimize the existing systems for the proposed projects instead of replacing the units, is outlined in Table 4-1 below.

Proposed Project	CWSRF Costs		
Dryer and Energy Recovery System			
(ERS)	\$194,349,188.00		
Dryer Only Facility		\$105,119,625.00	
Replacement of 6-inch Sanitary			
Sewer at Farmers Alley	\$335,000.00	\$335,000.00	
Kleinstuck Preserve SSOs	\$2,155,725.00	\$2,155,725.00	
Total	\$196,839,913.00	\$107,610,350.00	

Table 4-1 – Monetary Evaluation

F. Environmental Evaluation: The impact on the environment from these projects is expected to be minimal or none. The environmental impact of biosolids management alternatives was assessed, with greenhouse gas (GHG) emissions being a key consideration. This assessment can be seen in Appendix G. Landfilling is the least favorable option due to high moisture content in the cake, which creates anaerobic conditions and leads to significant methane emissions, a GHG far more potent than CO₂. The "no action" scenario, which relies on continued landfilling, presents the highest long-term environmental risk. Additionally, landfill costs have risen sharply with further
increases expected and regulatory uncertainty regarding the acceptance of biosolids containing CECs adds further risk.

Alternative treatment methods, such as drying and energy recovery systems (ERS), offer more sustainable solutions. Drying reduces landfill methane emissions but requires significant natural gas consumption, contributing to long-term CO₂ emissions. High-temperature fluidized bed (HTFB) incineration and ERS minimize methane and landfill dependency while reducing nitrous oxide (N₂O) emissions, a potent greenhouse gas. Supercritical water oxidation (SCWO) has higher N₂O emissions than HTFB. Modeling conducted using the Biosolids Emissions Assessment Model (BEAM v.3) confirmed that ERS is among the most environmentally favorable options. Figure 4.1 is a graphical representation of the GHG Potential of different biosolids management options. Moreover, the proposed project located within the KWRP, as well as the two (2) within the City limits do not pose an unmanageable risk to native wildlife habitats.



Figure 4-1: Greenhouse Gas Potential of Different Biosolids Management Options

G. Implementability and Public Participation: This project plan was created in collaboration with operators and managers at the KWRP. This was done to identify what was viewed as the most critical projects and prioritize them first. The proposed project plan was discussed with the Northside Association for Community Development (NACD) on January 28, 2025. Moreover, the proposed project plan was discussed with community members at a Public Hearing held on March 25, 2025.

5 Selected Alternatives

- A. Design Parameters: Projects that include optimization of existing equipment include:
 - Project A1 Dryer and Energy Recovery System (ERS): The current biosolids management process at the KWRP is facing significant challenges due to unsuitable biosolids produced from industrial sources. These biosolids are unsuitable for agricultural use, resulting in increased reliance on landfill disposal. This method has led to escalating disposal costs, projected to exceed \$13.5 million annually, with tipping fees expected to increase. The conceptual design of the proposed biosolids management system will include five (5) dryers each equipped with its own air pollution control (APC) system and serviced by an individual ERS unit. The number of dryers and thermal units is subject to change as design progresses.

The dryer will reduce moisture content, decreasing the volume of biosolids by up to 70% and improving handling and disposal properties. The thermal oxidation process will further reduce volume, converting the biosolids to ash. The ERS will capture heat from the thermal oxidation process to power the dryer, cutting energy consumption and operational costs. This system will also meet environmental regulations through advanced air emissions scrubbing.

Adding the ERS is the more beneficial option compared to Project A2, which omits it. While the ERS requires a higher initial investment, rising landfill costs could make the non-ERS option more expensive over time without added benefits. The ERS reduces landfill dependency, stabilizes costs, enhances efficiency, and supports sustainability. By adopting this system, the City will lower landfill reliance, achieve cost savings, and improve the KWRP's long-term operational and environmental performance.

- 2. Project B1 Replacement of 6-inch Sanitary Sewer at Farmers Alley: The existing 6-inch sanitary sewer at Farmers Alley, installed in 1882, has experienced frequent failures due to structural deterioration and capacity issues. The proposed project involves replacing 70 linear feet of sewer with an 8-inch pipe to meet current standards and accommodate future wastewater flows. This replacement will restore system reliability and capacity, addressing the infrastructure needs of Downtown Kalamazoo while minimizing disruption to surrounding utilities and businesses.
- 3. Project C1 Kleinstuck Preserve SSOs: The Kleinstuck Preserve has experienced sanitary sewer overflows (SSOs) due to structural deficiencies such as drop pipes, backfall, and root intrusion. This project will rehabilitate the existing sewer infrastructure by addressing these issues with pipe and manhole lining, minimizing environmental disruption. To improve existing access routes for easier maintenance, a 12-foot wide path will be constructed using 12 inches of 21AA natural crushed material with a

geofabric layer for stability. A thin layer of fines will be added to fill surface voids and level high spots.

- Dryer and Energy Recovery System (ERS) Project Location Site Options The Dog Dive
- B. Project map: See Figures 5-1, 5-2, and 5-3 below for location maps of the proposed projects.

Figure 5-1: Project Location Map for Dryer and Energy Recovery System (ERS)



Figure 5-2: Project Location Map for Replacement of 6-Inch Sanitary Sewer at Farmers Alley



Figure 5-3: Project Location Map for Kleinstuck Preserve SSOs

- C. Water and Energy Efficiency: The projects outlined will involve a very limited use of water as part of their construction. Once built, they will not require a significant amount of water, if any. Implementation of the recommended alternatives will serve to improve energy usage, as the newer equipment that will replace the antiquated will be able to run more efficiently.
- D. Schedule for Design and Construction: The tentative schedule for the proposed projects for fiscal year 2026 (Dryer and ERS, Replacement of 6-Inch Sanitary Sewer at Farmers Alley, and Kleinstuck Preserve SSOs) are outlined in Table 5-4 below. The schedule shows the projects following the quarter 4 schedule, outlined by EGLE and MFA with construction beginning in 2026 and extending into 2028. None of these projects will require a regional review as the KWRP is already a regional system.

Table 5-4 – Project Plan Schedule

																																						_	_
					2	202	5										202	26										20	27					2	028	20	29	203	30
Task Dat	ite:	3/1/25	3/31/25 4/30/25	5/31/25	6/30/25	7/31/25	8/31/25	9/30/25	10/31/25	11/30/25	12/31/25	1/31/26	2/28/26	3/31/26	4/30/26	5/31/26	6/30/26	7/31/26	8/31/26	9/30/26	10/31/26	12/31/26	1/31/27	2/28/27	3/31/27	4/30/27	5/31/27	6/30/27	7/31/27	8/31/27	12/00/04	11/30/27	12/31/27	1/31/28	12/31/28	1/31/29	12/31/29	1/31/30	10/31/30
Publication of Final IUP																							Т																
CWSRF Process																В	R		С		N		Т																
Dryer and Energy Recovery System (ERS)																																							
Replacement of 6-inch Sanitary Sewer at Farmers Alley																																							
Kleinstuck Preserve SSOs																																							
B-Bid Advertisement																																							

R-Resolution of Tentative Award

C-Loan Closing (Q4)

N-Notice to Proceed

EGLE Task Item or Milestone
JointEngineer/CityTasks
CityTask Item (Bidding & Award)
Engineers Design Tasks
Construction Projects and Construction Engineering



- E. Implementability: The proposed projects outlined in the Plan are located either on KWRP grounds or in existing rights-of-way or easements. The City will own and operate the facilities to be built as part of these proposed projects.
- F. Environmental and Public Health Impacts:
 - 1. Direct Impacts
 - i. Historical/Archeological: No impacts to historical sites are anticipated. Work will take place within KWRP grounds, Farmers Alley, and Kleinstuck Preserve. While the Farmers Alley project is near two (2) historical sites, it remains outside the designated zoning areas and will not encroach on any previously identified historical sites. All required "Cross-cutter" investigations will be performed and required documentation submitted to comply with reporting requirements.
 - ii. Geological: There is no direct impact on the geology of the area.
 - iii. Cultural/Social: A direct beneficial impact would be that the construction required would create jobs. Additionally, stabilized sewer rates would provide an economic benefit. An adverse impact would potentially be an uptick in traffic during construction activity in the short term.
 - iv. Recreational: The improvements will have no beneficial or adverse impacts on water recreation in the City. Access to parks and water is not expected to be impacted throughout the construction process.
 - v. Water Quality/Surface Waters: There are no expected short term or long-term impacts to the water quality of the Kalamazoo River.
 - vi. Air Quality: Any adverse impacts to air quality would be short term caused by construction. Long term impacts would include a reduction in greenhouse gas emissions. Additionally, Project A1 would require an air emissions permit issued by EGLE prior to construction which contains the required monitoring and emission limits for the process. Impacts can be minimized through proper maintenance and the use of water to reduce dust problems.
 - vii. Wetlands: Proposed work will not impact any wetlands.
 - viii. Coastal Zones: The projects are not located near any coastal zones.
 - ix. Floodplains: Proposed work will not impact any floodplains.
 - x. Construction Impacts: There will be temporary impacts to vehicle and pedestrian access in the areas of proposed work during construction.

- xi. Natural or Wild and Scenic Rivers: There are no natural or wild and scenic rivers designated in the project area.
- xii. Endangered Species: As included above in Table 2-4 (above), there are five federally threatened species identified in Kalamazoo County. The areas of inhabitance of each are not within the KWRP and will not be affected by work done on the proposed projects.
- xiii. Prime and Unique Agricultural Land: There is no prime or unique agricultural land in the project area.
- xiv. Construction Material/Energy Consumption: In order to execute the proposed projects, there will be monetary, material, and energy resources required. This will create a major short-term impact on the environment, as it will involve irreversible expenditures of labor, time, money, and energy for construction.
- xv. Accidents: The proposed projects, if implemented, will help to increase safety throughout the plant. Therefore, there will be a beneficial impact seen through a decrease in accidents around the KWRP.
- 2. Indirect Impacts
 - Changes in rate, density, or type of development (residential/commercial/industrial): The proposed projects will have no impact on development in the service area. No capacity is being created or reduced by the project.
 - ii. Changes in land use (open space, floodplains, prime agricultural land, shorelands, forested areas, or other natural habitats): The proposed projects will not have any impact on land use. The proposed project includes work in existing facilities with minimal new ground disturbance, all of which will occur on an existing wastewater treatment plant site.
 - iii. Changes in air or water quality due to facilitated development, including traffic impacts: Changes in air quality will be short lived during construction as a result of construction dust. Long term air quality is expected to improve as a result of the reduction of greenhouse gas emissions from the current biosolids disposal process.
 - iv. Changes to the natural setting or sensitive features resulting from secondary growth: There are no expected impacts to the natural setting or sensitive features as all proposed project components will be constructed within the bounds of the existing wastewater treatment plant site.

- v. Impacts on cultural, human, social, and economic resources: There are no anticipated indirect impacts to cultural, human, or social elements. There are no anticipated indirect economic resource impacts as the current rate model includes finances for the proposed project.
- vi. Impact to area aesthetics: There are no anticipated impacts to area aesthetics.
- vii. Resource consumption over the useful life of the project: There will be minimal resource consumption, above those currently experienced on the site, from the completion of these projects.
- 3. Cumulative Impacts
 - i. There are minimal cumulative impacts expected as a result of the proposed project. The project components are current CIP projects which will not include significant discharges to local waters, cause additional unwanted development, or excessively overwhelm the City financially. As proposed, there is one positive cumulative impact related to emissions and odor concerns in the Northside Neighborhood. Proposed project components will continue to reduce odorous emission potential of the wastewater plant. These reductions will continue to improve as the projects equipment and processes are refined/improved.
- 4. Unavoidable Adverse Impacts and Mitigative Measures: The main negative impacts are related to the construction work required for the proposed projects. These can be minimized through efficient and economically effective design and construction, air pollution control equipment, and noise control. This will result in more construction per dollar cost and a lower maintenance cost system than what is currently in place. Air pollution can be minimized through proper maintenance such as muffling of equipment. Additionally, calcium chloride and water can be used for dust control. Designated work hours, mufflers, and prohibiting work on weekends and holidays can help to limit noise pollution. The proposed alternative will require labor, time, materials, money, and energy for construction that are irreversible.

6 Selected Alternatives Cost Impacts

For the selected alternatives, total costs associated for each project from planning through construction are shown in Table 6-1.

Proposed Project	Total Construction Cost
Dryer and Energy Recovery	
System (ERS)	\$194,349,188.00
Replacement of 6-inch Sanitary	
Sewer at Farmers Alley	\$335,000.00
Kleinstuck Preserve SSOs	\$2,155,725.00
Total Cost Per Category	\$196,839,913.00

Table 6-1 – Cost Planning-Construction

User Costs:

See Table 6-2 for the Net Present Worth Calculations for the proposed projects. The discount rate used was the real discount rate of 2.20% for a 20-year planning period. This was pulled from the Office of Management and Budget, and documentation can be found in Appendix H. As a household is assumed on average to be 2.5 people at 100 gallons of water used per person, for a total of 250 gallons of water used per day, where 86.5% of the water goes back to the sewer (This Kalamazoo System sees significant industrial discharge which skews typical consumption percentages as do the large industries which have their own water wells but do discharge wastewater to the City system). Kalamazoo has an average daily flow to the KWRP of 28 MGD, so it can be calculated that there is a total of 129,479 REUs in the Kalamazoo system (28,000,000 gpd / (250 gpd per REU*0.865)). Using this total, the Cost per REU, representing the lump-sum share of project costs per unit, was determined to be \$1,615.99. See Table 6-2 for details..

Table 6-2 – Net Present Worth	n Calculations
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Item	Estimated Construction Cost	Estimated Design and Engineering Cost	Estimated Admin Cost	Total Estimated Project Costs	Annual O&M Costs	Present Worth Annual O&M	Salvage Value	Present Worth Salvage Value	Net Present Worth	Cost Per REU
Dryer and										
Energy Recovery										
System (ERS)	\$179,399,250	\$7,474,969	\$7,474,969	\$194,349,188	\$2,803,791	\$44,973,327.66	\$54,792,861.56	\$35,457,333	\$206,668,973.66	\$1,596.16
Replacement of										
6-inch Sanitary										
Sewer at										
Farmers Alley	\$250,000	\$42,500	\$42,500	\$335,000	\$670.00	\$10,144.74	\$-	\$-	\$345,444.74	\$2.67
Kleinstuck										
Preserve SSOs	\$1,658,250	\$248,737.50	\$248,737.50	\$2,155,725	\$4,311.45	\$67,211.89	\$-	\$-	\$2,222,936.89	\$17.17
Total	\$151,407,626	\$22,716,143.50	\$22,716,143.50	\$196,839,913	\$2,808,772.45	\$45,050,984.29	\$54,792,861.56	\$35,457,333.00	\$209,237,355.29	\$1,615.99

Debt Repayment Method:

The proposed projects discussed within this plan are factored into the already existing sewer rate model. Capitalizing costs would change rates slightly. If there are any rate increases to be caused by these projects, they will be minimal, and the City will evaluate before project commencement. Assuming SRF funds are obtained for these projects in the form of a 20-year loan where Kalamazoo meets the overburdened population requirements for a 2.0% interest rate, the City will need to generate an annual debt service of \$11,984,904.00. This results in a capital recovery of \$151.89 per REU/year or \$12.66 per REU/month, representing the annual cost per REU for repaying the capital costs of the project. This works out to \$151.89/REU/Year, or \$12.66/REU/month. This analysis assumes that the City obtains the loan money for the proposed projects as part of a single phase of construction. If funding were to be in multiple phases, the increase in user fees could be phased appropriately. Capital recovery calculations are shown below in Table 6-3.

Total			
Construction		City Cash	
Cost	CWSRF Loan Value	Contribution	Total Project Cost
Dryer and			
Energy			
Recovery			
System (ERS)	\$194,349,188.00	\$-	\$194,349,188.00
Replacement			
of 6-inch			
Sanitary			
Sewer at	4005 000 00	4	4225 222 22
Farmers Alley	\$325,000.00	Ş-	\$325,000.00
Kleinstuck			
Preserve			
SSOs	\$2,155,725.00	Ş-	\$2,155,725.00
Total Cost Per			
Category	\$196,829,913.00	Ş	\$196,829,913.00
Period, Years	20	N/A	N/A
Interest %	2.00%	N/A	N/A
Annual Debt			
Service	\$11,989,755.00	N/A	N/A
Average Daily			
Flow (MGD)	28	N/A	N/A
Capital			
Recovery Per			
REU/Year	\$151.89	N/A	N/A

Table 6-3 – Capital Recovery Calculations

7 Public Participation

- A. Public Hearing: The draft plan was submitted on February 28, 2025, to City Staff for their review. Additionally, participation involved meetings and discussion with the DPS Director and Wastewater Division Staff. A physical (hard) copy of the Project Plan will be available for review at City Hall and a link to download the digital version will be advertised. A Public Hearing will be held on March 25, 2025, at 6:00pm at Mt. Zion Baptist Church located at 120 Roberson Street in Kalamazoo, Michigan. The information and recommendations for proposed projects as well as the monetary and environmental impacts of these projects will be presented. The public will have the opportunity to ask questions of the City Staff and make public comments regarding the Project Plan and its components. Public comments can also be submitted in writing to the City Clerk or digitally through an online comment portal.
- B. Public Hearing Advertisement: The Public Hearing, scheduled for March 25, 2025, was advertised by the City through their typical media release protocols on Tuesday, March 4, 2025. A copy of the press release as well as screenshots of the postings will be included in Appendix I.
- C. Public Hearing Summary: The summary of the public hearing will be included in Appendix I.
- D. Comments Received and Answered: (Questions received during the Public Hearing will be addressed here.)

8 Adoption of Project Plan

Information regarding the adoption of the project plan (post public hearing) will be included here.



APPENDIX A

COMMUNICATIONS



STATE OF MICHIGAN

DEPARTMENT OF HEALTH AND HUMAN SERVICES

GRETCHEN WHITMER GOVERNOR

LANSING

ELIZABETH HERTEL DIRECTOR

March 13th, 2024

James J. Baker, PE City of Kalamazoo Public Services Director & City Engineer City of Kalamazoo Department of Public Services 415 Stockbridge Kalamazoo, MI 49001

Dear James Baker:

I am writing in support of the City of Kalamazoo's application for the State of Michigan's Clean Water State Revolving Loan Fund (CWSRF) low interest financing for planned Kalamazoo Water Reclamation Plant (KWRP) projects. The City of Kalamazoo's proposed projects for the CWSRF financing include those that will reduce odors from KWRP, among other significant improvements.

Our departments have a long history of collaborating on matters concerning air quality and odor mitigation around KWRP. You and your department have been a leader on issues related to odor mitigation and have worked diligently to address community concerns related to KWRP. I believe the projects you propose in your application for CWSRF financing are important, valuable, and will further benefit the surrounding community by addressing sources of odor within the community.

I strongly support your application for CWSRF financing and look forward to our continued collaboration. Please let me know if I can be of any assistance to you on this matter.

Sincerely,

il

Marcus Wasilevich, PhD Toxicology and Assessment Section Manager Michigan Department of Health and Human Services



APPENDIX B

ASSET MANAGEMENT PLAN & CAPITAL IMPROVEMENT PROGRAM

DRAFT - For Review and Comment



Where we're going: System Goals



DRAFT - For Review and Comment

Contents

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Prepared by

ENGINEER: Prein&Newhof PN# 2180207

INTRODUCTION

Our Mission

Our community, the City of Kalamazoo, Michigan, is committed to supporting public health and safety, and to protecting property and the environment, through responsible and effective management of three infrastructure systems: our water supply system, our wastewater system, and our stormwater system. These three systems affect each other and together they all affect public health, safety, property, and the environment. We strive to manage both three infrastructure systems in a coordinated approach to provide these essential public services for our citizens in a sustainable way. We plan to pursue this mission by implementing asset management.

Asset Management Principals

Asset management is the way to achieve sustainable infrastructure. All infrastructure deteriorates with age and requires proactive management to operate, maintain, repair, and eventually replace each physical component, or asset. This progression over time, from routine operation and maintenance through repairs and eventual replacement, is the asset's life cycle. Waiting to perform maintenance or make repairs can save money in the short term but may shorten the life cycle of an asset. On the other hand, replacing an asset before it fails may not take full advantage of the asset's value. It is this balance which puts the decisions for operations, maintenance, repair, and replacement actions at the heart of asset management.

Asset management is an evaluation of needed actions after considering the condition of an asset, the consequences of an asset failure, and the action alternatives available. The solution that provides the lowest life cycle cost at the desired Level of Service (LoS) is implemented.

Our Wastewater System

The City of Kalamazoo's wastewater system is comprised of collection pipes, manholes, and lift stations that collect wastewater from homes and businesses. These discharge to sewers within the City of Kalamazoo's wastewater collection system, where it is ultimately transported to the City of Kalamazoo's Reclamation Plant for treatment and recycled back into the environment.

About this Document

This document is our Wastewater Asset Management Plan (AMP). It defines the goals and guiding principles for running our wastewater system at its lowest life-cycle cost. Each of us pays to operate, maintain and replace those assets through our utility rates. In effect, each of us is an owner of the wastewater system. As owners, we commit to manage our assets and make decisions based on long term life cycle cost. With input from the community, we will maintain our AMP through a joint effort of our staff, administration, and elected officials. We will update it as needed to ensure its relevancy and effectiveness.

A companion document, our Wastewater Asset Management Program, shows how we will apply the principles of asset management to achieve the goals outlined in this AMP.

Prein&Newhof DRAFT - For Review and Comment

PART 1: DEFINING OUR GOALS-WHAT IS OUR DESIRED LEVEL OF SERVICE?

As a community, we determine the level of service we want from our wastewater system. Defining these goals has an effect on the cost of the service. Many factors play into this determination including public health, safety, compliance with regulations, aesthetics, odors, service reliability and stable rates. To this end, we have established the following primary goals for our wastewater system:

Goal 1: Meet Regulatory Requirements

Thee water quality of our discharge is an important value for our community to minimize potential health and environmental effects. Our wastewater treatment plant processes our wastewater in a way which meets or exceeds regulations established in the Federal Clean Water Act and State of Michigan Statutes/Rules. Our operators test our process products and water discharged to the environment according to Federal and State laws. We strive to achieve continued compliance with environmental regulations and produce the cleanest, safest treated water achievable with the treatment facilities we have.

Goal 2: Minimize Service Interruptions

Service interruptions are an inevitable part of operating a wastewater system and can be caused by many factors such as equipment failure, power outages, clogging, excessive flows, repairs, and replacement operations. Our goal is to minimize service interruptions by proactively managing and investing in our system.

Goal 3: Minimize Public Hazards

Sewer breaks can cause significant damage, not only to the streets above them but also to adjacent utilities and property. Additionally, sewer breaks and blockages may result in sewer backups which raise health concerns and can cause property damage.

Our goal is to minimize sewer breaks and backups. To minimize the potential for backups, we will continue to fund / perform regular cleaning of sewer as part of routine operations and maintenance. To minimize the potential for breaks, sewers at risk will be improved or replaced as part of our capital improvement program. To minimize the potential for damage from breaks and/or backups, we will continue to coordinate with the City of Kalamazoo to provide emergency response services 24 hours per day, 7 days per week. This also includes emergency response to our partner community with wastewater service agreements.

Goal 4: Manage Storm Water Inflow and Ground Water Infiltration

Storm water inflow through sources like roof drains and catch basins can cause sewer overflows and backups. Groundwater infiltration, if severe enough, can cause backups. Both inflow and infiltration (I/I) take up flow/treatment capacity in the system which reduces the amount of actual wastewater our system can manage and increases our transport/treatment costs.

We will identify and eliminate sources of I/I wherever practical to meet the Federal EPA guidelines for I/I and to reduce the potential for sewer overflows and back-ups.

Prein&Newhof DRAFT - For Review and Comment

Goal 5: Provide Capacity for Community Growth

We will design and maintain our wastewater assets to provide adequate capacity for community development, and we will plan for system improvements that allow our sewer service area to develop based on long range future land use plans. We will responsibly control system expansion by balancing requirements for community redevelopment/infill and desires for new development.

Goal 6: Minimize Life Cycle Costs

The best financial decisions are those which achieve the lowest life cycle costs while still meeting the desired level of service. This means we consider the full life cycle of each investment each time we evaluate improvements to our system. We recognize that short term fixes, while they may have the lowest immediate costs, may not be the best long term financial decision. Likewise, not spending money on maintenance and repairs can provide short term cost savings, but may result in asset failure, ultimately increasing life cycle costs. We intend to manage our system to always pursue the lowest life cycle cost possible for each system asset while maintaining our desired level of service.

Goal 7: Partner Communities

Our wastewater system serves not only our residents but also the communities of Village of Augusta, Brady Township, Charleston Township, Comstock Township, Cooper Township, City of Galesburg, Kalamazoo Township, City of Parchment, Pavilion Township, City of Portage, Richland Township, Village of Richland, Ross Township, Schoolcraft Township, Texas Township, and the Village of Vicksburg. This makes us all partners. As community partners, we must work together to manage our wastewater system. We will work with our community partners to facilitate communications regarding O&M, capital improvements, and rates.

PART 2: INVENTORY - WHAT DO WE OWN?

Our System

Our City of Kalamazoo wastewater system includes assets such as collection sewer mains, sewer services from the main to the right-of-way line, manholes, lift stations and metering stations that discharge to sewers in the City of Kalamazoo's wastewater collection system. A variety of materials including vitrified clay pipe (heat-treated clay) and concrete pipe were the main choices for collection sewers in North America for many decades.

We have over 256 miles of sewer pipes within the City of Kalamazoo and over 73 miles of sewer pipes in the partner communities that are multi-jurisdictional (interceptors) that the City of Kalamazoo is responsible to maintain. There are also seven (7) lift stations within the City and 54 lift stations in the partnering communities is responsible to maintain.

The majority of our collection sewers were built before the 1970's and dates back to the late 1800s. Most of these pipes are clay pipe. The remaining pipes from that era are either concrete or cast iron. Most pipes installed after 1980 are typically plastic.

All of the wastewater collected is treated at a City owned Wastewater Treatment Plant (WWTP). The City of Kalamazoo owns and operates a 54 million gallon per day tertiary wastewater reclamation plant to service the greater Kalamazoo metropolitan area. The KWRP main processes include screening, grit removal, primary sedimentation, secondary biological nutrient removal, clarification, disinfection, dechlorination, sludge processing, bio solid processing and sludge storage. The system currently serves approximately 200,000 individual connections/customers.

A detailed summary of our wastewater system assets are in our Wastewater Evaluation Report and in a detailed asset inventory maintained by our Department of Public Service (DPS). The DPS keeps a list of non-pipe assets which includes purchase date, original cost, inspection reports, repair history, maintenance schedule, and specifications.

Our Plan

We will keep our system inventory current by storing records of our wastewater system in our Geographic Information System (GIS) and our Computerized Maintenance Management Systems (CMMS). The GIS contains maps of all our collection system assets, our lift stations and force mains. The City of Kalamazoo will keep an inventory of non-pipe assets (equipment, buildings, etc.) and asset data pertinent to Operations, Maintenance, and Replacement in the CMMS.

PART 3: RISK OF FAILURE–WHAT ARE THE CONDITIONS OF OUR ASSETS?

Our System

To understand how long each of our assets may last, we must track their condition and potential failure risk. An asset condition rating system has been developed for each type of asset in the system inventory. All assets are rated on a scale of 1-5 with 5 representing the worst condition, or highest risk of failure. Sewer pipes and manhole ratings are based on inspections of the assets. Force main ratings are estimated from the pipe age, break history, and material inventory. Lift station ratings and treatment plant components are based on visual inspection and performance testing. Condition rating information is incorporated into the GIS with the asset inventory.

Our Plan

We will keep our condition assessments current using periodic asset inspections at intervals frequent enough to document reasonably expected condition changes. The inspection intervals will vary by asset type and its expected life. We will score each asset on its likelihood or risk of failure (RoF) ratings on a scale of 1-5.

PART 4: CONSEQUENCE OF FAILURE-WHAT HAPPENS WITH A FAILURE?

Our System

It is important we understand the severity of consequences which may occur if any asset in our system fails. In a sewer system, if part of the system fails, the consequences would most commonly be a wastewater backup into basements, a discharge of untreated wastewater to the environment, or a pipe collapse with a sink hole in the street or other places.

Functional failure consequences can occur when pumps stop working, valves cannot open or close, and when sewers become broken or blocked with sediment, debris, or roots. Physical failure consequences can occur when we have sewer main breaks or catastrophic equipment failures.

Our Plan

A rating system has been developed to establish a way for comparing the severity of potential consequences of sewer system failures. All assets are rated on a scale of 1-5 with 5 representing the most severe consequences. We will evaluate the CoF of each asset, from both a functional and physical failure perspective. We will maintain redundancy on assets with a high CoF.

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PART 5: CRITICALITY-HOW DO WE PRIORITIZE OUR ACTIONS?

Our System

We must prioritize our actions to meet our Level of Service (LoS) goals while managing our work loads, utility rates, and minimizing life cycle costs. Criticality ratings (otherwise known as Business Risk Factors in some asset management programs) are compiled for all assets in our wastewater system. Each assets "Risk of Failure" rating (1-5) is multiplied by its "Consequence of Failure" rating (1-5) to establish its Criticality rating (1-25). Criticality drives an asset's action priority.

Our Plan

Criticality ratings help us prioritize improvements and with development of our Capital Improvement Plan. Criticality of assets within our system will be determined by multiplying each asset's RoF (1-5) by its CoF (1-5).

PART 6: CAPACITY-DO WE HAVE ENOUGH, NOW AND FOR THE FUTURE?

Our System

Planning for future capacity needs is an essential part of our asset management program. Sewer pipes should last for many decades, so decisions about pipe capacity and system improvements require a very long term view. Over time, flows fluctuate with changes in property use and population. System analysis shows we are currently meeting peak flow and our estimated future flows. A detailed analysis of our system capacity is in our Kalamazoo Metropolitan Area Wastewater System Strategic Plan, February 2003.

