



# AGENDA

## COMMISSION ON STORM WATER ISSUES MEETING

July 6, 2021 at 6:30 p.m.

Heman Park Community Center

975 Pennsylvania Ave., University City, Missouri 63130

**1. MEETING CALLED TO ORDER**

**2. ROLL CALL**

**3. APPROVAL OF AGENDA**

**4. APPROVAL OF MINUTES**

**5. CITIZEN PARTICIPATION**

**6. NEW BUSINESS**

- a. US Army Corps of Engineers Update for Upper River Des Peres Flood Risk Management Study:
  - i. Hydraulics and Hydrology (H&H) updated model based on high water mark data
  - ii. Meeting with City of Overland
  - iii. Public Meeting and Public Review of Draft Report
  - iv. Refinement of the Tentatively Selected Plan (TSP) and timeframe for decision on selecting a Locally Preferred Plan (LPP)
  - v. Lake Sherwood dam
  - vi. Upcoming July 12 City Council Study Session
- b. Floodproofing Survey – Update and Discussion (Commissioner Stein) – See Attachment #1
- c. Stormwater Operations and Maintenance Manual First Draft – See Attachment #2

**7. OLD BUSINESS**

- a. Relief Map Project – Update (Commissioner Holly)
- b. US Army Corps of Engineers Upper River Des Peres Flood Risk Management Study – Update to Commission from Army Corps Technical Meeting of June 23, 2021 – See Attachment #3
- c. Flooding Early Warning System – Update

**8. SUBCOMMITTEE REPORTS**

- a. Flood Early Warning System
- b. Communications

**9. MISCELLANEOUS BUSINESS**

- a. Sherwood Lake Update

**10. COUNCIL LIAISON COMMENTS**

**11. ADJOURNMENT**

Please call (314) 505-8572 or email [salpaslan@ucitymo.org](mailto:salpaslan@ucitymo.org) to confirm your attendance.

## University City Flood-proofing and Elevation Survey (Draft 2, June 30)

University City is partnering with the U.S. Army Corps of Engineers (USACE) on a study that is examining ways to reduce the risk of flood damage to homes and businesses due to flooding from the River Des Peres in University City. The University City Commission on Storm Water Issues, appointed by the City Council to advise the city on such issues, would like your opinion on some of the measures being looked at in the study. You are receiving this survey because the USACE has identified your address as being at risk for future floods. Even if you have never experienced flooding in the past, your response to this survey is important.

The USACE is looking at various flood-proofing measures that might be offered to homeowners who have experienced flooding from the river, or who are in danger of experiencing such flooding. Measures that could be taken for homes at risk of main floor flooding are currently being studied. For those at risk of only basement flooding from the river, one measure that could be taken is to eliminate the basement by filling it in, in some cases leaving a crawl space under the house, which would be allowed to flood during high water. The utilities, such as furnace and water heater, would be moved up to the main floor, either to an existing space or possibly some kind of add-on space. This measure, known as “wet floodproofing”, would be done at no cost to home owners. While this may seem extreme, it could save some home-owners a significant amount of money. NFIP flood insurance premiums are determined by how high (the “elevation”) your main floor is compared to the height of a 100-year flood. The basement is counted as a floor, so eliminating the basement has the effect on insurance premiums of elevating the structure by 8 feet or so. In many cases (if your main floor is not a flood risk), this could reduce your premiums by as much as ¼ \* of their current level. The other advantage is that you do not have to worry about your basement and all its contents being damaged by a flood. The obvious disadvantage is losing the space afforded by a basement, while also losing space upstairs to accommodate the utilities (unless space is added for that). Also, there would likely be no direct compensation to make up for the probable loss of value of your home by loss of the basement.

To be clear, the measures being examined for this study would only address flooding that occurs when the river comes out of its banks and reaches your home (so called “overland” flooding). The study does not address flooding due to a basement drain backing up due to overload of the combined sewer line at your location, which falls under the jurisdiction of the Metropolitan Sewer District (MSD).

Your participation in this survey will help us greatly by advising the city and the USACE on the level of interest in these types of floodproofing and elevation measures:

- A. How likely would you be to participate in a (voluntary) program to “wet floodproof” your basement at no cost to you if it reduced your flood insurance premiums to around ¼ \* of current?
  1. No way
  2. Maybe (please elaborate in the comment space below)

2-3. Very likely

- B. How likely would you be to participate in a (voluntary) program to “wet floodproof” your basement at no cost to you if it did not reduce your flood insurance premium?
1. No way
  2. Maybe (please elaborate in the comment space below)
  3. Very likely
- C. Another kind of flood-proofing (called “dry<sup>2</sup> flood-proofing<sub>1</sub>”) involves keeping the basement but taking steps to keep water from getting in, such as installing glass block windows or barriers around the windows. Also included might be either a barrier around any walkout stairway or possibly filling it in. Authorities generally disfavor this method because water standing around a foundation exerts a significant pressure on it, which depending on its condition, could seriously damage the foundation. It is not clear that this will be an option in the program, but if it is and a qualified professional determines that it is OK for your home, how likely would you be to participate in this (voluntary) kind of “dry floodproofing” program?
1. No way
  2. Maybe (please elaborate in the comment space below)
  3. Highly likely
- D. In some cases, elevating the entire home to above the level of the flood is a better option than floodproofing for reducing flood risk. Elevating a home consists of raising the entire structure and eliminating indoor space below the level of the flood. Elevation would eliminate flood insurance premiums entirely. How likely would you be to participate in a (voluntary) program to elevate your home at no cost to you?
1. No way
  2. Maybe (please elaborate in the comment space below)
  3. Highly likely

Comments:

\*Commissioners: The COE recommends we not use this specific figure unless we are confident in its validity.

**OPERATION AND MAINTENANCE PROGRAM**

**FOR THE PREVENTION AND REDUCTION  
OF POLLUTION IN STORMWATER RUNOFF  
FROM MUNICIPAL OPERATIONS  
WITHIN THE CITY OF**

**UNIVERSITY CITY**

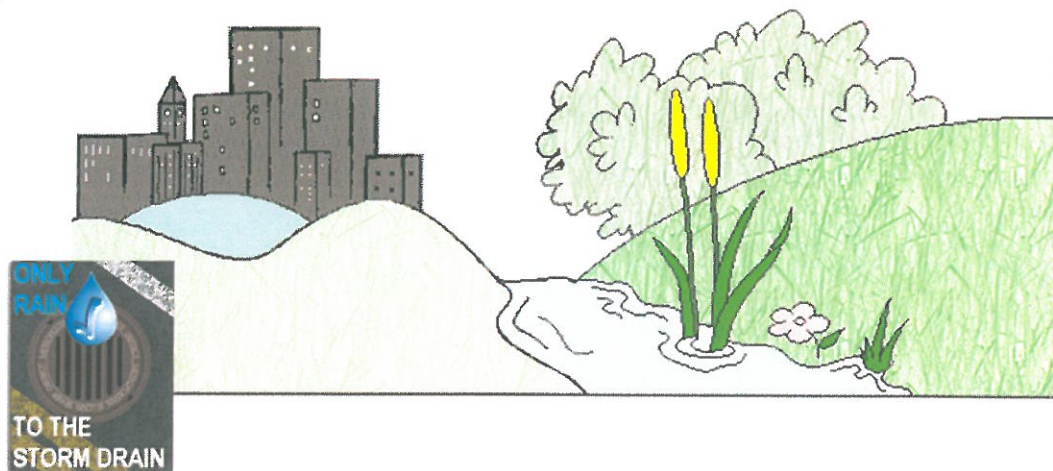
**ST. LOUIS COUNTY, MISSOURI**



2021

## Note From the Authors (METROPOLITAN SEWER DISTRICT)

This document is a Model Operation and Maintenance Program template developed to meet the requirements in the St. Louis Metropolitan Small MS4 Stormwater Permit, Section 4.2.6. All co-permittees are required to implement an Operation and Maintenance Program to comply with their permit. Stormwater A model program was developed to assist co-permittees in complying with the permit Section 4.2.6, and to help foster uniform approaches to implementing the Operation and Maintenance (O&M) Program. Each co-permittee must include in their program the applicable elements from the model program, based on the extent of their infrastructure, municipal facilities, and services. In drafting the model program, the authors made an effort to be as comprehensive as possible in addressing municipal operations by including generic example text for a variety of municipal operations. However, a co-permittee may add measures as it deems appropriate to meet its specific needs. Co-permittees are expected to edit the text in this model program to specifically apply it to their organization by including details, commitments, and policies specific to their organization. For additional information on the Best Management Practices (BMPs), please contact the Metropolitan St. Louis Sewer District Division of Environmental Compliance at 314-436-8710.



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## Chapter 1- Program Administration

### A. Introduction:

The Missouri Department of Natural Resources (MDNR) issued Phase II Stormwater Permit MO-R040005 to the University City effective **December 14, 2016**. The area served by the co-permittees is collectively known as the St. Louis Metropolitan Small MS4. One of the minimum control measures in the permit that must be addressed by the co-permittees includes pollution prevention and good housekeeping for municipal operations. Specifically, MCM 6 section of the permit requires each co-permittee to “develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.”

A Stormwater Management Plan (SWMP) for the St. Louis Metropolitan Small MS4 Stormwater is implemented under the Phase II permit. As a co-permittee under the state permit, the University City is bound by the commitments contained in the SWMP. The SWMP requires a model operation and maintenance program template and that each co-permittee implement a written operation and maintenance program.

