D-2. GSI Concept Plans
Proposed green stormwater infrastructure (GSI) for Seventh Avenue Park focuses on directing adjacent roadway runoff to the park's existing gravel parking lot and basketball court, improving the surfaces and functions of these features, while intentionally leaving the majority of the park's open space and programming untouched. Roadway runoff can be directed from Cubbage Street via new inlets and piped into a stormwater storage bed below a new parking lot surface consisting of permeable or conventional pavement. If landscape amenities are desired, bioswales can be added to the concept. Roadway runoff from Margaretta Street can be directed into a stormwater storage bed beneath the basketball court (assuming the court is still desired), which can be finished with either a permeable or conventional pavement surface. The GSI could be designed as an infiltration and/or slow-release system, depending on the subsurface conditions encountered.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Proposed green stormwater infrastructure (GSI) for the Carnegie Borough Park n Ride site focuses on maximizing stormwater capture by disconnecting a large portion of the adjacent neighborhood from the combined sewer and instead directing runoff via new inlets and new separate storm sewer to the proposed GSI. The proposed GSI can be a stormwater storage bed below a new parking lot surface consisting of permeable or conventional pavement. Landscape amenities are desired, bioswales can also be considered. The GSI could be designed as an infiltration and/or slow-release system, depending on the subsurface conditions encountered.

**General Notes:**
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and potential additional). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will be designed as an infiltration and/or slow-release system, or conventional pavement. If landscape amenities are desired, bioswales can also be considered.

**Data Sources:**
- **ALCOSAN:** Sewer Structures, Sewer Pipes, Subcatchments
- **Allegheny County:** Parcel Data, Contours
- **JACOBS:** Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The Port Authority Park and Ride parking lot is a large impervious surface that can be managed with green stormwater infrastructure (GSI). A subsurface storage/infiltration trench can be placed underneath the existing parking stalls and covered with either a permeable or conventional pavement surface. If landscape amenities are desired, small bioswale areas, bioswales, and/or tree trenches can be added to the design. In addition, a portion of Station Street’s runoff can be directed into an additional GSI feature in the southern parking area that could be a subsurface storage/infiltration trench with a permeable or conventional pavement surface.

Note: All potential GSI systems will overflow to existing combined sewer.
Proposed green stormwater infrastructure (GSI) for Crafton Park focuses on utilizing the park’s open space to manage stormwater runoff from the streets surrounding the park. Directing roadway runoff via new inlets and new separate storm sewers to the proposed GSI features essentially "disconnects" the neighborhood's streets from the combined sewer system and manages stormwater locally. If a low-impact approach is desired, the proposed GSI features can be stormwater storage beds located below the existing playfields. This minimizes disruption to usage of the park's open space and recreational features. If more visible features are desired, a rain garden and/or bioswale can be added as potential GSI features in addition to the stormwater storage beds, which can be designed as an infiltration and/or site-reuse system, depending on the subsurface conditions encountered.

General Notes:
1. GSI footprints shown are approximately sized at a 10:1 loading ratio for their respective drainage areas (local and enhanced).
2. All potential GSI systems will be sized at a 10:1 loading ratio for their respective

Data Sources:
ALCOXAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegeny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.
The Sto-Rox Junior/Senior High School has opportunities for green stormwater infrastructure (GSI) implementation at both small and large scales. On a large scale, there is the opportunity to direct right-of-way runoff from Rosamond Street, Russellwood Avenue, and Valley Street into a large subsurface storage bed underneath the existing parking lot which can be resurfaced with either permeable or conventional pavement. If landscape amenities are desired, bioswales and/or tree trenches can be added. There is also an opportunity on the northern side of the school for a smaller-scale demonstration GSI opportunity, such as a bioretention area (rain garden) that can manage the adjacent roadway and sidewalks while providing environmental education opportunities and landscape amenities. The proximity to the school provides an excellent opportunity for public education.