Our Plan

We will maintain our wastewater assets to provide adequate capacity for existing development and will plan for system improvements which will allow our community to grow. We plan to monitor land use for compatibility with the sewer system capacity master plan. As land development and new customer connections occur, we plan to continue monitoring the system flows.

We plan to coordinate any needed capacity improvements with sewer rehabilitation/replacement projects to maximize the life cycle of our existing assets and ensure long term capacity needs are met with the construction of any replacement assets.

PART 7: OPERATIONS AND MAINTENANCE-KEEPING UP WITH ROUTINE WORK

Our System

Certain portions of our system need routine, on-going service to continue functioning. Our system Operations and Maintenance (O&M) demands are stable and we will manage the system to maintain stability. We will use CMMS tools to maintain asset inventories and schedule regular O&M activities.

Our Plan

We have established the following O&M goals:

- 1. Maintain staffing and equipment levels so in-house staff can perform routine O&M activities.
- 2. Use in-house staff to verify proper function of all system assets such as valves, pumps, motors, and other mechanical equipment.
- 3. We will hire outside consultants when we need specialized technical or equipment capabilities.
- 4. We will hire outside consultants or utilize the City of Kalamazoo crews to perform sewer pipe cleaning and root cutting.

PART 8: CAPITAL IMPROVEMENTS-CONTINUING SYSTEM RENEWAL

Our System

Our condition assessments have revealed certain assets which are near the end of their life cycle and are in need of rehabilitation or replacement. Improvement recommendations for our wastewater system are in the Kalamazoo Metropolitan Area Wastewater System Strategic Plan and Wastewater System Evaluation Report. These reports identify the scope and priorities of proposed wastewater system improvements such as sewer pipe replacements, equipment replacements, and major O&M activities.

Our Plan

Planning for capital improvements is a continual management process. We will incorporate the recommendations of the sewer reports into a comprehensive CIP which will document the major projects we plan to complete within the next 10 years. Criticality ratings set the order and timing of projects. Project timing often is driven by the availability of outside funding such as loans and grants. We will maintain and update our comprehensive CIP every year.

PART 9: FINANCIAL STRATEGY-RATE PLANNING AND STABILITY

Our System

We will fund our system costs through our wastewater system billings. We break our wastewater bills into two categories: Readiness to Serve (RTS) charges and Commodity charges.

Our Plan

Financial goals and strategies will be detailed in a regularly updated rate study compiled in collaboration with our partner communities. We will maintain a life cycle forecast of estimated costs, income from rates, and cash balances. We will use this forecast in the rate study to establish sustainable and stable utility rates. This helps our residential, business, and industrial owners in their long term financial planning and is an economic development advantage when recruiting new employers.

We will fund system O&M as defined in the rate study. This will also allow us to pay cash for emergency repairs and minor unanticipated asset replacements.

We will pay cash for planned system repairs and replacements with a stable rate structure.

SUMMARY

Asset management is a collection of best management practices to which we will adhere in order to continue providing reliable wastewater service for our community. Our Asset Management Plan outlines our goals. The specific details of how we implement asset management may be adjusted from time to time as new/improved tools, software, and evaluation techniques are developed. Regardless of those changes, we will incorporate asset management into our everyday activities, including system improvements and master planning. By proactively managing our wastewater system through asset management, we can ensure reliable and sustainable wastewater service at the lowest life cycle cost for our community.

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WASTEWATER FUND

CAPITAL IMPROVEMENT PROGRAM 2023 - 2027

	PROJECT	START YEAR	FUNDING SOURCE	PRIOR BUDGET	ADOPTED 2022	AMENDED 2022	2023	2024
GENERAL C	APITAL							
wwr0100000	BUDGET HOLDING - ACCOUNTING USE ONLY	2009	BOND	587,484	-	(24,500)	-	-
wwr0100079	ASSET MGMT-MOBILE WORK ORDER	2011	BOND	120,893	-	-	-	-
wwr0100163	LIFT STATIONS RADIOS	2016	BOND	194,746	-	-	-	-
wwr0100179	SOLIDS HANDLING PROCESS-UPGRADE	2017	BOND	11,813,859	315,000	315,000	-	-
wwr0100196	TERTIARY PROCESS UPGRADE	2019	BOND	8,100,000	8,600,000	8,600,000	11,000,000	-
wwr0100201	RAW PUMP REPLACEMENT	2018	BOND	98,800	-	-	-	-
wwr0100201	RAW PUMP REPLACEMENT	2018	GRANT	98,800	-	-	-	-
wwr0100206	ALTERNATE FORCE MAIN & GRIT SYSTEM	2018	BOND	139,016	-	-	-	-
wwr0100212	CLARIFIER DRIVES & SWEEPS (5-8)	2018	BOND	325,495	-	-	115,000	2,951,000
wwr0100216	MOTOR CONTROL CENTER (MCC) UPGRADES	2019	BOND	-	150,000	150,000	-	268,500
wwr0100220	SCHIPPERS DAM & CULVERT REPLACEMENT	2019	BOND	350,000	-	-	450,000	200,000
wwr0100221	ACADEMY CULVERT REPLACEMENT	2019	BOND	-	-	-	-	-
wwr0100223	POWER STATION SWITCHGEAR	2019	BOND	1,323,659	1,500,000	1,850,000	-	-
wwr0100224	SCHIPPERS (STA 5) LATERAL BACKWASH CONN	2019	BOND	326,900	-	-	-	-
wwr0100225	MORRIS ROSE LIFT STATION IMPROVEMENT	2019	BOND	192,000	-	-	-	-
wwr0100228	REAL TIME DECISION SUPPORT SYSTEM (RT-DSS)	2019	BOND	900,000	1,900,000	1,900,000	1,600,000	720,000
wwr0100230	BAR SCREEN 4	2024	BOND	-	-	-	-	780,000
wwr0100231	FINE SCREEN PROCESS UPGRADE	2019	BOND	-	-	-	-	-
wwr0100232	KWRP ADMIN HVAC UPGRADE	2027	BOND	-	-	-	-	-
wwr0100233	WAR ROOF REPLACEMENT & EQUIP REMOVAL	2025	BOND	-	-	-	-	-
wwr0100234	PLANT FIBER CONNECTION	2026	BOND	-	-	-	161,000	-
wwr0100235	SLUDGE CAKE STORAGE SILOS	2024	GRANT	-	-	-	-	-
wwr0100236	SLUDGE STORAGE & THICKENING	2024	GRANT	-	-	-	-	-
wwr0100237	WW SCADA SYSTEM UPGRADE (2021-2024)	2023	BOND	-	-	-	150,000	649,350
wwr0100239	KWRP INTERCEPTOR BIOFILTRATION ODOR CONTROL	2020	BOND	4,215,350	-	-	-	-
wwr0100240	SCUM HANDLING	2024	BOND	-	-	-	-	90,000
wwr0100241	VACTOR/HAULED WASTE RECEIVING FACILITY	2024	GRANT	-	-	-	-	-
wwr0100242	KWRP STAFF LOCKER ROOM & PC/IT/ELEC BLDG	2024	BOND	-	-	-	-	-
wwr0100243	METER & SAMPLING STATION IMPROVEMENTS	2025	BOND	38,900	-	-	-	-
wwr0100244	PLANT EXTERIOR LIGHTING UPGRADE	2025	BOND	-	-	-	-	-
wwr0100245	TERTIARY SCREW PUMP #2	2025	BOND	-	100,000	100,000	-	65,000
wwr0100246	SECONDARY BLOWER #1 & #4 (CONTROLS)	2025	BOND	-	-	-	-	-
wwr0100247	INTERCEPTOR ACCESS ROAD - SPRING VALLEY	2025	BOND	-	-	-	-	-
wwr0100248	WWTP TRUCK SCALE/BUILDING	2021	BOND	57,000	693,000	693,000	-	-
wwr0100250	BLDG #5 MASONRY RESTORATION	2022	BOND	-	-	322,560	-	-
wwr0100252	KWRP SUSTAINABLE RESIDUAL BIOSOLIDS	2023	BOND				116,667	116,667
wwr01xxxxx	BLDG 24 MEP SYSTEMS	2024	BOND	-	-	-	-	-
wwr0100253	LIFT STATION IMPROVEMENTS PROGRAM	2023	BOND				200,000	500,000
wwr01xxxxx	KWRP EMERGENCY COMMUNICATION SYSTEM	2026	BOND	-	-	-	-	-
	TOTAL GENERAL CAPITAL	-		28,882,902	13,258,000	13,906,060	13,792,667	6,340,517
SEWER MAI	N CONSTRUCTION & OVERHEAD							
wwr0200000	BUDGET HOLDING - ACCOUNTING USE ONLY	2008	BOND	(85,123)	-	-	-	-
wwr0200002	SEWER CONSTRUCTION CONTINGENCY	2006	BOND	1,604,704	500,000	150,000	500,000	500,000
wwr0200061	SEWER TRENCHLESS REHAB PROGRAM	2019	BOND	2,196,855	1,500,000	1,500,000	1,100,000	1,100,000

2025	2026	2027	TOTAL PROJECT BUDGET
-	-	-	562,984
-	-	-	120,893
-	-	-	194,746
-	-	-	12,128,859
-	-	-	27,700,000
-	-	-	98,800
-	431,250	3,881,250	4,411,300
-	520,000	4,540,000	5,199,016
5,902,000	5,902,000	-	15,195,495
268,500	268,500	243,750	1,199,250
-	-	-	1,000,000
200,000	-	-	200,000
-	-	-	3,173,659
-	-	-	326,900
-	-	-	192,000
780,000	-	-	5,900,000
-	-	-	780,000
-	-	-	-
-	-	215,000	215,000
90,000	1,170,000	-	1,260,000
-	-	-	101,000
-	_	-	_
-	-	-	2 098 050
-	049,550		4 215 350
_	1 170 000	-	1 260 000
-	-	-	-
-	_	250 000	250.000
-	-	-	38,900
-	-	-	-
845,000	-	-	1,010,000
25,000	325,000	-	350,000
-	-	-	-
-	-	-	750,000
-	-	-	322,560
116,667	-	-	350,000
-	-	-	-
200,000	200,000	400,000	1,500,000
-	20,000	260,000	280,000
9,076,517	10,656,100	9,790,000	92,444,762
-	-	-	(85,123)

(05,125			
4,254,704	500,000	500,000	500,000
9,696,855	1,400,000	1,225,000	1,175,000

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CAPITAL IMPROVEMENT PROGRAM 2023 - 2027

	PROJECT	START YEAR	FUNDING Source	PRIOR BUDGET	ADOPTED 2022	AMENDED 2022	2023	2024	2025	2026	2027	TOTAL PROJECT BUDGET
wwr0200063	INTERCEPTOR ROAD ACCESS-ARCADIA CREEK	2019	BOND	-	-	-	-	-	-	-	-	-
wwr0200065	RANSOM ST INTERCEPTOR UPGRADE	2022	BOND	-	150,000	150,000	-	-	-	-	-	150,000
wwr0200065	RANSOM ST INTERCEPTOR UPGRADE	2022	CWSRF	-	-	-	4,950,000	3,300,000	-	-	-	8,250,000
wwr0200066	NEWTON CT SANITARY SEWER REPLACEMENT	2019	BOND	20,000	-	-	262,500	-	-	-	-	282,500
wwr0200067	FELLOWS CT SANITARY SEWER REPLACEMENT	2019	BOND	20,000	-	-	262,500	-	-	-	-	282,500
wwr0200073	MICHIGAN AVE SANITARY SEWER	2020	BOND	-	50,000	50,000	42,000	500,000	-	-	-	592,000
wwr0200074	WESTNEDGE (PIONEER-CROSSTOWN) SEWER	2022	BOND	-	-	24,500	321,750	-	-	-	-	346,250
wwr0200075	6-INCH SEWER UPGRADE PROGRAM	2024	BOND	-	-	-	-	90,000	660,000	-	-	750,000
wwr0200077	JOHN ST K-ZOO SIPHON REPLACEMENT	2022	BOND	-	100,000	100,000	1,050,000	350,000	-	-	-	1,500,000
wwr0200078	ROSE ST SANITARY (CEDAR TO VINE)	2022	BOND	-	75,000	75,000	-	-	-	93,750	687,500	856,250
wwr0200079	N. WESTNEDGE SANITARY(ELIZABETH TO MABLE)	2022	BOND	-	150,000	150,000	-	26,250	192,500	-	-	368,750
wwr0200080	REV WRIGHT CT (CHURCH to BURDICK)	2023	BOND				461,125	-	-	-	-	461,125
wwr0200081	SEWER EXTENSION PROGRAM	2023	BOND	-	-	-	150,000	150,000	150,000	150,000	150,000	750,000
wwr02xxxxx	VINE STREET TRUNK CAPACITY INCREASE (PARK-JASPER)	2023	BOND	-	-	-	-	60,000	-	-	450,168	510,168
wwr02xxxxx	W. DUTTON SANITARY (PARK TO S. BURDICK)	2024	BOND	-	-	-	-	90,000	660,000	-	-	750,000
wwr02xxxxx	ACKER LN SANITARY	2024	BOND	-	-	-	-	73,125	536,250	-	-	609,375
wwr02xxxxx	ENGLESIDE TERRACE SANITARY	2025	BOND	-	-	-	-	-	195,750	1,435,500	-	1,631,250
	TOTAL SEWER MAIN CONSTRUCTION & OVERHEA	D		3,756,436	2,525,000	2,199,500	9,099,875	6,239,375	4,069,500	3,404,250	3,187,668	31,956,604
SEWER LEA		2006	BOND	_	30,000	30,000			_	_		30.000
wwr0400051		2000	BOND	134 100	-	-	-	-	-	-	-	134 100
wwr0400052	GPI FEFLUENT SERVICE REALIGNMENT	2013	BOND	-	_	_	1 720 000	_	-	_	-	1.720.000
11110100002		S	DOND	134 100	30.000	30,000	1 720 000	_	-	-	_	1 884 100
				154,100	50,000	50,000	1,720,000					1,004,100
	TOTAL WASTEWATER CAPITAL IMPROVEMENT PROJECT	S		32,773,438	15.813.000	16,135,560	24.612.542	12,579,892	13.146.017	14.060.350	12.977.668	126,285,465
Wastewater Cap	oital Outlay - Operating											
590-536	WASTEWATER ADMINISTRATION	ANNUAL	OPERATING		54,000	54,000	60,000	60,000	60,000	60,000	60,000	354,000
590-541	WASTEWATER COLLECTIONS	ANNUAL	OPERATING		-	-	-	-	-	-	-	-
590-543	WASTEWATER PLANT MAINTENANCE	ANNUAL	OPERATING		800,000	800,000	525,000	525,000	525,000	525,000	525,000	3,425,000
590-544	WASTEWATER PROCESS CONTROLS	ANNUAL	OPERATING		500,000	500,000	260,000	260,000	260,000	260,000	260,000	1,800,000
590-545	WASTEWATER ENVIRONMENTAL SERVICES	ANNUAL	OPERATING		-	-	8,000	8,000	8,000	8,000	8,000	40,000
590-580	CITY FLEET	ANNUAL	OPERATING		465,000	465,000	260,000	260,000	260,000	260,000	260,000	1,765,000
	TOTAL CAPITAL OUTLAY - OPERATIN	G			1,819,000	1,819,000	1,113,000	1,113,000	1,113,000	1,113,000	1,113,000	7,384,000
	TOTAL WASTEWATER CAPITAL IMPROVEMENT	PROJECTS AND C	APTIAL OUTLAY	32,773,438	17,632,000	17,954,560	25,725,542	13,692,892	14,259,017	15,173,350	14,090,668	133,669,465
τοται ςαριται	IMPROVEMENT PROJECTS AND OPERATING CAPITAL OUTLA		SOURCE									
	REVENUE BONDS AND RESERVES		BOND	32 674 638	15 813 000	16 135 560	19 662 542	9 279 892	13 146 017	13 629 100	9 096 418	113 624 165
	CONTRIBUTIONS IN AID OF CAPITAL		CIA	-	-	-	-	-	-	-	-	
	CLEAN WATER STATE REVOLVING FUND		CWSRF	-	_	_	4 950 000	3 300 000	-	_	_	8,250 000
	GRANTS		GRANT	98 800	-	-	-	-	-	431 250	3 881 250	4,411,300
	WASTEWATER OPERATING REVENUE		OPERATING	-	1 819 000	1 819 000	1 113 000	1 113 000	1 113 000	1 113 000	1 113 000	7.384.000
		Е.		32,773,438	17.632.000	17.954.560	25.725.542	13.692.892	14.259.017	15.173.350	14.090.668	133,669,465
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WASTEWATER FUND

CAPITAL IMPROVEMENT PROGRAM

					2024 - 2	028							
	A B	C	D	E	F	K	L	М	Ν	0	Р	Q	R
		PROJECT	STADT VEAD	FUNDING		ADODTED 2022	AMENDED	2024	2025	2026	2027	2029	TOTAL PROJECT
3		PROJECT	START TEAR	SOURCE	PRIOR BODGET	ADUPTED 2023	2023	2024	2025	2020	2021	2020	BUDGET
-													
5	GENERAL CAP	ITAL											
6	wwr0100000	BUDGET HOLDING - ACCOUNTING USE ONLY	2009	BOND	562,984	-	-	-	-	-	-	-	562,984
7	wwr0100079	ASSET MGMT-MOBILE WORK ORDER	2011	BOND	120,893	-	-	-	-	-	-	-	120,893
8	wwr0100163	LIFT STATIONS RADIOS	2016	BOND	194,746	-	10,000	-	-	-	-	-	204,746
9	wwr0100179	SOLIDS HANDLING PROCESS-UPGRADE	2017	BOND	12,128,859	-	-	-	-	-	-	-	12,128,859
10	wwr0100196	TERTIARY PROCESS UPGRADE	2019	BOND	16,700,000	11,000,000	11,000,000		-	-	-	-	27,700,000
11	wwr0100201	RAW PUMP REPLACEMENT	2018	BOND	98,800	-	-	-	-	-	-	-	98,800
12	wwr0100201	RAW PUMP REPLACEMENT	2018	GRANT	98,800	-	-	-	-	431,250	3,881,250	3,881,250	8,292,550
13	wwr0100206	ALTERNATE FORCE MAIN & GRIT SYSTEM	2018	BOND	139,016	-	-	-	-	520,000	4,540,000	4,540,000	9,739,016
14	wwr0100212	CLARIFIER DRIVES & SWEEPS (5-8)	2018	BOND	325,495	115,000	115,000	-	5,000,000	7,000,000	5,000,000	-	17,440,495
15	wwr0100216		2019	BOND	150,000	-	150,000	300,000	300,000	350,000	350,000	400,000	2,000,000
16	wwr0100220		2019	BOND	350,000	450,000	450,000	-	-	-	-	-	800,000
17	wwr0100221		2019	BOND	-	-	-	-	200,000	-	-	-	200,000
18	wwr0100223		2019	BOND	3,173,039	-	411,000	-	-	-	-	-	3,384,039
19	wwr0100224		2019	BOND	326,900	-	-	-	-	-	-	-	326,900
∠U 21	WWI0100220		2019	BOND	2 800 000	-	-	-	-	-	-	-	5 000 000
21	wwr0100220	RAR SCREEN 4	2019	BOND	2,000,000		1,000,000	/20,000	1 000 000	-	_	_	1 000 000
22	wwr0100230		2024	BOND	-	-	-	-	-	-	-	-	-
24	wwr0100231	KWRP ADMIN HVAC LIPGRADE	2015	BOND	-	-	-	-	-	-	350 000	-	350 000
25	wwr0100232	WAR ROOF REPLACEMENT & FOUTP REMOVAL	2027	BOND	-	-	-	-	90 000	1 170 000		-	1,260,000
25	wwr0100233	PLANT FIBER CONNECTION	2025	BOND	-	161 000	161 000	-	-	-	-	-	161.000
20	wwr0100235	SUDGE CAKE STORAGE SUOS	2020	GRANT	<u> </u>	-	-	-	-	_	-	_	-
28	wwr0100236	SLUDGE STORAGE & THICKENING	2024	GRANT	-	-	-	-	-	-	-	-	-
29	wwr0100237	WW SCADA SYSTEM UPGRADE (2021-2024)	2023	BOND	-	150.000	150,000	650,000	650,000	650,000	-	-	2,100,000
30	wwr0100239	KWRP INTERCEPTOR BIOFILTRATION ODOR CONTROL	2020	BOND	4,215,350	-	-	-	-	-	-	-	4,215,350
31	wwr0100240	SCUM HANDLING	2024	BOND	-	-	-	90,000	-	1,170,000	-	-	1,260,000
32	wwr0100241	VACTOR/HAULED WASTE RECEIVING FACILITY	2024	GRANT	-	-	-	-	-	-,	-	-	_,,
33	wwr0100242	KWRP STAFF LOCKER ROOM & PC/IT/ELEC BLDG	2024	BOND	-	-	-	-	-	-	-	-	-
34	wwr0100243	METER & SAMPLING STATION IMPROVEMENTS	2025	BOND	38,900	-	-	-	-	-	-	-	38,900
35	wwr0100244	PLANT EXTERIOR LIGHTING UPGRADE	2025	BOND	-	-	-	-	-	-	-	-	-
36	wwr0100245	TERTIARY SCREW PUMP #2	2025	BOND	100,000	-	-	65,000	845,000	-	-	-	1,010,000
37	wwr0100246	SECONDARY BLOWER #1 & #4 (CONTROLS)	2025	BOND	-	-	-	550,000	,		-	-	550,000
38	wwr0100247	INTERCEPTOR ACCESS ROAD - SPRING VALLEY	2025	BOND	-	-	-	-	-	-	-	-	-
39	wwr0100248	WWTP TRUCK SCALE/BUILDING	2021	BOND	750,000	-	-	-	-	-	-	-	750,000
40	wwr0100250	BLDG #5 MASONRY RESTORATION	2022	BOND	322,560	-	-	-	-	-	-	-	322,560
41	wwr0100251	WWR INTERCEPTOR ODOR EMISSIONS IMP	2025	BOND	-	-	162,000	500,000	-	-	-	-	662,000
42	wwr0100253	LIFT STATION IMPROVEMENTS PROGRAM	2023	BOND	-	200,000	190,000	-	-	-	-	-	190,000
43	wwr01xxxxx	BLDG 24 MEP SYSTEMS	2024	BOND	-	-	-	-	-	-	-	-	-
44	wwr01xxxxx	LOAD CENTER REPLACEMENTS	2024	BOND	-	-	-	600,000	600,000	650,000	675,000	700,000	3,225,000
45	wwr01xxxxx	RCS COMMUNICATIONS RING	2024	BOND	-	-	-	500,000	500,000	750,000	-	-	1,750,000
46	wwr01xxxxx	CITY LIFT STATION MECHANICALS PROGRAM	2024	BOND	-	-	-	200,000	200,000	200,000	100,000	-	700,000
47	wwr01xxxxx	CITY LIFT STATION CONTROLS PROGRAM	2024	BOND	-	-	-	150,000	150,000	150,000	100,000	-	550,000
48	wwr01xxxxx	CITY LIFT STATION GENERATOR PROGRAM	2024	BOND	-	-	-	150,000	150,000	150,000	100,000	-	550,000
49	wwr01xxxxx	TWP LIFT STATION MECHANICALS PROGRAM	2024	BOND		-	-	500,000	500,000	500,000	500,000	500,000	2,500,000
50	wwr01xxxxx	TWP LIFT STATION CONTROLS PROGRAM	2024	BOND	-	-	-	500,000	500,000	500,000	500,000	500,000	2,500,000
51	wwr01xxxxx	TWP LIFT STATION GENERATOR PROGRAM	2024	BOND		-	-	500,000	500,000	500,000	500,000	500,000	2,500,000
52	wwr01xxxxx	KWRP EMERGENCY COMMUNICATION SYSTEM	2024	BOND	-	-	-	-	-	20,000	260,000	260,000	540,000
53	wwr01xxxxx	EMERGENCY COMMUNICATIONS SUPPORT - CH GENERATOR	2024	BOND	-	-	-	400,000	-	-	-	-	400,000
54	wwr01xxxxx	PRIMARY SETTLING MECHANICAL REHABILITATION	2024	BOND	-	-		750,000	750,000	750,000	750,000	750,000	3,750,000
55		TOTAL GENERAL CAPIT.	AL		42,788,962	13,676,000	14,399,000	7,125,000	12,715,000	15,461,250	17,606,250	12,031,250	122,126,712
56		CONSTRUCTION & OVERHEAD											
57			2008	BOND	(85 123)	_	_					_	(85 172)
52	wwr0200000		2000	BOND	1 604 704	500 000	500 000	500 000	500 000	500 000	500 000	500 000	4 604 704
50	wwr0200002	SEWER TRENCHI ESS REHAB PROGRAM - CITY	2000	BOND	1,004,704 2 106 855	1 100 000	1 100 000	750,000	750,000	900,000	900,000		4,004,704 7 506 855
53	wwr020001	SEWER TRENCHLESS REHAB DROGRAM - TWD	2019	BOND	2,190,000	-	1,100,000 -	1 000 000	1 000 000	1 000 000		1 000 000	5 000 000
61	wwr0200063		2024	BOND	-		-	-	-	-	-	-	5,000,000
62	wwr0200005	RANSOM ST INTERCEPTOR LIPGRADE	2015	BOND	682 982	-	-	-	-	-	-	-	682 982
63	wwr0200005	RANSOM ST INTERCEPTOR UPGRADE	2022	CWSRF	-	4 950 000	8,000 500	-	-	-	-	-	8,000 500
64	wwr0200066	NEWTON CT SANITARY SEWER REPLACEMENT	2019	BOND	20,000	262,500	262,500	410,000	-	-	-	_	692,500
65	wwr0200067	FELLOWS CT SANITARY SEWER REPLACEMENT	2019	BOND	20,000	262,500	262,500	410.000	-	-	-	-	692,500
66	wwr0200073	MICHIGAN AVE SANITARY SEWER	2020	BOND	-	42,000	42,000	-	-	600,000	-	_	642,000
67	wwr0200074	WESTNEDGE (PIONEER-CROSSTOWN) SEWER	2022	BONDRA	FT - For Revie	w and Commen	1 321.750	-	-	-	-	-	321,750

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WASTEWATER FUND

					CAPITAL IMPROVED 2024 -	MENT PROGRAM 2028							
A	В	C	D	E	F	K	L	M	N	0	P	Q	R
3		PROJECT	START YEAR	FUNDING SOURCE	PRIOR BUDGET	ADOPTED 2023	AMENDED 2023	2024	2025	2026	2027	2028	TOTAL PROJECT BUDGET
68	wwr0200075	6-INCH SEWER UPGRADE PROGRAM	2024	BOND	-	-	-	-	-	-	300,000	700,000	1,000,000
69	wwr0200077	JOHN ST K-ZOO SIPHON REPLACEMENT	2022	BOND	-	1,050,000	1,050,000	500,000	-	-	-	-	1,550,000
70	wwr0200078	ROSE ST SANITARY (CEDAR TO VINE)	2022	BOND	-	-	-	-	-	93,750	687,500	687,500	1,468,750
71	wwr0200079	N. WESTNEDGE SANITARY(ELIZABETH TO MABLE)	2022	BOND	-	-	-	26,250	192,500	-	-	-	218,750
72	wwr0200080	REV WRIGHT CT (CHURCH to BURDICK)	2023	BOND		461,125	461,125	1,000,000	-	-	-	-	1,461,125
73	wwr0200081	SEWER EXTENSION PROGRAM	2023	BOND	-	150,000	150,000	-	-	-	400,000	400,000	950,000
74	wwr02xxxxx	VARIOUS STREETS	2024	BOND	-	-	-	650,000	650,000	650,000	-	-	1,950,000
75	wwr02xxxxx	VINE STREET TRUNK CAPACITY INCREASE (PARK-JASPER)	2023	BOND	-	-	-	60,000	-	-	1,000,000	1,000,000	2,060,000
76	wwr02xxxxx	W. DUTTON SANITARY (PARK TO S. BURDICK)	2024	BOND	-	-	-	-	90,000	660,000	-	-	750,000
77	wwr02xxxxx	ACKER LN SANITARY	2024	BOND	-	-	-	-	73,125	536,250	-	-	609,375
78	wwr02xxxxx		2025	BOND	-	-	-	-	-	195,750	1,435,500	-	1,631,250
79	wwr02xxxxx	BURDICK (REED TO VINE)	2024	BOND	-	-	-	90,000	675,000	700.000	-	-	765,000
80	wwr02xxxxx	BURDICK (CROSSIOWN TO VINE)	2024	BOND	-	-	-	-	90,000	/00,000	-	-	790,000
81	wwr02xxxxx	WATER STREET (WESTNEDGE TO PARK)	2024	BOND	-	-	-	8/5,000	-	-	-	-	875,000
82 83		TOTAL SEWER MAIN CONSTRUCTION & OVERHEAD)		4,439,418	9,099,875	12,150,375	6,271,250	4,020,625	5,835,750	6,223,000	5,287,500	44,227,918
84	RESIDUAL BIOS	OLIDS											
85	wwr0100252	KWRP SUSTAINABLE RESIDUAL BIOSOLIDS	2023	BOND		116,667	116,667	500,000	600,000	-	-	-	1,216,667
86	wwr0100252	KWRP SUSTAINABLE RESIDUAL BIOSOLIDS	2023	TBD		-	-	-	-	45,000,000	45,000,000	45,000,000	135,000,000
87 88		TOTAL RESIDUAL BIOSOLIDS				116,667	116,667	500,000	600,000	45,000,000	45,000,000	45,000,000	136,216,667
89	SEWER LEADS												
90	wwr0400001	SEWER CONNECTION CONTINGENCY	2006	BOND	-	-	-	-	-	-	-	-	-
91	wwr0400051	LEAF COMPOST SITE	2019	BOND	134,100	-	-	-	-	-	-	-	134,100
92	wwr0400052	GPI EFFLUENT SERVICE REALIGNMENT	2023	BOND	-	1,720,000	1,720,000	-	-	-	-	-	1,720,000
93		TOTAL SEWER LEADS	5		134,100	1,720,000	1,720,000	-	-	-	-	-	1,854,100
94													
95		TOTAL WASTEWATER CAPITAL IMPROVEMENT PROJECTS	5		47,362,479	24,612,542	28,386,042	13,896,250	17,335,625	66,297,000	68,829,250	62,318,750	304,425,396
96													
97 W	astewater Capita	l Outlay - Operating							Reflects 900 o	odes - as of 9/28/23 i	n OpenGov		
98	590-536	WASTEWATER ADMINISTRATION	ANNUAL	OPERATING	137,000	60,000	60,000	30,000	30,000	30,000	30,000	30,000	347,000
99	590-541	WASTEWATER COLLECTIONS	ANNUAL	OPERATING	-	-	-	25,000	25,000	25,000	25,000	25,000	125,000
100	590-543	WASTEWATER PLANT MAINTENANCE	ANNUAL	OPERATING	2,368,000	525,000	525,000	545,000	545,000	545,000	545,000	545,000	5,618,000
101	590-544	WASTEWATER PROCESS CONTROLS	ANNUAL	OPERATING	1,111,100	260,000	260,000	255,000	255,000	255,000	255,000	255,000	2,646,100
102	590-545	WASTEWATER ENVIRONMENTAL SERVICES	ANNUAL	OPERATING	-	8,000	8,000	8,000	8,000	8,000	8,000	8,000	48,000
103	590-580	CITY FLEET	ANNUAL	OPERATING	1,977,000	260,000	260,000	260,000	260,000	260,000	260,000	260,000	3,537,000
104		TOTAL CAPITAL OUTLAY - OPERATING	ì		5,593,100	1,113,000	1,113,000	1,123,000	1,123,000	1,123,000	1,123,000	1,123,000	12,321,100
107		TOTAL WASTEWATER CAPITAL IMPROVEMENT P	ROJECTS AND C	APTIAL OUTLAY	52,955,579	25,725,542	29,499,042	15,019,250	18,458,625	67,420,000	69,952,250	63,441,750	316,746,496
108													
109 T(DTAL CAPITAL IM	PROVEMENT PROJECTS AND OPERATING CAPITAL OUTLAY BY F	UNDING SOUR	CE									
110		REVENUE BONDS AND RESERVES		BOND	47,263,679	19,662,542	20,385,542	13,896,250	17,335,625	20,865,750	19,948,000	13,437,500	153,132,346
111		CONTRIBUTIONS IN AID OF CAPITAL		CIA	-	-	-	-	-	-	-	-	-
112		CLEAN WATER STATE REVOLVING FUND		CWSRF	-	4,950,000	8,000,500	-	-	-	-	-	8,000,500
113		GRANTS		GRANT	98,800	-	-	-	-	431,250	3,881,250	3,881,250	8,292,550
114		WASTEWATER OPERATING REVENUE		OPERATING	5,593,100	1,113,000	1,113,000	1,123,000	1,123,000	1,123,000	1,123,000	1,123,000	12,321,100
115 116 117		TOTAL BY FUNDING SOURCE	E		52,955,579	25,725,542	29,499,042	15,019,250	18,458,625	22,420,000	24,952,250	18,441,750	181,746,496
118										(45,000,000)		(45,000,000)	(125,000,000)
113					-	-	-	-	-	(45,000,000)	(45,000,000)	(45,000,000)	(122,000,000)



APPENDIX C

CITY OF KALAMAZOO SSO DOCUMENTATION

FOR IMMEDIATE RELEASE

Contact: Mike Wetzel City of Kalamazoo Public Services Department Environmental Services Superintendent Phone Numbers: Office (269) 337-8667 Cell (269) 998-0275

SANITARY SEWER OVERFLOW: 2041 Saxonia Lane Kalamazoo, Michigan

Kalamazoo, Michigan, April 27, 2013 – The City of Kalamazoo Department of Public Services personnel were notified at 11:40 am of a sanitary sewer overflow from a manhole located at 2041 Saxonia Lane. Untreated raw sewage was released to the immediate area of 120 feet from the sanitary manhole. At this time, the City of Kalamazoo Department of Public Services is advising all persons to avoid the impacted area and keep pets and children away until the area is assessed and remediated. If contact with raw sewage is made, avoid spreading and tracking and clean and disinfect shoes, clothes, and skin thoroughly.