This document represents the University City implementation of the model operation and maintenance program as applicable and tailored to specifically meet University City’s needs and goals. This program impacts all facets of municipal operations. It is University City’s intent to adhere to the policies and procedures stated herein in order to prevent pollution, to safeguard the environment for the health and benefit of all University City employees, residents and visitors, and to serve as a model for the entire regulated area. Where the municipal operations described in this manual are contracted, rather than performed by municipal employees, the best management practices (BMPs) will be imposed to the maximum extent practicable on the contractor through purchasing or contract mechanisms by including BMPs in the scope of work or job/service specifications. Contractors will be required to obtain all applicable local/state/federal environmental permits.

### B. Policies:

University City has adopted several policies regarding the purchase of recycled products; janitorial and other supplies exhibiting lower toxicity; utilization of integrated pest management practices; and other pollution prevention policies. University City has sections of municipal code related to its sanitation services. Copies of policies are contained in Appendix 1-B1.

### C. Organization Manual

The SWMP contains nine major categories of municipal operations/activities. Based on its size and the nature of its municipal services each co-permittee may have activities in only some or in all nine categories. For consistency within the Plan area, each of the nine categories is addressed in the following Chapters 2 through 10. A statement of non-

applicability is contained in those chapters where University City is not engaged in the subject activity.

#### D. Administration:

The responsible party for administration of the operation and maintenance (O&M) program is the Director of Public Works. This person is responsible for ensuring the program is kept up to date, and that employees are trained on the procedures implementing the program.

University City will train all staff associated with activities that can impact pollution in stormwater runoff. Each chapter will identify employees who should be subject to training on that particular chapter. Employees will receive general stormwater pollution prevention training provided by the Metropolitan St. Louis Sewer District. Upon implementation of specific procedures, management will review the new procedures that incorporate stormwater BMPs, proper waste management, and applicable NPDES permit requirements with all employees affected. New employees will be trained on applicable procedures within the first three months of employment. Contractors working for the municipality and implementing BMPs for municipal work, as described in Section A., must train their employees on applicable BMPs before work begins.

Records documenting the training of employees and contractors must be maintained in file.

## Chapter 2- General Housekeeping, Operation, and Maintenance

### A. Description of Activities:

Municipal operations include a variety of activities conducted to maintain City-owned property and facilities. This chapter will cover those activities that are not specifically covered in the other chapters of this document. This chapter covers custodial and building maintenance activities, materials management and storage, safe material substitutions, spill plans, establishment of general O&M procedures, scheduling, record keeping, and housekeeping practices in general.

This chapter also covers general municipal housekeeping issues, which include illegal dumping, littering, pet wastes, trash storage, and recycling.

### B. Locations:

1. City Hall - 6801 Delmar Blvd. This facility is situated on nine (9) acres, with a building size of approximately 33,495 square feet. City Hall houses the Administration Department, Planning and Development Department, Finance Department, Human Resources Department, Police Department, and Public Works Department.
2. Maintenance Yard – 1015 Pennsylvania Ave. This facility is situated on four (4) acres. The maintenance facility houses the parks, forestry, streets, fleet, and solid waste division operations.
3. Centennial Commons (Recreation Center) and Heman Park Municipal Pool – 7210 Olive Blvd. This facility administrates and operates recreation programs and events. Centennial Commons and Heman Park Municipal Pool are located in Heman Park and are included in the square footage listed below.
4. Community Center – 975 Pennsylvania. This facility is used for meetings and events.
5. University City Parks:
  - Ackert Park (includes Ackert Walkway) – 6600 Delmar Blvd. 3.8 acres
  - Eastgate Park- Northeast corner of Vernon and Eastgate- 0.93 acres
  - Flynn Park- Bounded by Pershing, Midvale, and Kingsbury- 6.61 acres
  - Fogerty Park- 1500 block of North 82<sup>nd</sup> Blvd- 11.80 acres
  - Greensfelder Park- West of 8333 Fullerton- 6.75 acres
  - Greenway South- South from 6600 Kingsbury to Millbrook- 1.83 acres
  - 170 Bike Trail (Great Rivers Greenway) – situated on the east side of 170 between south of Delmar and Olive Blvd – 2 acres
  - Heman Park- Bounded by Midland, Olive, Purdue, Pennsylvania, and Vernon- 85.26 acres
  - Kaufman Park- Mulberry and Blackberry- 7.77 acres
  - Kingsland Park- Kingsland at Chamberlain- 0.84 acres

- Lewis Park- Delmar at Yale- 4 acres
- Janet Majerus Park- Raymond and Partridge Avenues- 5 acres
- Metcalfe Park- Canton and North & South Roads- 5.6 acres
- Millar Park- Canton and North & South Roads- 12.19 acres
- Mona Trail – starts at the east end of 7800 block of Shaftesbury running east to the dead-end of Warder Ave. turning Northwest along Mona Drive – 2 acres
- Mooney Park- Jackson Avenue, Delmar to Amherst- 5.2 acres
- Joseph L. Adams Park- Bid Bend, south of Forsyth- 1.6 acres
- Rabe Park- Midland at Canton- 2.0 acres
- Ruth Park Golf Course – 8210 Groby Rd. – 70 acres
- Ruth Park Woods- 1018-1094 McKnight Rd- 26 acres

### C. Responsible Parties:

1. City Hall- Authority over City Hall is divided by departments.
  - a. Administration  
City Manager: (314) 505-8534
  - b. Department of Planning and Development: (314) 505-8500
  - c. Department of Finance: (314) 505-8544
  - d. Human Resources  
Director of Human Resources: (314) 505-8693
  - e. Police Department  
Police Chief: (314) 505-8659
  - f. Department of Public Works: (314) 505-8560  
(Responsible for Facilities, Streets and Sanitation Divisions)
  - g. Department of Parks, Recreation, and Forestry: (314) 505-8625  
(Responsible for Parks, Recreation, Forestry, and Fleet Divisions)

## D. Best Management Practices (BMP)

(THE FOLLOWING BMP'S ARE RECOMMENDED TO BE IMPLEMENTED TO THE MAXIMUM EXTENT PRACTICABLE)

### FACILITIES

- Pool drainage and filter backwash water from chlorinated swimming pools, fountains, and lined ponds must be discharged into the sanitary sewer system. Other chlorinated water from water line or tank disinfection must also be directed to the sanitary sewer.
- Any discharge to surface water of pool or backwash water from pools and ponds must be dechlorinated prior to discharging into storm sewer system under the conditions of an NPDES permit
- Obtained by the facility. The NPDES permit requires ceasing chlorination 7 days prior to discharge or using chemical dichlorination. These discharges to surface water must be approved under local building code, and not create a nuisance to adjoining property.
- Avoid using copper or silver-containing algacides in pools, fountains, and ponds.
- Ensure grease traps and oil/water separators in kitchens and food service areas are maintained. Avoid sanitary sewer grease blockage by regularly pumping out traps and separators.
- Maintain site plumbing plans showing sanitary and storm sewer connections. Ensure wastewater is discharged only to the sanitary sewer, and stormwater to the storm sewer. Label storm drain inlets to ensure they are used only for stormwater drainage.
- Minimize the use of pesticides through an Integrated Pest Management (IPM) Program. An IPM Program uses monitoring of pest populations compared to an action threshold, and then choosing the proper tactics, using nonchemical pest control practices, such as mechanical and biological controls, when possible, or less toxic products when needed. IPM does not rely on routine applications of pesticides based on a calendar date.
- Reduce the risk of West Nile Virus by reducing stagnant water (mosquito breeding grounds) caused by cans, containers, and tires present in litter and junk piles. Keeping stormwater drainage gutters and drains clean will also reduce conditions suitable for mosquito breeding. Refer to MU Extension IPM Guides at: <https://ipm.missouri.edu/pubs/> (See Chapter 7 for additional BMPs.)
- Minimize the use of herbicides through an Integrated Pest Management Program for weed control. With turf grass, prevention of weed infestation begins with practices to promote healthy grass through proper planting, watering, fertilizing, mowing, aerification, and thatch control. Refer to MU Extension Publication IPM1009: <https://extension2.missouri.edu/MX399> (See Chapter 7 for additional BMPs.)

### MATERIAL MANAGEMENT

- Develop a policy to purchase recycled products or products with high post-consumer waste content whenever practical. Many resources are available from the EPA WasteWise Helpline: 800 EPA-WISE. Website <https://www.epa.gov/smm/wastewise> (See Appendix 2-F1 for a sample waste reduction and recycling policy.)

- Collect and recycle, to the maximum extent practicable, wastes generated by municipal operations. (See the policy in Appendix 2-F1.)
- Develop a policy to purchase environmentally preferred products whenever practical. For a “Database of Environmental Information for Products and Services,” see EPA website: <https://www.gsa.gov/governmentwide-initiatives/sustainability/buy-green-products-services-and-vehicles>  
(See Appendix 2-F2 for a sample green procurement policy or <https://www.dgs.pa.gov/Businesses/Materials%20and%20Services%20Procurement/Procurement-Resources/Pages/Green-Procurement.aspx>) Provide for the proper disposal of all wastes generated or collected in the course of municipal operations, in accordance with all applicable local, state, and federal laws.
- Inspect facilities for litter on a regular basis, and clean up as needed.
- Keep trash container lids closed to keep rain out. Do not dispose of liquid waste in the trash container.
- Ensure that the collection frequency of trash containers is appropriate to avoid overflows.
- Outdoor material stockpiles at both permanent locations and at job sites should be covered to protect from rainfall and prevent contamination of stormwater runoff.
- Material stockpiles which cannot feasibly be covered should be surrounded by a berm or otherwise contained so that stormwater runoff can be captured.