General Notes:
1. GSI footprints shown are approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, the GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.
Proposed green stormwater infrastructure (GSI) for the Furnace Street Parking Lot will capture stormwater runoff from Furnace Street Extension and adjacent streets and parking lots and direct it to potential GSI features within the parking lot property. These areas can be disconnected from the existing combined sewer system by installing new inlets and new separate storm sewer along Furnace Street Extension. The potential GSI features can be storage beds under permeable or conventional pavement. If landscape amenities are desired, bioswales can be added to the concept. The GSI could be designed as an infiltration and/or slow-release system, depending on the subsurface conditions encountered. Given its proximity to the creek, this concept should be closely coordinated with any other proposed sewer separation or GSI for this area.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Proposed green stormwater infrastructure (GSI) for Oakwood Park will disconnect neighboring streets in the south and west of the park, directing that stormwater runoff via new inlets and new separate storm sewer into proposed GSI features in the park. To maintain the park’s current uses and programming, the proposed GSI can be a storage bed located underneath the existing basketball court, assuming the court is still desired. The surface of the basketball court can be restored using either permeable or conventional pavement, and if landscape amenities are desired, bioswales can be included in the concept. The GSI can be designed as an infiltration and/or slow-release system, depending on the subsurface conditions encountered.

General Notes:
1. GSI footprint shown is approximately sized at a 15:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Existing Inlets

Proposed Separate Storm Sewer to Convey Enhanced Drainage Area to GSI

Bioswales

Proposed inlets

CC-28: Oakwood Park
City of Pittsburgh / POC C-25

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
PWSA: Existing Inlets, Sewer Pipes

Note: Map was prepared by JACOBS - Feb 2020
The existing sports field at Bishop Canevin School appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have the potential to manage roadway runoff from Mangon Road in addition to the school's parking lots. Stormwater runoff could be diverted from Mangon Rd. via a new diversion structure and a separate storm sewer, which would direct runoff into a proposed subsurface storage bed below the existing playfield. In addition to the subsurface stormwater feature, a bioretention area and/or bioswales could be included in the concept if landscape amenities are desired. The GSI can be designed as an infiltration and/or low-release system, depending on the subsurface conditions encountered. Note that additional investigation will be required to verify the area is combined as the sewer in Mangon Rd. is labeled as separate stormwater rather than combined.

**Potential GSI Location:**
- Storage Bed Below Playfield

**Proposed Diversion Structure and Separate Storm Sewer to Convey Runoff to GSI**

**Potential Additional GSI Location:**
- Bioretention or Bioswales

**General Notes:**
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area shown.
2. All potential GSI systems will overflow to existing combined sewer.

**Note:** Need to confirm if area is in CSS or already disconnected

**Data Sources:**
- **ALCOSAN:** Sewer Structures, Sewer Pipes, Subcatchments
- **Allegheny County:** Parcel Data, Contours
- **PWSA:** Existing Inlets, Sewer Pipes

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

**Map prepared by JACOBS - Feb 2020**
Proposed green stormwater infrastructure (GSI) for the Port Authority Parking Lot on Chartiers Ave has the potential to capture stormwater runoff from Chartiers Ave, Greenway Drive, Municipal St, and several other side streets and direct it to potential GSI features within the parking lot property. The roadways can be disconnected from the existing combined sewer system by installing new inlets and new separate storm sewers. The potential GSI features can be storage beds under conventional pavement. If landscape amenities are desired within the parking lot property, bioswales can be added to the concept. The GSI features could be designed as infiltration basins or detention ponds. The GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.

The roadways can be disconnected from the existing combined sewer system by installing new separate storm sewers which will divert from combined sewer. Close/modify (2) existing inlets at corner of Chartiers Ave and Du Bois St has the potential to capture stormwater runoff from Chartiers Ave, Greenway Drive, Municipal St, and several other side streets and direct it to potential GSI features within the parking lot property. Two direct stream inflows have also been confirmed up Greenway Drive.

Proposed separate storm sewers to convey runoff to GSI (typ)

Close/modify (2) existing inlets at corner of Chartiers Ave and Du Bois St

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- PWSA: Existing Inlets, Sewer Pipes

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The Stowe Township school bus lot is currently a significantly large impervious surface and has the potential to capture and manage stormwater runoff from both the parking lot and adjacent roadways. By adding new storm inlets and storm pipe on Thomas Street and Tunnel Way, the roadway runoff to the west of the site can be disconnected from the combined system and directed to a subsurface stormwater storage bed that can be finished with either a permeable or conventional pavement surface. If landscape amenities are desired, bioswales can be added to the concept. The stormwater storage bed could be designed to avoid conflict with the subsurface foundations of the existing light poles.