The Department of Public Services removed the blockage at 5:32 pm on April 27, 2013. The amount of material discharged from sanitary sewer is estimated to be 1,800 gallons.

Please call the Department of Public Services at 269-998-0275 with questions related to the repair.

As required by law, Water Reclamation Plant personnel notified the Michigan Department of Environmental Quality at the Kalamazoo District Office (or via the Pollution Emergency Alerting System) and the Kalamazoo County Environmental Health and Community Services of the spill.



DRAFT - For Review and Comment MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WATER RESOURCES DIVISON Report of Discharge

This information is required to be submitted under Michigan Act 451, Public Acts of 1994, as amended, Part 31, Section 324.3112a. Potential fines and penalties specified in Part 31 apply to this requirement.

Type of Discharge Being Reported
RTB Discharge : The reported discharge was from a retention and treatment basin (RTB), or equivalent structure, which serves a municipal combined sewer system. The RTB or equivalent structure is designed in accordance with approved plans, and operated in accordance with criteria in a permit, order, or other enforceable document issued by the Michigan Department of Environmental Quality (MDEQ) or by court action. This type of discharge is commonly referred to as an RTB discharge.
CSO Discharge : The reported discharge is from a municipal combined sewer system and is not from a facility which is designed to meet final performance criteria specified in a permit, order, or other enforceable document. The discharge is associated with wet weather events. This type of discharge is commonly referred to as a combined sewer overflow (CSO).
SSO Discharge : The reported discharge is from a private or municipal separate sewer collection system (not wastewater treatment plant) during wet or dry weather, or a dry weather discharge from a municipal combined sewer collection system. This type of discharge is commonly referred to as a sanitary sewer overflow (SSO).
Other : The reported discharge was of untreated or partially treated sewage (definition in Section 3112a) which is not characterized by one of the conditions listed above. A detailed description of the discharge is provided below.

Report Submitted By					
Name Steven M. Rochow					
Position					
Address 1415 N. Harrison					
City, State, Zip code	Kalamazoo, Michigan 49007				
County	Kalamazoo County				
Telephone No.	(269) 337-8365				
E-mail address	rochows@kalamazoocity.org				
Signature	Steven M. Rochow	Date 4/30/13			

Sewer System Owner					
Name	Kalamazoo Water Reclamation Plant				
Address	1415 N. Harrison				
City, State, Zip Code	Kalamazoo, Michigan 49007				
County	Kalamazoo County				

Discharge Information (see instructions for completing this section)					
Volume discharged (specify units, either gallons or	1,800 gallons				
million gallons)					



DRAFT - For Review and Comment MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WATER RESOURCES DIVISON Report of Discharge

Quality of discharge(s) (such as raw sewage, diluted raw sewage, partially treated, RTB, blended, etc.)	Raw Sewage						
Reason for the discharge(s)	Tree roots blocked the flow in the sanitary sewer creating an overflow situation.						
Location of the discharge(s)	2041 Saxonia Lane Kalamazoo, Michigan 49007						
Surface waters impacted by the discharge(s)	None						
Land impacted by the discharge(s)	120 feet downhill of	the s	anitary manhole	e			
Discharge event start date and time	Date: 4/27/13 Time: 11:40 am						
Discharge event end date and time	Date: 4/27/13 Time: 5:32 pm						
Is the sewer system owner in compliance or not in compliance with applicable discharge permits, laws, rules, and orders?	☑ In compliance☑ Not in compliance		If not in compliance, please explain:				
Initial notification date and time (if no notice or >24 hrs of discharge, please explain at the end of the form)	notification date and if no notice or >24 hrs charge, please explain end of the form) <u>MDEQ</u> Date: 4/27/13 Time: 4:17 pm		Local Health DepartmentDaily Local NewspDate: 4/27/13Date: 4/27/13Time: 3:35 pmTime: 8:51 pm		<u>ocal Newspaper</u> 4/27/13 3:51 pm		
Notification that the discharge has concluded (if the discharge was still occurring at the initial notification)	<u>MDEQ</u> Date: 4/27/13 Time: 6:32 pm ☐ Not applicable		Local Health I Date: 4/27/13 Time: 6:30 pr	ical Health Department ate: 4/27/13 me: 6:30 pm] Not applicable		Daily Local Newspaper Date: Time: X Not applicable	
Precipitation type and measurements, if applicable	ble None Am		bunt:	Start Date/Time:		End Date/Time:	
Name of wastewater treatment facility normally receiving sewage	Kalamazoo Water Reclamation Plant						
Was this discharge disinfected to meet fecal coliform limitations?	 ∐ Yes ☐ No ⊠ Not applicable 						
Actions taken to minimize the impact from the discharge(s), if any	Lime was spread over impacted areas.						
Actions taken or that will be taken to prevent	Further root cutting and video the sanitary sewer in the area was performed on 4/29/13.						



DRAFT - For Review and Comment MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WATER RESOURCES DIVISON Report of Discharge

reoccurrence of the discharge(s), if any				
Results of <u><i>E. coli</i></u> testing (select one)	☐ Results pending (provide expected date of submittal)	Results attached	Testing waived by local health department	⊠Not applicable no discharge to surface waters

(1) The reported discharge was caused by a party other than this sewer system owner and over which this owner had no control or knowledge of the actions which resulted in the discharge. Reporting and corrective actions by this sewer system owner were conducted in a timely manner upon becoming aware of the condition.
(2) The reported discharge was from an RTB, <u>and</u> the level of treatment provided is in full compliance with <u>final</u> performance criteria in a permit, order, or other enforceable document issued or entered between the MDEQ and the discharger, or by court action.
(3) The reported discharge was of partially treated sewage that bypassed one or more treatment units at the wastewater treatment facility.
All effluent limits were met during the event
All effluent limits were not met during the event (please explain)
The 2041 Saxonia Lane incident was reported to PEAS # 6251.



FOR IMMEDIATE RELEASE

Contact: Sue Foune City of Kalamazoo Public Services Department Public Services Deputy Director Phone Numbers: Office (269) 337-8440

SANITARY SEWER OVERFLOW: 2041 Saxonia Lane Kalamazoo, Michigan

Kalamazoo, Michigan, April 27, 2013 – The City of Kalamazoo Department of Public Services personnel were notified at 11:40 am of a sanitary sewer overflow from a manhole located at 2041 Saxonia Lane. Untreated raw sewage was released to the immediate area of 120 feet from the sanitary manhole.

The Department of Public Services removed the blockage at 5:32 pm on April 27, 2013. The amount of material discharged from the sanitary sewer is estimated to be 1,800 gallons. At this time, the City of Kalamazoo Department of Public Services is advising all persons to avoid the impacted area until the area is assessed and remediated within the next 48 hours. If contact with raw sewage is made, clean and disinfect shoes, clothes, and skin thoroughly.

Please call the Department of Public Services at 269-337-8440 with questions related to this event.

As required by law, Water Reclamation Plant personnel notified the Michigan Department of Environmental Quality at the Kalamazoo District Office (or via the Pollution Emergency Alerting System) and the Kalamazoo County Environmental Health and Community Services of the spill.




This information is required to be submitted under Michigan Act 451, Public Acts of 1994, as amended, Part 31, Section 324.3112a. Potential fines and penalties specified in Part 31 apply to this requirement.

Type of Discharge Being Reported
RTB Discharge : The reported discharge was from a retention and treatment basin (RTB), or equivalent structure, which serves a municipal combined sewer system. The RTB or equivalent structure is designed in accordance with approved plans, and operated in accordance with criteria in a permit, order, or other enforceable document issued by the Michigan Department of Environmental Quality (MDEQ) or by court action. This type of discharge is commonly referred to as an RTB discharge.
CSO Discharge : The reported discharge is from a municipal combined sewer system and is not from a facility which is designed to meet final performance criteria specified in a permit, order, or other enforceable document. The discharge is associated with wet weather events. This type of discharge is commonly referred to as a combined sewer overflow (CSO).
SSO Discharge : The reported discharge is from a private or municipal separate sewer collection system (not wastewater treatment plant) during wet or dry weather, or a dry weather discharge from a municipal combined sewer collection system. This type of discharge is commonly referred to as a sanitary sewer overflow (SSO).
Other : The reported discharge was of untreated or partially treated sewage (definition in Section 3112a) which is not characterized by one of the conditions listed above. A detailed description of the discharge is provided below.

Report Submitted By				
Name	Steven M. Rochow			
Position	Senior Environmental Services Supervisor			
Address	Address 1415 N. Harrison			
City, State, Zip code	Kalamazoo, Michigan 49007			
County	Kalamazoo County			
Telephone No.	(269) 337-8365			
E-mail address	rochows@kalamazoocity.org			
Signature		Date 4/30/13		

Sewer System Owner			
Name	Kalamazoo Water Reclamation Plant		
Address	1415 N. Harrison		
City, State, Zip Code	Kalamazoo, Michigan 49007		
County	Kalamazoo County		

Discharge Information (see instructions for completing this section)				
Volume discharged (specify units, either gallons or million gallons)	1,800 gallons			



Quality of discharge(s)	Raw Sewage					
(such as raw sewage,						
diluted raw sewage,						
partially treated, RTB,						
blended, etc.)	-					4 14 14
Reason for the discharge(s)	Tree roots blocked	the flo	ow in the sanital	ry sewer crea	ating an	overflow situation.
Location of the discharge(s)	2041 Saxonia Lane	Kala	mazoo, Michiga	in 49007		
Surface waters impacted by	None					
the discharge(s)						
Land impacted by the	120 feet downhill of	the s	anitary manhole	Э		
discharge(s)						
Discharge event start date	Date: 4/27/13					
and time	Time: 11:40 am					
Discharge event end date	Date: 1/27/13					
and time	Time: 5:32 nm					
	11110: 0.02 pin		If not in compl	lianaa nlaaa		
is compliance or not in			II not in compi	liance, pleas	e explair	1.
discharge permits laws		CA				
rules and orders?		66				
Initial notification date and	MDEQ		Local Health Department		Dailv L	ocal Newspaper
time (if no notice or >24 hrs						
of discharge, please explain	Date: 4/27/13		Date: 4/27/13	3	Date: 4	4/27/13
at the end of the form)	Time: 4:17 pm		Time: 3:35 pr	n	Time: 8	3:51 pm
Notification that the	MDEQ		Local Health Department		Daily L	<u>ocal Newspaper</u>
discharge has concluded (if						
the discharge was still	Date: 4/27/13		Date: 4/27/13		Date:	
occurring at the initial	Time: 6:32 pm		Time: 6:30 pm		Time:	
nouncauon)						tapplicable
				able		applicable
Precipitation type and	Type:	Amo	unt.	Start Date/	Time [.]	End Date/Time
measurements, if applicable	None	7	Juni	otart Dato,		
Name of wastewater	Kalamazoo Water F	Reclar	mation Plant			
treatment facility normally						
receiving sewage						
Was this discharge	☐ Yes					
disinfected to meet fecal	il 🗌 No					
coliform limitations?	Not applicable					
Actions taken to minimize	Lime was spread over impacted areas.					
the impact from the	mpact from the					
discharge(s), if any						
Actions taken or that will be	Further root cutting and video the sanitary sewer in the area was performed on			was performed on		
taken to prevent	4/29/13.					
	1					



reoccurrence of the discharge(s), if any				
Results of <u><i>E. coli</i></u> testing (select one)	Results pending (provide expected date of submittal)	Results attached	Testing waived by local health department	Not applicable no discharge to surface waters

Additional Information (Check any box that is appropriate)	(1) The reported discharge was caused by a party other than this sewer system owner and over which this owner had no control or knowledge of the actions which resulted in the discharge. Reporting and corrective actions by this sewer system owner were conducted in a timely manner upon becoming aware of the condition.
	(2) The reported discharge was from an RTB, <u>and</u> the level of treatment provided is in full compliance with <u>final</u> performance criteria in a permit, order, or other enforceable document issued or entered between the MDEQ and the discharger, or by court action.
	(3) The reported discharge was of partially treated sewage that bypassed one or more treatment units at the wastewater treatment facility.
	All effluent limits were met during the event
	All effluent limits were not met during the event (please explain)
(attach sheets as necessary)	The 2041 Saxonia Lane incident was reported to PEAS # 6251.



The sewer system owner, or their designee, responsible for the discharge of sewage shall immediately, but not more than 24 hours after the discharge begins, and again at the conclusion of the discharge (if it was still occurring at the time of the initial notification), notify the MDEQ, local health department(s), and daily newspaper(s), as specified in the law. During normal business hours, notification to the MDEQ shall be made to the phone number shown on the attached table. Notification during non-business hours shall be made to the Pollution Emergency Alerting System at 1-800-292-4706.

The "Report of Discharge" form may be used to provide information required by law at the conclusion of the discharge. Information submitted to the MDEQ shall be directed to the appropriate MDEQ District Office (see attached table). This form may be submitted electronically as long as the form is signed and submitted as a pdf document.

Volume discharged

Provide the volume discharged in gallons or millions of gallons (clearly indicate which units are being used). If volume is estimated, indicate that. If multiple discharge locations are included in the report, provide information for each discharge location and the total volume for all discharges.

Quality of discharge(s)

Provide information on the quality of the discharge by using a narrative description and/or analytical data. Select the type of sewage that characterizes the discharge(s): raw sewage, diluted raw sewage (sewage diluted by rain or snowmelt), partially treated, RTB, or blended sewage (partially treated wastewater that combines with fully treated wastewater prior to discharge). If multiple discharge locations are included in the report, provide this information for each discharge location.

Reason for the discharge(s)

Provide the reason for the discharge(s), such as an overflow from a lift station due to power failure caused by lightning strike, sewer overflow due to heavy rain, bypass at wastewater treatment plant due to pump failure, etc. Be specific.

Location of the discharge(s)

Provide the street address or other descriptive location (provide a map if necessary) for each point of discharge. Provide the latitude and longitude to within ten (10) seconds, if known or obtainable. Indicate the city, township, if applicable, and county where the discharge is located.

Surface waters impacted by the discharge(s)

Provide the name of the surface waters into which the discharge flows. If the discharge did not reach a surface water body, indicate "None." If the discharge goes to an unnamed surface waterbody, indicate that and provide the name of the first downstream waterbody with a name and a description of the path to this waterbody.

Land impacted by the discharge(s)

Provide a description of any land that is impacted by the discharge, or indicate "None."

Discharge start date and time

Discharge end date and time

Provide the date and time the discharge(s) began and ended. If multiple discharge locations are included in the report, provide the discharge dates and times for each discharge location.

Compliance status

Indicate whether the sewer system owner, prior to this discharge event, is in compliance with their wastewater discharge permits (if any) and applicable state and federal statutes, rules, and orders. If "not in compliance" is indicated, please provide an explanation.

Were initial notification procedures followed?

Sewer system owners responsible for a discharge of sewage are required to immediately (but not more than 24 hours after the discharge begins) notify the MDEQ, local health departments, daily newspaper(s), and affected municipalities as described by the law. If the discharge was still occurring at



the time of the initial notification, sewer system owners must also notify the MDEQ when the discharge ends. Provide the date and time notifications were made to each entity. If the notification procedures were not followed, please explain and provide the steps taken to correct this situation.

Sewer system owners are also required to annually contact each municipality whose jurisdiction contains waters that may be affected by the discharge. If those contacted municipalities wish to be notified in the same manner as above, the owner of the sewer system shall provide that notification.

Precipitation type and measurements

If the reason for the discharge is related to rainfall and/or snowmelt, provide the precipitation type, the amount of precipitation, time and duration of the precipitation (e.g., 2 inches of rain over a 6-hour period beginning at 3:00 a.m. on 9/14/2006).

Name of wastewater treatment facility normally receiving sewage

Provide the name of the wastewater treatment facility that would have normally provided treatment to the sewage that was discharged.

Disinfected to comply with fecal coliform limitations

This requirement is applicable to sewer systems with authorized points of discharge (by permit or order) that are required to disinfect wastewater prior to discharge to surface waters. If disinfection was required by a permit or order and it was not provided, please provide an explanation.

Actions taken to stop and/or minimize the discharge(s)

Provide a description of the action(s) that the sewer system owner took to stop the discharge(s) or to minimize the amount discharged.

Actions taken to minimize the impact from the discharge(s)

Provide a description of the action(s) that the sewer system owner took to minimize the impact from the discharge(s), such as actions taken to minimize exposure to the public or to contain/capture the discharge(s).

Actions to prevent reoccurrence of the discharge(s)

Provide a description of actions taken or planned (but not yet implemented) to prevent reoccurrence of this discharge(s). This may include plans to replace equipment, to conduct inflow/infiltration studies, to examine maintenance procedures, etc. Please include a schedule for planned actions.

Results of *E. coli* testing

Provide the results of *E. coli* testing of affected waters as specified by the local health department(s). If results are not yet available, provide the date they are expected to be available and then submit them as soon as they become available. If the local health department did not require testing, indicate that the testing is "waived." If the discharge(s) did not reach affected surface waters, circle "not applicable."

Discharge Report

Report the characterization of the discharge by checking the appropriate box. Please check only one box.

An example of discharge characterization (1) is accidental releases from work done by a phone carrier who unexpectedly damages a sewer pipe.

An example of discharge characterization (2) is an RTB where the level of treatment provided is in full compliance with final performance criteria in a permit, order, or other enforceable document issued or entered between the MDEQ and the discharger, or by court action.

An example of discharge characterization (3) is partially treated sewage that bypasses one or more treatment units at the wastewater treatment facility, such as primary clarification or disinfection.



The discharge will be characterized when posted to the MDEQ web site. However, be aware that the MDEQ reserves the right to recharacterize the web posting based on facts related to the discharge.

Additional information

Provide any additional information you deem appropriate.

Return completed and signed form by mail, e-mail, or fax to the District Office indicated on the attached table.



Water Resources Division District Office Addresses and County Jurisdictions

MDEQ DISTRICT OFFICES	TELEPHONE # FAX #	<u>#</u> <u>COUNTY JURISDICTIONS</u>		
CADILLAC DISTRICT OFFICE WRD DISTRICT SUPERVISOR 120 WEST CHAPIN ST CADILLAC, MI 49601-2158	231-775-3960 231-775-1511	ALPENA ALCONA ANTRIM BENZIE CHARLEVOIX CHEBOYGAN CRAWFORD EMMET	GRAND TRAVERSE KALKASKA LAKE LEELANAU MANISTEE MASON MISSAUKEE MONTMORENCY	OSCEOLA OSCODA OTSEGO PRESQUE ISLE ROSCOMMON WEXFORD
SOUTHEAST MICHIGAN DISTRICT OFFICE WRD DISTRICT SUPERVISOR 27700 DONALD CT WARREN, MI 48092-2793	586-753-3700 586-753-3751	MACOMB OAKLAND ST. CLAIR WAYNE		
GRAND RAPIDS DISTRICT OFFICE WRD DISTRICT SUPERVISOR 350 OTTAWA AVE NW, UNIT 10 GRAND RAPIDS, MI 49503-2341	616-356-0500 616-356-0202	BARRY IONIA KENT MECOSTA MONTCALM	MUSKEGON NEWAYGO OCEANA OTTAWA	
JACKSON DISTRICT OFFICE WRD DISTRICT SUPERVISOR 301 EAST LOUIS GLICK HIGHWAY JACKSON, MI 49201-1556	517-780-7690 517-780-7855	HILLSDALE JACKSON LENAWEE	MONROE WASHTENAW	
UPPER PENINSULA DISTRICT OFFICE WRD DISTRICT SUPERVISOR 420 FIFTH STREET GWINN, MICHIGAN 49841-3004	906-346-8300 906-346-4480	ALGER BARAGA CHIPPEWA DELTA DICKINSON GOGEBIC	HOUGHTON IRON KEWEENAW LUCE MARQUETTE MACKINAC	MENOMINEE ONTONAGON SCHOOLCRAFT
KALAMAZOO DISTRICT OFFICE WRD DISTRICT SUPERVISOR 7953 ADOBE ROAD KALAMAZOO, MI 49009-5026	616-567-3500 616-567-9440	ALLEGAN BERRIEN BRANCH CALHOUN	CASS KALAMAZOO ST. JOSEPH VAN BUREN	
SAGINAW BAY DISTRICT OFFICE WRD DISTRICT SUPERVISOR 401 KETCHUM STREET, SUITE B BAY CITY, MI 48708	989-894-6200 989-891-9237	ARENAC BAY CLARE GLADWIN HURON IOSCO	ISABELLA MIDLAND OGEMAW SAGINAW SANILAC TUSCOLA	
LANSING DISTRICT OFFICE WRD DISTRICT SUPERVISOR P.O. BOX 30242 LANSING, MI 48909-7742	517-335-6010 517-241-3571	CLINTON EATON GENESEE GRATIOT INGHAM	LAPEER LIVINGSTON SHIAWASSEE	



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WATER RESOURCES DIVISON Report of Discharge

This information is required to be submitted under Michigan Act 451, Public Acts of 1994, as amended, Part 31, Section 324.3112a. Potential fines and penalties specified in Part 31 apply to this requirement.

Type of Discharge Being Reported
RTB Discharge : The reported discharge was from a retention and treatment basin (RTB), or equivalent structure, which serves a municipal combined sewer system. The RTB or equivalent structure is designed in accordance with approved plans, and operated in accordance with criteria in a permit, order, or other enforceable document issued by the Michigan Department of Environmental Quality (MDEQ) or by court action. This type of discharge is commonly referred to as an RTB discharge.
CSO Discharge : The reported discharge is from a municipal combined sewer system and is not from a facility which is designed to meet final performance criteria specified in a permit, order, or other enforceable document. The discharge is associated with wet weather events. This type of discharge is commonly referred to as a combined sewer overflow (CSO).
SSO Discharge : The reported discharge is from a private or municipal separate sewer collection system (not wastewater treatment plant) during wet or dry weather, or a dry weather discharge from a municipal combined sewer collection system. This type of discharge is commonly referred to as a sanitary sewer overflow (SSO).
Other : The reported discharge was of untreated or partially treated sewage (definition in Section 3112a) which is not characterized by one of the conditions listed above. A detailed description of the discharge is provided below.

Report Submitted By				
Name	Steven M. Rochow			
Position	Senior Environmental Services Supervisor			
Address	1415 N. Harrison			
City, State, Zip code	Kalamazoo, Michigan 49007			
County	Kalamazoo County			
Telephone No.	(269) 337-8365			
E-mail address	Iress rochows@kalamazoocity.org			
Signature	Stove M. Rochow	Date 11/27/17		

Sewer System Owner			
Name	Kalamazoo Water Reclamation Plant		
Address	1415 N. Harrison		
City, State, Zip Code	Kalamazoo, Michigan 49007		
County	Kalamazoo County		

Discharge Information (see instructions for completing this section)				
Volume discharged (specify	25 cubic yards of sludge (biosolids)			
units, either gallons or				
million gallons)				



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WATER RESOURCES DIVISON Report of Discharge

Quality of discharge(s) (such as raw sewage, diluted raw sewage, partially treated, RTB, blended, etc.)	Treated Wastewater Sludge					
Reason for the discharge(s)	Spillage from sludge hauler truck (Cordes, Inc.) due to accident.					
Location of the discharge(s)	US 131 Mile Marker 48, Gun Plain Township Allegan County, Michigan					
Surface waters impacted by the discharge(s)	None	None				
Land impacted by the discharge(s)	10 x 10 yards grour	nd in t	he highway me	dian		
Discharge event start date and time	Date: 11/21/17 Time: 6:37 pm					
Discharge event end date and time	Date: 11/22/17 Time: 12:00 am	Date: 11/22/17 Time: 12:00 am				
Is the sewer system owner in compliance or not in compliance with applicable discharge permits, laws, rules, and orders?	☑ In compliance☑ Not in compliance		If not in compl	liance, pleas	e explair	n:
Initial notification date and time (if no notice or >24 hrs of discharge, please explain at the end of the form)	<u>MDEQ</u> Date: 11/21/17 Time: 8:10 pm		Local Health I Date: 11/22/1 Time: 8:13 ar	<u>Department</u> 7 n	<u>Daily L</u> Date: Time: 9	ocal Newspaper 11/22/17 9:24 am
Notification that the discharge has concluded (if the discharge was still occurring at the initial	MDEQ Date: 11/22/17 Time: 8:36 am		Local Health Department Date: Time:		<u>Daily L</u> Date: Time:	ocal Newspaper
notification)	□ Not applicable		🛛 Not applic	able	🛛 Not	t applicable
Precipitation type and measurements, if applicable	Type: None	Amo	bunt:	Start Date/	Time:	End Date/Time:
Name of wastewater treatment facility normally receiving sewage	Kalamazoo Water Reclamation Plant					
Was this discharge disinfected to meet fecal coliform limitations?	 ☐ Yes ☐ No ☑ Not applicable 					
Actions taken to minimize the impact from the discharge(s), if any	The impacted area was blocked off from traffic.					
Actions taken or that will be taken to prevent	The sludge was collected and disposed into the City of Kalamazoo dump trucks and hauled back to the Kalamazoo Water Reclamation Plant The sludge was					



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WATER RESOURCES DIVISON Report of Discharge

reoccurrence of the discharge(s), if any	hauled to the landfill on November 25.
Results of <u><i>E. coli</i></u> testing (select one)	Results Results Testing waived Not applicable pending attached by local health no discharge to (provide expected department surface waters date of submittal)
Additional Information (Check any box that is appropriate)	 (1) The reported discharge was caused by a party other than this sewer system owner and over which this owner had no control or knowledge of the actions which resulted in the discharge. Reporting and corrective actions by this sewer system owner were conducted in a timely manner upon becoming aware of the condition. (2) The reported discharge was from an RTB, <u>and</u> the level of treatment provided is in full compliance with <u>final</u> performance criteria in a permit, order, or other enforceable document issued or entered between the MDEQ and the discharger, or by court action. (3) The reported discharge was of partially treated sewage that bypassed one or more treatment units at the wastewater treatment facility. All effluent limits were met during the event (please explain)
Additional information (attach sheets as necessary)	The City of Kalamazoo was notified on November 21, 2017 @ 6:45 pm that the company (Cordes, Inc.) that transports the sludge from the wastewater treatment plant to the landfill had an accident and spilled an estimated 25 cubic yards of sludge onto median of US 131 (mile marker 48). The incident was reported to PEAS on November 21, 2017 8:10 pm by Jim Cornell. The clean-up work was performed under the incident command of the Allegan County Sheriff and in coordination & cooperation with the Michigan Department of Transporation (MDOT). The impacted area was blocked off from traffic and the sludge was collected & deposed back into city trucks. The sludge was taken back to the Kalamazoo Water Reclamation Plant. The sludge was hauled to the landfill on November 25, 2017. The Allegan County Health Department did not require lime to be spread onto the impacted area due to low public exposure. Kalamazoo County Health Department was notified of the incident on November 22, 2017 at 8:04 am to ensure the department was aware of the incident.