- Petroleum products, fuels, chemicals, hazardous and toxic materials, and all wastes should be properly labeled to ensure appropriate handling and disposal.
- Petroleum products, fuels, chemicals, hazardous and toxic materials, and all wastes should be stored and handled with appropriate safeguards to prevent contamination of stormwater from drips and spillage from the transfer of materials (for example, cover storage containers, use collection trays for drips, maintain spill kits and floor drain plugs to contain spills, etc.). Liquid containers should be stored under a roof; or if outdoors, containers should be kept clean and sealed water-tight.
- Prevent spills of hazardous materials by selecting storage areas that avoid traffic to minimize accidental contact, and select areas that are away from storm drain inlets and streams to minimize the impact of a spill. Storage areas should be kept clean and organized.
- Contain and clean up all spills immediately. Ensure employees are familiar with spill response procedures and the location of spill kits to enable them to stop the spills at the source and contain the spilled material. With training on hazards from a material safety data sheet, minor spills can be addressed by employees, however, significant spills will require evacuation and contacting emergency responders.
- Keep material safety data sheets (MSDS) for chemicals onsite for information on reportable spill quantities, proper handling, and health and safety issues.
- Maintain and post a list of emergency contact numbers for spill reporting and spill clean-up contractor response, including: Missouri Department of Natural Resources (MDNR) – 573-634-2436, National Response Center – 800-424-8802, and for releases to the sewer, MSD – 314-768-6260. Reportable quantities (RQ) for chemicals are listed on the MSDS, and petroleum RQs include: any amount released to a storm sewer or waterway causing a sheen, 25 gallons from an underground tank, and 50 gallons from all other sources.
- Prepare for appropriately handling the clean-up of the spilled material and disposal of waste. Do not hose down spills to the storm sewer system. Clean up spills with dry methods, using absorbent to pick up fluids.
- Spill response plans are recommended for all areas of municipal operations. Spill Prevention Control and Countermeasure (SPCC) plans are required to meet regulatory criteria in 40 CFR 112 for sites with a storage capacity over 660 gallons of oil in one container or 1,320 gallons on site.
- Establish at all municipal facilities materials management and inventory controls to include the proper identification of hazardous and non-hazardous substances and proper labeling of all containers.
- Regular inspections and inventory of material storage and use areas should be performed to ensure BMPs are being used.



## COMMUNITY

- Develop/enforce ordinances for waste containers which regulate size, type, covers, and water-tightness for residential, commercial, and industrial areas. (See Appendix 2-3 for language from the St. Louis County Waste Management Code.)
- Develop/enforce ordinances against illegal dumping, littering, and improper yard waste disposal, providing for corrective action, enforcement and penalties. (See Appendix 2-F4 and 2-F5 for Model Ordinances.)
- Develop/enforce ordinances requiring pet owners, property owners, and equestrian and animal boarding facilities to clean up wastes from their pets and other animals. (See Appendix 2-F6 for Model Ordinance).
- Provide pet waste scoop dispensers and signage in parks and other public areas frequented by pet walkers to promote the proper disposal of pet waste and notify the public of ordinance requirements.
- Provide recycling and yard waste services for residential waste.
- Provide sufficient numbers of appropriately-sized waste receptacles at municipal facilities and in public areas with regularly scheduled servicing, collection, and disposal.
- Educate citizens on trash and pet waste issues to promote compliance with ordinances using available methods such as resident newsletters, brochures, internet sites, storm drain marking projects, etc.
- Promote and assist in neighborhood and stream clean-up activities.
- Develop/enforce municipal ordinances against illegal discharges to stormwater from sources such as failing septic tanks, septic tanks discharging to stormwater, etc. Ordinances to address illegal connections of sanitary sewers should be at least as stringent as the Missouri Department of Health regulations in 19 CSR 20-3 and County requirements, such as St. Louis County Plumbing Code Section 1103.
- Develop/enforce municipal ordinances requiring the proper maintenance of septic tanks and other small onsite sewage disposal systems. For a model ordinance, see: <http://www.anjec.org/pdfs/Ord-ModelSeptic.pdf>

## O&M PROGRAM

- Establish standard operation and maintenance procedures, maintenance schedules, and long-term inspection procedures in accordance with this program manual with emphasis on safety, efficiency, and compliance with applicable laws, and good environmental stewardship.
- General housekeeping inspections of facilities and storage areas should be performed once a month and records kept of the inspections.
- Develop record-keeping procedures that effectively track implementation of program elements and that provide the information necessary to meet the reporting requirements of the MS4 permit.

#### E. NPDES Permit status:

Facilities are operating under no exposure received October 24, 2014.

#### F. Training:

All employees involved in maintenance operations, construction, purchasing, facility or site design, or building or facility management will be trained on this chapter, including the following Departments and work units:

- Fleet maintenance division – mechanics, storekeepers, and management.
- Public works department – equipment operators, laborers, and management.
- Parks maintenance division – equipment operators, laborers, and management.
- Golf maintenance division – equipment operators, laborers, and management.

In addition to training on the housekeeping BMPs and proper waste management, employees will be provided general awareness of NPDES discharge requirements.

## Chapter 3- Vehicle/Equipment Repair, Maintenance, and Washing

### A. Descriptions of Activities:

Fleet maintenance facilities are responsible for the maintenance and repair of equipment and vehicles ranging from chain saws and light vehicles to loaders and tandem dump trucks. Preventative maintenance or PM's include oil and filter changes, tune-ups, and tire rotations. Repairs include engine and transmission replacement; brake, suspension, or axle repair; and welding work. There is a fueling site at the Central Garage.

### B. Locations:

The Central Garage is located at 1015 Pennsylvania Ave.  
The off-site wash station is located at 8304 Olive Blvd.

### C. Responsible Parties:

The Fleet Manager oversees all aspects of fleet administration and operations, and is responsible for the day-to-day operations of vehicle/equipment repair, maintenance, and washing and the central garage in general.

### D. Best Management Practices (BMP):

*(THE FOLLOWING BMP'S ARE RECOMMENDED TO BE IMPLEMENTED TO THE MAXIMUM EXTENT PRACTICABLE)*

#### OPERATIONS

- Institute a preventive maintenance program to minimize fluid leaks and equipment failures. Inspect vehicles and equipment frequently for leaks, collecting leaks with pans or absorbent, and repairing leaks.
- All routine vehicle maintenance and repairs at (municipality) facilities are performed indoors. On occasion and when necessary, outside maintenance work will be performed in a paved area with provisions made to contain and clean up all drips and spills.
- Use non-hazardous, environmentally safe products when possible. Avoid the use of chlorinated organic solvents.
- Environmentally safe detergents are used instead of caustic cleaning solutions.
- Flammable liquids are kept in a vented fire-rated cabinet.
- All supplied material and waste containers are marked clearly and properly to identify the contents.
- Keep material safety data sheets (MSDS) for chemicals onsite for information on reportable spill quantities, proper handling, and health and safety.

- All supplied material and waste containers are stored undercover to prevent contact with rainfall; or when uncovered, containers are clean and sealed.
- Tops of containers have absorbent mats and are free of standing liquid, and stored containers are kept closed.
- Waste oils, filters, antifreeze, and other wastes are collected in designated, labeled containers and recycled to the maximum extent practicable.
- Wheel weights are kept in a container marked “scrap lead”.
- Records of waste pick-ups are logged and maintained in file.
- Drain pans are labeled for specific types of fluid. Use pans under vehicles and equipment with fluid leaks. Always use drip pans when making and breaking connections.
- Used oil filters should be gravity drained for 24 hrs with the anti-drain back valve or filter dome punctured to facilitate the draining process. Crushing the oil filter and recycling is preferred.
- Batteries, waste oil, etc. having spill/leak potential are stored indoors and are in secondary containment, when possible.
- Neutralizer and absorbent are kept by both new and used batteries.
- All floors are clean of oil and grease.
- Immediately clean up all spills of chemicals or vehicle fluids using dry methods (absorbents), minimizing the use of water whenever possible.
- Vehicle operators should be instructed to remain with the vehicle during fueling, and not to top-off the fuel tank to avoid overflows and spills.
- For painting or sanding activities outdoors, use a tarp enclosure to contain and capture material. Collect and dispose of paint chips and sandblast waste in the trash for non-lead-based paint, or evaluate lead-based paint for hazardous waste disposal.
- Keep the facility and surrounding area clear of litter.

## SPILL PREVENTION

- Spill control plans should be in place with procedures for proper spill response to minimize environmental impacts. SPCC plans must meet regulatory criteria in 40 CFR 112 for sites with a storage capacity over 660 gallons of oil in one container or 1,320 gallons on site.
- Procedures for loading, unloading, and transfer operations should be developed to prevent overfilling and spills.
- In areas where spills could occur, such as fueling and loading areas, keep spill kits with absorbent materials nearby and display signage indicating the location of those spill kits. Storm drain plugs or covers are recommended to prevent the flow of spilled material from entering the storm drain.
- For fueling areas, post signs that state “no topping off”.
- Regularly inspect all tanks and containers to ensure physical integrity.
- Maintain equipment to ensure the proper operation of automatic shutoff devices on pumps and, overfill protection and spill buckets on tanks.
- Emergency phone numbers are clearly posted in the shop and near material storage areas.