### General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced).
   - If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.
3. Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

### Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Proposed green stormwater infrastructure (GSI) at Pittsburgh Classical Academy is intended to manage the roadways and driveways within the school property in addition to several roads and parking lots in the southwest of the school that are shown draining into an existing storm sewer running through the site. Potential GSI features include two storage systems underneath two existing parking lots, which could also feature bioswales if landscape amenities are desired. Additional potential GSI features include a subsurface storage bed underneath the existing sports field and two bioretention basins in existing grass areas. These bioretention basins could feature native flowering perennials and meadow grasses or they could be subsurface storage beds under more traditional turf-grass surfaces. All the GSI features could be designed as infiltration and/or slow-release systems, depending on the subsurface conditions encountered.

Potential GSI Locations:
- Bioretention basin to manage school drive and part of the parking lot
- Storage bed under field with optional bioswales
- Storage beds under conventional pavement parking lots with optional bioswales
- Storage Bed under field with optional Bioswale/Bioretention
- Storage Bed Under Grass Surface
- Potential GSI Location: Bioretention Basin and/or Storage Bed Under

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced).
2. All potential GSI systems will manage school drive overflow to existing combined sewer.
3. If only local drainage area is managed, GSI footprint will be less. See shown.
4. Optional Bioswale/Bioretention

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments: Allegheny County, Parcel Data, Contours
- City of Pittsburgh / POC O-13

Note that limited sewer system information is available in GIS. All existing sewer system information may not be shown on this map.
The Pleasant Ridge Public Housing development has the potential for implementing a variety of green stormwater infrastructure (GSI) typologies throughout the site. For example, subsurface storage/infiltration trenches or vegetated bumpouts can be placed in the right-of-way at numerous strategic locations. Small bioretention areas (rain gardens) can be located in open spaces next to each of the various parking lots to manage runoff while also introducing enhanced landscape amenities. Several larger bioretention areas near the development’s entrance and along Overlook Place can provide larger capture volumes, while also creating more impactful aesthetic and educational features. Finally, there are additional opportunities to manage the housing development by directing runoff via new storm sewers to a more centralized GSI facility (subsurface storage/infiltration trench or infiltration basin/bioretention system) in one of the open lawn areas to the west.

Potential GSI Location - Subsurface Storage Trench or Bioretention (Rain Garden)

Potential GSI Location - Subsurface Storage/Infiltration Trenches or Vegetated Bumpouts (typology to repeat throughout housing development)

Potential GSI Location - New Traffic Island with Bioretention (Rain Garden)

Opportunity to improve/retrofit existing detention basin - verify what is currently managed
Fowler Playground (located south of N Charles St) is a prime candidate to integrate green stormwater infrastructure (GSI). The proposed GSI feature has the potential to manage roadway runoff from Perrysville Ave, N Charles St, and several additional side streets. Stormwater runoff would be directed via new separate storm sewers into a proposed roadway runoff capture. The GSI system could be designed as infiltration and/or slow-release, depending on the subsurface conditions encountered.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced).
2. If only local drainage area is managed, GSI footprint will be less than shown.
3. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
- Alcosan - Sewer Structures, Sewer Pipes, Survey/CAD
- Allegheny County - Parcel Data, Contours
- PA DEP - Existing Wells
- City of Pittsburgh, POC O-33

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The section of Allegheny Commons/East Park located to the west of the intersection of Cedar Ave and Lockhart St appears to be a suitable location for potential green stormwater infrastructure (GSI). Adjacent roadway runoff from East Ohio Street, Cedar Avenue, Union Place, Avery St, and Pressley Street could be directed to the site via new separate storm sewers and managed with a subsurface storage/infiltration trench located under the existing open lawn area and sidewalk. If vegetated surface features are desired, a bioretention area could also be included in the site design (e.g. on the perimeter of the open grass area).

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Map prepared by JACOBS- Feb 2020
Potential Additional GSI Location - adjacent to MLK Elementary

Potential GSI Location - Subsurface storage/infiltration: Underneath existing field

Possible Additional GSI systems will be directed via new separate storm sewers into a proposed subsurface storage/infiltration system.

- All potential GSI systems will have a footprint that will be less than shown.
- The proposed GSI feature has the potential to manage runoff from North Avenue, Federal Street, and Arch Street. Stormwater runoff would be directed via new separate storm sewers into a proposed subsurface storage/infiltration bed below the existing field. The GSI will be designed in a way that will not impact the existing sports field activities.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will have overflow to existing combined sewer.