Department of Public Services

Director's Office

415 Stockbridge Avenue Kalamazoo, MI 49001-2898 Ph.269.337.8660 Fx.269.337.8533

Media Release

FOR IMMEDIATE RELEASE

Contacts: James J. Baker, PE Public Services Director 269-337-8768

SANITARY SEWER OVERFLOW Allegan County northbound US 131 – Mile Marker 48

November 22, 2017, Allegan County, Michigan, – The City of Kalamazoo Department of Public Services personnel were notified at 6:45 pm on November 21, 2017 of a spill of treated wastewater sludge from a transport vehicle on northbound US 131 at Mile Marker 48.

The Department of Public Services staff finished remediating the impacted area at 12:00 am on November 22, 2017. The amount of material spilled from the vehicle is estimated to be about 25 cubic yards. The work was completed under the incident command of Allegan County Sheriff and in coordination and cooperation with Michigan Department of Transportation (MDOT).

As required by law, Water Reclamation Plant personnel notified the Michigan Department of Environmental Quality at the Kalamazoo District Office and the Allegan County Environmental Health Department of the spill.



10100 Sedroc Industrial Drive Byron Center, MI 49315 (616) 877-9935 fax (616) 877-9976

September 8th, 2020

Steve Helmer City of Kalamazoo Water Reclamation Plant

Re: Spill

At 9:30 am this morning, Dale Teed was driving Cordes truck #122 southbound on US 131 with a load of biosolids, heading towards Waste Management's West Side Landfill. An automobile that was two vehicles ahead of him decided to pull into the Speedway gas station, and then unexpectedly stop in the driveway just as he pulled in. The automobile in front of Dale, who also planned to pull into the Speedway, then made a complete stop in the traffic lane. Dale had no choice except to hit the brakes excessively to avoid impacting the second vehicle, which caused the biosolids to lunge forward in the box and escape over the front of the trailer, underneath the tarp. Dale immediately notified his superior at Cordes Inc, Charles Cordes, and also Steve Helmer from the City of Kalamazoo WRP, thereby implementing the Sludge Prevention Plan.

Dale remained at the scene with flashers on to block traffic from encountering the spilled material. He placed triangles to warn traffic of lane interruption. Meanwhile Steve Helmer and Charles Cordes conversed and continued with the the outlined procedure of how to handle a spill. Steve dispatched a vac truck and Cordes dispatched a representative with some cleanup tools to assist in the cleanup as needed. The City's cleanup crew took over and did an amazing job of removing any trace of material from the roadway.

The amount of material spilled was relatively minor, but the response by the City was quick and decisive. This is the first spill in a few years, always nice to have the plan in place. No one was hurt, no physical damage to any vehicle occurred.

We at Cordes will discuss this incident with the other drivers and use it as a refresher as to what steps we should take to avoid a spill and also what steps to take should a spill occur.

Charles Cordes

Cordes Inc Byron Center, MI



DRAFT - For Review and Comment

Submission Complete

Schedule of Compliance Submittal - Basic (NPDES Unscheduled Permit Required Reports)

09/09/2020 Submission HP2-MRGH-N7GW3 Revision 1 Form Version 1.7

Your submission was successfully submitted. It is recommended that you print and retain a copy of your submission receipt for this transaction using the Print Confirmation feature.



NPDES Unscheduled Permit Required Reports

Submission HP2-MRGH-N7GW3 Revision 1 Form Version 1.7

Review

(?)

This step allows you to review the form to confirm the form is populated completely and accurately, prior to certification and submission.

I. SUBMITTAL INFORMATION AND ATTACHMENTS

Please provide notes and attach the relevant report, or other files containing your submittal data. Other attachments that could useful for the EGLE Reviewer of your submittal may also be attached.

Site name:

Kalamazoo WWTP

Permit or Authorization number: MI0023299

Submital Attachments

City of Kalamazoo Solids Spill 9-8-20.pdf

Comment

Enclosed is the letter of explanation from Cordes Incorporated about the Sludge Hauling Incident of September 8, 2020.Please note that no pictures of the incident were taken. We will request that Cordes add that to the procedure for future events.

DRAFT - For Review and Comment Table of Contents

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Report of Discharge (CSO\SSO\RTB)

version 1.14

(Submission #: HPC-ZPMJ-F39DY, version 3)

Details

Submission ID HPC-ZPMJ-F39DY Status Submitted

Form Input

Report Details

Is this the inital or final discharge report? Final

CORRECTION REQUEST (CORRECTED) Please mark this as the final discharge report

It appears as though this SSO have been addressed adequately. Please mark this as the final report and re-submit. Thank you.

Created on 11/5/2021 12:50 PM by Marcus Tironi

Site/Facility Name:

Kalamazoo CM

Permit Number (if applicable): 3112a-0546

Sewer System or Treatment Facility Owner

Organization Name
City of KalamazooNumberExtensionPhone TypeNumberExtensionBusiness2693378365Email
rochows@kalamazocity.orgFax
NONE PROVIDEDVolume

Address

1415 HARRISON ST KALAMAZOO, MI 49007 United States

Facility Address

1415 HARRISON ST KALAMAZOO, MI 49007

Sewer System or Treatment Facility Owner Location 42.3077,-85.5743

1415 HARRISON ST, KALAMAZOO, MI

Discharge Details (1 of 1)

SSO Discharge from Manhole KC28085

Discharge Type:

SSO Discharge

SSO Discharge

The reported discharge is from a private or municipal separate sewer collection system (not a wastewater treatment plant) during wet or dry weather, or a dry weather discharge from a municipal combined sewer collection system.

Is the outfall or discharge area located at a private residential address? NO

Outfall or Discharge Area Name

Manhole KC28085

Outfall or Discharge Area Description

2034 Saxonia Lane, Kalamazoo, MI 49008

Outfall or Discharge Area Location

42.2700671,-85.6055179

Has the discharge ended?

YES

Volume Discharged	Unit	Was the volume estimated?
50	Gallons	Yes

Quality of Discharge

Raw Sewage

Please describe the discharge, including the reason for Discharge

Discharge was caused by tree roots in the sanitary sewer, which plugged the sewer, and caused overflow of manhole.

Was the land or surface water impacted by the discharge?

Land impacted only

Name/description of the land impacted:

Impacted area was approximately 15 feet between MH KC28085 and stormwater catch basin STCBKC28179 on Saxonia Lane. Minimal amount of wastewater reached stormwater outfall to ground, which flowed toward Kleinstuck Marsh.

Discharge Event Start

Date	Time
11/4/2021	09:30 am

Discharge Event End

Date	Time
11/4/2021	10:30 am

Name of the wastewater treatment facility that normally receives sewage.

Kalamazoo Water Reclamation Plant

Was the reported discharge caused by a party other than the sewer system owner and out of the control or knowledge of the actions which resulted in the discharge? NO

Is the sewer system owner in compliance with applicable discharge permits, laws, rules, and orders? YES

Initial Notification

Organization	Date	Time
Local Health Department	11/4/2021	11:56 am
Daily Local Newspaper	11/5/2021	08:16 am

CORRECTION REQUEST (APPROVED) Initial notification to the local media is required

Please submit requested details in report Created on 11/4/2021 4:20 PM by **Marcus Tironi**

Was EGLE notified prior to this report being received?

This report is being used as the initial notification to EGLE

Notification that discharge has concluded.

Organization	Date	Time
Local Health Department	11/4/2021	11:56 am
Daily Local Newspaper	11/5/2021	08:16 am

CORRECTION REQUEST (APPROVED) Notification to the local media that event has concluded is required

Please submit requested details in report. Created on 11/4/2021 4:21 PM by **Marcus Tironi**

Precipitation Type(s) (Select none if there was no precipitation) None

Actions taken to minimize the impact from the discharge(s):

The road surface was washed with chlorinated water and the storm catch basin was cleaned by the vactor crew.

Actions taken, or that will be taken, to prevent this discharge event from reoccurring:

SSO incident was caused by roots. A root cutter was used on the collection system area to remove root build-up. The area will be placed on a watch list for tree root build-up.

Additional Details

Report Submitter

PrefixMr.First NameLast NameScottManaghan

Title

Environmental Services Tech III

Organization Name

City of Kalamazoo

Phone Type Number Extension

Mobile 2699938755

Email managhans@kalamazoocity.org

Fax 2693378765

Address

YES

1415 HARRISON ST KALAMAZOO, MI 49007 United States

Do you have any additional comments or uploads you would like to provide?

Additional Information

Tree roots in sanitary sewer were removed, and normal sewer flow resumed. Saxonia Lane near the site of the sanitary sewer overflow was vactored and power washed with chlorinated water. City crews may continue to do further sewer camera work, and cleaning of the sanitary sewer in the area. The final discharge report to EGLE will be submitted on 11/8/21.

Upload addition information, as needed.

SSO Media Release - 2034 Saxonia Lane 11-4-21.doc - 11/08/2021 08:39 AM

Site Map - Sanitary Sewer Overflow 2034 Saxonia Lane 11-4-21.pdf - 11/08/2021 08:40 AM

Comment

Attached is the SSO Site Map and Media Release for the incident.

Attachments

Date	Attachment Name	Context	User
11/8/2021 8:40 AM	Site Map - Sanitary Sewer Overflow 2034 Saxonia Lane 11-4-21.pdf	Attachment	Steven Rochow
11/8/2021 8:39 AM	SSO Media Release - 2034 Saxonia Lane 11-4-21.doc	Attachment	Steven Rochow

Status History

	User	Processing Status
11/8/2021 8:25:21 AM	Steven Rochow	Draft
11/8/2021 8:46:26 AM	Steven Rochow	Submitting
11/8/2021 8:46:32 AM	Steven Rochow	Submitted

Revisions

Revision Revision Date

Revision By

Revision	Revision Date	Revision By
Revision 1	11/4/2021 1:04 PM	Scott Managhan
Revision 2	11/5/2021 8:45 AM	Scott Managhan
Revision 3	11/8/2021 8:25 AM	Steven Rochow

Sanitary Sewer Werflow 2034 Saxon at Lane 11-4-2021



11/4/2021, 12:11:23 PM



Parcel Boundary

City Boundary



DRAFT - For Review and Comment



Department of Public Services



Director's Office 415 Stockbridge Avenue Kalamazoo, MI 49001-2898 Ph.269.337.8660 Fx.269.337.8533

Media Release

FOR IMMEDIATE RELEASE

Contact: James Baker, PE City of Kalamazoo Director of Public Services (269) 337-8148

SANITARY SEWER OVERFLOW 2034 Saxonia Lane

November 5, 2021, Kalamazoo, Michigan, – The City of Kalamazoo Department of Public Services personnel responded immediately after being notified at 9:30 am on November 4, 2021 of a sanitary sewer overflow from a manhole located at 2034 Saxonia Lane.

The Department of Public Services staff removed the blockage at 10:30 am on November 4, 2021. The amount of material discharged from the sanitary sewer manhole is estimated to be about 50 gallons. A minimal amount of wastewater did reach Kleinstuck Marsh. Normal flow conditions in the sanitary sewer have been restored and the impacted area has been remediated.

As required by law, Water Reclamation Plant personnel notified the Michigan Department of Environmental, Great Lakes and Energy (EGLE) at the Kalamazoo District Office and the Kalamazoo County Environmental Health Unit of the spill.



This information is required to be submitted under Michigan Act 451, Public Acts of 1994, as amended, Part 31, Section 324.3112a. Potential fines and penalties specified in Part 31 apply to this requirement.

Type of Discharge Being Reported
RTB Discharge : The reported discharge was from a retention and treatment basin (RTB), or equivalent structure, which serves a municipal combined sewer system. The RTB or equivalent structure is designed in accordance with approved plans, and operated in accordance with criteria in a permit, order, or other enforceable document issued by the Michigan Department of Environmental Quality (MDEQ) or by court action. This type of discharge is commonly referred to as an RTB discharge.
CSO Discharge : The reported discharge is from a municipal combined sewer system and is not from a facility which is designed to meet final performance criteria specified in a permit, order, or other enforceable document. The discharge is associated with wet weather events. This type of discharge is commonly referred to as a combined sewer overflow (CSO).
SSO Discharge : The reported discharge is from a private or municipal separate sewer collection system (not wastewater treatment plant) during wet or dry weather, or a dry weather discharge from a municipal combined sewer collection system. This type of discharge is commonly referred to as a sanitary sewer overflow (SSO).
Other : The reported discharge was of untreated or partially treated sewage (definition in Section 3112a) which is not characterized by one of the conditions listed above. A detailed description of the discharge is provided below.

Report Submitted By						
Name	Steven M. Rochow					
Position	Senior Environmental Services Supervisor					
Address	1415 N. Harrison					
City, State, Zip code	Kalamazoo, Michigan 49007					
County	Kalamazoo County					
Telephone No.	(269) 337-8365					
E-mail address	rochows@kalamazoocity.org					
Signature		Date 11/27/17				

Sewer System Owner				
Name	Kalamazoo Water Reclamation Plant			
Address	1415 N. Harrison			
City, State, Zip Code	Kalamazoo, Michigan 49007			
County	Kalamazoo County			

Discharge Information (see instructions for completing this section)							
Volume discharged (specify units, either gallons or million gallons)	25 cubic yards of sludge (biosolids)						



Quality of discharge(s) (such as raw sewage, diluted raw sewage,	Treated Wastewate	er Sluc	lge				
partially treated, RTB, blended, etc.)							
Reason for the discharge(s)	Spillage from sludge hauler truck (Cordes, Inc.) due to accident.						
Location of the discharge(s)	US 131 Mile Marke	US 131 Mile Marker 48, Gun Plain Township Allegan County, Michigan					
Surface waters impacted by the discharge(s)	None						
Land impacted by the discharge(s)	10 x 10 yards grour	nd in t	he highway meo	dian			
Discharge event start date and time	Date: 11/21/17 Time: 6:37 pm						
Discharge event end date and time	Date: 11/22/17 Time: 12:00 am						
Is the sewer system owner in compliance or not in compliance with applicable discharge permits, laws, rules, and orders?	☑ In compliance☑ Not in complian	ice	If not in compliance, please explain:				
Initial notification date and time (if no notice or >24 hrs of discharge, please explain at the end of the form)	MDEQ Date: 11/21/17 Time: 8:10 pm		Local Health Department Date: 11/22/17 Time: 8:13 am		Daily Local Newspaper Date: 11/22/17 Time: 9:24 am		
Notification that the discharge has concluded (if	MDEQ		Local Health Department		Daily L	Daily Local Newspaper	
the discharge was still occurring at the initial	Date: 11/22/17 Time: 8:36 am		Date: Time:		Date: Time:		
notification)	□ Not applicable		☑ Not applicable		⊠ Not applicable		
Precipitation type and measurements, if applicable	Type: None	Amo	ount:	Start Date/	Time:	End Date/Time:	
Name of wastewater treatment facility normally receiving sewage	Kalamazoo Water Reclamation Plant						
Was this discharge disinfected to meet fecal coliform limitations?	 ☐ Yes ☐ No ☑ Not applicable 						
Actions taken to minimize the impact from the discharge(s), if any	The impacted area was blocked off from traffic.						
Actions taken or that will be taken to prevent	The sludge was collected and disposed into the City of Kalamazoo dump trucks and hauled back to the Kalamazoo Water Reclamation Plant The sludge was						



reoccurrence of the discharge(s), if any	hauled to the landfill on November 25.							
Results of <u><i>E. coli</i></u> testing (select one)	Results pending (provide expected date of submittal)	Results attached	Testing waived by local health department	Not applicable no discharge to surface waters				

Additional Information (Check any box that is appropriate)	 (1) The reported discharge was caused by a party other than this sewer system owner and over which this owner had no control or knowledge of the actions which resulted in the discharge. Reporting and corrective actions by this sewer system owner were conducted in a timely manner upon becoming aware of the condition. (2) The reported discharge was from an RTB, <u>and</u> the level of treatment provided is in full compliance with <u>final</u> performance criteria in a permit, order, or other enforceable document issued or entered between the MDEQ and the discharger, or by court action. (3) The reported discharge was of partially treated sewage that bypassed one or more treatment units at the wastewater treatment facility. All effluent limits were met during the event (please explain)
Additional information (attach sheets as necessary)	The City of Kalamazoo was notified on November 21, 2017 @ 6:45 pm that the company (Cordes, Inc.) that transports the sludge from the wastewater treatment plant to the landfill had an accident and spilled an estimated 25 cubic yards of sludge onto median of US 131 (mile marker 48). The incident was reported to PEAS on November 21, 2017 8:10 pm by Jim Cornell. The clean-up work was performed under the incident command of the Allegan County Sheriff and in coordination & cooperation with the Michigan Department of Transporation (MDOT). The impacted area was blocked off from traffic and the sludge was
	collected & deposed back into city trucks. The sludge was taken back to the Kalamazoo Water Reclamation Plant. The sludge was hauled to the landfill on November 25, 2017. The Allegan County Health Department did not require lime to be spread onto the impacted area due to low public exposure. Kalamazoo County Health Department was notified of the incident on November 22, 2017 at 8:04 am to ensure the department was aware of the incident.



The sewer system owner, or their designee, responsible for the discharge of sewage shall immediately, but not more than 24 hours after the discharge begins, and again at the conclusion of the discharge (if it was still occurring at the time of the initial notification), notify the MDEQ, local health department(s), and daily newspaper(s), as specified in the law. During normal business hours, notification to the MDEQ shall be made to the phone number shown on the attached table. Notification during non-business hours shall be made to the Pollution Emergency Alerting System at 1-800-292-4706.

The "Report of Discharge" form may be used to provide information required by law at the conclusion of the discharge. Information submitted to the MDEQ shall be directed to the appropriate MDEQ District Office (see attached table). This form may be submitted electronically as long as the form is signed and submitted as a pdf document.

Volume discharged

Provide the volume discharged in gallons or millions of gallons (clearly indicate which units are being used). If volume is estimated, indicate that. If multiple discharge locations are included in the report, provide information for each discharge location and the total volume for all discharges.

Quality of discharge(s)

Provide information on the quality of the discharge by using a narrative description and/or analytical data. Select the type of sewage that characterizes the discharge(s): raw sewage, diluted raw sewage (sewage diluted by rain or snowmelt), partially treated, RTB, or blended sewage (partially treated wastewater that combines with fully treated wastewater prior to discharge). If multiple discharge locations are included in the report, provide this information for each discharge location.

Reason for the discharge(s)

Provide the reason for the discharge(s), such as an overflow from a lift station due to power failure caused by lightning strike, sewer overflow due to heavy rain, bypass at wastewater treatment plant due to pump failure, etc. Be specific.

Location of the discharge(s)

Provide the street address or other descriptive location (provide a map if necessary) for each point of discharge. Provide the latitude and longitude to within ten (10) seconds, if known or obtainable. Indicate the city, township, if applicable, and county where the discharge is located.

Surface waters impacted by the discharge(s)

Provide the name of the surface waters into which the discharge flows. If the discharge did not reach a surface water body, indicate "None." If the discharge goes to an unnamed surface waterbody, indicate that and provide the name of the first downstream waterbody with a name and a description of the path to this waterbody.

Land impacted by the discharge(s)

Provide a description of any land that is impacted by the discharge, or indicate "None."

Discharge start date and time

Discharge end date and time

Provide the date and time the discharge(s) began and ended. If multiple discharge locations are included in the report, provide the discharge dates and times for each discharge location.

Compliance status

Indicate whether the sewer system owner, prior to this discharge event, is in compliance with their wastewater discharge permits (if any) and applicable state and federal statutes, rules, and orders. If "not in compliance" is indicated, please provide an explanation.

Were initial notification procedures followed?

Sewer system owners responsible for a discharge of sewage are required to immediately (but not more than 24 hours after the discharge begins) notify the MDEQ, local health departments, daily newspaper(s), and affected municipalities as described by the law. If the discharge was still occurring at



the time of the initial notification, sewer system owners must also notify the MDEQ when the discharge ends. Provide the date and time notifications were made to each entity. If the notification procedures were not followed, please explain and provide the steps taken to correct this situation.

Sewer system owners are also required to annually contact each municipality whose jurisdiction contains waters that may be affected by the discharge. If those contacted municipalities wish to be notified in the same manner as above, the owner of the sewer system shall provide that notification.

Precipitation type and measurements

If the reason for the discharge is related to rainfall and/or snowmelt, provide the precipitation type, the amount of precipitation, time and duration of the precipitation (e.g., 2 inches of rain over a 6-hour period beginning at 3:00 a.m. on 9/14/2006).

Name of wastewater treatment facility normally receiving sewage

Provide the name of the wastewater treatment facility that would have normally provided treatment to the sewage that was discharged.

Disinfected to comply with fecal coliform limitations

This requirement is applicable to sewer systems with authorized points of discharge (by permit or order) that are required to disinfect wastewater prior to discharge to surface waters. If disinfection was required by a permit or order and it was not provided, please provide an explanation.

Actions taken to stop and/or minimize the discharge(s)

Provide a description of the action(s) that the sewer system owner took to stop the discharge(s) or to minimize the amount discharged.

Actions taken to minimize the impact from the discharge(s)

Provide a description of the action(s) that the sewer system owner took to minimize the impact from the discharge(s), such as actions taken to minimize exposure to the public or to contain/capture the discharge(s).

Actions to prevent reoccurrence of the discharge(s)

Provide a description of actions taken or planned (but not yet implemented) to prevent reoccurrence of this discharge(s). This may include plans to replace equipment, to conduct inflow/infiltration studies, to examine maintenance procedures, etc. Please include a schedule for planned actions.

Results of *E. coli* testing

Provide the results of *E. coli* testing of affected waters as specified by the local health department(s). If results are not yet available, provide the date they are expected to be available and then submit them as soon as they become available. If the local health department did not require testing, indicate that the testing is "waived." If the discharge(s) did not reach affected surface waters, circle "not applicable."

Discharge Report

Report the characterization of the discharge by checking the appropriate box. Please check only one box.

An example of discharge characterization (1) is accidental releases from work done by a phone carrier who unexpectedly damages a sewer pipe.

An example of discharge characterization (2) is an RTB where the level of treatment provided is in full compliance with final performance criteria in a permit, order, or other enforceable document issued or entered between the MDEQ and the discharger, or by court action.

An example of discharge characterization (3) is partially treated sewage that bypasses one or more treatment units at the wastewater treatment facility, such as primary clarification or disinfection.



The discharge will be characterized when posted to the MDEQ web site. However, be aware that the MDEQ reserves the right to recharacterize the web posting based on facts related to the discharge.

Additional information

Provide any additional information you deem appropriate.

Return completed and signed form by mail, e-mail, or fax to the District Office indicated on the attached table.



Water Resources Division District Office Addresses and County Jurisdictions

MDEQ DISTRICT OFFICES	TELEPHONE # FAX #	<u><i>±</i></u> <u>COUNTY JURISDICTIONS</u>				
CADILLAC DISTRICT OFFICE WRD DISTRICT SUPERVISOR 120 WEST CHAPIN ST CADILLAC, MI 49601-2158	231-775-3960 231-775-1511	ALPENA ALCONA ANTRIM BENZIE CHARLEVOIX CHEBOYGAN CRAWFORD EMMET	GRAND TRAVERSE KALKASKA LAKE LEELANAU MANISTEE MASON MISSAUKEE MONTMORENCY	OSCEOLA OSCODA OTSEGO PRESQUE ISLE ROSCOMMON WEXFORD		
SOUTHEAST MICHIGAN DISTRICT OFFICE WRD DISTRICT SUPERVISOR 27700 DONALD CT WARREN, MI 48092-2793	586-753-3700 586-753-3751	MACOMB OAKLAND ST. CLAIR WAYNE				
GRAND RAPIDS DISTRICT OFFICE WRD DISTRICT SUPERVISOR 350 OTTAWA AVE NW, UNIT 10 GRAND RAPIDS, MI 49503-2341	616-356-0500 616-356-0202	BARRY IONIA KENT MECOSTA MONTCALM	MUSKEGON NEWAYGO OCEANA OTTAWA			
JACKSON DISTRICT OFFICE WRD DISTRICT SUPERVISOR 301 EAST LOUIS GLICK HIGHWAY JACKSON, MI 49201-1556	517-780-7690 517-780-7855	HILLSDALE JACKSON LENAWEE	MONROE WASHTENAW			
UPPER PENINSULA DISTRICT OFFICE WRD DISTRICT SUPERVISOR 420 FIFTH STREET GWINN, MICHIGAN 49841-3004	906-346-8300 906-346-4480	ALGER BARAGA CHIPPEWA DELTA DICKINSON GOGEBIC	HOUGHTON IRON KEWEENAW LUCE MARQUETTE MACKINAC	MENOMINEE ONTONAGON SCHOOLCRAFT		
KALAMAZOO DISTRICT OFFICE WRD DISTRICT SUPERVISOR 7953 ADOBE ROAD KALAMAZOO, MI 49009-5026	616-567-3500 616-567-9440	ALLEGAN BERRIEN BRANCH CALHOUN	CASS KALAMAZOO ST. JOSEPH VAN BUREN			
SAGINAW BAY DISTRICT OFFICE WRD DISTRICT SUPERVISOR 401 KETCHUM STREET, SUITE B BAY CITY, MI 48708	989-894-6200 989-891-9237	ARENAC BAY CLARE GLADWIN HURON IOSCO	ISABELLA MIDLAND OGEMAW SAGINAW SANILAC TUSCOLA			
LANSING DISTRICT OFFICE WRD DISTRICT SUPERVISOR P.O. BOX 30242 LANSING, MI 48909-7742	517-335-6010 517-241-3571	CLINTON EATON GENESEE GRATIOT INGHAM	LAPEER LIVINGSTON SHIAWASSEE			

Gun Plains Township - All	egan County
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AM Marilyn Engels PE	AS 18481
3591 After Hours: P	EAS 1-800-292-47
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Department of Public Services

Cala, (0 p) (

Director's Office 415 Stockbridge Avenue Kalamazoo, MI 49001-2898 Ph.269.337.8660 Fx.269.337.8533

Media Release

FOR IMMEDIATE RELEASE

Contacts: James J. Baker, PE Public Services Director 269-337-8768

SANITARY SEWER OVERFLOW Allegan County northbound US 131 – Mile Marker 48

November 22, 2017, Allegan County, Michigan, – The City of Kalamazoo Department of Public Services personnel were notified at 6:45 pm on November 21, 2017 of a spill of treated wastewater sludge from a transport vehicle on northbound US 131 at Mile Marker 48.

The Department of Public Services staff finished remediating the impacted area at 12:00 am on November 22, 2017. The amount of material spilled from the vehicle is estimated to be about 25 cubic yards. The work was completed under the incident command of Allegan County Sheriff and in coordination and cooperation with Michigan Department of Transportation (MDOT).

As required by law, Water Reclamation Plant personnel notified the Michigan Department of Environmental Quality at the Kalamazoo District Office and the Allegan County Environmental Health Department of the spill.



APPENDIX D

NPDES PERMIT

PERMIT NO. MI0023299

STATE OF MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the federal Clean Water Act (federal Water Pollution Control Act, 33 U.S.C., Section 1251 *et seq.*, as amended); Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2019-06,

City of Kalamazoo

241 West South Street Kalamazoo, MI 49007

is authorized to discharge from the Kalamazoo Water Reclamation Plant, located at

1415 Harrison Street Kalamazoo, MI 49007

designated as Kalamazoo WWTP

to the receiving water named the Kalamazoo River in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on a complete application submitted on April 3, 2020, as amended through May 6, 2020.

This permit takes effect on September 1, 2021. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date, this permit shall supersede National Pollutant Discharge Elimination System (NPDES) Permit No. MI0023299 (expiring October 1, 2020).

This permit and the authorization to discharge shall expire at midnight on **October 1, 2025**. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit an application that contains such information, forms, and fees as are required by the Michigan Department of Environment, Great Lakes, and Energy (Department) by <u>April 4, 2025</u>.

Issued: July 28, 2021.

Original signed by Christine Alexander Christine Alexander, Manager Permits Section Water Resources Division

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at https://miwaters.deq.state.mi.us. Payment shall be submitted or postmarked by January 15 for notices mailed by December 1. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Municipal Major, 50 MGD to less than 500 MGD (Individual Permit)

In accordance with Section 324.3118 of the NREPA, the permittee shall make payment of an annual storm water fee to the Department for each January 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at https://miwaters.deq.state.mi.us. Payment shall be submitted or postmarked by March 15 for notices mailed by February 1. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after February 1.