## FACILITY

- All floors in work areas are sloped to floor drains that are connected to an MSD-approved sediment /oil trap prior to discharge into the sanitary sewer system. The trap is pumped out quarterly, or as needed.
- A site-plumbing schematic showing all drains, traps, and shut-offs for utilities should be posted in the shop. Employees should be made aware of sanitary and storm sewers to ensure all wastewater is discharged to the sanitary sewer.
- Storm drains/inlets can be labeled to help protect from improper usage.
- All above-ground storage tanks have secondary containment in accordance with SPCC requirements and are covered with a roof. If containment is not roofed, inspect accumulated rainwater for contamination prior to discharge.
- Fueling areas are recommended to be designed with a roof to prevent contact with stormwater. The area should be graded and sloped to direct stormwater runoff away from the site and to prevent runoff from flowing over the fueling area.
- Stormwater treatment devices can be used to treat runoff from fueling areas.
- “No smoking” signs are posted in the shop and near hazardous waste and flammable material storage areas. Verify that fire extinguishers are charged and inspected yearly.

### E. NPDES Permit status:

Facilities are operating under no exposure received October 24, 2014.

### F. Training:

Training on stormwater BMPs will be provided to mechanics, storekeepers, material handlers, laborers, equipment operators, janitors, and management staff working at facilities identified in Section B. All employees will be provided safety training and training on written procedures pertaining to general housekeeping. Implement monthly safety meetings to include environmental training and HAZMAT training.

## Chapter 4- Cleaning and Maintenance of Roadways, Highways, Bridges, and Parking Facilities

### A. Description of Activities:

Most highway agencies and municipalities are responsible for the cleaning and maintenance of roadways, highways, and parking facilities under their maintenance purview. Activities include, but may not be limited to, street sweeping, flushing, applying surface seals, patching, snow removal, and emergency response to spills and accidents.

Street sweeping operations normally involve self-contained and powered collection devices, utilizing belt conveyors or vacuum systems. This work may be performed on a scheduled basis, or when requested and is usually conducted on roads with curbs where debris can accumulate in the gutter line.

Many agencies flush bridge decks and parking structures in the spring to remove de-icing chemicals and to clean the drainage structures. Also, flushing operations are performed on sections of pavement where mud or debris accumulates after flooding, creating hazardous conditions.

Bridge decks and parking structures are normally sealed on a five-to-seven year cycle to protect the concrete and steel reinforcement from corrosive elements.

Patching operations involve the preparation of potholes and the fill of either hot mix or cold patching material.

Highway agencies plow and salt the roadways under their maintenance jurisdiction during winter snow events. Typically, 200 to 400 pounds of salt per lane mile is used to de-ice the pavement. Other chemicals, such as calcium chloride, are used when prevailing temperatures fall below 20° Fahrenheit.

Most highway agencies are required to respond to emergency situations involving spills and debris from vehicles. This work is performed if it is determined that the material which will be removed from the public road right-of-way is of a non-hazardous nature. Hazardous material is handled through hazardous material removal procedures not specified in this chapter.

### B. Locations:

All local road networks or public parking structures of University City. The Street Maintenance Division is responsible for the signing, marking, and maintenance of all 96.6 miles of public city-controlled streets and related facilities, including repairs, traffic control, street sweeping, leaf collection, and snow/ice removal. In addition, this division is responsible for the maintenance of bridges and other structures.

### C. Responsible Parties:

The Director of Public Works has authority over all local roads and parking facilities. Local roads and parking facilities are actively managed by the Superintendent of Streets. Park parking facilities are managed by the Deputy Director of Parks.

### D. Materials/Supplies Acquisition, Storage, and Usage:

Large quantities of materials are expended in the performance of work. Some material is purchased and used immediately, while other material is stockpiled. Agencies working within the constraints of their budget weigh fiscal responsibility against the immediate and long-range needs for such materials, and adjust their purchasing habits accordingly.

### E. Waste Generation, Storage, Disposal, Recycling:

A certain amount of construction spoil and waste is generated during the performance of maintenance operations on our road network. Recycling methods are employed if they are determined to be cost-effective; however, in many instances, waste material must be removed from the work site by various disposal methods.

### F. Best Management Practices (BMP):

#### MAINTENANCE

- If certain road maintenance activities are prone to produce pollutants that can be carried off with stormwater runoff, schedule these maintenance activities during times of dry weather if possible.
- Capture scrapings/rust/dirt/sandblasting grit/overspray/drips, etc., from preparation and painting of bridges/structures/traffic control devices.
- For steel girders on bridges utilize certified inspectors to inspect for lead-based paint on structures older than 1978. Use only state-certified removal contractors for lead based paint abatement.
- Used asphalt is recycled when it is cost-beneficial.
- Block scuppers and drains when sealing bridge decks.
- On asphalt overlays, ensure stormwater drainage capacity of curbs and inlets is maintained by milling down into the street at the curb or using open-graded thin bonded overlay.
- Comply with St. Louis County or municipal land disturbance ordinances and programs implemented under the St. Louis County Phase II Stormwater Management Plan. For projects less than the land disturbance program thresholds, employ BMPs for erosion and sediment control.
- All construction or maintenance activities that excavate in or discharge any dredge or fill material into a "water of the United States", which includes ditches, creeks, rivers, lakes, ponds, and wetlands, requires a Corps of Engineers 404 permit and an MDNR 401 water quality certification. Examples of construction or repair activities requiring a permit include: bridgework, culverts under road crossings, dredging, or placing rip rap in creeks. See Appendix 5-F1 for a summary of permit requirements.

## DE-ICING

- Use calibrated chemical applicators for salt and brine applications.
- Minimize the use of salt without compromising public safety.
- Stop salt feed on trucks at stop signs, where equipped.
- Stored salt is on an impervious surface and is covered.
- As available, use road weather information such as weather forecasts, meteorological data, and pavement sensors to maximize the efficiency and effectiveness of resources.

## CLEANING

- Remove as much mud, grit, salt, and debris as possible (by scraping, brooming, etc.) prior to roadway flushing on bridges.
- Evaluate the need for street sweeping to remove grit and trash at facility parking lots and roadways within jurisdiction. Implement street sweeping, when feasible, focusing on heavy traffic patterns, seasonal variations (spring/fall), and problem areas. Record the volume of trash/debris removed to identify the priority of areas being cleaned and the effectiveness of resources used. Investigate to determine sources of litter in areas of excessive accumulation.
- The environmentally preferred sweepers are those with an integral collection device and fugitive dust control. Properly dispose of trash/debris as indicated in Section E above.
- Do not hose down parking lots in a manner that discharges wash water to the storm drain untreated.

## G. NPDES Permit status:

Facilities are operating under no exposure received October 24, 2014.

## H. Training

Employees involved in Street and Highway maintenance and repair will be trained on the BMPs in this chapter.



## Chapter 5- Maintenance of Parks, Green Spaces, Trails, and Landscaping

### A. Description of Activities:

University City has 20 green spaces totaling 260 acres of land that consist of parks, trails, and walkways.

University City has responsibility for the development and maintenance of recreational areas and green space within the city, including neighborhood and regional parks, community gardens, bike and walking paths, linear parks, trees, public facility landscaping, and public street right-of-way landscaping. The city promotes an interconnected system of open space and trails that facilitates active and passive recreational opportunities for the community.

The creation and design of parks and open space can assist in the management of stormwater by providing green infrastructure and a means of absorbing rainwater, slowing its release into streams, storing, filtering, and slowing stormwater runoff down and thus preventing or reducing flash flooding downstream. Local governments have an opportunity to use their park lands to benefit the environment and to demonstrate best practices for stormwater management.

Maintenance activities include mowing of grassy areas, pruning trees, removing fallen limbs, mulching, emptying trash receptacles, trail maintenance (repairing asphalt bike path and walking trails), routine cleaning of park restrooms, and parking lot maintenance.

### B. Locations:

- Ackert Park (includes Ackert Walkway) – 6600 Delmar Blvd. 3.8 acres
- Eastgate Park- Northeast corner of Vernon and Eastgate- 0.93 acres
- Flynn Park- Bounded by Pershing, Midvale, and Kingsbury- 6.61 acres
- Fogerty Park- 1500 block of North 82<sup>nd</sup> Blvd- 11.80 acres
- Greensfelder Park- West of 8333 Fullerton- 6.75 acres
- Greenway South- South from 6600 Kingsbury to Millbrook- 1.83 acres
- 170 Bike Trail (Great Rivers Greenway) – situated on the east side of 170 between south of Delmar and Olive Blvd – 2 acres
- Heman Park- Bounded by Midland, Olive, Purdue, Pennsylvania, and Vernon- 85.26 acres
- Kaufman Park- Mulberry and Blackberry- 7.77 acres
- Kingsland Park- Kingsland at Chamberlain- 0.84 acres
- Lewis Park- Delmar at Yale- 4 acres
- Janet Majerus Park- Raymond and Partridge Avenues- 5 acres
- Metcalfe Park- Canton and North & South Roads- 5.6 acres
- Millar Park- Canton and North & South Roads- 12.19 acres

- Mona Trail – starts at the east end of 7800 block of Shaftesbury running east to the dead-end of Warder Ave. turning Northwest along Mona Drive – 2 acres
- Mooney Park- Jackson Avenue, Delmar to Amherst- 5.2 acres
- Joseph L. Adams Park- Bid Bend, south of Forsyth- 1.6 acres
- Rabe Park- Midland at Canton- 2.0 acres
- Ruth Park Golf Course – 8210 Groby Rd. – 70.6 acres
- Ruth Park Woods- 1018-1094 McKnight Rd- 23 acres
- Wilson Buyout – Beginning west side of Midland Blvd. along the east side of Wilson Ave. and on the west side of River des Peres – 3.5 acres

### C. Responsible Parties:

The Director of Parks, Recreation, and Forestry has authority over all parks. Parks are actively managed by the Deputy Director of Parks Maintenance.