The section of Allegheny Commons/West Park Field located south of North Ave and between Arch and Federal Streets is a prime candidate to integrate green stormwater infrastructure (GSI). The proposed GSI feature has the potential to manage runoff from North Avenue, Federal Street, and Arch Street. Stormwater runoff would be directed via new separate storm sewers into a proposed subsurface storage/infiltration bed below the existing field. The GSI will be designed in a way that will not impact the existing sports field activities.
The section of Allegheny Commons/West Park located at the corner of W Ohio Street and Brighton Road appears to be a suitable location for potential green stormwater infrastructure (GSI). The proposed GSI features can manage the runoff from Western Avenue, Rope Way, Brighton Road appears to be a suitable location for potential green stormwater infrastructure (GSI). The proposed GSI features can manage the runoff from Western Avenue, Rope Way, Brighton Road, and other areas that may benefit from GSI implementation. If only local drainage area is managed, GSI footprint will be less than shown. If potential GSI systems will be located to minimize impacts to the large existing trees on site. The proposed GSI features can manage the runoff from Western Avenue, Rope Way, Brighton Road, and other areas that may benefit from GSI implementation. If only local drainage area is managed, GSI footprint will be less than shown. If potential GSI systems will be located to minimize impacts to the large existing trees on site.

General Notes:
1. GSI footprint shown is approximately sized at a 15:1 loading ratio for the total drainage area (local and enhanced).
2. All potential GSI systems will be located to minimize impact to existing trees (GSI will be located to minimize impact to existing trees).
3. Bioswale/Bioretention with limited subsurface storage (GSI will be located to minimize impact to existing trees).
4. Proposed Separate Storm Sewer Sewer Pipes

- Combined
- Sanitary
- Stormwater
- Other Sewer Type

- Project Parcel Boundary
- Parcels
- Municipal Boundary
- GSI Footprint
- Impervious Drainage Area (Local)
- Impervious Drainage Area (Enhanced)
- Surface Water
- Combined Sewer Area
- Runoff To Combined Area
- Separate Sewer Area
- Non-contributing Area (NCA)

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Sanitary
Allegheny County: Parcel Data, Contours
Jacobs: Existing footprints

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Potential GSI Location - Subsurface storage/infiltration bed underneath existing field

Existing retaining wall on Butler Street side of field prevents DA capture/piping from Butler St (field is approx. 5' higher than street).

If only local drainage area is managed, GSI drainage area (local and enhanced).

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Data Sources:
ALCOSAN, Sewer Structures, Sewer Pipes, Stormwater
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Map prepared by JACOBS- Feb 2020

Main Rivers
GSI CONCEPT PLAN

MR-29: Arsenal School
City of Pittsburgh, POC A-26

GROW Project (ID) 100
Sewer Structures
- Proposed Separate Storm Sewer

Sewer Pipes
- Combined
- Sanitary
- Stormwater
- Other Sewer Type

Project Parcel Boundary
Parcels
- Municipal Boundary
- GSI Footprint
- Impervious Drainage Area (Local)
- Impervious Drainage Area (Enhanced)*
- Surface Water
- Combined Sewer Area
- Runoff To Combined Area
- Separate Sewer Area
- Non-contributing Area (NCA)

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced).
2. If only local drainage area is managed, GSI footprint will be less than shown.
3. All potential GSI systems will overflow to existing combined sewer.

Arsenal School's existing soccer field, located at 39th and Butler St, appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from 40th St, 39th St, and part of Dawson St and Almond Way. The existing retaining wall on the Butler Street side of the field prevents drainage area capture and piping from Butler Street. Stormwater runoff will be redirected via new separate stormwater sewers into a subsurface storage/infiltration trench underneath the existing field. Once the GSI is constructed, there will be no anticipated impacts to the sports activities above ground.
Proposed green stormwater infrastructure (GSI) for Friendship Park will manage stormwater runoff from Friendship Ave, S Mathilda St, and S Millvale Ave. Potential GSI features can be located in the right-of-way surrounding the park perimeter and also within the park’s property. The new separate stormwater sewers will primarily feed into several proposed subsurface storage/infiltration trenches underneath the existing parking lanes surrounding the park. These new gardens can provide aesthetic value in addition to public environmental/education opportunities.