In accordance with Section 324.3132 of the NREPA, the permittee shall make payment of an annual biosolids land application fee to the Department if the permittee land applies biosolids. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at https://miwaters.deq.state.mi.us. Payment shall be submitted or postmarked no later than January 31 of each year for notices mailed by December 15. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after December 15.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Kalamazoo District Office of the Water Resources Division. The Kalamazoo District Office is located at 7953 Adobe Road, Kalamazoo, MI 49009-5025, Telephone: 269-567-3500, Fax: 269-567-9440.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environment, Great Lakes, and Energy, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

PART I

Section A. Limitations and Monitoring Requirements

1. Final Effluent Limitations, Monitoring Point 001A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge treated municipal wastewater from Monitoring Point 001A through Outfall 001. Outfall 001 discharges to the Kalamazoo River at Latitude 42.30824, Longitude -85.57218. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading			Maximum Limits for Quality or Concentration				Monitoring	Sample	
<u>Parameter</u>	Monthly	<u>7-Day</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>7-Day</u>	<u>Daily</u>	<u>Units</u>	Frequency	Туре
Flow	(report)		(report)	MGD					Daily	Report Total Daily Flow
Carbonaceous Biochem	ical Oxygen D	emand ((CBOD5)							
May – September October November December – April	1800 4400 8000 11000	4500 6700 12000 18000	(report) (report) (report) (report)	lbs/day lbs/day lbs/day lbs/day	4 25	 40	10 15 27 (report)	mg/l mg/l mg/l mg/l	Daily Daily Daily Daily	24-Hr Composite
Total Suspended Solids	(TSS)									
May – September October – April	8900 13000	13000 20000	(report) (report)	lbs/day lbs/day	20 30	30 45	(report) (report)	mg/l mg/l	Daily Daily	24-Hr Composite
Ammonia Nitrogen (as N	۱)									
May – September October November – April	220 (report)	890 2900 	(report) (report) (report)	lbs/day lbs/day lbs/day	0.5 (report)	 	2.0 6.5 (report)	mg/l mg/l mg/l	Daily Daily Weekly	24-Hr Composite
Total Phosphorus (as P)	225		(report)	lbs/day	1.0		(report)	mg/l	Daily	24-Hr Composite
Chloride					(report)		(report)	mg/l	Monthly	24-Hr Composite
Sulfate					(report)		(report)	mg/l	Monthly	24-Hr Composite
Fecal Coliform Bacteria					200	400	(report)	cts/ 100 ml	Daily	Grab
Total Residual Chlorine							38	ug/l	Daily	Grab
Available Cyanide	4.5		(report)	lbs/day	10		(report)	ug/l	Quarterly	Grab
Total Lithium	380		(report)	lbs/day	850		(report)	ug/l	Quarterly	Grab
Perfluorooctane Sulfonate (PFOS)	(report)		(report)	lbs/day	(report)		(report)	ng/l	Quarterly	Grab
Perfluorooctanoic Acid (PFOA)	(report)		(report)	lbs/day	(report)		(report)	ug/l	Quarterly	Grab
Hexachlorobenzene							<0.01	ug/l	Monthly	24-Hr Composite
Whole Effluent Toxicity (C. dubia and	fathead	minnow)							
Acute Toxicity							1.0	TU _A	Quarterly	24-Hr Composite
						Individ	ual Chronic	Value		
Chronic Toxicity					2.0		(report)	TUc	Quarterly	24-Hr Composite
Section A. Limitations and Monitoring Requirements

	Maxi Quar	Maximum Limits for Quantity or Loading			Maximum Limits for Quality or Concentration				Monitoring	Sample
<u>Parameter</u>	Monthly	7-Day	Daily	<u>Units</u>	Monthly	7-Day	Daily	<u>Units</u>	Frequency	<u>Type</u>
Total Mercury										
Corrected	(report)		(report)	lbs/day	(report)		(report)	ng/l	Quarterly	Calculation
Uncorrected							(report)	ng/l	Quarterly	Grab
Field Duplicate							(report)	ng/l	Quarterly	Grab
Field Blank							(report)	ng/l	Quarterly	Preparation
Laboratory Method Blank							(report)	ng/l	Quarterly	Preparation
	12-Month Rolling Avg				12-Month Rolling Avg					
Total Mercury	0.0013			lbs/day	3.0			ng/l	Quarterly	Calculation
					Minimum % <u>Monthly</u>		Minimum % <u>Daily</u>			
CBOD5 Minimum % Rei	moval									
December – April					85		(report)	%	Monthly	Calculation
TSS Minimum % Remov	/al									
October – April					85		(report)	%	Monthly	Calculation
					Minimum <u>Daily</u>		Maximum <u>Daily</u>			
рН					6.5		9.0	S.U.	Daily	Grab
Dissolved Oxygen					4.0			mg/l	Daily	Grab

The following design flow was used in determining the above limitations, but is not to be considered a limitation or actual capacity: 53.5 MGD.

a. Narrative Standard

The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling Locations

Samples for CBOD5, TSS, Ammonia Nitrogen, Total Phosphorus, Chloride, Sulfate, Hexachlorobenzene, Acute Toxicity, Chronic Toxicity, and Total Mercury shall be taken prior to disinfection. Samples for Fecal Coliform Bacteria, Total Residual Chlorine, Available Cyanide, Total Lithium, PFOS, PFOA, pH, and Dissolved Oxygen shall be taken after disinfection. The Department may approve alternate sampling locations that are demonstrated by the permittee to be representative of the effluent.

Section A. Limitations and Monitoring Requirements

c. Quarterly Monitoring

Quarterly samples shall be taken during the months of January, April, July, and October. If the facility does not discharge during these months, the permittee shall sample the next discharge occurring during the period in question. If the facility does not discharge during the period in question, a sample is not required for that period. For any month in which a sample is not taken, the permittee shall enter "*G" on the Discharge Monitoring Report (DMR). (For purposes of reporting on the Daily tab of the DMR, the permittee shall enter "*G" on the first day of the month only).

- d. Total Residual Chlorine (TRC) Compliance with the TRC limit shall be determined on the basis of one (1) or more grab samples. If more than one (1) sample per day is taken, the additional samples shall be collected in near equal intervals over at least eight (8) hours. The samples shall be analyzed immediately upon collection and the average reported as the daily concentration. Samples shall be analyzed in accordance with Part II.B.2. of this permit.
- e. Percent Removal Requirements Monthly percent removal shall be calculated based on the monthly average effluent CBOD5 and TSS concentrations and the monthly average influent concentrations for approximately the same period. Daily percent removal shall be calculated based on the daily effluent CBOD5 and TSS concentrations and the daily influent concentrations for the same day. Reporting of Daily percent removal is only required on days on which an influent sample is obtained.
- f. Monitoring Frequency Reduction for Available Cyanide, Total Lithium, and Hexachlorobenzene After the submittal of 24 months of data, the permittee may request, in writing, Department approval for a reduction in monitoring frequency for Available Cyanide, Total Lithium, and/or Hexachlorobenzene. This request shall contain an explanation as to why the reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in Part I.A.1. of this permit. The monitoring frequency for Available Cyanide, Total Lithium, and Hexachlorobenzene shall not be reduced to less than annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.
- g. Monitoring Frequency Reduction for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)

After the submittal of 36 months of quarterly data or at least 10 equally spaced sample results obtained over a minimum of three (3) months, the permittee may request, in writing, Department approval of a reduction in monitoring frequency for PFOS and/or PFOA. This request shall contain an explanation as to why the reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in Part I.A.1. of this permit. The monitoring frequency for PFOS and/or PFOA shall not be reduced to less than annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

h. Limits Below the Quantification Level – Hexachlorobenzene The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Hexachlorobenzene shall be in accordance with EPA Method 612. Upon approval from the Department, the permittee may use alternate analytical methods (for parameters with methods specified in 40 CFR, Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136). The quantification level shall be 0.01 ug/l unless a higher level is appropriate because of sample matrix interference. Justification for a higher quantification level shall be submitted to the Department within 30 days of such determination.

Section A. Limitations and Monitoring Requirements

The water quality-based effluent limitation for Hexachlorobenzene is a maximum monthly average of 0.0003 ug/l (0.0001 lbs/day). This is less than the quantification level. Control requirements are therefore established consistent with R 323.1213. **Any discharge of Hexachlorobenzene at or above the quantification level is a specific violation of this permit**. If concentrations in all samples representing a monitoring period are less than the quantification level, the permittee will be considered to be in compliance with the permit for the monitoring period that the samples represent, provided that the permittee is also in full compliance with the Pollutant Minimization Program for Hexachlorobenzene set forth in Part I.A.5. of this permit. For the purpose of reporting on the Daily tab of the DMR, individual sample results less than the quantification level in place of any sample result less than the quantification level, and the calculated value ("X") resulting from any calculation made using one or more sample results below quantification shall be reported as less than the calculated value X (i.e., "<X"). For additional guidance including examples, see the document entitled "Reporting Results Below Quantification," available at: https://www.michigan.gov/documents/deq/wrd-npdes-results-quantification_620791_7.pdf.

This permit condition does not authorize the discharge of this parameter at levels that are injurious to the designated uses of the waters of the state or that constitute a threat to the public health or welfare.

i. Final Effluent Limitation for Total Mercury

The final limit for total mercury is the Discharge Specific Level Currently Achievable (LCA) based on a multiple discharger variance from the WQBEL of 1.3 ng/l, pursuant to Rule 1103(9) of the Water Quality Standards. Compliance with the LCA shall be determined as a 12-month rolling average, the calculation of which may be done using blank-corrected sample results. The 12-month rolling average shall be determined by adding the present monthly average result to the preceding 11 monthly average results then dividing the sum by 12. For facilities with quarterly monitoring requirements for total mercury, quarterly monitoring shall be equivalent to three (3) months of monitoring in calculating the 12-month rolling average. Facilities that monitor more frequently than monthly for total mercury must determine the monthly average result, which is the sum of the results of all data obtained in a given month divided by the total number of samples taken, in order to calculate the 12-month rolling average. If the 12-month rolling average for any quarter is less than or equal to the LCA, the permittee will be considered to be in compliance for total mercury for that quarter, provided the permittee is also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.4. of this permit.

j. Total Mercury Testing and Additional Reporting Requirements

The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry," EPA-821-R-02-019, August 2002. The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternate sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, "Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance)," EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittee shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittee shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittee shall collect at least one (1) field blank AND field duplicate for every ten (10) samples

Section A. Limitations and Monitoring Requirements

collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e., a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. If blank correction is not performed on a given sample analytical result, the permittee shall report under "Total Mercury – Corrected" the same value reported under "Total Mercury – Uncorrected." The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

k. Whole Effluent Toxicity Final Requirements

Test species shall include fathead minnow **and** *Ceriodaphnia dubia*. Testing and reporting procedures shall follow procedures contained in EPA-821-R-02-013, "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (Fourth Edition). When the effluent ammonia nitrogen (as N) concentration is greater than 3 mg/l, the pH of the toxicity test shall be maintained at a pH of 8 Standard Units. The acute toxic unit (TU_A) value and chronic toxic unit (TU_C) value for **each species tested** shall be reported on the DMR. If multiple chronic toxicity tests for the same species are performed during the month, the maximum TU_A value and monthly average TU_C value for the species shall be reported. For **each species not tested**, the permittee shall enter "*W" on the DMR. (For purposes of reporting on the Daily tab of the DMR, the permittee shall enter "*W" on the first day of the month only). Completed toxicity test reports for each test conducted shall be retained by the permittee in accordance with the requirements of Part II.B.5. of this permit and shall be available for review by the Department upon request. Toxicity test data acceptability is contingent upon validation of the test method by the testing laboratory. Such validation shall be submitted to the Department upon request.

1) When monitoring shows persistent exceedance of the 2.0 TU_C limit or the 1.0 TU_A limit for effluent toxicity, the Department will determine whether the permittee must implement the toxicity control program requirements specified in 2), below.

2) Upon written notification by the Department, the following conditions apply. <u>Within 90 days</u> of the notification, the permittee shall implement a Toxicity Reduction Evaluation (TRE). The objective of the TRE shall be to reduce the toxicity of the final effluent from Monitoring Point 001A to <2.0 TU_c and <1.0 TU_A. The following documents are available as guidance to reduce toxicity to acceptable levels: Phase I, EPA/600/6-91/005F (chronic), EPA/600/6-91/003 (acute); Phase II, EPA/600/R-92/080 (acute and chronic); Phase III, EPA/600/R-92/081 (acute and chronic); and Publicly Owned Treatment Works (POTWs), EPA/833B-99/002. Annual reports shall be submitted to the Department <u>within 30 days</u> of the completion of the last test of each annual cycle.

I. Reduction of Total Phosphorus in the Kalamazoo River/Lake Allegan Watershed The Department has developed a Total Maximum Daily Load (TMDL) for total phosphorus in Lake Allegan. The TMDL is established to protect Lake Allegan from high nutrient levels which has resulted in violations of water quality standards. In addition to establishing the TMDL, the Department is signatory to a "Cooperative Agreement to Meet Total Maximum Daily Load (TMDL) for Phosphorus" (cooperative agreement). Signatories to the cooperative agreement include point source dischargers of phosphorus and other stakeholders including nonpoint source contributors. The signatories to the cooperative agreement have agreed to participate with other point and nonpoint contributors in the watershed to reduce phosphorus as necessary to meet the goals of the TMDL. This will be accomplished by continuing activities outlined in the phosphorus reduction implementation plans as well as other activities as specified in the cooperative agreement.

If it is determined that commitments under the cooperative agreement are not met, this permit may be modified to include the appropriate phosphorus requirements in accordance with applicable laws and rules.

Section A. Limitations and Monitoring Requirements

2. Quantification Levels and Analytical Methods for Selected Parameters

Maximum acceptable quantification levels (QLs) are specified for selected parameters in the table below. These QLs shall be considered the maximum acceptable unless a higher QL is appropriate because of sample matrix interference. Justification for higher QLs shall be submitted to the Department <u>within 30 days</u> of such determination. Where necessary to help ensure that the QLs specified herein can be achieved, analytical methods may also be specified in the table below. The sampling procedures, preservation and handling, and analytical protocol for all monitoring conducted in compliance with this permit, including monitoring conducted to meet the requirements of the application for permit reissuance, shall be in accordance with the methods specified herein, or in accordance with Part II.B.2. of this permit if no method is specified herein, unless an alternate method is approved by the Department. The Department will consider only alternate methods that meet the requirements of Part II.B.2. and whose QLs are at least as sensitive (i.e., low) as those specified herein. **Not all QLs are expressed in the same units in the table below**. The table is continued on the following page:

Parameter	QL	Units	Analytical Method
1,2-Diphenylhydrazine (as Azobenzene)	3.0	ug/l	
2,4,6-Trichlorophenol	5.0	ug/l	
2,4-Dinitrophenol	19	ug/l	
3,3'-Dichlorobenzidine	1.5	ug/l	
4-Chloro-3-Methylphenol	7.0	ug/l	
4,4'-DDD	0.01	ug/l	
4,4'-DDE	0.01	ug/l	
4,4'-DDT	0.01	ug/l	
Acrylonitrile	1.0	ug/l	
Aldrin	0.01	ug/l	
Alpha-Endosulfan	0.01	ug/l	
Alpha-Hexachlorocyclohexane	0.01	ug/l	
Antimony, Total	1	ug/l	
Arsenic, Total	1	ug/l	
Barium, Total	5	ug/l	
Benzidine	0.1	ug/l	
Beryllium, Total	1	ug/l	
Beta-Endosulfan	0.01	ug/l	
Beta-Hexachlorocyclohexane	0.01	ug/l	
Bis (2-Chloroethyl) Ether	1.0	ug/l	
Bis (2-Ethylhexyl) Phthalate	5.0	ug/l	
Boron, Total	20	ug/l	
Cadmium, Total	0.2	ug/l	
Chlordane	0.01	ug/l	
Chloride	1.0	mg/l	
Chromium, Hexavalent	5	ug/l	
Chromium, Total	10	ug/l	
Copper, Total	1	ug/l	
Cyanide, Available	2	ug/l	EPA Method OIA 1677
Cyanide, Total	5	ug/l	
Delta-Hexachlorocyclohexane	0.01	ug/l	
Dieldrin	0.01	ug/l	

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Section A. Limitations and Monitoring Requirements

Parameter	QL	Units	Analytical Method
Di-N-Butyl Phthalate	9.0	ug/l	
Endosulfan Sulfate	0.01	ug/l	
Endrin	0.01	ug/l	
Endrin Aldehyde	0.01	ug/l	
Fluoranthene	1.0	ug/l	
Heptachlor	0.01	ug/l	
Heptachlor Epoxide	0.01	ug/l	
Hexachlorobenzene	0.01	ug/l	
Hexachlorobutadiene	0.01	ug/l	
Hexachlorocyclopentadiene	0.01	ug/l	
Hexachloroethane	5.0	ug/l	
Lead, Total	1	ug/l	
Lindane	0.01	ug/l	
Lithium, Total	10	ug/l	
Mercury, Total	0.5	ng/l	EPA Method 1631E
Nickel, Total	5	ug/l	
PCB-1016	0.1	ug/l	
PCB-1221	0.1	ug/l	
PCB-1232	0.1	ug/l	
PCB-1242	0.1	ug/l	
PCB-1248	0.1	ug/l	
PCB-1254	0.1	ug/l	
PCB-1260	0.1	ug/l	
Pentachlorophenol	1.8	ug/l	
Perfluorooctane sulfonate (PFOS)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Perfluorooctanoic acid (PFOA)	0.002	ug/l	ASTM D7979 or an isotope dilution method
			(sometimes referred to as Method 537 modified)
Phenanthrene	1.0	ug/l	
Phosphorus (as P), Total	10	ug/l	
Selenium, Total	1.0	ug/l	
Silver, Total	0.5	ug/l	
Strontium, Total	1000	ug/l	
Sulfate	2.0	mg/l	
Sulfides, Dissolved	20	ug/l	
Thallium, Total	1	ug/l	
Toxaphene	0.1	ug/l	
Vinyl Chloride	1.0	ug/l	
Zinc, Total	10	ug/l	

Section A. Limitations and Monitoring Requirements

3. Additional Monitoring Requirements

As a condition of this permit, the permittee shall monitor the discharge from monitoring point 001A for the constituents identified below. This monitoring is an application requirement of 40 CFR 122.21(j), effective December 2, 1999. Testing shall be conducted in <u>October 2021</u>, <u>May 2022</u>, <u>March 2023</u>, and <u>August 2024</u>. Grab samples shall be collected for total phenols and the Perfluoroalkyl and Polyfluoroalkyl Substances and Volatile Organic Compounds identified below. For all other parameters, 24-hour composite samples shall be collected.

The results of such additional monitoring shall be submitted with the application for reissuance (see the cover page of this permit for the application due date). The permittee shall notify the Department <u>within 14 days</u> of completing the monitoring for each month specified above in accordance with Part II.C.5. Additional reporting requirements are specified in Part II.C.11. If, upon review of the analysis, it is determined that additional requirements are needed to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified by the Department in accordance with applicable laws and rules.

Hardness calcium carbonate

Metals (Total Recoverable) an	nd Total Phenols		
antimony	arsenic	nickel	beryllium
cadmium	chromium	zinc	copper
lead	thallium	selenium	silver
total phenolic compounds			
Volatile Organic Compounds			
acrolein	acrylonitrile	benzene	bromoform
carbon tetrachloride	chlorobenzene	chlorodibromomethane	chloroethane
2-chloroethylvinyl ether	chloroform	dichlorobromomethane	1,1-dichloroethane
1,2-dichloroethane	trans-1,2-dichloroethylene	1,1-dichloroethylene	1,2-dichloropropane
1,3-dichloropropylene	ethylbenzene	methyl bromide	methyl chloride
methylene chloride	1,1,2,2-tetrachloroethane	tetrachloroethylene	toluene
1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethylene	vinyl chloride
Acid-Extractable Compounds			
4-chloro-3-methylphenol	2-chlorophenol	2,4-dichlorophenol	2,4-dimethylphenol
4,6-dinitro-o-cresol	2,4-dinitrophenol	2-nitrophenol	4-nitrophenol
Pentachlorophenol	phenol	2,4,6-trichlorophenol	
Base/Neutral Compounds			
acenaphthene	acenaphthylene	anthracene	benzidine
benzo(a)anthracene	benzo(a)pyrene	3,4-benzofluoranthene	benzo(ghi)perylene
benzo(k)fluoranthene	bis(2-chloroethoxy)methane	bis(2-chloroethyl)ether	bis(2-chloroisopropyl)ether
bis(2-ethylhexyl)phthalate	4-bromophenyl phenyl ether	butyl benzyl phthalate	2-chloronaphthalene
4-chlorophenyl phenyl ether	chrysene	di-n-butyl phthalate	di-n-octyl phthalate
dibenzo(a,h)anthracene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
3,3'-dichlorobenzidine	diethyl phthalate	dimethyl phthalate	2,4-dinitrotoluene
2,6-dinitrotoluene	1,2-diphenylhydrazine	fluoranthene	fluorene
hexachlorobutadiene	hexachlorocyclo-pentadiene	hexachloroethane	isophorone
indeno(1,2,3-cd)pyrene	naphthalene	nitrobenzene	pyrene
n-nitrosodi-n-propylamine	n-nitrosodimethylamine	n-nitrosodiphenylamine	phenanthrene
1,2,4-trichlorobenzene			

Section A. Limitations and Monitoring Requirements

4. Pollutant Minimization Program for Total Mercury

The goal of the Pollutant Minimization Program is to maintain the effluent concentration of total mercury at or below 1.3 ng/l. The permittee shall modify the Pollutant Minimization Program approved on July 6, 1990, and modifications thereto, to proceed toward the goal. The Pollutant Minimization Program includes the following:

- a. an annual review and annual monitoring of potential sources of mercury entering the wastewater collection system;
- b. a program for semi-annual monitoring of influent and periodic monitoring of sludge for mercury; and
- c. implementation of reasonable cost-effective control measures when sources of mercury are discovered. Factors to be considered include significance of sources, economic considerations, and technical and treatability considerations.

On or before <u>March 31 of each year</u>, the permittee shall submit a status report to the Department for the previous calendar year that includes 1) the monitoring results for the previous year, 2) an updated list of potential mercury sources, and 3) a summary of all actions taken to reduce or eliminate identified sources of mercury.

Any information generated as a result of the Pollutant Minimization Program set forth in this permit may be used to support a request to modify the approved program or to demonstrate that the Pollutant Minimization Program requirement has been completed satisfactorily.

A request for modification of the approved program and supporting documentation shall be submitted in writing to the Department for review and approval. The Department may approve modifications to the approved program (approval of a program modification does not require a permit modification), including a reduction in the frequency of the requirements under items a. and b. above.

This permit may be modified in accordance with applicable laws and rules to include additional mercury conditions and/or limitations as necessary.

5. Pollutant Minimization Program for Hexachlorobenzene

This requirement establishes the program necessary to comply with the final effluent limitations for Hexachlorobenzene. The goal of the Pollutant Minimization Program is to maintain the effluent concentration of Hexachlorobenzene at or below the water quality-based effluent limitation set forth in Part I.A.1.h. The permittee shall develop and implement a Pollutant Minimization Program in accordance with the following schedule:

On or before <u>December 1, 2021</u>, the permittee shall submit to the Department an approvable Pollutant Minimization Program for Hexachlorobenzene designed to proceed toward the goal. The Pollutant Minimization Program shall be implemented upon approval by the Department. The Pollutant Minimization Program shall include the following:

- a. an annual review and semi-annual monitoring of potential sources of Hexachlorobenzene entering the wastewater collection system;
- b. a program for quarterly monitoring of influent and periodic monitoring of sludge for Hexachlorobenzene; and
- c. implementation of reasonable cost-effective control measures when sources of Hexachlorobenzene are discovered. Factors to be considered include significance of sources, economic considerations, and technical and treatability considerations.

Section A. Limitations and Monitoring Requirements

On or before <u>September 1 of each year</u> following approval of the Pollutant Minimization Program, the permittee shall submit a status report to the Department that includes 1) the monitoring results for the previous year, 2) an updated list of potential sources, and 3) a summary of all actions taken to reduce or eliminate identified sources of Hexachlorobenzene.

Any information generated as a result of the Pollutant Minimization Program set forth in this permit may be used to support a request to modify the approved program or may demonstrate that the Pollutant Minimization Program requirement has been completed satisfactorily.

A request for modification of the approved program and supporting documentation shall be submitted in writing to the Department for review and approval. The Department may approve modifications to the approved program (approval of a program modification does not require a permit modification).

The permittee may choose to demonstrate that the program is complete and request removal of the program from the permit. Such request and supporting documentation demonstrating that the water quality-based effluent limits are being achieved shall be submitted in writing to the Department. If the Department determines that the request is approvable, this permit may be modified in accordance with applicable laws and rules to remove this requirement.

This permit may be modified in accordance with applicable laws and rules to include additional conditions and/or limitations as necessary.

6. Pollutant Minimization and Source Evaluation Program for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)

The goal of the Pollutant Minimization and Source Evaluation Program is to identify and address sources of PFOS and/or PFOA and to reduce and maintain the effluent concentrations of PFOS and/or PFOA at or below the water quality-based effluent limitations (WQBELs). The WQBELs are 12 ng/l for PFOS and 41 ug/l for PFOA.

<u>Within 90 days</u> of written notification by the Department or after the permittee notifies the Department that the final effluent concentration of PFOS and/or PFOA has exceeded the WQBELs, the permittee shall submit to the Department an approvable Pollutant Minimization and Source Evaluation Program for PFOS and/or PFOA to proceed toward the goal. The Pollutant Minimization and Source Evaluation Program shall continue work under the Industrial Pretreatment Program Per- and Polyfluoroalkyl Substances (IPP PFAS) Initiative and shall include the following at a minimum:

- a. identification of and strategies to identify any additional potential and probable PFOS and/or PFOA sources;
- b. monitoring plan for the permitted facility's influent and effluent, as well as effluent from potential sources;
- c. implemented measures thus far to eliminate, reduce, and/or control sources, and an assessment of the degree of success and the strategies used to measure success; and
- d. proposed measures and implementation schedules for elimination, control, and/or reduction of the identified sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success.

The Pollutant Minimization and Source Evaluation Program shall be implemented upon approval by the Department.

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On or before <u>May 1 of each year</u> following Pollutant Minimization and Source Evaluation Program implementation, the permittee shall submit to the Department a status report for the previous calendar year. Upon written notification by the Department, the permittee may be required to submit more frequent status reports. Status reports at a minimum shall include:

- a. complete listing of PFOS and/or PFOA sources;
- b. summary of influent and effluent monitoring data;
- c. summary of monitoring data from known or potential sources;
- d. history and compliance status for sources;
- e. implemented measures to eliminate, reduce, or control sources, (prioritizing highest loadings and concentrations), and an assessment of the degree of success and the strategies used to measure success;
- f. proposed measures and schedules for elimination, control, or reduction of any newly identified PFOS and/or PFOA sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success;
- g. barriers to implementation and revisions to the implementation schedule; and
- h. laboratory reports, if not previously supplied.

Any information generated as a result of the Pollutant Minimization and Source Evaluation Program set forth in this permit may be used to support a request to modify the Pollutant Minimization and Source Evaluation Program or to demonstrate that the requirement has been completed satisfactorily.

A request for modification of the approved Pollutant Minimization and Source Evaluation Program shall be submitted in writing to the Department along with supporting documentation for review and approval. The Department may approve modifications to the approved Pollutant Minimization and Source Evaluation Program, including a reduction in the frequency of the influent and known or potential source monitoring requirements. Approval of a Pollutant Minimization and Source Evaluation Program modification does not require a permit modification.

This permit may be modified in accordance with applicable laws and rules to include additional PFOS and/or PFOA conditions and/or limitations as necessary.

7. Untreated or Partially Treated Sewage Discharge Reporting and Testing Requirements

In accordance with Section 324.3112a of the NREPA, if untreated or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the permittee shall immediately, but not more than 24 hours after the discharge begins, notify local health departments, a daily newspaper of general circulation in the county in which the permittee is located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located, that the discharge is occurring. The permittee shall also notify the Department via its MiWaters system on the form entitled "Report of Discharge (CSO\SSO\RTB)." The MiWaters website is located at https://miwaters.deq.state.mi.us. At the conclusion of the discharge, the permittee shall make all such notifications specified in, and in accordance with, Section 324.3112a of the NREPA, and shall notify the Department via its MiWaters system on the form entitled "Report of Discharge (CSO\SSO\RTB)."

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The permittee shall also annually contact municipalities, including the superintendent of a public drinking water supply with potentially affected intakes, whose waters may be affected by the permittee's discharge of untreated or partially treated sewage, and if those municipalities wish to be notified in the same manner as specified above, the permittee shall provide such notification.

Additionally, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated or partially treated sewage occurs, the permittee shall test the affected waters for Escherichia coli to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The results of this testing shall be submitted to the Department via MiWaters as part of the notification specified above, or, if the results are not yet available, submitted as soon as they become available. This testing is not required if it has been waived by the local health department, or if the discharge(s) did not affect surface waters. The testing shall be done at locations specified by each affected local county health department but shall not exceed 10 tests for each separate discharge event. The affected local county health department may waive this testing requirement if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

8. Facility Contact

The "Facility Contact" was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address and telephone number of the new facility contact).

The facility contact shall be (or a duly authorized representative of this person): a.

- for a corporation, a principal executive officer of at least the level of vice president; or a designated representative if the representative is responsible for the overall operation of the facility from which the discharge originates, as described in the permit application or other NPDES form,
- for a partnership, a general partner, •
- for a sole proprietorship, the proprietor, or •
- for a municipal, state, or other public facility, either a principal executive officer, the mayor, village • president, city or village manager or other duly authorized employee.
- b. A person is a duly authorized representative only if:
 - the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
 - the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section releases the permittee from properly submitting reports and forms as required by law.

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9. Monthly Operating Reports

Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated R 299.2953, requires that the permittee file with the Department, on forms prescribed by the Department, operating reports showing the effectiveness of the treatment facility operation and the quantity and quality of liquid wastes discharged into waters of the state.

<u>Within 30 days</u> of the effective date of this permit, the permittee shall submit to the Department a revised treatment facility monitoring program to address monitoring requirement changes reflected in this permit, or submit justification explaining why monitoring requirement changes reflected in this permit do not necessitate revisions to the treatment facility monitoring program. The permittee shall implement the revised treatment facility monitoring program. The permittee shall implement the revised treatment facility monitoring program upon approval from the Department. Applicable forms and guidance are available on the Department's web site at https://www.michigan.gov/egle/0,9429,7-135-3313_71618_44117---,00.html. The permittee may use alternate forms if they are consistent with the approved treatment facility monitoring program. Unless the Department provides written notification to the permittee that monthly submittal of operating reports is required, operating reports that result from implementation of the approved treatment facility monitoring program shall be maintained on site for a minimum of three (3) years and shall be made available to the Department for review upon request.