### D. Best Management Practices (BMP):

(THE FOLLOWING BMP'S ARE RECOMMENDED TO BE IMPLEMENTED TO THE MAXIMUM EXTENT PRACTICABLE)

#### PARK DESIGN AND SITING

- Creating undeveloped, natural open space and preserving established trees and other natural vegetation, particularly around natural drainage areas, such as creeks, is recommended. Tree buffers and tall grass filters around streams improve water quality, slow runoff, and prevent erosion. A minimum buffer width of 50 feet is recommended.
- Avoid site development and placing facilities in the flood plain.
- Design park sites to preserve natural resources such as wetlands and existing natural draining areas, minimizing their loss and maintaining existing trees and a riparian corridor next to creeks to the degree possible. Minimize creek crossings, and place them only after consideration of the stream features to enable natural flow.
- Design landscaping that uses native vegetation to reduce the need for irrigation, fertilizer, and pesticide. Select plants appropriate for site conditions for sun, moisture, and soil type.
- Utilize low-impact development to minimize impervious surfaces, See Chapter 5.
- In designing stormwater drainage facilities, use the following BMPs to improve the water quality of site drainage and slow the release of water to streams: wet detention ponds, micro detention basins, wetlands, rain gardens, vegetative filter strips and riparian buffers along streams, structural filter systems, pervious pavement and green (vegetated) roofs. The use of swales instead of curbs along roads and parking lots is beneficial to filter pollutants and reduce the volume and rate of stormwater flow. Fact Sheets on stormwater management practices are available from the Stormwater Manager's Resource Center at the following web site:  
<https://www.sustainable.org/environment/water/319-stormwater-managers-resource-center-smrc>

## COMMUNITY PROGRAMS

- Sponsor activities and annual events that involve the general public, schools, watershed groups, stream teams, etc., providing hands-on activities that promote water quality in their adopted parks and greenways. Typical activities include: field trips, cleanups, educational programs, restoration projects, stream monitoring, storm drain marking, and trail projects.
- Organize or participate in reforestation programs, planting native trees to buffer streams, create shade, and beautify parks. Support community volunteer group efforts in these programs.
- Require pet owners to pick up and properly dispose of pet waste in parks. Provide pet waste scoop dispensers and signage in parks to notify visitors of the requirement.
- Control wild geese populations near lakes with “no feeding the geese” signs and ordinances. Other techniques to control populations include habitat modification by increasing shoreline vegetation height, scare tactics, or relocation.

## PARK/LANDSCAPE MAINTENANCE

- Remove litter and debris regularly.
- Properly dispose of yard waste, for example, by composting. Do not dump yard waste into creeks.
- Minimize mowing of open space sites, depending on site objectives.
- Mow grass higher and leave grass clippings on the lawn to retain moisture and provide nutrients.
- Remove exotic invasive vegetation and replace with native plantings as resources are available.
- Perform soil tests to determine the optimum fertilizer application rate.
- Apply fertilizer only in cool weather, preferably fall. Avoid application before a rain, and do not apply fertilizer at rates higher than indicated in on label instructions. Apply slow release fertilizers such as methylene urea, IDBU, or resin-coated fertilizer.
- When disturbing land, such as clearing vegetation and destroying the root zone, employ BMPs for erosion and sediment control. For details concerning these BMPs, see the SWPPP link on the following web page:  
<https://www.stlouisco.com/YourGovernment/PublicWorks/Permits/LandDisturbance> All construction or maintenance activities that excavate in or discharge any dredge or fill material into a “water of the United States”, which includes ditches, creeks, rivers, lakes, ponds, and wetlands, requires a Corps of Engineers 404 permit and a MDNR 401 water quality certification. Examples of activities that require a permit include: placing culverts in creeks, constructing outfalls, and stream restoration activities. See Appendix 5-F1 for a summary of permit requirements.

## INTEGRATED PEST MANAGEMENT

- Use Integrated Pest Management (IPM) techniques to minimize the use of pesticides. Pesticide application should be timed carefully and combined with other pest management practices. Pests and their development stage should be identified accurately and pesticide applications made only when necessary, using the least amount needed and the least toxic product for adequate pest control.

- Use mechanical controls to keep pests in check, such as species-specific, pheromone-based traps. Remove pests by hand. Eliminate conditions favorable to pests and place barriers to control pests and weeds.
- Use natural, biological controls, when feasible, including natural enemies of pests, such as: predators, parasites, pathogens, pheromones, and juvenile hormones.
- Reduce the risk of West Nile Virus by reducing stagnant water (mosquito breeding grounds) caused by cans, containers, and tires present in litter and junk piles. Keeping stormwater drainage gutters and drains clean will also reduce conditions suitable for mosquito breeding. Refer to MU Extension IPM Guides at: <https://ipm.missouri.edu/pubs/> Minimize the use of herbicides through an Integrated Pest Management technique for weed control. This includes practices that keep plants healthy, such as selecting disease and pest-resistant varieties and maintaining good growing conditions. For turf grass, prevention of weed infestation begins with practices to promote healthy grass through proper planting, watering, fertilizing, mowing, aerification, and thatch control. Refer to MU Extension Publication IPM1009: <https://extension2.missouri.edu/MX399>

#### PESTICIDE/HERBICIDE USE

- When pesticide or herbicide use is required, select pesticides carefully, avoiding highly water-soluble and very environmentally stable products to minimize the potential for leaching from soils into waterways. Environmentally friendly products readily degrade in the environment and/or bind to soil particles.
- Consider the vulnerability of the area in which pesticides are applied, avoiding areas with streams, ponds, sinkholes, or wells. Sinkholes are an environmentally sensitive area, because they allow surface water to reach groundwater quickly with little natural soil filtering.
- Apply pesticides when the target pest is at its most vulnerable life stage, and use site-specific rather than wholesale application.
- Read pesticide labels carefully for information and restrictions about the rate, timing, and placement of the pesticide in that container. Calibrate equipment to apply at the proper rate. Apply when the threat of rain is low to avoid wasting material and washing pesticide into the waterways. Carefully calculate how much pesticide concentrate is needed to treat the specific site with the equipment being used, to eliminate the disposal of excess spray mix.
- Store pesticides in their original containers in a cool, well-ventilated building with a concrete floor. Handle pesticides carefully to avoid spills.
- Dispose of pesticide waste properly, following label instructions.

#### LAND DISTURBANCE

- Comply with St. Louis County or municipal land disturbance ordinances and programs implemented under the St. Louis County Phase II Stormwater Management Plan. For projects less than the land disturbance program thresholds, prevent erosion of soil from the bare ground at the site by employing erosion and sediment control BMPs, such as: soil stabilization with mulch or seeding, settling basins, sediment traps, vegetated buffer strips, and silt fencing for perimeter controls. For details concerning these BMPs,

see the SWPPP link on the following web page:  
<https://www.stlouisco.com/YourGovernment/PublicWorks/Permits/LandDisturbance>

#### E. NPDES Permit status:

Facilities are operating under no exposure received October 24, 2014.

#### F. Training:

All employees directly involved in the design, construction, and maintenance of landscaping, trails, green spaces, and parks will be trained on the BMPs in this chapter. Affected employees will likely be: facility engineers, park management, equipment operators, gardeners, laborers, and contract operations providing these services.

## Chapter 6- Transfer Station Solid Waste Management Plan

### 1.0 Operations

#### 1.1 Solid Waste Inspection, Acceptance, Handling, and Removal

##### *Vehicle Scaling*

All vehicles delivering or shipping waste will cross the University City Transfer Station scale. The scale software and hardware equipment located in the Sanitation office will account for all inbound and outbound waste shipments. All weights will be monitored electronically by computerized software located in the same office. In the event that a trailer is loaded beyond the weight limit for roadway passage, the trailer will be required to return to the transfer station building and unload the necessary material.

##### *Monitoring and Inspections*

Prohibited and unacceptable waste materials will be restricted from the University City Transfer Station through appropriate signs at the entrances to the site and through visual inspection by personnel. Facility personnel shall be thoroughly trained in the handling of acceptable/unacceptable waste and in all aspects applicable to their job. All personnel involved in handling of material at the site will be trained to identify unauthorized material and carry out the appropriate measures as required by University City Transfer Station policy in accordance with Local, State, and Federal Regulations. Unacceptable waste that is discovered prior to unloading will be turned away. If unacceptable waste is discovered after it has been unloaded it will be isolated and removed by the owner. If the owner cannot be identified, the unacceptable waste will be isolated and removed within 24 hours for putrescible waste and within 7 days for non-- putrescible waste by a City staff, or authorized contractor that is capable of handling said material.

The Transfer Station equipment will be monitored and inspected for malfunctions, wear, operator errors, and spills or discharges that may cause an impact on the environment or public safety. Any identified hazards revealed by the inspections will be immediately remedied. If a potential hazard is imminent or has already occurred, action will be taken. The corrective actions will be reported to the appropriate agency, when applicable. All inspections will be recorded and kept on site.