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Map prepared by JACOBS- Feb 2020

Data Sources:
ALGONAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
POC: Existing Inlets

Potential GSI Location - Bioretention Areas/Rain Gardens (typ of 3 throughout park)
Potential GSI Location - Subsurface storage/ infiltration trenches underneath parking lanes with optional permeable pavement (typ of 4 around park perimeter)

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

A-22

A-23

TORLEY ST

S MILLVALE AVE

JOLIET WAY

GINN WAY

RHOATE WAY

PAPER WAY

FRIENDSHIP AVE

EDMOND ST

EMERALD WAY

PEARL ST

INGALLS WAY

MARINE WAY

GOODWOOD WAY

COMRIE WAY

PITT ST

FRIENDSHIP AVE

S WINEBIDDLE ST

MARBLE WAY

MARBLE WAY

EDWARDS WAY

GOODWOOD WAY

GOODWOOD WAY

GOODWOOD WAY

GOODWOOD WAY

GOODWOOD WAY

GOODWOOD WAY

GOODWOOD WAY
Baum Grove Parklet, located at the corner of Roup Ave and S Fairmount St, is a prime candidate for green stormwater infrastructure (GSI). Adjacent roadway runoff from Harriet St, Roup Ave, S Fairmount St, and Olga Way could be captured by proposed subsurface storage/infiltration trenches with optional vegetated bump outs located in the right-of-way surrounding the parklet. In addition, runoff could be directed to two bioretention/rain gardens located at the ends of both triangles in the Roup Ave/S Fairmount St intersection. This would remove excess pavement but also might require modifications to existing traffic patterns (i.e. limited right turns). Finally, a subsurface storage/infiltration trench could potentially be located underneath the grass in the southern portion of the parklet.

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- Jacobs: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Potential GSI Location - Sewer Structures

Existing Inlets

GROW Project (ID)

therefore likely require an easement to do so.

stormwater sewer pipes would need to cross through the private parcel and would

surrounded on three sides by a private commercial property, one of the proposed

repaved with permeable pavement for enhanced infiltration. As the parklet is

underneath the existing basketball courts. If desired, the basketball courts could be

Ave, Eva St, and portions of additional streets could be directed to the site via new

green stormwater infrastructure (GSI). Adjacent roadway runoff from Penn Ave, Negley

Enright Parklet, located at the corner of Eva St and Amber St, is a prime candidate for

overflow to existing combined sewer.

2. All potential GSI systems will

footprint will be less than shown.

If only local drainage area is managed, GSI

sized at a 10:1 loading ratio for the total

1. GSI footprint shown is approximately

General Notes:

1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.

2. All potential GSI systems will overflow to existing combined sewer.

Notes:

Main Rivers

GSI CONCEPT PLAN

MR-34: Enright Parklet

City of Pittsburgh: VOIC A-22

GROW Project (ID)

Data Sources:

ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments

Allegheny County: Parcel Data, Contours

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Map prepared by JACOBES- Feb 2020
Potential GSI Locations - Subsurface storage/infiltration with optional permeable pavement and bioretention features.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced), if only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Potential to close/modify (2) existing inlets

PENN AVE A-22

1010

permeable pavement for enhanced infiltration and if vegetated areas are desired, bioretention features can be included in the design. Two existing inlets existing on Rural Street could potentially be closed/modified to enhance runoff capture.

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Sanitary, Combined
Allegheny County: Parcel Data, Contours
PADEP: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Project MR-35 (Parcel Owner: City of Pittsburgh)

<table>
<thead>
<tr>
<th>Project MR-35 (Parcel Owner: City of Pittsburgh)</th>
<th>Impervious Area Captured (ac)</th>
<th>*Construction Cost for Stand-alone GSI</th>
<th>*Construction Cost for Integrated GSI</th>
<th>Relative Constraint Score</th>
<th>Runoff Capture (gal/yr)</th>
<th>Overflow Reduction Efficiency (ORE)</th>
<th>CSO Reduction (gal/yr)</th>
<th><strong>Cost Efficiency (gall/y) overflow reduction</strong></th>
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*Costs are planning level estimates with an expected accuracy range of ±25% to ±50%.
**Integrating GSI with other planned site improvements is assumed to result in a 30% cost reduction.
**Efficiency based on construction cost for stand-alone GSI
Existing Inlets

GROW Project (ID) 130

Sewer Structures

910

the design.

if vegetated features are desired, bioretention and/or bioswales can be included in

trenches can then be repaved with permeable pavement for enhanced infiltration and

subsurface storage/infiltration trenches located underneath the existing parking lot. The

east of the URA-owned lot. The new separate stormwater sewers will feed into two

parking lot will capture stormwater runoff from Station St, Harvard St, Ansley St, N Beatty

Proposed green stormwater infrastructure (GSI) for the Urban Redevelopment Authority

overflow to existing combined sewer.