10. Asset Management

The permittee shall at all times properly operate and maintain all facilities (i.e., the sewer system and treatment works as defined in Part 41 of the NREPA), and control systems installed or used by the permittee to operate the sewer system and treatment works and achieve and maintain compliance with the conditions of this permit (also see Part II.D.3 of this permit). The requirements of an Asset Management Program function to achieve the goals of effective performance, adequate funding, and adequate operator staffing and training. Asset management is a planning process for ensuring that optimum value is gained for each asset and that financial resources are available to rehabilitate and replace those assets when necessary. Asset management is centered on a framework of five (5) core elements: the current state of the assets; the required sustainable level of service; the assets critical to sustained performance; the minimum life-cycle costs; and the best long-term funding strategy.

a. Asset Management Program Requirements

The permittee shall continue to implement the Asset Management Plan approved on January 31, 2017, and approved modifications thereto. The Asset Management Plan contains a schedule for the development and implementation of an Asset Management Program that meets the requirements outlined below in 1) - 4):

1) *Maintenance Staff.* The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. The level of staffing needed shall be determined by taking into account the work involved in operating the sewer system and treatment works, planning for and conducting maintenance, and complying with this permit.

2) Collection System Map. The permittee shall complete a map of the sewer collection system it owns and operates. The map shall be of sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by the Department. Note: Items below referencing combined sewer systems are not applicable to separate sewer systems. Such map(s) shall include but not be limited to the following:

- a) all sanitary sewer lines and related manholes;
- b) all combined sewer lines, related manholes, catch basins and CSO regulators;

Section A. Limitations and Monitoring Requirements

- c) all known or suspected connections between the sanitary sewer or combined sewer and storm drain systems;
- d) all outfalls, including the treatment plant outfall(s), combined sewer treatment facility outfalls, untreated CSOs, and any known SSOs;
- e) all pump stations and force mains;
- f) the wastewater treatment facility(ies), including all treatment processes;
- g) all surface waters (labeled);
- h) other major appurtenances such as inverted siphons and air release valves;
- i) a numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;
- j) the scale and a north arrow;
- k) the pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow; and
- I) the manhole interior material, rim elevation (optional), and invert elevations.

3) *Inventory and assessment of fixed assets.* The permittee shall complete an inventory and assessment of operations-related fixed assets including portions of the collection system owned and operated by the permittee. Fixed assets are assets that are normally stationary (e.g., pumps, blowers, buildings, manholes, and sewer lines). The inventory and assessment shall be based on current conditions and shall be kept up-to-date and available for review by the Department.

a) The fixed asset inventory shall include the following:

(1) a brief description of the fixed asset, its design capacity (e.g., pump: 120 gallons per minute), its level of redundancy, and its tag number if applicable;

- (2) the location of the fixed asset;
- (3) the year the fixed asset was installed;
- (4) the present condition of the fixed asset (e.g., excellent, good, fair, poor); and

(5) the current fixed asset (replacement) cost in dollars for year specified in accordance with approved schedules;

b) The fixed asset assessment shall include a "Business Risk Evaluation" that combines the probability of failure of the fixed asset and the criticality of the fixed asset, as follows:

(1) Rate the probability of failure of the fixed asset on a scale of 1-5 (low to high) using criteria such as maintenance history, failure history, and remaining percentage of useful life (or years remaining);

(2) Rate the criticality of the fixed asset on a scale of 1-5 (low to high) based on the consequence of failure versus the desired level of service for the facility; and

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(3) Compute the Business Risk Factor of the fixed asset by multiplying the failure rating from (1) by the criticality rating from (2).

4) Operation, Maintenance & Replacement (OM&R) Budget and Rate Sufficiency for the Sewer System and Treatment Works. The permittee shall complete an assessment of its user rates and replacement fund, including the following:

- a) beginning and end dates of fiscal year;
- b) name of the department, committee, board, or other organization that sets rates for the operation of the sewer system and treatment works;
- c) amount in the permittee's replacement fund in dollars for year specified in accordance with approved schedules;
- d) replacement fund strategy of all assets with a useful life of 20 years or less;
- e) expenditures for maintenance, corrective action and capital improvement taken during the fiscal year;
- f) OM&R budget for the fiscal year; and
- g) rate calculation demonstrating sufficient revenues to cover OM&R expenses. If the rate calculation shows there are insufficient revenues to cover OM&R expenses, the permittee shall document, within three (3) fiscal years after submittal of the Asset Management Plan, that there is at least one rate adjustment that reduces the revenue gap by at least 10 percent. The permittee may prepare and submit an alternate plan, subject to Department approval, for addressing the revenue gap. The ultimate goal of the Asset Management Program is to ensure sufficient revenues to cover OM&R expenses.

b. Annual Reporting

The permittee shall develop a written report that summarizes asset management activities completed during the previous year and planned for the upcoming year. The written report shall be submitted to the Department on or before <u>February 1 of each year</u>. The written report shall include:

1) a description of the staffing levels maintained during the year;

2) a description of inspections and maintenance activities conducted and corrective actions taken during the previous year;

3) expenditures for collection system maintenance activities, treatment works maintenance activities, corrective actions, and capital improvement during the previous year;

4) a summary of assets/areas identified for inspection/action (including capital improvement) in the upcoming year based on the five (5) core elements and the Business Risk Factors computed in accordance with condition a.3)b)(3) above;

5) a maintenance budget and capital improvement budget for the upcoming year that take into account implementation of an effective Asset Management Program that meets the five (5) core elements;

6) an updated asset inventory based on the original submission; and

Section A. Limitations and Monitoring Requirements

7) an updated OM&R budget with an updated rate schedule that includes the amount of insufficient revenues, if any.

11. Discharge Monitoring Report – Quality Assurance Study Program

The permittee shall participate in the Discharge Monitoring Report – Quality Assurance (DMR-QA) Study Program. The purpose of the DMR-QA Study Program is to annually evaluate the proficiency of all in-house and/or contract laboratory(ies) that perform, on behalf of the facility authorized to discharge under this permit, the analytical testing required under this permit. In accordance with Section 308 of the Clean Water Act (33 U.S.C. § 1318); and R 323.2138 and R 323.2154 of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, participation in the DMR-QA Study Program is required for all major facilities, and for minor facilities selected for participation by the Department.

Annually and in accordance with DMR-QA Study Program requirements and submittal due dates, the permittee shall submit to the Michigan DMR-QA Study Program state coordinator all documentation required by the DMR-QA Study. DMR-QA Study Program participation is required only for the analytes required under this permit and only when those analytes are also identified in the DMR-QA Study.

If the permitted facility's status as a major facility should change, participation in the DMR-QA Study Program may be reevaluated. Questions concerning participation in the DMR-QA Study Program should be directed to the Michigan DMR-QA Study Program state coordinator.

All forms and instructions required for participation in the DMR-QA Study Program, including submittal due dates and state coordinator contact information, can be found at http://www.epa.gov/compliance/discharge-monitoring-report-quality-assurance-study-program.

12. Continuous Monitoring

If continuous monitoring equipment is used and becomes temporarily inoperable, the permittee shall manually obtain a minimum of three (3) equally spaced grab samples/readings within each 24-hour period for the affected parameter(s). On such days, in the comment field on the Daily tab of the DMR, the permittee shall indicate "continuous monitoring system inoperable," the date on which the system is expected to become operable again, and the number of samples/readings obtained during each 24-hour period.

Section B. Storm Water Pollution Prevention

1. Final Effluent Limitations and Monitoring Requirements

The permittee is authorized to discharge storm water associated with industrial activity, as defined under 40 CFR 122.26(b)(14)(i-ix), to the Kalamazoo River. Such discharge shall be limited and monitored by the permittee as specified below.

a. Narrative Standard

In accordance with R 323.1050 of the Part 4 Rules promulgated pursuant to Part 31 of the NREPA, the receiving waters shall not have any of the following physical properties as a result of this discharge in unnatural quantities that are, or may become, injurious to any designated use: turbidity, color, oil films, floating solids, foams, settleable solids, suspended solids, or deposits.

- b. Unusual Discharge Characteristics Storm water discharges shall be monitored as required by this permit to ensure there are no unusual characteristics (i.e., unnatural turbidity, color, oil film, floating solids, foams, settleable solids, suspended solids, or deposits) that would cause a violation of the narrative standard or other water quality standards.
- c. Industrial Storm Water Certified Operator Storm water treatment and/or control measures associated with this discharge shall be under the direct supervision of an industrial storm water operator certified by the Department, as required by Section 3110 of the NREPA.
- d. Implementation of Storm Water Pollution Prevention Plan The permittee shall implement an acceptable Storm Water Pollution Prevention Plan (SWPPP) as required by this permit.

Section B. Storm Water Pollution Prevention

2. Storm Water Pollution Prevention Plan

The SWPPP is a written plan that identifies sources of significant materials associated with industrial activity and includes procedures intended to reduce the exposure of significant materials to storm water. The SWPPP template and other guidance materials are available on the Industrial Storm Water Program webpage at www.michigan.gov/industrialstormwater.

An acceptable SWPPP shall identify the facility name, address, and permit number, and meet the requirements specified in Part I.B.3. through Part I.B.9. below:

3. Source Identification

To identify potential sources of significant materials that have reasonable potential to pollute storm water and subsequently be discharged to surface waters of the state, the SWPPP shall, at a minimum, include the following:

a. Site Map

The site map shall identify and label the following:

- 1) buildings and other permanent structures;
- 2) all areas of industrial activity, industrial equipment, and/or industrial material storage;
- 3) storage, disposal, and/or recycling areas for significant materials;

4) the location of all storm water discharge points and monitoring points (numbered or otherwise uniquely labeled for reference);

5) the location of all storm water inlets (e.g., catch basins, roof drains, etc.) contributing to each storm water discharge point (numbered or otherwise labeled for reference);

6) the location of non-storm water NPDES-permitted discharges;

7) the location of all storm water conveyances (e.g., pipe, ditch, channel, etc.) and outlines of the drainage areas contributing to each storm water discharge point;

8) all structural controls (e.g., secondary containment, inlet filters, etc.) and/or or storm water treatment equipment/devices;

9) area(s) of vegetation (with appropriate labelling such as lawn, old field, marsh, wooded, etc.);

10) area(s) that have the potential for soil erosion and sediment discharges (e.g., gravel lots, access roads, material stockpiles, outfalls, etc.);

11) impervious surfaces (e.g., roofs, asphalt, concrete, etc.);

12) name and location of receiving water(s); and

13) contaminated areas of the site regulated under Part 201 (Environmental Remediation) of the NREPA.

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- b. List of Significant Materials Associated with Industrial Activity This list shall identify all significant materials that have a reasonable potential to pollute storm water, and identify the activity or area in which the significant materials are handled or stored. For each activity or area identified, the inlet(s) and discharge point(s) impacted in the event of a spill or leak shall be included on the list. The following industrial activities and/or areas shall be evaluated for the potential to expose significant materials to storm water, as applicable:
 - 1) loading, unloading, and other industrial material handling activities;
 - 2) outdoor industrial material storage areas, including secondary containment structures;
 - 3) outdoor manufacturing or processing activities;
 - 4) dust or particulate generating processes/activities;
 - 5) discharges associated with vents, stacks, and air emission controls;
 - 6) industrial waste or recyclable material storage or disposal areas;
 - 7) activities associated with the maintenance and cleaning of vehicles, machines, and equipment;

8) area(s) that have the potential for soil erosion and sediment discharges (e.g., gravel lots, access roads, material stockpiles, outfalls, etc.);

- 9) areas of contamination regulated under Part 201 (Environmental Remediation) of the NREPA;
- 10) areas of significant material residues;
- 11) areas where animals (wild or domestic) congregate and deposit wastes; and
- 12) other areas where storm water may come into contact with significant materials.
- c. List of Significant Spills and Leaks

This list shall identify the date, volume, and location of each significant spill/leak as defined under Part II.A. of this permit, and the cleanup actions undertaken. Significant spills/leaks shall be controlled in accordance with the SWPPP and are cause for the SWPPP to be updated as specified in Part I.B.7. of this permit. The permittee shall notify the Department of significant spills/leaks as specified in Part II.C.6. and/or Part II.C.7. of this permit. Written reports regarding significant spills/leaks shall be retained with the SWPPP records in accordance with Part I.B.10. of this permit.

- d. Summary of Storm Water Discharge Sampling Data If data have been collected, the SWPPP shall include a list of the pollutants detected, sources identified, and the control measures implemented to reduce the discharge of the detected pollutants. Storm water discharge sampling data shall be retained in accordance with Part I.B.10. of this permit.
- e. Illicit Connection Investigation and Elimination Program The permittee shall implement an illicit connection investigation and elimination program. The SWPPP shall include a written description of the actions taken to identify, investigate, and eliminate illicit connections to Municipal Separate Storm Sewer System (MS4) or surface waters of the state. Any discharge from an illicit connection to an MS4 or surface water of the state is a violation of this permit.

Section B. Storm Water Pollution Prevention

f. Description of Dust Suppression Material Used Onsite The SWPPP shall include a description of the dust suppression material used onsite, the areas where the material is used, and the actions implemented to prevent an unauthorized discharge of the material. If the permittee does not use dust suppression material onsite, the SWPPP shall indicate this.

4. Total Maximum Daily Loads (TMDLs)

The permittee shall implement nonstructural and/or structural controls to reduce the discharge of the pollutant(s) associated with any TMDL(s) identified below. The SWPPP shall include a list of all TMDL(s) identified below, as well as references to control measures already listed in the SWPPP intended to reduce the discharge of the TMDL pollutant(s). The implementation of an acceptable SWPPP shall meet the control measure expectations of all TMLD(s) identified below; however, the Department may require additional control measures if it is determined that the storm water discharge is negatively impacting the applicable TMDL(s). If no TMDLs are identified below, this condition does not apply.

Name of TMDL	Pollutant of Concern
Kalamazoo River/Lake Allegan	Total Phosphorus

5. Nonstructural Controls

To manage and address sources of significant materials that have reasonable potential to pollute storm water and subsequently be discharged to surface waters of the state, the SWPPP shall, at a minimum, include the following nonstructural controls:

a. Preventative Maintenance

Preventive maintenance procedures shall list the storm water management and control devices, treatment systems, industrial equipment, etc. that will be routinely serviced and maintained to prevent significant material exposure to storm water. The written procedures shall include a maintenance schedule for each item listed.

b. Good Housekeeping Inspections

Good housekeeping procedures shall list the areas that will be routinely inspected and cleaned to prevent significant material exposure to storm water. The areas associated with the items listed in the preventative maintenance procedures shall also be included. The written procedures shall include an inspection and cleaning schedule for each area listed. A written report documenting the implementation of the inspection and cleaning schedule shall be retained in accordance with Part I.B.10. of this permit.

c. Comprehensive Site Inspections

Comprehensive site inspection procedures shall include all items identified in 3) below that will be inspected by an Industrial Storm Water Certified Operator to ensure compliance with this permit. At a minimum, one inspection shall be performed during normal facility operating hours within each of the following quarters unless the Department has approved an alternate schedule in accordance with Part I.B.12. of this permit: January – March, April – June, July – September, and October – December. A written report documenting the comprehensive site inspection shall be retained in accordance with Part I.B.10. of this permit, and shall include the following information:

- 1) the date of the inspection;
- 2) the Industrial Storm Water Certified Operator's name(s) and certification number(s);

3) all observations regarding significant material exposure and any necessary corrective actions related to the inspection of the following:

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- a) areas identified in Part I.B.3.a. and Part I.B.3.b. of this permit,
- areas identified in Part I.B.3.c. of this permit where significant spills or leaks have b) occurred in the past three years,
- all storm water inlets, conveyances (not including subsurface piping), and discharge C) points, and
- d) all structural controls and/or storm water treatment equipment/devices;

4) a review of the good housekeeping reports, and any other paperwork associated with the SWPPP; and

5) a written statement, based on the results of the comprehensive site inspection, certifying compliance with the terms of this permit and with the permittee's SWPPP.

d. Visual Assessments

At a minimum, one (1) storm water sample shall be collected for visual assessment during normal facility operating hours at each discharge point within each of the following guarters unless the Department has approved an alternate schedule in accordance with Part I.B.12. of this permit: January – March, April – June, July – September, and October – December. Visual assessment guidance is available on the Industrial Storm Water Program webpage at www.michigan.gov/industrialstormwater.

The following are the requirements of the visual assessments and shall be included in the written procedures:

1) The storm water sample(s) shall be collected during normal hours of operation by an Industrial Storm Water Certified Operator, Qualified Personnel as defined in Part II.A. of this permit, or automatic sampling device.

- 2) The storm water sample(s) shall be collected:
 - a) with clean equipment and containers, and
 - b) within the first 30 minutes of the start of a discharge resulting from a qualifying storm event as defined in Part II.A. of this permit. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample shall be collected as soon thereafter as practicable. In the case of snowmelt, samples shall be collected during a period with measurable discharge from the site.

3) The visual assessment of the storm water sample(s) shall be performed and documented by an Industrial Storm Water Certified Operator. Documentation shall be retained in accordance with Part I.B.10. of this permit, and shall include the following information:

- a) Sample location(s).
- Storm water sample collection date(s), time(s), and if applicable, an explanation as to b) why sample(s) were not collected within the first 30 minutes of discharge.
- Visual assessment date and time. C)
- d) Name and certification number of the Industrial Storm Water Certified Operator.

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- e) Storm event information, including the length of event expressed in hours, approximate size of event expressed in inches of precipitation, duration of time since previous event that caused a discharge, date and time the discharge began, and nature of event (i.e., rainfall or snowmelt).
- f) Name(s) of personnel who obtained the storm water sample(s) or document that an automatic sampling device was used.
- g) Any notable observations of the discharge while the storm water samples were collected. This requirement is waived if an automatic sampling device was used to collect the storm water samples.
- h) Sample(s) shall be observed in a colorless glass or plastic container for the following characteristics: color, oil sheen, turbidity, floating solids, suspended solids, settleable solids, foam, and any other unusual characteristics.
- i) Unaltered, full-color photograph of the storm water sample(s) against a white background.
- j) A description of corrective actions taken if any unusual characteristics are identified during the visual assessment.

4) When a visual assessment cannot be completed for any reason (e.g., adverse weather conditions, no discharge, qualifying event occurred outside the normal facility operating hours, etc.) during any quarter, written documentation explaining the reason for not completing the visual assessment shall be included with the SWPPP records. Adverse weather conditions are those that are dangerous or create inaccessibility for personnel, such as local flooding, high winds, electrical storms, or situations that otherwise make sampling impractical such as drought or extended frozen conditions.

5) If the facility has two (2) or more storm water discharge points that are believed to discharge substantially identical storm water effluents, the facility may conduct visual assessments of the discharge at one (1) of the storm water discharge points and report that the results also apply to the other substantially identical storm water discharge point(s). The determination of substantially identical storm water discharge point(s). The determination conducted as set forth under Part I.B.3.b. of this permit and shall be clearly documented in the SWPPP. Visual assessments shall be conducted on a rotating basis of each substantially identical storm water discharge point throughout the period of coverage under this permit.

e. Material Handling and Spill Prevention / Response Procedures Significant material handling and storage procedures shall be developed to minimize the potential for leaks and spills that may be exposed to storm water. For each potential spill or leak area, the procedures shall identify the significant material handling and storage requirements, spill/leak response actions, and locations of spill/leak kits. The SWPPP shall include language describing what a reportable spill or leak is, and the appropriate reporting requirements in accordance with Part II.C.6. and Part II.C.7. of this permit.

For Polluting Materials as defined under Part II.A. of this permit, the SWPPP may reference any of the following plans:

 Pollution Incident Prevention Plan (PIPP) prepared in accordance with the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code)

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- Hazardous Waste Contingency Plan prepared in accordance with 40 CFR 264 and 265 Subpart D, as required by Part 111 of the NREPA
- Spill Prevention Control and Countermeasure (SPCC) plan prepared in accordance with 40 CFR 112
- f. Annual Employee Training Program The SWPPP shall include a written description of the employee training program that will be implemented on an annual basis to inform appropriate personnel of the components of the SWPPP and requirements of this permit. Records of the annual employee training program shall be retained in accordance with Part I.B.10. of this permit.

6. Structural Controls

Structural controls shall be used to reduce significant material exposure and/or the concentration of significant materials in the discharge to ensure compliance with Part I.B.1.a. and Part I.B.1.b. of this permit. The SWPPP shall provide a list of all structural controls utilized onsite and the significant material(s) intended to be managed by the structural controls. The location of the structural controls shall be identified on the site map. Where applicable, structural controls shall, at a minimum, be utilized to achieve the following:

- a. prevent unauthorized discharges from industrial waste and recyclable material containers,
- b. prevent the discharge of sediment and other particulates that can be mobilized by storm water, and
- c. minimize channel/streambank erosion and scour in the immediate vicinity of outfalls.

7. Keeping SWPPPs Current

- a. The permittee and/or an Industrial Storm Water Certified Operator shall review the SWPPP annually after it is developed and maintain a written report of the review. Based on the review, the permittee or an Industrial Storm Water Certified Operator shall amend the SWPPP as needed to ensure continued compliance with the terms and conditions of this permit. A SWPPP Annual Review Report form is available on the Industrial Storm Water Program webpage at <u>www.michigan.gov/industrialstormwater</u>. The written report of the SWPPP Annual Review shall be retained in accordance with Part I.B.10. of this permit.
- b. The SWPPP developed under the conditions of a previous permit shall be amended as necessary to ensure compliance with this permit.
- c. The SWPPP shall be updated or amended whenever changes at the facility have the potential to increase the exposure of significant materials to storm water, significant spills/leaks occur at the facility, or when the SWPPP is determined by the permittee or the Department to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges associated with industrial activity. SWPPP updates necessitated by increased activity or significant spills at the facility shall include a description of how the permittee intends to control any new sources of significant materials or respond to and prevent spills in accordance with the requirements of this permit.
- d. The Department may notify the permittee at any time that the SWPPP does not meet minimum requirements of this permit. Such notification shall identify why the SWPPP does not meet minimum requirements of this permit. The permittee shall make the required changes to the SWPPP within

Section B. Storm Water Pollution Prevention

<u>30 days</u> after such notification from the Department and shall submit to the Department a written certification that the requested changes have been made.

e. Amendments to the SWPPP shall be signed and retained on-site with the SWPPP pursuant to Part I.B.9. of this permit.

8. Contact Information and Industrial Storm Water Certified Operator Update

- a. The SWPPP shall include contact information (i.e., name, mailing address, phone number, and email address) for the Facility Contact, Industrial Storm Water Certified Operator(s), environmental consultant, and/or any other appropriate individuals who manage the storm water program at the facility. The SWPPP shall be updated, as necessary, to ensure the contact information is current.
- b. If the primary Industrial Storm Water Certified Operator is replaced, the permittee shall provide the name and certification number of the new Industrial Storm Water Certified Operator to the Department by updating the facility's MiWaters site. If a facility has multiple Industrial Storm Water Certified Operators, the names and certification numbers of all shall be included in the SWPPP.

9. Signature and SWPPP Certification

- a. The SWPPP shall be reviewed and signed by an Industrial Storm Water Certified Operator and by either the permittee or an authorized representative in accordance with 40 CFR 122.22. The SWPPP and associated records shall be retained on-site at the facility that generates the storm water discharge.
- b. The permittee shall make the SWPPP and items required by Part I.B.10. of this permit available upon request to the Department. The Department makes the non-confidential business portions of the SWPPP available to the public.

10. Record Keeping

The permittee shall maintain records of all SWPPP-related activities. All such records shall be retained for three (3) years. The following records are required by this permit:

- a. good housekeeping inspection reports
- b. comprehensive site inspection reports
- c. visual assessment reports
- d. employee training records
- e. SWPPP annual review reports
- f. significant spill/leak reports, and
- g. storm water discharge sampling data.

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11. Non-Storm Water Discharges

Storm water is defined in Part II.A. of this permit to encompass non-storm water discharges included under the conditions of this permit. Any discharge of wastewater other than storm water as defined under the conditions of this permit shall be in compliance with an NPDES permit issued for the discharge. The non-storm water discharges included under the conditions of this permit are authorized under this permit, provided pollution prevention controls for the non-storm water component are identified in the permittee's SWPPP. The non-storm water discharges included under the conditions of this permit are as follows:

- a. discharges from fire hydrant flushing
- b. potable water sources, including water line flushing
- c. water from fire system testing and fire-fighting training without burned materials or chemical fire suppressants
- d. irrigation drainage
- e. lawn watering
- f. routine building wash-down that does not use detergents or other compounds
- g. pavement wash waters where contamination by toxic or hazardous materials has not occurred (unless all contamination by toxic or hazardous materials has been removed) and where detergents are not used
- h. uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids
- i. springs
- j. uncontaminated groundwater
- k. foundation or footing drains where flows are not contaminated with process materials such as solvents, and
- I. discharges from fire-fighting activities. Discharges from fire-fighting activities are exempted from the requirement to be identified in the SWPPP.

12. Alternate Schedule Request for Comprehensive Site Inspections and/or Visual Assessment

The permittee may request Department approval of an alternate schedule for comprehensive site inspections and/or visual assessments. Such a request may be made if the permittee meets the following criteria: the permittee is in full compliance with this permit, the permittee has an acceptable SWPPP, the permittee has installed and/or implemented adequate structural controls at the facility, the permittee has all required inspection reports available at the facility, and the permittee has an Industrial Storm Water Certified Operator at the facility. The Department may revoke the approval of an alternate schedule at any time upon notification to the permittee if these criteria are not being met.

Section B. Storm Water Pollution Prevention

13. Tracer Dye Discharges

This permit does not authorize the discharge of tracer dyes without approval from the Department. Requests to discharge tracer dyes shall be submitted to the Department in accordance with Rule 1097 (R 323.1097 of the Michigan Administrative Code).

Section C. Industrial Waste Pretreatment Program

1. Federal Industrial Pretreatment Program

- a. The permittee shall implement the Federal Industrial Pretreatment Program (FIPP) approved on October 11, 1985, and any subsequent modifications approved up to the issuance of this permit. Approval of substantial program modifications after the issuance of this permit shall be incorporated into this permit by minor modification in accordance with 40 CFR 122.63.
- b. The permittee shall comply with R 323.2301 through R 323.2317 of the Michigan Administrative Code (Part 23 Rules), the General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403), and the approved FIPP.
- c. The permittee shall have the legal authority and necessary interjurisdictional agreements that provide the basis for the implementation and enforcement of the approved FIPP throughout the service area. The legal authority and necessary interjurisdictional agreements shall include, at a minimum, the authority to carry out the activities specified in R 323.2306(a).
- d. The permittee shall develop procedures which describe, in sufficient detail, program commitments which enable implementation of the approved FIPP, 40 CFR Part 403, and the Part 23 Rules in accordance with R 323.2306(c).
- e. The permittee shall establish an interjurisdictional agreement (or comparable document) with all tributary governmental jurisdictions. Each interjurisdictional agreement shall contain, at a minimum, the following:

1) identification of the agency responsible for the implementation and enforcement of the approved FIPP within the tributary governmental jurisdiction's boundaries; and

2) the provision of the legal authority which provides the basis for the implementation and enforcement of the approved FIPP within the tributary governmental jurisdiction's boundaries.

f. The permittee shall prohibit discharges that:

1) cause, in whole or in part, the permittee's failure to comply with any condition of this permit or the NREPA;

2) restrict, in whole or in part, the permittee's management of biosolids;

3) cause, in whole or in part, operational problems at the treatment facility or in its collection system;

- 4) violate any of the general or specific prohibitions identified in R 323.2303(1) and (2);
- 5) violate categorical standards identified in R 323.2311; and
- 6) violate local limits established in accordance with R 323.2303(4).
- g. The permittee shall maintain a list of its nondomestic users that meet the criteria of a significant industrial user as identified in R 323.2302(cc).
- h. The permittee shall develop an enforcement response plan which describes, in sufficient detail, program commitments which will enable the enforcement of the approved FIPP, 40 CFR Part 403, and the Part 23 Rules in accordance with R 323.2306(g).

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Section C. Industrial Waste Pretreatment Program

- i. The Department may require modifications to the approved FIPP which are necessary to ensure compliance with 40 CFR Part 403 and the Part 23 Rules in accordance with R 323.2309.
- j. The permittee shall not implement changes or modifications to the approved FIPP without notification to the Department. Any substantial modification shall be subject to Department public noticing and approval in accordance with R 323.2309.
- k. The permittee shall maintain an adequate revenue structure and staffing level for effective implementation of the approved FIPP.
- I. The permittee shall develop and maintain, for a minimum of three (3) years, all records and information necessary to determine nondomestic user compliance with 40 CFR Part 403, Part 23 Rules and the approved FIPP. This period of retention shall be extended during the course of any unresolved enforcement action or litigation regarding a nondomestic user or when requested by the Department or the United States Environmental Protection Agency. All of the aforementioned records and information shall be made available upon request for inspection and copying by the Department and the United States Environmental Protection Agency.
- m. The permittee shall evaluate the approved FIPP for compliance with the 40 CFR Part 403, Part 23 Rules and the prohibitions stated in item f. above. Based upon this evaluation, the permittee shall propose to the Department all necessary changes or modifications to the approved FIPP no later than the next Industrial Pretreatment Program Annual Report due date (see item p. below).
- n. The permittee shall develop and enforce local limits to implement the prohibitions listed in item f above. Local limits shall be based upon data representative of actual conditions demonstrated in a maximum allowable headworks loading analysis. An evaluation of whether the existing local limits need to be revised shall be submitted to the Department by <u>September 1, 2022</u>. The submittal shall provide a technical evaluation of the basis upon which this determination was made which includes information regarding the maximum allowable headworks loading, collection system protection criteria, and worker health and safety, based upon data collected since the last local limits review.