##### *Determination of Acceptable Waste*

The Transfer Station operation will accept non-hazardous residential waste, yard waste, tree brush in limited quantity, batteries, and tires generated by on-site fleet maintenance staff to be recycled. Construction and demolition debris may be accepted by various University City divisions on a temporary basis only. Hazardous and infectious wastes such as asbestos, radioactive and nuclear wastes as well as chemicals, and railroad ties will not be accepted at the Transfer Station. Signs will be posted at the entrance to the site indicating that these materials are unacceptable

## 1.2 Recovered Material Inspection, Acceptance, Handling, and Removal

- The City of University City will accept electronic components for recycling during special fairs or recycling events only. The acceptable items will include monitors, laptops, notebooks, scanners, printers, all in-one computers, fax machines, and televisions. The material will be sorted, separated, placed on a pallet, and shrink wrapped for delivery to market. The material will be occasionally stored in the area formerly used as the Material Recovery Facility. In addition, solid waste supplies such as lids, containers, wheels, and carts may be stored in the same location.
- The City of University City has implemented a refuse cart recovery program. Trash carts are repossessed by the city if a resident fails to pay for trash service over an extended period of time. The carts are removed from the homeowner's property and stored at the Central Garage Facility until the responsible parties' bill is paid in full or a payment agreement is established.

## FACILITY ACCESS AND HOURS OF OPERATION

### 1.3 Hours of Operation

The City of University City's hours of operation to receive materials are Monday through Friday from 7 a.m. to 3:30 p.m. and on Saturday after a holiday from 7 a.m. to noon. The Residential Recycling Drop-Off center is open 24 hours to receive acceptable recycling materials.

## 2.0 Facility Signage

- All storage areas will be clearly marked with the appropriate signage.
- Access to the Facility will be controlled by signage. The signs shall be displayed prominently at the front and rear site entrances. A sign will display the following information:
- "This Facility accepts: Municipal Solid Waste (MSW), non-hazardous residential and commercial recyclables, pre-sorted loose recyclables, newspapers, magazines, junk mail, OCC, old office paper/computer paper, all colors of food/beverage glass containers, aluminum, steel beverage cans, PET (clear/green beverage), HDPE (natural, pigmented, blown containers only), and bulk steel/metals.
  - "WARNING: Transporting any unauthorized hazardous waste to this facility for disposal is prohibited by law. Persons violating this prohibition are subject to Civil and Criminal Prosecution."
- Additional Facility signage will direct incoming loads to the appropriate processing area. The hours of operation and emergency telephone numbers shall also be posted.

## 2.1 Control of Employee and Public Access

Access will be controlled to periods when responsible operating personnel are on duty in accordance with the facility operation hours indicated above. The facility is enclosed with all processing and tipping area contained with the building. The facility will be closed and locked at the end of each operating day. Office and operations personnel shall prohibit any unauthorized access and shall record all incidences of unauthorized access.

Vehicle access to the site is limited to two roadways. Access to and from the roadways are restricted by fencing and a gate. The entrance gates shall be closed and locked at the end of each operating day.

Outside storage of recyclables will be either enclosed in 30-yard roll-off containers or secured by a tarpaulin.

All visitors will be required to check-in at the appropriate office. A sign indicating this will be posted in the parking area. Employees will walk from the parking area to the office prior to the start of the day.

## 2.2 Control of Collection Vehicle and Transfer Trailer Access

To control access to the site, a two-way entrance will be used by collection vehicles, transfer trailers, employees, and visitor vehicles. The entrance gate will be closed and locked during non-operational hours.

## 2.3 On-site Roadways and Parking Areas

The parking area will be able to accommodate personal vehicles, city vehicles, equipment, and buses. All inbound collection vehicles and trailers, after crossing the scale, will travel south in a counter-clockwise direction towards the tipping floors.

After tipping and transfer operations have occurred, vehicles will move in a southerly manner to exit.

## 2.4 Facility Supervision

Personnel are required to be on duty at all times during operation of the University City Transfer Station. In addition, a minimum of one supervisor will also be on duty the entire working day. All personnel will be qualified and have the necessary licenses required by Local, State, and Federal regulations. The movement of traffic on-site will be controlled by University City Transfer Station personnel and appropriate traffic signage. The City Transfer Station will have suitable fencing and locking gates to prohibit unauthorized entry to the site during periods of Facility closure.

## 3.0 Facility Personnel and Equipment

### 3.1 Facility Personnel

Preliminary Staffing Plan



POSITION	NUMBER	DESCRIPTION
Manager	1	Supervise all facility operations, transfer station & MRF; hires personnel, assist in long-range planning of city operations; administers and assist in accounting and data management activities; supervise reporting and inspections.
Crew Leader(s)	2	Assists Manager in day-to-day facility operations. Supervise crews, write reports.
Heavy Equipment Operators	9	Operates processing equipment, inspects, and assists in the collection of MSW in the field. Performs routine preventive maintenance.
Transfer Trailer Drivers	2	Hauls MSW and Residuals to Landfill. Maintains Transfer Station equipment, inspects loads processed at Transfer Station.

Note: Personnel may be added or subtracted as required for efficient facility operations.

### *Facility Supervision*

All operations at the University City Transfer Station will be performed under the Sanitation Superintendent. These personnel will have the responsibility of ensuring the Transfer Station is in compliance with the University City Transfer Station maintenance manual and all other applicable Local, State, and Federal regulations.

### 3.2 MSW Transfer Facilities Equipment

University City solid waste processing transfer station will use the following on-site equipment for receipt, storage, transfer, and housekeeping functions.

1. Scale (10' x 65' pitless truck platform type)
2. Front-end Loaders
3. Cardboard Compactor (1)
4. Semi-Tractor
5. Close Top Trailers
6. Open-top Roll-off Containers
7. 1.5 c.y. - 5 c.y. containers
8. Forklift Truck
9. Solid Waste Compactor (1)
10. Fire extinguishers will be located on/near all equipment
11. Street Sweeper

### 3.3 Storm Water Drainage Management

Storm water runoff from the site currently drains from the East to the West where there is a drainage channel flowing North to South. The developed site shall include a series of storm water inlets.

Contamination of surface water shall be prevented through the design of the building floors and through regular cleaning of area.

The Facility will have a roof gutter system at the perimeter of the eave. The pitched roof will direct the rain water to the gutters at the eve of the Facility.

### 3.4 Waste Water Management

All free liquids, wash water, etc., generated during daily facility cleaning from within the building will be collected in a fully enclosed sanitary sewer system where it will ultimately be treated and released by St. Louis Metropolitan Sewer District.

In the event of accidental spillage of waste water, the DNR Water Pollution Control Program shall be notified immediately. Any accidental spillage that occurs on the facility site shall be contained and cleaned by trained city personnel or Fire Department.

### 3.5 Air Quality

Emissions are not anticipated to be a problem on-site, however, they will be monitored and appropriate corrective actions are taken if necessary.

No hazardous gases will be produced or stored at the facility; therefore, there is no possibility of any release. Decertification of white goods (Freon) will be handled by a certified processor.

### 3.6 Vectors

For both the Facility and the surrounding site, a good housekeeping program will be utilized to rid the area of all standing water or potential areas for mosquito infestation. Any spilled material will be promptly removed to preclude any source of breeding for flies and other insects.

All solid waste will be covered after the trailers are loaded, and the Facility will be cleaned daily. The tipping floor(s) will be sprayed and washed daily to ensure good housekeeping practices. Floor sweeping and removal of litter, will minimize the need for pesticides and insecticides and thereby further reduce any potential impact to groundwater or surface water. This task will be completed daily.

The City currently outsources pest control and does not maintain a contract with any given company. A designated contractor performs Vector Control inspections to make sure no problems exist or any further treatments are necessary for rodents.

The City's Community Development Department will also maintain a combination of chemical, physical, and natural vector control measure, as necessary. These will include, but not be limited to, bat stations, perimeter wall spraying, interior fogging, spring traps, glue boards/strips. Natural control measures will include exterior bat and purple martin houses.

Facility vector control/housekeeping records and a schedule of on-site pest control services should prevent any problems with vectors. Also, a Vector Control Contingency Program shall be implemented when necessary to prevent or rectify problems. An assessment shall be made of the operating conditions to see what conditions are being maintained that are favorable for the existence of vectors and necessary corrective action will be taken.

### 3.7 Aesthetics and Housekeeping

On-site personnel will routinely monitor the entire site of transfer station operations. At a minimum, there will be daily cleanup of litter and spillage around the entire facility, as well as the following areas by maintenance crews as part of mandatory housekeeping procedures.

#### Tipping area and Ramp:

- Will be swept, washed, and maintained daily. Keeping the area clean from litter, liquids, and debris.

#### Compactor Area:

- Will be maintained utilizing front-end loader to collect overflow from transfer trailers. This area will be swept at the end of each shift and all debris will be removed.

#### Yard Area:

- The Central Garage facility will be swept weekly. Litter around the perimeter will be collected and disposed of by staff. All vehicles will be parked on the line. Containers will be stored in its designated area

#### White Goods Area:

- White Goods will be collected and stored in the provided roll-off container and delivered to market as needed

#### Residential Recycling Drop -Off Area:

- Will be maintained twice daily at a minimum. All materials will be collected and stored in the appropriate bins and storage containers until time to deliver to market. The drop-off will be swept and clear of contaminants and debris. The recyclable materials will be taken off site within 7 days of acceptance.

#### *Housekeeping Standards*

- The MSW transfer station and processing area will not store putrescible waste longer than 24 hours and no longer than 7 days for non-putrescible waste. The Tipping floor will be cleaned after each 24-hour period by sweeping the area.