2. All potential GSI systems will

If only local drainage area is managed, GSI

drainage area (local and enhanced).

1. GSI footprint shown is approximately

General Notes:

Inlet may not exist, which would extend DA capture further south.

Refer to Concept MR-35 which is proposed to manage N Euclid Ave runoff

Potential GSI Locations - Subsurface storage/infiltration trenches underneath optional permeable pavement with bioretention/bioswale features

Potential to capture private parking lot runoff

Potential to capture private parking lot runoff

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Osceola Parklet, located at Cypress and Osceola Streets, is a prime candidate for green stormwater infrastructure (GSI). Adjacent roadway runoff from Powhattan St and Osceola St, as well as potential additional runoff from the Post Office parking lot and private parking lots on Powhattan St could be managed with subsurface storage/infiltration trenches located underneath the existing basketball court. The basketball court has the option of being repaved with permeable pavement if desired. In addition, runoff from Cypress St could be managed in a subsurface storage/infiltration trench located underneath the existing parking lane and sidewalk on the southern edge of the park. A potential alternate/additional GSI location could be the existing grass area in the northernmost corner of the park.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The existing paved lot at Liberty School, located at Filbert St and Ellsworth Ave, appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from Ivy St, Elmer St, Filbert St, and Urn Way. Stormwater runoff will be redirected via new separate stormwater sewers into a subsurface storage/infiltration bed underneath the lot, which has the option of being repaved with permeable pavement. An existing inlet on the school grounds to the southeast of the lot can either be piped to the GSI feature or a stand-alone rain garden could be located there as an educational/demonstration feature. If additional vegetated features are desired, bioretention areas and/or bioswales could also be included in the primary GSI design.
Potential GSI Location - Bioswale along existing gutter

Potential GSI Location - Subsurface storage/infiltration underneath existing baseball field

Potential GSI Location - Subsurface storage/infiltration underneath existing baseball field and basketball courts

Existing gutter

General Notes:
- 1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced).
- If only local drainage area is managed, GSI footprint will be less than shown.
- 2. All potential GSI systems will overflow to existing combined sewer.

Map prepared by JACOBS- Feb 2020

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The existing schoolyard and parking lot at the Magee Phillips K-5 School appear to be suitable locations for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from Sarah St, S 19th St, Larkins Way, and Jane St in addition to the parking lot itself. Stormwater runoff from adjacent streets would be redirected via new stormwater sewers into a subsurface storage/infiltration trench placed underneath the parking lot. In addition to the subsurface stormwater feature, permeable pavement over the parking lot and a vegetated bumpout on Sarah St could be included in the concept if desired. It appears that the schoolyard was recently renovated, so GSI implementation would likely be postponed until future renovations are planned.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Armstrong Playground (located at the corner of S 13th St and Sarah St) is a prime candidate to integrate green stormwater infrastructure (GSI). Adjacent roadway runoff from S 13th St, Enon Way, S 12th St, and Sarah St could be directed to the site via new separate storm sewers and managed with a subsurface storage/infiltration bed located underneath the existing sports field. A bioswale could be added to the concept if desired. In addition, there is an opportunity to disconnect external roof leaders on a large building north of the playground and direct the runoff into a second subsurface storage/infiltration system in the north end of the playground.
Warrington Field (located between Kingsboro St and E Warrington Ave) appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from adjacent streets to the northwest such as Haberman Ave, Pasadena St, Kingsboro St, Estella Ave, and E Warrington Ave along with additional side streets. The stormwater runoff would be redirected via new separate stormwater sewers into subsurface storage/infiltration trenches placed beneath the recreation center sports field. The location of the GSI would not interfere with the existing sports field programming and would be sited an adequate distance from the existing combined sewer that runs through the field.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.
The existing lawn areas and parking lot at Knoxville Elementary School appear to be suitable locations for potential green stormwater infrastructure (GSI). Proposed GSI features will capture roadway runoff from streets to the northeast such as Georgia Ave, Grimes Ave, Charles St, Michigan Way, and Zara St along with additional side streets. Stormwater will be redirected via new separate stormwater sewers into a bioretention area in the lawn at the northeast corner of the site, a subsurface trench in the existing play area at the northwest corner of the site, and a subsurface storage/infiltration trench in the existing parking lot. If desired, the GSI system in the parking lot can be finished with permeable pavement. The feasibility of GSI implementation depends on future use of the property as the school is currently abandoned.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Townsend Parklet at Ernie St and Janewood Way, appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from Crucible St, Janewood Way, Ernie St, and part of Lorenz Ave. Stormwater runoff will be redirected via new separate stormwater sewers into two subsurface storage/infiltration trenches located underneath existing paved areas of the playground. The GSI features could be repaved with permeable pavement and if vegetated features are desired, bioretention areas (rain gardens) could also be included in the site design.