The following pollutants shall be evaluated:

- 1) Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Silver, and Zinc;
- 2) Pollutants that are subject to limits or monitoring in this permit;
- 3) Pollutants that have an existing local limit; and,

4) Other pollutants of concern which would reasonably be expected to be discharged or transported by truck or rail or otherwise introduced into the POTW.

Section C. Industrial Waste Pretreatment Program

- o. The permittee is required under this permit and R 323.2303(4) of the Michigan Administrative Code to review and update their local limits when:
 - 1) new pollutants are introduced;
 - 2) new pollutants that were previously unevaluated are identified;

3) new water quality or biosolids standards are established or additional information becomes available about the nature of pollutants, such as removal rates and accumulation in biosolids; or

4) substantial increases of pollutants are proposed as required in the notification of new or increased uses in accordance with the provisions of 40 CFR 122.42.

 p. On or before <u>April 1 of each year</u>, the permittee shall submit to the Department, as required by R 323.2310(8), an Industrial Pretreatment Program Annual Report on the status of program implementation and enforcement activities. The reporting period shall begin on January 1 and end on December 31. At a minimum, the Industrial Pretreatment Program Annual Report shall include:

1) the Pretreatment Program Reports data identified in Appendix A to 40 CFR Part 127 – NPDES Electronic Reporting;

2) a summary of changes to the approved FIPP that have not been previously reported to the Department;

3) a summary of results of all the sampling and analyses performed of the wastewater treatment plant's influent, effluent, and biosolids conducted in accordance with approved methods during the reporting period. The summary shall include the monthly average, daily maximum, quantification level, and number of samples analyzed for each pollutant. At a minimum, the results of analyses for all locally limited parameters for at least one monitoring event that tests influent, effluent and biosolids during the reporting period shall be submitted with each report, unless otherwise required by the Department. Sample collection shall be at intervals sufficient to provide pollutant removal rates, unless the pollutant is not measurable; and

4) any other relevant information requested by the Department.

Section C. Industrial Waste Pretreatment Program

2. Federal Industrial Pretreatment Standard Exemption

In accordance with Public Law 104-134, the permittee submitted on March 19, 1999 (with supportive documentation through February 8, 2001), a request for an exemption from the Federal Categorical Pretreatment Standards which apply to the Pharmacia Corporation pharmaceutical manufacturing facility located at 7171 Portage Road, Kalamazoo, Michigan and which discharges to the Kalamazoo Water Reclamation Plant. The request was approved on May 23, 2001. The approval was based on a demonstration that the Kalamazoo Water Reclamation Plant will provide treatment and pollution removal equivalent to or better than that which would be required through a combination of pretreatment by such industrial discharger and treatment by the Kalamazoo Water Reclamation Plant in the absence of the exemption and that all other provisions of Public Law 104-134 are complied with.

- a. The exemption, as specified in the approval letter, from the Pharmaceutical Point Source Standards are granted for Acetone, Toluene and Methylene Chloride at the facility listed above with the following conditions:
 - 1) All pollutants regulated under Federal Categorical Standards, except for those listed above at the Pharmacia Corporation facility, shall satisfy requirements for Existing or New Source for indirect dischargers.
 - 2) The City of Kalamazoo shall require the Pharmacia Corporation to monitor for all exempted parameters monthly using United States Environmental Protection Agency approved methods in accordance with 40 CFR 136.
 - 3) Monitoring results shall be submitted to the Department annually with the Annual Pretreatment Report for the City of Kalamazoo.
 - 4) The City of Kalamazoo shall require the Pharmacia Corporation facility to report immediately any concentration exceeding the following notification levels:

Acetone 282 mg/l Toluene 1.7 mg/l Methylene Chloride 8.9 mg/l

The City of Kalamazoo shall report such discharges to the Department within 30 days of receipt of notice by the pharmaceutical manufacturer.

- 5) Any substantial change to processes, treatment, loading or concentration of pollutants, discharge location, or other information used as a basis for the exemption shall be reported immediately.
- 6) If the conditions of the exemption are not met on a consistent basis, the Department reserves the right to withdraw its authorization of the exemption request.
- 7) Requests for an exemption for additional regulated pollutants shall be submitted for approval to the Department.
- 8) On approval of additional pollutant exemptions, the exemptions of the approval letter shall be considered part of this permit, including new notification levels. All other portions of Part I.C.2 shall not be changed by this action.

Section D. Residuals Management Program

1. Residuals Management Program for Land Application of Biosolids

The permittee is authorized to land-apply bulk biosolids or prepare bulk biosolids for land application in accordance with the permittee's approved Residuals Management Program (RMP) approved on April 24, 2003, and approved modifications thereto, and the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules). The approved RMP, and any approved modifications thereto, are enforceable requirements of this permit. Incineration, landfilling and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this permit. The Part 24 Rules can be obtained via the internet (http://www.michigan.gov/egle/ and near the top of the screen click on Water, then towards the bottom right of the screen click on Permits, Wastewater, Biosolids, then click on Biosolids Laws and Rules Information which is under the Laws & Rules banner in the center of the screen).

a. Annual Report

On or before <u>October 30 of each year</u>, the permittee shall submit an annual report to the Department for the previous fiscal year of October 1 through September 30. The report shall be submitted electronically via the Department's MiWaters system at https://miwaters.deq.state.mi.us. At a minimum, the report shall contain:

1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Annual Report Form for Reporting Biosolids, available at https://miwaters.deq.state.mi.us.

b. Modifications to the Approved RMP

Prior to implementation of modifications to the RMP, the permittee shall submit proposed modifications to the Department for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

c. Record Keeping

Records required by the Part 24 Rules shall be kept for a minimum of five (5) years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

d. Contact Information

RMP-related submittals shall be made to the Department.

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means 100/LC₅₀ where the LC₅₀ is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of Section 9110 of Part 91, Soil and Sedimentation Control, of the NREPA, to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

CAFO means concentrated animal feeding operation.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_c) means 100/MATC or 100/IC₂₅, where the maximum acceptable toxicant concentration (MATC) and IC₂₅ are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules, Land Application of Biosolids, promulgated under Part 31 of the NREPA. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

Section A. Definitions

Composite sample is a sample collected over time, either by continuous sampling or by mixing discrete samples. A composite sample represents the average wastewater characteristics during the compositing period. Various methods for compositing are available and are based on either time or flow-proportioning, the choice of which will depend on the permit requirements.

Continuous monitoring refers to sampling/readings that occur at regular and consistent intervals throughout a 24-hour period and at a frequency sufficient to capture data that are representative of the discharge. The maximum acceptable interval between samples/readings shall be one (1) hour.

Daily concentration

FOR PARAMETERS OTHER THAN pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – Daily concentration is the sum of the concentrations of the individual samples of a parameter taken within a calendar day divided by the number of samples taken within that calendar day. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations. For guidance and examples showing how to perform calculations using results below quantification levels, see the document entitled "Reporting Results Below Quantification," available at https://www.michigan.gov/documents/deq/wrd-npdes-results-quantification_620791_7.pdf.

FOR pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – The daily concentration used to determine compliance with maximum daily pH, temperature, and conductivity limitations is the highest pH, temperature, and conductivity readings obtained within a calendar day. The daily concentration used to determine compliance with minimum daily pH and dissolved oxygen limitations is the lowest pH and dissolved oxygen readings obtained within a calendar day.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environment, Great Lakes, and Energy.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

EC₅₀ means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

Section A. Definitions

Fecal coliform bacteria monthly

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

Fecal coliform bacteria 7-day

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned composite sample is a composite sample in which either a) the volume of each portion of the composite is proportional to the effluent flow rate at the time that portion is obtained, or b) a constant sample volume is obtained at varying time intervals proportional to the effluent flow rate.

General permit means an NPDES permit authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

 IC_{25} means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

Section A. Definitions

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts a POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC₅₀ means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body's legal authority.

MBTU/hr means million British Thermal Units per hour.

MGD means million gallons per day.

Section A. Definitions

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the "AVERAGE" column under "QUANTITY OR LOADING" on the DMR.

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a POTW as defined in the Code of Federal Regulations at 40 CFR 122.2.

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Clean Water Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Clean Water Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to watercarried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Nonstructural controls are practices or procedures implemented by employees at a facility to manage storm water or to prevent contamination of storm water.

NPDES means National Pollutant Discharge Elimination System.

Outfall is the location at which a point source discharge first enters a surface water of the state.

Section A. Definitions

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of Section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of Section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation control activities under Part 615, Supervisor of Wells; Part 631, Reclamation of Mining Lands; or Part 632, Nonferrous Metallic Mineral Mining, of the NREPA, pursuant to the provisions of Section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittee's NPDES permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules, Spillage of Oil and Polluting Materials, promulgated under Part 31 of the NREPA (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment work.

Predevelopment is the last land use prior to the planned new development or redevelopment.

Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualified Personnel means an individual who meets qualifications acceptable to the Department and who is authorized by an Industrial Storm Water Certified Operator to collect the storm water sample.
Section A. Definitions

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall. Upon request, the Department may approve an alternate definition meeting the condition of a qualifying storm event.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by state or federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface waters or groundwaters of the state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittee as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Significant materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111, Hazardous Waste Management, of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

Section A. Definitions

Special-use area means storm water discharges for which the Department has determined that additional monitoring is needed from: secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and/or areas with other activities that may contribute pollutants to the storm water.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

Storm water discharge point is the location where the point source discharge of storm water is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

Structural controls are physical features or structures used at a facility to manage or treat storm water.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Clean Water Act for waterbodies that do not meet water quality standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet water quality standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value, or observation shall be reported for that period if a discharge occurs during that period. If the calendar week begins in one month and ends in the following month, the analytical result, reading, value, or observation shall be reported in the month in which monitoring was conducted.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14-day period.

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

Section A. Definitions

7-day concentration

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

7-day loading

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period and in which the volume of each portion is proportional to the discharge flow rate at the time that portion is taken. A time-proportioned composite sample may be used upon approval from the Department if the permittee demonstrates it is representative of the discharge.

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Clean Water Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations**. For lists of approved test methods, go to https://www.epa.gov/cwa-methods. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Manager of the Permits Section, Water Resources Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30458, Lansing, Michigan, 48909-7958. The permittee may use such procedures upon approval.

The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Assurance/Quality Control program.

3. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

Section C. Reporting Requirements

1. Start-Up Notification

The permittee shall notify the Department of start-up if one of the following conditions applies and in accordance with the applicable condition:

a. Non-CAFOs

1) **If this is an individual permit** and the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department via MiWaters <u>within</u> <u>14 days</u> following the effective date of this permit, and then again <u>60 days prior</u> to commencement of the discharge.

2) **If this is a general permit** and the permittee will not discharge during the first 60 days following the effective date of the Certificate of Coverage (COC) issued under this general permit, the permittee shall notify the Department via MiWaters <u>within 14 days</u> following the effective date of the COC, and then again <u>60 days prior</u> to commencement of the discharge.

b. CAFOs

 If this is an individual permit and the permittee will not populate with animals during the first 60 days following the effective date of this permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of this permit, and then again <u>60 days prior</u> to populating with animals.

2) **If this is a general permit** and the permittee will not populate with animals during 60 days following the effective date of the Certificate of Coverage (COC) issued under this general permit, the permittee shall notify the Department via MiWaters <u>within 14 days</u> following the effective date of the COC, and then again <u>60 days prior</u> to populating with animals.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA (specifically Section 324.3110(7)); and R 323.2155(2) of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, allow the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring," the permittee shall submit self-monitoring data via the Department's MiWaters system.

The permittee shall utilize the information provided on the MiWaters website, located at https://miwaters.deq.state.mi.us, to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

Section C. Reporting Requirements

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittee shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittee shall certify, in writing, to the Department, on or before <u>January 10th (April 1st for animal feeding operation facilities) of each year</u>, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittee shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to a permittee by notification in writing from the Department. In such cases, the permittee shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittee. Reissuance or modification of this permit or reissuance or modification of an individual permittee's authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act, 1987 PA 96, as amended, for assurance of proper facility operation, shall be submitted as required by the Department.

5. Compliance Dates Notification

<u>Within 14 days</u> of every compliance date specified in this permit, the permittee shall submit a written notification to the Department via MiWaters (https://miwaters.deq.state.mi.us) indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

Section C. Reporting Requirements

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Clean Water Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

a. 24-Hour Reporting

Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, <u>within 24 hours</u> from the time the permittee becomes aware of the noncompliance by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC). A written submission shall also be provided via MiWaters (https://miwaters.deq.state.mi.us) <u>within five (5) days</u>.

b. Other Reporting

The permittee shall report, in writing via MiWaters (https://miwaters.deq.state.mi.us), all other instances of noncompliance not described in a. above <u>at the time monitoring reports are submitted</u>; or, in the case of retained self-monitoring, <u>within five (5) days</u> from the time the permittee becomes aware of the noncompliance.

Reporting shall include: 1) a description of the discharge and cause of noncompliance; 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue; and 3) the steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, by calling the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.

<u>Within 10 days</u> of the release, the permittee shall submit to the Department via MiWaters (https://miwaters.deq.state.mi.us) a full written explanation as to the cause of the release, the discovery of the release, response measures (clean-up and/or recovery) taken, and preventive measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

Section C. Reporting Requirements

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

- a. that an upset occurred and that the permittee can identify the specific cause(s) of the upset;
- b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and
- c. that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

a. Bypass Prohibition

Bypass is prohibited, and the Department may take an enforcement action, unless:

1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and

3) the permittee submitted notices as required under b. or c. below.

b. Notice of Anticipated Bypass

If the permittee knows in advance of the need for a bypass, the permittee shall submit written notification to the Department before the anticipated date of the bypass. This notification shall be submitted <u>at least 10 days before</u> the date of the bypass; however, the Department will accept fewer than 10 days advance notice if adequate explanation for this is provided. The notification shall provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions specified in a. above.

c. Notice of Unanticipated Bypass

<u>As soon as possible but no later than 24 hours</u> from the time the permittee becomes aware of the unanticipated bypass, the permittee shall notify the Department by calling the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if notification is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.

Section C. Reporting Requirements

d. Written Report of Bypass

A written submission shall be provided <u>within five (5) working days</u> of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of a., b., c., and d., above. This provision does not relieve the permittee of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittee is prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

11. Notification of Changes in Discharge

The permittee shall notify the Department, via MiWaters (https://miwaters.deq.state.mi.us), as soon as possible but within no more than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

Section C. Reporting Requirements

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards <u>or</u> b) by written notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such written notice, the permit or, if applicable, the facility's COC, may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in ownership or control of facilities from which the authorized discharge emanates, the following requirements apply: Not less than <u>30 days prior</u> to the actual transfer of ownership or control – for non-CAFOs, or <u>within 30 days</u> of the actual transfer of ownership or control – for CAFOs, the permittee shall submit to the Department via MiWaters (https://miwaters.deq.state.mi.us) a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least <u>sixty days prior to start-up</u> of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

Section C. Reporting Requirements

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Clean Water Act and the NREPA.

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than \$2,500.00 or more than \$25,000.00 for each violation. The court may impose an additional fine of not more than \$25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than \$25,000.00 per day and not more than \$50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit electronically via MiWaters (https://miwaters.deq.state.mi.us) all such reports or notifications as required by this permit, on forms provided by the Department.

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Clean Water Act and constitutes grounds for enforcement action; for permit or COC termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

- a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or
- b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations of this permit.

5. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

Section D. Management Responsibilities

6. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a POTW, these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittee shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

- a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and
- b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Clean Water Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit and required to be submitted to the Department shall be available for public inspection via MiWaters (https://miwaters.deq.state.mi.us). As required by the Clean Water Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Clean Water Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittee shall furnish to the Department via MiWaters (https://miwaters.deq.state.mi.us), <u>within a</u> <u>reasonable time</u>, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

Section E. Activities Not Authorized by This Permit

1. Discharge to the Groundwaters

This permit does not authorize any discharge to the groundwaters. Such discharge may be authorized by a groundwater discharge permit issued pursuant to the NREPA.

2. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Clean Water Act except as are exempted by federal regulations.

5. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environment, Great Lakes, and Energy permits, or approvals from other units of government as may be required by law.

DRAFT - For Review and Comment



APPENDIX E

KALAMAZOO RESIDUAL BIOSOLIDS SUSTAINABLE ALTERNATIVES SECOND STAKEHOLDER CONFERENCE

Kalamazoo Residual Biosolids Sustainable Alternatives Second Stakeholder Conference

Welcome and thank you for joining us!

Conference Held: Wednesday, November 13, 2024 Radisson Plaza Hotel at Kalamazoo Center



Housekeeping



- Bathrooms are located down the hall to the right.
- Lunch will be served at noon in the Fields room down the hall.
- Wi-Fi: City of Kalamazoo Password: Sustainability24
- If you did not get your parking ticket validated at the sign in table, please see Alex before you leave.



Schedule

8:45-9:15	Breakfast Buffet
9:15-10:30	Introductions Problem and Objective Background
10:30-10:45	Break
10:45-12:00	Review of Shortlisted Technologies Greenhouse Gas Study Emission Study
12:00-1:00	Lunch
1:00-2:30	Engineering Economic Crash Course Financial Analysis of Technologies Sensitivity Analysis
2:30-2:45	Break
2:45-4:00	Open Discussion and Technology Selection
4:00	Adjourn

DRAFT - For Review and Comment

Introductions

Aaron Davenport





James Baker

Reach consensus on a single technology solution.



Biosolids Management and Current Costs

James Baker



9765

What are Biosolids?

- Biosolids are a by-product of the wastewater treatment process.
- Solids are separated from the liquid wastewater and treated to become biosolids.
- KWRP Biosolids are unique due to waste stream characteristics.



How are Biosolids Typically Managed?

- Biosolids are typically processed into a semisolid, organic, nutrientrich product.
- Biosolids may be applied to farm fields (under strict regulatory requirements) as a natural fertilizer.
- Biosolids can also be landfilled or, less commonly, incinerated.



Kalamazoo's Unique Challenge

- The organic load at Kalamazoo's Water Reclamation Plant is from 60-70 percent industrial sources.
- Kalamazoo's biosolids are not suitable for agricultural land application.
- Contaminants of emerging concern and the physical properties of biosolids make landfills wary of accepting Kalamazoo's biosolids.



The Problem

The City of Kalamazoo is currently paying over \$13.5M per year for biosolids disposal.

These "tipping fees" continue to increase annually leading to significant operating expense and raised rates.

The current disposal contract expires in 2025 with no guarantees of future disposal contracts going forward.



Biosolids Disposal Cost Over Time



2023 First Stakeholder Conference Review

Troy M. Brehmer





RFI Response

- 27 Vendors responded to the RFI with over 30 proposed solutions.
- The responses were evaluated by the project team and compiled into 7 technology categories.

DRAFT - For Review and Comment

Heat Drying Technology Summary

Environmental Protection Agency (EPA) Description: "Heat dying occurs when heat from direct or indirect dryers is used to evaporate water from wastewate solids."

Water Environment Federation (WEF) Description:

"Thermal drying involves heating biosolids to evaporate water and thereby reduce the moisture content further than conventional mechanical-dewatering methods can achieve."

Engineer's Description:

Kalamazoo's sludge is between 76 and 79 percent water. This additional mass increases transportation and final disposal costs. It is imparticulat to remove additional water using conventional mechanical methods such as centrifuging. Heat drying evaporates the water, reducing the total amount of sludge to be landfilled by approximately 70 percent.

The main drawback of heat drying is that it consumes a lot of energy in the form of natural gas or electricity. Some contaminants of emerging concern such as PFAS or pharmaceuticals may be denatured or volatilized by heat drying; however, it should not be considered a significant means of destruction.

The basic technology of heat drying is well-established with many successful long-term installations throughou the country. Recert innovations focus on improving energy efficiency, safety, and ease of maintenance. The following respondents focused on heat drying:





Environmental Protection Agency (EPA) Description:

Technetical is combustion in the presence of air. Westewater solds are developed to between 15 to 35 procent solds prior to concention. The inconnation process then coverds blocalisk into and rad. Soly-two to 75 percent of the solds are combustible, and thus the volume of ash is significantly lower than that of the original blocalist. This ais can be used or disposed of more readily due to 18 low volume and men tature. If solds are developed to approximately 30 percent solds and their heat value is sufficient, the process can be self-austanting, and suggemental that is not required to subate normalization.

Engineer's Description:

Studge incinemtors are typically steel cylinders lined with refractory bricks reaching several stories tall. Studge is fed into an incinementor to town at a controlled rate. The resulting rath is approximately 7 percent of the original studge's volume. The chemical energy of studge is generally sufficient to maintain combustion; however, supplemental hole is sometimes required, particularly during startup.

Strict air emission regulations require extensive scrubbing of incinerator emissions. We expect that if an incinerator were constructed in Kalamazoo, it would not have any visible air emissions.

There is evidence to suggest that incineration may destroy many contaminants of emerging concern such as PFAS and pharmaceuticals.

Sludge incineration is a mature technology with many facilities successfully operating in America and worldwide.

The following respondents focused on incineration



Super Critical Water Oxidation Technology Summary



Environmental Protection Agency (EPA) Description:

"At temperatures above 374°C and pressures above 22.1 MPa, water is considered supercritical, a special state where organic solubility increases and oxidation processes are accelerated. Supercritical water oxidation (SCWO) has been previously shown to destroy hazardous substances such as haldgemated compounds."

Engineer's Description:

When studye is subjected to extremely high temperature and pressure (greater than 705°F and 3200 ps), at enters an altered physical state called superchical. In this sub, subject can undergo a range deminant neutrino with oxygen. The reaction and end products are similar to combustion, however, the process does not require that the water in the studye be enroved or evaporated. After studye undergoes superchical water code the original call of the studye of the studye or undergoes superchical water code the end product is a small around if means also superchical or relatively clean water. As used machinerial dewatering step can separate the ash and water. The resulting ash is approximately 3 percent of the original studyes vulnero.

There is evidence to suggest that this process destroys many contaminants of emerging concern such as PFAS and presumably pharmaceuticals.

This technology has never been used for wastewater sludge disposal at a full-scale installation. The technology has been successfully used at full-scale for destruction of hazardous wastes, however, many such installations have closed due to operation issues.

The following respondents focused on supercritical water oxidation

S74Water



RFI Presentation

- A broad technical analysis of each technology was presented with the goal of imparting sufficient understanding for stakeholders to make an informed decision.
- Emphasis was placed on minimizing bias and maintaining transparency.



First Stakeholder Conference – Outcomes

- Identified Stakeholder Priorities.
- Most stakeholders stated that minimizing total cost was their priority.
- Other major priorities expressed by stakeholders included:
 - Greenhouse Gas Emissions
 - Potential for Odor Generation
 - Worker Safety



First Stakeholder Conference – Outcomes

- Technologies Selected for further review.
 - Dryer (many types)
 - Incineration (two types)
 - Super-Critical Water Oxidation





Framing the Discussion

- Whichever Process Technology becomes the path forward, the following will be true:
 - The City of Kalamazoo will own the process.
 - The City of Kalamazoo will operate the process.
 - The City of Kalamazoo will maintain the process.
 - This technology will be located at the Kalamazoo Water Reclamation Plant.





We will reconvene in 10 to 15 minutes.



Overview of Shortlisted Technologies

Philip Teague



Heat Dryers

The water in biosolids is evaporated.














Dryer Pros and Cons

Pros

- Highly reliable and proven technology.
- 70 percent reduction of biosolids mass.
- Improves mechanical properties of biosolids for easier/cheaper landfilling.
- Relatively simple to operate and maintain.

- Considerable energy consumption.
- Generates dust.



Fluidized Bed Incineration

Biosolids are burned.



Fluidized Bed Incinerator Diagram



















Fluidized Bed Incineration Pros and Cons

Pros

- Relatively low operational cost.
- Minimal energy input.
- Minimal potential for fugitive odors.
- Evidence of destruction of many contaminants of emerging concern.

Cons

• High capital cost.



Energy Recovery System (ERS) Incineration

Biosolids are dried and then burned.



Simplified ERS Incineration Sequence









ERS Incineration Pros and Cons

Pros

- Relatively low operational cost.
- Minimal energy input.
- Minimal potential for fugitive odors.
- Evidence of destruction of many contaminants of emerging concern.
- Possible to implement dryer first, with ERS later.

- High capital cost.
- Moderately new technology.
- Single-source provider.



Super Critical Water Oxidation

Biosolids are subjected to extreme pressures and temperatures, transforming dissolved organics into gas and mineral ash.





Simplified SCWO Process Diagram















Super Critical Water Oxidation Pros and Cons

Pros

- Potential long-term solution to biosolids disposal.
- Evidence that process destroys contaminants of emerging concern.
- No potential for harmful air emissions or odors.

- Applications of this technology in other industries have struggled with equipment corrosion and fouling.
- This technology has never been implemented at full scale in the wastewater industry.
- Lots of equipment to maintain.
- Extremely high capital cost.
- Large footprint.
- Single-source provider.
- High energy consumption.



Gasification

Biosolids are dried and then cooked into a charcoal-like substance.



Gasification Sequence







Gasification Pros and Cons

Pros

- Potential 96 percent reduction in solids to be disposed of.
- Destroys many contaminants of emerging concern.

- Has not had widespread success in the industry with few operating systems nationwide.
- Performance can be sensitive to moisture content, particle size, and composition.



DRAFT - For Review and Comment

Greenhouse Gas Study

Aaron Davenport


Greenhouse Gas Impacts





Northern Tilth LLC



Greenhouse Gas Impacts





CO₂ Emissions

- GHGs are regularly Converted to Equivalent Tonnes of CO₂.
 1 Tonne is approx. 2,205 lbs
- 1 MG/YR of GHGs = 1 Metric Tonne of CO₂
- 1 Metric Tonne of CO₂ is Equivalent to that Generated Driving 2,500 Miles in a Standard Gasoline-Powered American Sedan.

CO₂ Equivalencies

- Current KWRP Process 71,767,500 Miles
 - 125,250 Round Trips to Mighty Mac Each Year
- Thermal Drying 21,000 Fewer Trips
- SCWO 87,850 Fewer Trips
- Fluid Bed Incinerator 101,715 Fewer Trips
- Dryer + ERS 119,100 Fewer Trips
 95% Less



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Emissions Study

Philip Teague



Odor and Air Emissions





University of Dayton Hanley Sustainability Institute



Dr. Moshan Kahandawala

Lunch Break

We will reconvene in 60 Minutes



DRAFT - For Review and Comment

Transparency and Credibility

Philip Teague



Engineering Economics Crash Course

Philip Teague



Hypothetical Situation

Used Car 1

- \$8,000 Capital Cost
- \$1,500 Annual Operational Costs
- \$3,150 Major Rebuild Every Five Years
- \$3,500 10-year Resale "Salvage" Value

Used Car 2

- \$14,000 Capital Cost
- \$700 Annual Operational Costs
- \$5,000 Major Rebuild Every Seven Years
- \$4,000 10-year Resale "Salvage" Value



Hypothetical Situation – First Used Car



Hypothetical Situation – Second Used Car



Time-Value of Money

We could just add up all the numbers, except, paying for something later is better than paying for something now.



Time-Value of Money

If you need to pay \$100 in 1 years and you can earn 5 percent interest, then you only need \$95.24 today.

 $Money Today = \frac{Future Money}{(1 + Annual Interest Rate)^{Number of Years}}$

$$\$95.24 = \frac{\$100}{(1+0.05)^1}$$



Time-Value of Money

How about in 2 years?

 $Money Today = \frac{Future Money}{(1 + Annual Interest Rate)^{Number of Years}}$

$$\$90.70 = \frac{\$100}{(1+0.05)^2}$$



Present Worth Calculation in Practice



Used Car 1



Used Car 1 Present Worth



Used Car 2



Used Car 2 Present Worth



This Concludes the Engineering Economics Crash Course



DRAFT - For Review and Comment

Proposed Solutions

Philip Teague & James Baker



Summary of 20-Year Projected Costs



Dryer Annualized Cost Breakdown



Fluidized Bed Incinerator Cost Breakdown



ERS Incinerator Cost Breakdown



Gasification Cost Breakdown



Super Critical Water Oxidation Cost Breakdown



DRAFT - For Review and Comment

Sensitivity Analysis

Rylan Elliott



Projected Sensitivity Impacts – Low-Cost Gas & Disposal



Projected Sensitivity Impacts – High-Cost Gas & Disposal



Projected Sensitivity Impacts – High-Cost Construction



Projected Sensitivity Impacts – Condensed Footprint





We will reconvene in 10 to 15 minutes.



Importance of Reaching a Consensus

Aaron Davenport



DRAFT - For Review and Comment

Open Discussion


Proven Reliability



Summary of 20-Year Projected Costs



Odor Potential



Carbon Footprint



Destruction of Contaminants of Emerging Concern



Request For Consensus

Aaron Davenport



Next Steps

Aaron Davenport





APPENDIX F

REGIONALIZATION AGREEMENTS



APPENDIX G

GREENHOUSE GAS EMISSIONS ASSESSMENT OF KALAMAZOO'S WATER RECLAMATION PLANT (KWRP) FUTURE SLUDGE MANAGEMENT OPTIONS



Northern Tilth

Greenhouse Gas Emissions Assessment of Kalamazoo's Water Reclamation Plant (KWRP) Future Sludge Management Options



Technical Memorandum November 7, 2024 Developed by Northern Tilth

Executive Summary

The City of Kalamazoo, MI is considering alternative methods for managing sludge generated at their water reclamation plant (KWRP). KWRP provides wastewater treatment services to over 150,000 residents as well as a several local industrial water users; industrial wastewater makes up an estimated 60-80% of the BOD influent to the treatment plant. Currently, the sludge generated at the KWRP is dewatered and landfilled. The City is investigating upgrading their disposal/management of the sludge. Greenhouse gas emissions associated with managing the biomass is one factor that the City will consider in choosing its future solid management strategy. Because of the large industrial input to KRWP, use of the processed sludge is not being considered; it is assumed in all cases that the finished product will be disposed of at local landfills.