#### *Maintenance Requirements*

- The University City Transfer Station equipment will be periodically power-washed or cleaned by other appropriate methods to prevent odors and vectors. All on-site equipment and machinery will be maintained to prevent equipment failure to the maximum extent practicable. Shelter for mobile equipment maintenance and repair will be available on-site. On-site roads and all entrances to the site will be kept passable and safe in all conditions. Sanding or other appropriate measures will be taken when ice is present on-site

#### *Facility Drainage*

- There will be floor drains located in the Recycling and Process areas of the facility to collect the free liquid and wash water generated during daily facility cleaning. Any fluids which may be contained with the incoming MSW collection vehicles will be directed to the drain located to the south of the Tipping Floor. Any fluids which may be contained within materials that are discharged from the collection vehicles will be power-washed with a hose. During equipment clean-out, it will be swept and thoroughly washed down through daily cleanup operations.

The floors have been designed so that once any liquid enters the building it will remain contained within the building perimeter. All floors and open paved surfaces will be cleaned daily by sweeping. Water collected from cleaning the floors and wash down of the equipment will be collected and deposited into one of the floor drains. The University City Transfer Station and Recycling Center will be washed down once a week or when needed weather permitting.

## 4.0 Processed Solid-Waste and Residue Handling

### 4.1 Storage and Removal of Waste

Removal of the acceptable wastes at the University City Transfer Station will occur using a front-end loader. The front-end loader will transfer the waste from the ground to the transfer hopper at the

transfer station. The MSW tipping and storage areas will be cleared and all waste will be containerized at the end of each operating day.

Waste spillage from the loading of transfer trailers in the load-out area will be cleaned up using a pay-loader after the loading of the last truck of the day.

***Banned Landfill Materials***

One of the principal objectives of the MSW receiving and inspection procedures discussed in this document is to ensure that no banned landfill materials are included in the MSW loaded into the transfer trailers. The following table summarizes how these materials will be handled if they are identified and sorted from the MSW tipping floor:

<b>MATERIAL</b>	<b>PROPER DESTINATION</b>
White Goods	PSC Metals or designated scrap facility
Yard Waste (including Christmas trees)	To be transferred to adjacent yard waste composting nursery facility or other designated area
Whole Tires	Recovered on-site by local tire vendor and no more than 25 tires are stored during a single collection period
Used Oil/Antifreeze	Recovered on-site by R&S Oil Service or City's other service provider
Auto Batteries	Recovered on-site by a designated vendor

***Recoverable Waste***

The City collects curbside recyclables (paper, cardboard, and commingled containers) with residential MSW. These recyclables will be removed from the curbside and transported directly to the vendor. In addition, the city collects bulk items in the spring and fall the following items are collected during this period: white goods, metal, furniture, glass, tables, windows, and doors.

***MRF Residual Materials***

Residual Materials generated by Residential Recycling Drop-Off will be accumulated in self-dumping containers located inside the facility. This material will then be loaded into Roll-off containers or any other appropriate container for delivery to market. Other materials will be properly stored on pallets for good housekeeping

**4.2 Safety Operations**

The University City Transfer Station safety plan will work in conjunction with City policy and protocol. In addition, local Police, Fire Department, and Health Officials will have the right to immediate access to the Facility.

**4.3 Emergency Coordinator**

The list below contains the name, address, and phone number of the person(s) who will act as the emergency coordinator(s) in the event of an emergency on-site.

Dennis Lockett  
1015 Pennsylvania Avenue University City, MO 63130  
(314) 505.8575  
dlockett@ucitymo.org

#### 4.4 Emergency Services Contacts

University City Fire Protection District:	911 or (314) 505-8591
Police Emergency:	911 or (314) 725-2211
Medical Emergency:	911
Environmental Emergency	Designated Emergency Coordinator(s)

#### 4.5 Personal Protective Equipment

All employees will receive on-site safety training in order to acquaint them with the potential problems and safety issues that can arise in the operation of the Facility. All employees will be required to wear hearing protection, safety glasses, and hard hats. Employees handling the MSW or Recyclables will be required to also wear gloves. This does not refer to employees scavenging and is only an acceptable practice as a matter of housekeeping or extenuating circumstances (e.g., policing litter, removing unacceptable waste, etc.). The following personal protective equipment will be made available to all University City Transfer Station and Residential Recycling Drop-Off personnel:

- Rain gear
- Gloves
- Safety Glasses
- Hearing Protection
- Breathing Apparatus
- Hard hat

The personal protective equipment that will be used by each University City Transfer Station employee will depend on their job functions. In addition, barricades, cones, warning signs, and warning lights may be utilized as well.

#### 4.6 Safety Training

All University City Solid Waste employees will receive general safety training and training specific to their job responsibilities when first hired and on a continuing refresher basis. General safety training will be based on the applicable Industry Standards. Specific equipment training will be based on data provided by the manufacturer's manuals.

#### 4.7 General Safety Guidelines

The following guidelines will be used to develop an occupationally safe work environment:

- All required safety equipment and clothing will be worn when performing daily work assignments.
- No equipment will be operated by anyone who has not received proper training for it.
- Abuse of tools and equipment will not be permitted.

- Management will be responsible for issuing warnings to their subordinates if they observe unsafe or dangerous conditions. Employees are responsible as well for reporting these conditions to the appropriate supervisor(s).
- All staff will immediately report all accidents and injuries to the appropriate supervisors.
- The safety devices and controls provided shall be maintained in good operating condition and replaced when needed.

#### 4.8 Fire District Services

In the event a fire occurs in the payload of any truck or trailer, the vehicle will discharge the load onto a designated area. Fire services will be contacted immediately. Hoses, fire hydrants, or connections will be used to extinguish the fire. The vehicle will be inspected for damage. A front-end loader will be used to reload the material after the material has been extinguished.

In the event a fire occurs on the tipping floor, the hoses and fire extinguishers will be used to extinguish the fire. Fire services will be contacted immediately.

Smoke and fire detection equipment will be designed and installed according to Local and State Regulations. In general, smoke and fire detection equipment will be strategically installed in all occupied areas of the University City Transfer Station and Recycling Center building. Alarm circuits, when energized, will activate enunciators within the Facility.

The following sections below identify the additional on-site fire control equipment. It will be maintained and tested on a scheduled basis in accordance with manufacturer and code requirements.

##### *Fire Hydrants*

There are several fire hydrants on-site and will be utilized in the event of a fire at the facility.

- 700' from the Northeast corner of the University City Transfer Station and Recycling Center process building.
- 300' from the Southeast corner of the University City Transfer Station and Recycling Center process building.
- 95' to the East of the University City Transfer Station and Recycling Center.

##### *Fire Extinguishers*

Fire extinguishers will be located in the administrative office(s), transfer station processing area, and on all rolling stock and equipment.

#### 4.9 Spill Control Equipment

To provide protection in the event of a spill, absorbent materials including sand, oil dri, terra- green (soil, conditioner) or equivalent, and chamoil-away will be stored on-site in bags. A minimum of 100 pounds of each will be stored in the University City Garage area.

#### 4.10 Internal Plant Radio System

A two-way radio system will be used at the facility. The plant supervisory staff, loader operators, and office personnel will have two-way radios to ensure that communication will occur between different areas of the facility.

#### 4.11 Salvaging

Salvaging/scavenging by visitors and city personnel is strictly prohibited.

#### 4.12 Unauthorized Materials

The Transfer Station is not permitted to handle hazardous or infectious wastes of any kind, including asbestos, medical waste, explosives, or radioactive wastes. Signs will be posted at the entrance to the site indicating that these materials are unacceptable. This however does not preclude the possibility that some haulers may knowingly or unknowingly deliver a hazardous material to the transfer station.

- Any vehicle suspected of carrying hazardous materials will be inspected by trained University City Transfer Station personnel. All personnel involved in handling material at the site will be trained to identify unauthorized material and carry out the appropriate measures as identified in this contingency plan.
- If personnel find any evidence of a possible hazardous substance, the vehicle will not be allowed to unload and the DNR will be notified immediately and given details of the situation.
- If a vehicle reaches the transfer station and suspected hazardous substances have been discharged, the material will be confined and isolated for removal by a professional firm licensed for the handling of such waste. Then DNR personnel will be notified of this situation.
- Once the material is isolated, routine transfer operations will continue as normal. This material will be removed within 24 hours for putrescible and 7 days for non-putrescible waste.

#### 4.13 Explosion Prevention

No explosive materials of any kind will be accepted at the facility. The potential for receipt of explosive materials does exist and will be minimized through the observation and inspection procedures of incoming loads. Proper procedures will be taken.

1. The material will be observed as it is unloaded into the hopper, as well as during transfer and load-out procedures.
2. Any material that is observed as being potentially explosive or otherwise suspected to be hazardous will be quarantined and handled as "unauthorized waste."

#### 4.14 Evaluation Plan

Evacuation of the Facility will be required in the event of a life-threatening emergency such as fire, explosion, major hazardous substance release, or other public safety emergency either on the site or in the immediate vicinity. Depending on the nature of the emergency, incoming waste vehicles would be directed to alternate disposable facilities or the backup landfill. All equipment will be shut down as quickly as possible. The Emergency Coordinator will provide instructions via the internal radio system. The fire alarm system can be used as well. Non-essential personnel, or all personnel, would be directed to a designated off-site secure area by the Emergency Coordinator.

The proposed evacuation routes will utilize new and existing roadways and are designed to move people away from the building as early as possible. The order for evacuation will be transmitted via the internal radio system for the Emergency Coordinator through supervisors to all people on site.

#### 4.15 Records

Status reports will be issued monthly by the Sanitation Superintendent. The Status Report will identify the actual quantity of solid waste received daily, any major operational problems, complaints, or difficulties, and control efforts for vector, odor, dust, and litter. Any and all corrective actions recommended and those corrective actions taken will be documented as part of the Monthly Report.