Potential GSI Location - Subsurface storage/infiltration bed with optional bioretention features

Potential Alternative GSI Location - Subsurface storage/infiltration bed with pervious pavement under play area

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Map prepared by JACOBS- Feb 2020
Potential GSI Location - Subsurface storage/infiltration bed underneath existing field

Potential GSI Location - Subsurface storage/infiltration bed underneath permeable pavement

General Notes:

1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Upper Allegheny
GSI CONCEPT PLAN

UA-01: Natoli Field
City of Pittsburgh POC A-41

Existing Inlets
Sewer Structures
Proposed Separate Storm Sewer
Sewer Pipes
- Combined
- Sanitary
- Stormwater
- Other Sewer Type

Project Parcel Boundary
Parcels
Municipal Boundary
GSI Footprint
Impervious Drainage Area (Local)
Impervious Drainage Area (Enhanced)*
Surface Water
Combined Sewer Area
Runoff To Combined Area
Separate Sewer Area
Non-contributing Area (NCA)

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
Jacobs: Existing Fields

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Natoli Field, located at President Way and Antietam St, is a prime candidate for green stormwater infrastructure (GSI). A significant amount of adjacent roadway runoff from the neighborhood to the north of the field (i.e. streets such as Greenwood St, Chislett St, President Way, and Antietam St) could be directed to the site via new separate storm sewers and managed with two subsurface storage/infiltration trenches underneath the existing baseball field and underneath the existing parking lot. The parking lot could also be renovated to include permeable pavement for enhanced infiltration.

Project UA-01 (Parcel Owner: City of Pittsburgh)

<table>
<thead>
<tr>
<th>Impervious Area Captured [ac]</th>
<th>Construction Cost for Stand-alone GSI (gpy)</th>
<th>Construction Cost for Integrated GSI (gpy)</th>
<th>Relative Constraint Score</th>
<th>Runoff Capture (gpy)</th>
<th>Overflow Reduction Efficiency (ORE)</th>
<th>CSD Reduction (gpy)</th>
<th><strong>Cost Efficiency (gpy)</strong></th>
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<td>$350,000</td>
<td>$380,000</td>
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<td>Enhanced Drainage Area</td>
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</tr>
<tr>
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<td>$4,380,000</td>
<td>3.0</td>
<td>4,420,000</td>
<td>99%</td>
<td>4,370,000</td>
<td>$50.25</td>
</tr>
</tbody>
</table>

*Costs are planning level estimates with an expected accuracy range of ±20% to ±50%.
*Enhanced GSI with other planned site improvements is assumed to result in a 99% cost reduction. **Cost efficiency based on construction cost for stand-alone GSI.
Chadwick Playground (located between Mingo St and Gladefield St) is a prime candidate to integrate green stormwater infrastructure (GSI). Adjacent roadway runoff from Latana Ave, Cibernet St, Mingo St, Galdene St, and Gladefield St could be directed to the site via new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which, with optional permeable pavement, could be located within the park. It is recommended that a timer or control switch be installed at the existing spray park to minimize the amount of water entering the storm drains at the north of the site.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
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Chadwick Playground (located between Mingo St and Gladefield St) is a prime candidate to integrate green stormwater infrastructure (GSI). Adjacent roadway runoff from Latana Ave, Cibernet St, Mingo St, Galdene St, and Gladefield St could be directed to the site via new separate storm sewers and managed with bioswales located on the eastern and southern perimeters of the existing football field. An additional subsurface storage/infiltration bed with optional permeable pavement could be located within the play area at the southeast corner of the park. It is recommended that a timer or control switch be installed at the existing spray park to minimize the amount of water entering the storm drains at the north of the site.