The processing technologies assessed in this review include:

- Thermal drying the sludge through a natural gas-driven drying process
- Processing the sludge through 374 Water's super critical water oxidation (SCWO) process
- Combusting the sludge with Veolia's ERS process
- Combusting the sludge in a fluidized bed incinerator (FBI)

Northern Tilth estimated GHG emissions associated with KWRP's considered sludge management options using the recently updated Biosolids Emissions Assessment Model (BEAM v.3). Northern Tilth was also able to obtain some process-specific energy use and emissions data from both Jones and Henry Engineers (JHE) and the providers of the technologies being considered by the City. Because the City of Kalamazoo has made a commitment to using renewable sources of electricity, the GHG accounting for this assessment uses an assumed carbon intensity of electricity of zero in the model. Modeling these scenarios Northern Tilth found the following order of carbon footprint (from lowest to highest).

BioCon/ERS < 374 Water SCWO < FBI Incineration < Current management for KWRP < Thermal Drying.

Methane emissions and nitrous oxide emissions are typically much larger contributors to the overall GHG footprint for organic waste management options compared to the GHG costs of burning fossil fuels for transportation, and that is the case with the findings from this assessment. Due to high electricity use in some of these options, the results of the model can vary significantly with the actual carbon intensity of electricity purchased by the City of Kalamazoo. When running the model using the US EPA's current calculated carbon intensity for Michigan, the carbon footprints of the SCWO option increases significantly. Model assumptions and limitations are included in this report.

1.0 Introduction

The City of Kalamazoo's water reclamation plant (KWRP) currently generates approximately 75,000 wet tons per year of sludge dewatered to approximately 20% solids. Due to the large industrial input to the facility, land application or composting the sludge has not historically been an option for the City. The dewatered sludge is currently landfilled at three local landfills. The City is investigating options for processing the sludge prior to landfilling in order to reduce transportation and disposal costs. In this investigation, the City would like to determine the greenhouse gas (GHG) emissions implications associated with sludge processing options. The City's engineers, Jones & Henry Engineers (JHE), contracted with Northern Tilth to provide a rudimentary GHG assessment of each of the processing options that the City is investigating. For this assessment, Northern Tilth used version 3 of the Biosolids Assessment Emissions Model (BEAM) with some process information provided by vendors of the technologies being considered.

2.0 Model Boundary and Assumptions

The boundary of the GHG emissions assessment starts with 75,000 wet tons of sludge at 20% solids and ends with the transport and disposal of the processed sludge at three local landfills, with the percentages of mass going to the landfills in line with current KWRP disposal.

- 63% to the Autumn Hill landfill, 47 miles from KWRP
- 18% to the Westside landfill, 32 miles from KWRP
- 19% to the Woodland Meadows landfill, 119 miles from KWRP
- For a weighted average one-way trip of 58 miles from KWRP

The five scenarios modeled are as follows

- 1. Base scenario: 75,000 wet tons per year of sludge dewatered to 20% solids and transported to area landfills in gravel train trucks at 56 wet tons per load
- 2. Thermal drying: 75,000 wet tons per year of dewatered sludge dried to 90% solids natural gasfueled dryer using 3.5 GJ per Mg water evaporated. The dried sludge would then be transported to the same mix of landfills as in Scenario 1
- Super Critical Water Oxidation: Using the 374 Water ambient air supercritical water oxidation (SCWO) technology to dissociate 75,000 wet tons of dewatered sludge into water and mineral matter, with mineral slurry storage on site allowing for decanting of the material to 70% solids and then transported to area landfills.
- 4. Drying and Incineration: Using Veolia's BioCon-ERS drying/Incineration technology to autogenically thermally oxidize 75,000 wet tons of sludge into an ash at 100% solids that is then transported to area landfills
- 5. Sludge Incineration: Using fluidized bed Incineration technology to incinerate 75,000 wet tons of sludge into an ash at 100% solids that is also transported to area landfills.

Additional assumptions and process-specific information used in this assessment:

• Some of the technologies considered have relatively high electricity usage. Based on feedback from JHE it is Northern Tilth's understanding that the City of Kalamazoo will in the future be purchasing electricity from 100% renewable sources. Accordingly, for this model, Northern Tilth has used an electricity carbon intensity of 0 gCO₂-e/kWh electricity used. For the sensitivity

analysis, we used the e-grid carbon intensity of electricity of 555 gCO_2 -e/kWh, which has a significant impact on the GHG estimates for the electricity-intensive processing technologies.

- Methane (CH₄) emissions resulting from landfilling fresh organic matter, such as food waste or sludge, are considerable. Because methane has a global warming potential of 25 times that of carbon dioxide, landfilling unprocessed sludge is often the largest component of GHG emissions related to managing sludge. The BEAM does not distinguish between dried and dewatered sludge relative to the potential for organic carbon in sludge to be transformed to methane during landfilling; the model assumes that in the moist mix of landfilled waste in humid environments, the sludge will be subject to anaerobic conditions causing methane to be formed. In the sensitivity analysis, Northern Tilth demonstrated the reduction of methane emissions from the thermal drying scenario based on a slower organic carbon to methane transformation rate of the very dry sludge as compared to a faster transformation rate for the wetter sludge that KWRP is currently landfilling. Emissions are reduced because, presumably, less methane is emitted prior to capping the landfill and installing gas collection systems.
- For the SCWO, ERS and FBI processes, the resulting mineral material, or ash, is assumed to be inert and, consequently not subject to generating methane or nitrous oxide when landfilled.
- Nitrous oxide (N₂O) emissions from the Incineration of municipal sludge can be significant depending on operating conditions of the Incineration process. In general, higher temperatures of Incineration result in lower N₂O emissions (but sometimes higher NO_x emissions, which are regulated; N₂O is not). For this project, both 374 Water and Veolia were able to provide estimates of N₂O emissions for their processes. And with the expected Incineration temperatures that JHE provided to Northern Tilth for the proposed fluidized bed incinerator, Northern Tilth was able to estimate N₂O emissions from that option.
- Estimated electricity and fuel use was provided by 374 Water and Veolia for Scenarios 3 and 4. Natural gas use for the dryer option in Scenario 2 was estimated based on the energy needed to evaporate water from a de-watered sludge.
- This GHG assessment does not address the embodied GHG costs associated with construction and concrete for developing the sludge processing technologies at the KWRP facility.

3.0 Summary of BEAM Results for KWRP

Figure 3-1 displays the component GHG emissions associated with each of the five sludge management scenarios modeled. It is important to note that biogenic CO₂ is not included in the CO₂ emissions calculated in this report. Biogenic carbon emissions represent short-term carbon that has recently been pulled from the atmosphere and incorporated into plants, as opposed to CO₂ emitted from the Incineration of fossil fuels or direct emissions of methane and nitrous oxide, which are long-term sources gases with global warming potential.



Figure 3-1: Component Emissions by Scenario (100-yr GWP)

CO og Totolo (Mg/yoor)	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
CO ₂ eq Totals (wg/year)	Current	Thermal Dry	scwo	ERS	FBI
Unit Process	De-watered Cake to Landfill	Thermally Dried Biosolids to Landfill	374 Water SCWO to Landfill	Veolia BioCon- ERS	Fluidized Bed Incinerator
Thermal Drying	NA	8,285	NA	0	NA
Landfill Disposal - Typical	28,434	28,434	0	0	0
Combustion	NA	NA	8,510	1,394	5,378
Miscellaneous Emissions	NA	NA	49	NA	NA
Transportation	273	61	13	16	16
TOTALS	28,707	36,779	8,572	1,410	5,394
Wet Tons	75,000	75,000	75,000	75,000	75,000
Wet Mg	68,058	68,058	68,058	68,058	68,058
Dry Mg	13,612	13,612	13,612	13,612	13,612
CO₂eq/Dry Mg	2.11	2.70	0.63	0.10	0.40
Emissions by Gas Type	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
(Mg CO₂eq/year)	Current	Thermal Dry	SCWO	ERS	FBI
2	Total	Total	Total	Total	Total
* 200	-3,696	4,377	62	116	89
CH (CO ² eq)	26,102	26,102	17	17	17
N O (CO eq)	6,301	6,301	8,493	1,278	5,288

Table 3-1. Summary Results by Unit Process (based on the City purchasing carbon-neutral electricity)

Major GHG Components from the Five Scenarios

Methane from Landfilling Undigested and Un-combusted Sludge

As discussed above, when landfilling sludge, especially sludge that has not been digested nor combusted, the potential for methane emissions, especially in the first few years after placement in the landfill is high. In these two scenarios, Northern Tilth used the "typical US landfill" calculations in BEAM (which are derived from the EPA's WARM model) for determining methane emissions. Methane emissions are by far the largest contributor to the carbon footprint of these two options. There is obviously a significant cost advantage to landfilling a dried sludge compared to dewatered sludge. Drying the KWRP sludge to 90% solids will reduce tonnage from 75,000 to 16,700 tons per year (a 78% reduction in tonnage, and possibly an even greater reduction in tip fees due the sludge being an easier material to handle when dried). However from the perspective of GHG emissions, the only reduction in the model is the modest decrease from lower fuel costs for transport to the area landfills, and due to the use of natural fuel for drying, the overall carbon footprint is larger for the drying option.

Carbon sequestration from Landfilling Undigested and Un-combusted Sludge

When landfilling undigested and un-combusted sludge, some of the carbon that does not transform to methane is sequestered in the landfill, which in turn provides some benefit to the overall footprint. This credit is not recognized in the Scenarios 3,4 and 5 because the organic carbon in these scenarios has been thermally oxidized in each of those three processes.

Nitrous Oxide Emissions

Because N₂O has a global warming potential of 298 times that of CO2, relatively low emissions can have a significant impact on cumulative GHG emissions. The relatively high nitrogen content of municipal sludge can lead to nitrous oxide emissions, both during landfilling and Incineration of sludge. For scenarios 1 and 2, because the nitrogen content of the landfilled sludge is the same on a dry weight basis, N₂O emissions are the same in both scenarios. As discussed above, 374 Water and Veolia provided nitrous oxide emissions estimates for Scenarios 3 and 4. For the fluidized bed incineration scenario, the nitrous oxide emissions were calculated from the default Incineration nitrous oxide emissions in the BEAM model based on an Incineration temperature of 870°C provided by JHE.

Transportation Fuel CO₂ Emissions

Relative to methane and nitrous oxide emissions from managing organic wastes, such as sludge, the CO₂ emissions associated with burning diesel fuel for transporting materials has a relatively small impact on the overall carbon footprint for managing these materials. This is most evident in the modest difference in the transportation-related GHGs between Scenarios 1 and 2. For all of the Scenarios modeled in this assessment, fossil fuel use from transportation is an insignificant portion of overall GHG emissions. Additionally, compared to other sludge management programs modeled by Northern Tilth using the BEAM, the weighted average distance to the three landfills (58 miles one way) is a relatively short haul.

Based on this GHG assessment, and using the assumptions describe above, the order of carbon footprint (from lowest to highest) by Scenario is as follows:

BioCon/ERS < FBI Incineration < 374 Water SCWO < Current management for KWRP < Thermal Drying.

As stated, this assessment is only looking at the implications on GHG emissions; it does not factor in capital nor operational costs. From a GHG perspective, the low carbon footprint for the BioCon/ERS technology is related to both the low inputs of fuel and electricity (the excess heat from Incineration is used to dry the material prior to Incineration resulting in limited inputs of natural gas or diesel to run the process). Additionally, the reported nitrous oxide emissions from Veolia are low relative to other Incineration processes, however, it does make sense that at the high reported temperatures of Incineration in this process, the nitrous oxide emissions would be low.

The nitrous oxide emissions from both the SCWO process and the FBI Incineration are high relative to the modeled emissions from the BioCon/ERS process, but both are considerably lower than the default IPCC nitrous oxide emissions provided by the IPCC guidance for sludge incineration. While combusting a relatively wet sludge (20%) solids does not always provide for considerable excess energy during Incineration in the FBI process, the model does indicate that if excess heat from the Incineration process were used to replace space heating at the KWRP, the carbon footprint of this Scenario could be lowered. Additionally, 374 Water reports that there is excess heat generated in the SCWO process that also has the potential to be converted to usable energy for heating spaces, but their proformas do not typically include that in energy accounting.

4.0 Sensitivity Analysis

Carbon Intensity of Electricity

Due to the high electricity use associated with Scenario 3 (the 374 Water SCWO option), the carbon intensity of electricity used by Kalamazoo to power future sludge management options has a big impact on the carbon footprint of this option. As mentioned above, due to efforts by the City of Kalamazoo to procure renewable sources of electrical energy, Northern Tilth used the assumption that electricity used in sludge processing will be carbon neutral. To demonstrate the sensitivity of the analysis to variations in the carbon intensity of electricity, Northern Tilth also ran the BEAM using the current US EPA e-grid carbon intensity for Michigan, which is 555 gCO_2 -e/kWh. With this change in GHG emissions from purchased electricity, the carbon footprints for the scenarios change significantly (Figure 4-1) with the order of carbon footprints changing to (from lowest to highest):

BioCon/ERS < FBI Incineration < Current management for KWRP< 374 Water SCWO< Thermal Drying.





CO.eq Totals (Mg/year)	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	Current	Thermal Dry	scwo	ERS	FBI
Unit Process	De-watered Cake to Landfill	Thermally Dried Biosolids to Landfill	374 Water SCWO to Landfill	Veolia BioCon- ERS	Fluidized Bed Incinerator
Thermal Drying	NA	9,902	NA	1,617	NA
Landfill Disposal - Typical	27,490	27,490	0	0	0
Combustion	NA	NA	32,289	1,677	8,031
Miscellaneous Emissions	NA	NA	49	NA	NA
Transportation	273	61	13	16	16
TOTALS	27,762	37,452	32,351	3,310	8,047
Wet Tons	75,000	75,000	75,000	75,000	75,000
Wet Mg	68,058	68,058	68,058	68,058	68,058
Dry Mg	13,612	13,612	13,612	13,612	13,612
CO ₂ eq/Dry Mg	2.04	2.75	2.38	0.24	0.59
Emissions by Gas Type	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
(Mg CO₂eq/year)	Current	Thermal Dry	SCWO	ERS	FBI
2	Total	Total	Total	Total	Total
ŤCO	-4,640	5,050	23,841	2,016	2,742
CH (CO ² eq)	26,102	26,102	17	17	17
N O (CO eq)	6.301	6.301	8.493	1.278	5,288

Table 4-1. Summary Results by Unit Process- Current Michigan Carbon Intensity of Electricity

Northern Tilth has not found published data that documents a reduction in methane emissions for landfilled organic waste that has been dried prior to landfilling. However, Dr. Tarek Abichou, a professor of Civil and Environmental Engineering from Florida State University, who has worked extensively on GHG emissions related to landfills noted in a conversation with Northern Tilth that while the methane generating potential of the sludge would not necessarily change after drying, the transformation to methane may be less rapid once landfilling. Because the bulk of methane emissions from landfilling organic waste comes in the first few years after landfilling (before the landfill is capped), a slower transformation from organic carbon to methane could make a significant difference in overall methane emissions in the thermal drying \rightarrow landfill scenario (Scenario 2). Below are the results of the modeling using a lower decay rate constant for the transformation of organic carbon to methane with the dried sludge in Scenario 2. In this sensitivity calculation Northern Tilth is using a decay rate K constant of 0.06 (which is normally used for cool dry climates) instead of the K constant of 0.185 used for cool wet climates, such as that in Kalamazoo. With this decay rate change, the thermal drying scenario has a lower carbon footprint than the current management for KWRP, but it is still higher than that for the other three processing options.





5.0 Summary and Limitations of Assessment

Results from Northern Tilth's modeling of GHG emissions for the future sludge management options that the KWRP is considering indicate that the BioCon dryer/ERS Incineration combination has the lowest carbon footprint of the five options considered. Lower emissions from this process are related to the close to energy neutral process of combined drying and Incineration, the low reported nitrous oxide emissions from this process and the biochemically inert nature of the resulting ash that is disposed at a landfill. The next lowest carbon footprint is provided by 374 Water's SCWO process, followed by Incineration in a fluidized bed incinerator. Drying the sludge prior to landfilling, while providing significant savings in landfill tip fees and lower transportation-related emissions, has a slightly higher carbon footprint than KWRP's current practice of landfilling the dewatered sludge due to the use of natural gas for drying the sludge. This assessment assumed that the City of Kalamazoo will be purchasing carbon neutral electricity to run the processes. As the sensitivity analysis has shown, if the carbon intensity of the electricity used by the City is similar to that of the current electrical grid in Michigan, the carbon footprint for the SCWO option increases considerably.

There are some limitations to this assessment. The science of determining greenhouse gas emissions as they relate to managing organic wastes is relatively new and evolving. The BEAM represents up-to-date emissions factors based on the most recent published literature on the topic of GHG emissions from managing sludge and other organic wastes, but the science is still evolving. A couple of areas that still have some uncertainty in this arena are methane emissions from landfilling and nitrous oxide emissions from Incineration. Fortunately, the EPA WARM model does have some robust science behind the estimates of emissions from organic waste disposal in "typical" US landfills. As landfill operators become more knowledgeable about methane emissions there are steps that can be taken to reduce the

high emissions that take place in the first few years after landfilling. For instance, the landfill requirements in California currently mandate quicker capping and installation of gas collection systems, which can lower these emissions. Additionally, there is not much data published on whether drying sludges will lower estimated methane emissions. Nitrous oxide emissions from Incineration can be highly variable, but fortunately for this review, the manufacturers have data that can better pinpoint these emissions. Overall, the assessment provided here uses the latest data available and should provide good general guidance for assessing the GHG impacts of the Scenarios modeled.



APPENDIX H

DISCOUNT RATE & COST ANALYSIS

APPENDIX C (Revised November 14, 2024)

DISCOUNT RATES FOR COST-EFFECTIVENESS, LEASE PURCHASE, AND RELATED ANALYSES

Effective Dates. This appendix is updated annually. This version of the appendix is valid for calendar year 2025. A copy of the updated appendix can be obtained in electronic form through the OMB home page at https://www.whitehouse.gov/wp-content/uploads/2025/01/CircularA-94AppendixC.pdf. The text of the Circular is found at https://www.whitehouse.gov/wp-content/uploads/2025/01/CircularA-94.pdf, and a table of past years' rates is located at https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-94.pdf, and a table of past years' rates is located at https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-94.pdf, and a table of past years' rates is located at https://www.whitehouse.gov/wp-content/uploads/2025/01/CircularA-94DiscountHistory.pdf. Updates of the appendix are also available upon request from OMB's Office of Economic Policy (a94@omb.eop.gov).

Nominal Discount Rates. A forecast of nominal or market interest rates for calendar year 2025 based on the economic assumptions for the 2026 Budget is presented below. These nominal rates are to be used for discounting nominal flows, which are often encountered in lease-purchase analysis.

Nominal Interest Rates on Treasury Notes and Bonds of Specified Maturities (in percent)

<u>3-Year</u>	<u>5-Year</u>	<u>7-Year</u>	10-Year	<u>20-Year</u>	<u>30-Year</u>
3.7	3.8	3.9	4.1	4.4	4.4

<u>**Real Discount Rates**</u>. A forecast of real interest rates from which the inflation premium has been removed and based on the economic assumptions for the 2026 Budget is presented below. These real rates are to be used for discounting constant-dollar flows, as is often required in cost-effectiveness analysis.

<u>Real Interest Rates on Treasury Notes and Bonds</u> of Specified Maturities (in percent)

<u>3-Year</u>	<u>5-Year</u>	7-Year	<u>10-Year</u>	<u>20-Year</u>	<u>30-Year</u>
1.5	1.6	1.8	1.9	2.2	2.3

Analyses of projects with terms different from those presented above may use a linear interpolation. For example, a four-year project can be evaluated with a rate equal to the average of the three-year and five-year rates. Projects with durations longer than 30 years may use the 30-year interest rate.

Veolia Dryer & ERS Capital Cost [Equipment Redundancy]

	Unit	Quantity	Unit Price	Price
Building				
Dryer & ERS Buidling Structure	SQFT	70000	\$ 300	\$ 21,000,000
ERS Building Structure	SQFT	0	\$ 300	\$ -
Electrical	SQFT	70000	\$ 150	\$ 10,500,000
Thickened Sludge Pump Station				\$ 5,000,000
Buidling HVAC	SQFT	70000	\$ 55	\$ 3,850,000
Truck Loading Building Structure	SQFT	7500	\$ 300	\$ 2,250,000
Building Subtotal				\$ 42,600,000
Site work, Paving, and Landscaping	Percent	7.5%		\$ 3,195,000
Building Subtotal				\$ 45,795,000
Equipment				
Dryer Equipment Provided by Veolia	Each	5	\$ 5,156,250	\$ 25,781,250
ERS Incineration Equipment Provided by Veolia	Each	1	\$ 22,500,000	\$ 22,500,000
Centrifuge Relocation & Replacement				\$ 8,000,000
Feed Pumps	LS	1	\$ 1,250,000	\$ 1,250,000
Cake Hoppers	LS	1	\$ 850,000	\$ 850,000
Conveyance	LS	1	\$ 2,750,000	\$ 2,750,000
Pelletizer	LS	2	\$ 1,500,000	\$ 3,000,000
Dry Produce Silo	Each	4	\$ 1,000,000	\$ 4,000,000
Ash Silo	Each	2	\$ 200,000	\$ 400,000
Dry Ash Management	LS	1		\$ -
Carbon Scrubber	Each	1	\$ 1,500,000	\$ 1,500,000
Liquid Sludge Tank	Gal	500000	\$ 6	\$ 3,000,000
Equipment Subtotal				\$ 73,031,250
Equipment Installation	Percent	35%		\$ 25,560,938
Controls	Percent	7%		\$ 5,112,188
Equipment Total				\$ 103,704,375
Project Capital Cost Subtotal				\$ 149,499,375
Contingency	Percent	20%		\$ 29,899,875
Engineering, Permitting, Overhead, Administration, and Mi	Percent	10%		\$ 14,949,938

Project Capital Cost Total

194,349,188

\$

Veolia Dryer & ERS Salvage Value [Equipment Redundancy]

				Remaining Useful Life	Present Worth
Building (Includes site work and contingency)		Capital Cost	Useful Life (Years)	After Linear Depreciation	(20 year, 4.7 percent)
Dryer Buidling Structure	\$	27,090,000	50	\$ 16,254,000	\$ 10,517,963
ERS Building Structure	\$	-	50	\$ -	\$ -
Electrical	\$	13,545,000	20	\$ -	\$ -
Thickened Sludge Pump Station	\$	6,450,000	30	\$ 2,150,000	\$ 1,391,265
Buidling HVAC	\$	4,966,500	20	\$ -	\$ -
Truck Loading Building Structure	\$	2,902,500	50	\$ 1,741,500	\$ 1,126,925
Equipment (Includes installation, controls, and	contingency)				
Dryer Equipment Provided by Veolia	\$	43,931,250	30	\$ 14,643,750	\$ 9,475,971
ERS Incineration Equipment Provided by Veolia	\$	38,340,000	30	\$ 12,780,000	\$ 8,269,938
Centrifuge Relocation and Replacement	\$	13,632,000	25	\$ 2,726,400	\$ 1,764,253
Feed Pumps	\$	2,130,000	20	\$ -	\$-

Cake Hoppers	\$	1,	448,400		20	\$		-	\$	-
Conveyance	\$	4,	686,000		20	\$		-	\$	-
Pelletizer	\$	5,	112,000		20	\$		-	\$	-
Dry Produce Silo	\$	6,	816,000		50	\$		4,089,600	\$	2,646,380
Ash Silo	\$		681,600		50	\$		408,960	\$	264,638
Carbon Scrubber	\$	2,	556,000		20	\$		-	\$	-
Total Salvage Value (20 years, 2.2 percent)									\$	35,457,333
P Given F (20 years, 2.2 percent)			0.647							
A Given P Multiuplier (20 year, 2.2 percent)			16.040							
				a						
Veolia Dryer & ERS Annual Cost [Equipment Redu	Indan	Unit		Quantity		•	Unit Price	0.450	•	Price
Electricity		KVVN		4,537,680		\$		0.156	\$	/0/,8/8
Natural Gas		MMBtu Der Deres r		0		\$		6.91	\$	-
Labor		Per Person	۴	8	70 001 050	Ф	10/	150,000	Ф	1,200,000
Maintenance		Percent Equipment	\$	4.040	73,031,250	•	1%		ъ Ф	/30,313
Dried Product Disposal		Ion		1,840		\$		90	\$	165,600
Sum Annual Costs									\$	2,803,791
Annual Cost	\$	2,	803,791							
Annual Cost Converted to Present Worth	\$	44,	972,801							
Capital Cost	\$	194,	349,188							
Salvage Value	\$	35,	457,333							
Total Net Present Worth	\$	206,	668,446							

ERS savings Calc assuming 3 dryers in operation @ 80K ton/yr

Natural Gas Annual Dryer Cost [No ERS] (\$/year)	Annual Disposal Cost [No ERS]	(\$/year)	Natural Gas Annual Dryer Cost [ERS] (\$/year)	Annual Dispos	al Cost [ERS] (\$/year)
\$	1,301,429.40	\$	1,800,000.00		0 \$	165,600

Table X: ERS Savings given 80K Wet tons/year @ 23%

Natural Gas Savings (\$/year)		Disposal Savings (\$/year)		Total Savings from Disposal and Fuel (\$/year)		
\$	1,301,429.40	\$	1,634,400.00	\$	2,935,829.40	



Engineer's Estimate of Probable Construction Cost Kalamazoo, Michigan FY26 CWSRF Project Plan - Project B1 March 3, 2025 Project No. 017-8236.001

			-		1	
					Estimated	Total Estimated
Item No.	MDOT	Description	Quantity	Unit	Cost/Unit	Cost of Item
1		Consultant Engineering Scvs (including internal & stakeholder engagement meetings)	1	LSUM	\$25,000.00	\$25,000.00
2		70 – 100 LF of 8" sanitary sewer 10-15 ft deep w/ 5 – 10 services & 2 – 3 manholes, tight construction limits, various impeding existing underground utilities, maintenance of traffic (motorized & non-motorized)	1	LSUM	\$250,000.00	\$250,000.00
3		Consultant Engineering Scvs (IDR's, Daily MoT reviews, draft pay request reviews, submittal reviews, stakeholder engagement)	1	LSUM	\$30,000.00	\$30,000.00
				Const	truction Subtotal:	\$305,000.00
Construction Contingency (10%)						\$30,500.00
	\$335,500.00					
3		Consultant Engineering Scvs (IDR's, Daily MoT reviews, draft pay request reviews, submittal reviews, stakeholder engagement)	1 Cons	LSUM Const struction C Co	\$30,000.00 truction Subtotal: ontingency (10%) postruction Total:	



Engineer's Estimate of Probable Construction Cost Kalamazoo, Michigan FY26 CWSRF Project Plan - Project C1 March 3, 2025 Project No. 017-8236.001

					Estimated	Total Estimated
Item No.	MDOT	Description	Quantity	Unit	Cost/Unit	Cost of Item
1		Manhole Rehabilitation	550	VLF	\$400.00	\$242,000.00
2		12-15" Sanitary Sewer Rehabilitation	10,500	LF	\$75.00	\$866,250.00
3		Updated Access Roads	1	LSUM	\$550,000.00	\$550,000.00
				Const	ruction Subtotal:	\$1,658,250.00
Construction Contingency (30%)						\$497,475.00
				Co	Instruction Total:	\$2,155,725.00

Monetary Evaluation										
Item	Estimated Construction Cost	Estimated Design and Engineering Cost	Estimated Admin Cost	Total Estimated Project Costs	Annual O&M Costs	Present Worth Annual O&M	Salvage Value	Present Worth Salvage Value	Net Present Worth	Cost Per REU
Dryer and Energy Recovery System	\$ 149,499,376.00	\$ 22,424,906.00	\$ 22,424,906.00	\$ 194,349,188.00	\$ 2,803,791.00	\$44,973,327.66	\$ 54,792,861.56	\$35,457,333.00	\$ 206,668,973.66	\$ 1,596.16
Replacement of 6-Inch Sanitary Sewer at Farmers										
Alley	\$ 250,000.00	\$ 42,500.00	\$ 42,500.00	\$ 335,000.00	\$ 670.00	\$ 10,444.74	\$-	\$-	\$ 345,444.74	\$ 2.67
Kleinstuck Preserve SSOs	\$ 1,658,250.00	\$ 248,737.50	\$ 248,737.50	\$ 2,155,725.00	\$ 4,311.45	\$ 67,211.89	\$-	\$-	\$ 2,222,936.89	\$ 17.17
Total	\$ 151,407,626.00	\$ 22,716,143.50	\$ 22,716,143.50	\$ 196,839,913.00	\$ 2,808,772.45	\$ 45,050,984.29	\$ 54,792,861.56	\$ 35,457,333.00	\$ 209,237,355.29	\$ 1,615.99

	. 					
Total Construction Cost	CWSRF Loan Value		City Cash Contribution	Total F	Total Project Cost	
Dryer and Energy Recovery System	\$	194,349,188	\$ -	\$	194,349,188	
Replacement of 6-Inch Sanitary Sewer at Farmers Alley	\$	335,000	\$ -	\$	335,000	
Kleinstuck Preserve SSOs	\$	2,155,725	\$ -	\$	2,155,725	
Total Cost Per Category	\$	196,839,913	\$-	\$	196,839,913	
Period, Years		20	N/A	N/A		
Interest %		2.00%	N/A	N/A		
Annual Debt Service	\$	11,989,755	N/A	N/A		
Average Daily Flow (MGD)		28	N/A	N/A		
Capital Recovery Per REU/Year	\$	151.90	N/A	N/A		

Capital Recovery Calculation



APPENDIX I

PUBLIC PARTICIPATION



APPENDIX J

CITY COMMISSION RESOLUTION

If you have any questions regarding this report, please contact:

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