Records concerning volumes of incoming and outgoing loads to a permitted sanitary landfill, productivity reports, disposal billing, and general office records will be maintained. Recycling records will also be maintained as the volumes recycled and disposition of the commodities.

#### 4.16 Contingency Plans

Solid waste shall not be accepted at the Transfer Station if the available storage capacity is full or the facility is expected to be out of operations for more than twenty-four hours. In the event the facility is out of operation for more than twenty-four hours, all incoming trucks will be routed directly to the appropriate landfill. This will continue until the facility is operational again.

### 5.0 Closure Provision

The Saint Louis County Department of Health and all other appointed authorities including Missouri Department of Natural Resource will be notified immediately in the event of closure. Notices will be sent via mail, e-mail, and communicated via telephone where applicable. All haulers and their entities will be notified of the same. Access will be controlled in and out of the facility by the City of University City or any other appointed authority contracted to do such by the City. The appointed authority of these events will be controlled by the Sanitation Superintendent or any other employee authorized to perform such an event.



## Chapter 7- Water Quality Impact Assessment of Flood Management Project

### 1. Description of Activities:

New flood management projects located within the co-permittee's jurisdiction must be assessed for impacts on water quality. Existing projects must be assessed for incorporation of additional water quality protection devices or practices, where feasible. Flood management projects in the Plan Area can include: regional stormwater control (retention basins, detention basins); flood control levees and associated pump stations; stormwater drainage conveyance capacity improvements; projects involving land buyouts; and designated uses of flood plain land.

Stormwater management projects in both development and re-development will be assessed for water quality impact, according to MSD's "Rules and Regulations and Engineering Design Requirements for Stormwater Drainage Facilities", which address the Stormwater Management Plan water quality requirements under MCM 5. Projects within designated levee districts, such as Monarch-Chesterfield, Earth City, and Riverport will be based on the Stormwater Master Plan for these districts. All flood management projects involving channel modification will also be assessed for aquatic and water quality impacts through the Corps of Engineers 404 permit and MDNR 401 water quality certification process.

### 2. Locations:

Existing projects located within the Plan Area include: *(INSERT LIST OF FLOOD MANAGEMENT PROJECTS)*

### 3. Responsible Parties:

All co-permittees that plan, design, or install flood management projects are subject to this chapter. MSD has general responsibility for stormwater drainage facilities in the Plan Area. St. Louis County, municipalities, and property owners have responsibility for the drainage facilities not dedicated to and maintained by MSD. St. Louis County and municipalities maintain control over planning and zoning, land use regulations, and flood plain management through ordinances.

### 4. Materials/Supplies acquisition, storage, and usage:

Not applicable. For the construction phase of work, land disturbance requirements will apply. See Chapter 2 and 8 for construction and maintenance.

### 5. Waste generation, storage, disposal, recycling:

Not applicable. See Chapter 2 and 8 for maintenance.

## 6. Best Management Practices (BMP):

- Implement and enforce ordinances and/or procedures requiring that water quality factors be incorporated into the design and operation of stormwater/flood control structures.
- Inspect existing flood management facilities on a specified frequency to determine water quality impacts and exploit opportunities for improvement.
- Existing control structures undergoing renovation are modified to the maximum extent practicable to meet new construction criteria in MSD's "Rules and Regulations and Engineering Design Requirements for Sanitary Sewage and Stormwater Drainage Facilities".
- Design new flood management projects to prevent or minimize adverse water quality impacts, exploring alternative programs utilizing non-structural flood damage reduction and streambank stabilization measures to the maximum extent practicable, such as flood proofing houses, and buy-outs.
- Use models based on fully developed conditions, and adopt a freeboard above base flood elevation for development.
- Identify existing wetlands or other natural open space areas, particularly around streams, and preserve them from development so they can provide natural attenuation, retention, or detention of runoff.
- Survey watersheds downstream from proposed projects to determine potential water quality impacts. Design proposed projects to minimize downstream impact.
- Work closely with local governments, environmental organizations, and others to develop multi-use open space corridors along streams which will allow for overbank floodplain storage.
- Floodplains are preserved to the maximum extent practicable.
- Use non-structural flood management practices to the maximum extent practicable, utilizing acquisition of flood-prone property where possible.
- Open stormwater conveyance systems are used to the maximum extent practicable to preserve natural conditions and habitat.
- Channel improvement projects are to use natural approaches rather than concrete, riprap, or other "hard" techniques to the maximum extent practicable.
- Inlets and outlets from closed portions of conveyance systems are designed to minimize scour and erosion.
- Trash racks are provided at outlet structures of detention ponds and other flood control structures to capture trash and floatables.
- Employ natural solutions and use controls that preserve the hydrology of a site as the first line of flood control to the maximum extent practicable.

## 7. NPDES Permit status

Not applicable

## 8. Training:

Employees and contractors responsible for the planning and design of the flood management projects identified in Section A will be trained on the BMPs in this chapter. In addition, employees performing this work will be familiar with MSD's rules and regulations and engineering design requirements for stormwater drainage facilities.

## Notes on June 23 meeting with USACE team (Eric S)

A lot was covered, esp. with regard to incorporating our recently-submitted water level data into their model. It would be nice to have a written summary of that from Joel because there was more detail than I could follow.

Channel clearing - Joel asked MSD (Jeff Riepe) if MSD clears the channel of debris. He replied that he does not know for sure but that they usually do not clear from unimproved parts of channel, but would do so in improved portions, and specifically cited the stretch between the Pennsylvania bridge and tunnel as improved. He did state that, even in unimproved portions, they would remove a blockage such as a fallen tree that is obstructing the channel. He stated that one of the reasons they do not clear unimproved portions is their belief that it would violate corps regulations. Joel replied that the corps would have no problem with it if they were only returning the channel to its original state by simply clearing debris. To my ears, it sounded like he was maybe even prodding MSD a bit on the issue.

Use of our recent water elevation data – A lot of detail was covered here very quickly by Joel because of meeting time constraints. It would be nice to have a written summary from him but if not, maybe we can elicit additional detail at the July 6 meeting. Joel emphasized that his main calibration is gauge 22 but that he spent a significant amount of time revising the model from incorporating our data. For each location for which we submitted data, he summarized actual vs. model levels. (This is what would be nice to have in writing but perhaps we can capture more in the July 6 meeting if we cannot get before then.) Although there was more detail than I could follow it seemed to me that he generally got good agreement between 2008 actual and model but had real trouble with 2020 levels, especially at Groby. He stated that the model does not incorporate debris blockage and he is suspecting that may be significant and affecting results. This may explain motive behind his question above to MSD. He asked if debris was a problem at that bridge and I replied that it was (and cited attached photos from 2020 flood) and that we also suspect it is undersized. He concurred that this is likely. At a later point, Janet said that even if measured water surface elevations are greater than modeled, the data only adds to the corps interest in this mitigation project. They asked if we had any further elevation data. I told them what we recently sent was it for now but that we may add as additional info comes in from public. They stated that this can be incorporated when it happens but that for now, they needed to proceed using the revised model to keep from stalling the project.....this is still at low-level design stage, nothing in stone.

Modeled levels d/s of Kingsland (tunnel) – Joel stated that 25-yr modeled levels in this area were the result of incorporating input into the tunnel from the NE trib and esp. Engleholm. He said he knows the model is conservative in estimating surcharge east of Kingsland, but insisted this was necessary. It was hard to follow his discussion about the rating curve he established for the tubes, but discussed that adding the flow from the tribs added flow and raised the water surface. He also added that regardless of the rating curve assumptions, the model differences were insignificant upstream of Pennsylvania.

There was resistance to changing any model assumptions due to the ripple effect on the other aspects (real estate, cost, est).

FEMA 100 year floodplain – Joel stated that FEMA’s modeled 100- yr floodplain is too low. He also said there is a proposed modification coming out soon, which he also believes is too low. I believe (not sure) he said this has to do with how tubes are modeled. He used “PC-SWMM” model to develop rating curve for tubes, which he regards as resulting in better model results.

Sherwood Lake Dam – They conferred with USACE dam safety division. USACE’s inspection in the 80s was a one-time thing that was done in response to a dam break. Dam inspection is not a typical Corps program and it did not continue. While this dam is not their responsibility, that office could do a dam safety / brake study but at extra cost. It is beyond scope of the current study because a dam break is considered a statistical anomaly whereas the current study is based on probable events. Janet also said that because of the public safety nature of a dam breach, a study also triggers lots of internal review and reporting requirements that increase man-hours, and thus costs. Additional cost required for data collection (life safety, hydraulics) to extend the RAS model up to Sherwood Lake. Study would cost in \$50-100k range. She said if city wants to pursue, cost share might be available through their FPMS office (Flood Plain Management Services), but that there is a queue of projects and would be a lengthy process.

Survey of residents on floodproofing – The day before the meeting, the corps made several suggested revisions to the commission’s survey draft. The corps is happy to have the survey and said results would be significant to their planning. I stated that other commissioners have not yet seen their suggestions but that I believe they will be well-received and incorporated. They inquired about our timeline. I stated that this has not been discussed with all commissioners but in my view, it should be done ASAP. Eric K added that this and other public information was scheduled for late July as part of the city’s storm water management plan study.

Sinan or Eric – Please send the two following pictures to Joel. Or give me is address and I will.



Groby Bridge, u/s (west) side, Aug 9, 2020 (Stein photo)



Groby Bridge, looking south with u/s on right, August 9, 2020 (Stein photo)