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Chadwick Playground (located between Mingo St and Gladefield St) is a prime candidate to integrate green stormwater infrastructure (GSI). Adjacent roadway runoff from Latana Ave, Cibernet St, Mingo St, Galdene St, and Gladefield St could be directed to the site via new separate storm sewers and managed with bioswales located on the eastern and southern perimeters of the existing football field. An additional subsurface storage/infiltration bed with optional permeable pavement could be located within the play area at the southeast corner of the park. It is recommended that a timer or control switch be installed at the existing spray park to minimize the amount of water entering the storm drains at the north of the site.

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Chadwick Playground (located between Mingo St and Gladefield St) is a prime candidate to integrate green stormwater infrastructure (GSI). Adjacent roadway runoff from Latana Ave, Cibernet St, Mingo St, Galdene St, and Gladefield St could be directed to the site via new separate storm sewers and managed with bioswales located on the eastern and southern perimeters of the existing football field. An additional subsurface storage/infiltration bed with optional permeable pavement could be located within the play area at the southeast corner of the park. It is recommended that a timer or control switch be installed at the existing spray park to minimize the amount of water entering the storm drains at the north of the site.

General Notes:
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2. All potential GSI systems will overflow to existing combined sewer.
The currently vacant URA-owned lot at the corner of Frankstown Ave and Collier St appears to be a promising location for potential green stormwater infrastructure (GSI). Proposed GSI features have the potential to manage roadway runoff from adjacent and surrounding streets including Frankstown Ave, Collier St, Felicia Way, and Bennett St. Stormwater runoff would be redirected via new separate stormwater sewers into a bioretention system (rain garden) with subsurface storage/infiltration beds beneath the garden. The feasibility of GSI implementation depends ultimately on any future redevelopment plans for the site.

Potential GSI Location - Bioretention (rain garden) with subsurface storage/infiltration

**General Notes:**
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

**Data Sources:**
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- Jacobs: Sewer Structures

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The parking lot at the Crescent Early Childhood Center appears to be a suitable location for potential green stormwater infrastructure (GSI). New GSI will complement the existing rain garden project that exists to the north of the parking lot. In addition to managing the parking lot runoff, the GSI features will capture roadway runoff from Seagirt St, Tokay St, Fahnestock St, and portions of several other streets that drain down the hill towards the parking lot. Stormwater runoff will be redirected via new separate storm sewers into a subsurface storage/infiltration bed underneath the existing parking lot with an optional permeable pavement surface. If vegetated features are desired, bioswale features could also be included in the renovated parking lot design. A potential additional location for GSI is the large parking lot to the southwest of the center, where a subsurface storage/infiltration trench with permeable pavement or optional bioswales could be located.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GSI, so all existing sewer system information may not be shown on this map.
Heinz Memorial Field has potential for green stormwater infrastructure (GSI) at several locations to manage the runoff from the site’s basketball courts in addition to right-of-way runoff from 20th Street, Chapman Street, and the alley to the north of the park. A subsurface stone storage trench can be located strategically underneath the easternmost play courts, with the option for either a permeable or conventional pavement surface. In addition, a bioretention area (rain garden) can be located near the park entrance at the corner of 20th and Chapman to manage the adjacent ROW runoff while providing an educational opportunity and landscape amenity. The new GSI should be sited to avoid damaging any large existing trees on site and must take the retaining wall on 20th Street into consideration when determining how to direct runoff onto the site.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Potential GSI location - permeable pavement basketball courts or subsurface infiltration trench underneath resurfaced courts

Potential GSI location - Bioretention area near park entrance

Note existing retaining wall along length of park on 20th St

Drainage areas to be field verified to confirm potential to capture adjacent right-of-way within park

Note: All potential GSI systems will overflow to the existing combined sewer

Separate storm sewer should be investigated for potential capture
Marion Gerardi Memorial Park presents the opportunity to manage adjacent right-of-way runoff within the park parcel in addition to opportunities to introduce traffic-calming GSI features along the perimeter of the park. Inside the park, a subsurface stormwater storage trench can be strategically sited underneath the existing open lawn area without disturbing the existing large trees or play areas. If landscape amenities are desired, a bioretention area (rain garden) or bioswale can be included. Along the perimeter of the park, on Main Street, 16th Street, and Middle Street, subsurface stormwater trenches with vegetated bumpouts can be placed to capture roadway runoff and slow traffic, creating a safer walking environment for pedestrians.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets
Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Proposed green stormwater infrastructure (GSI) at the Sharps Terrace housing development focuses primarily on siting GSI features in the existing parking lot to manage not only the parking lot runoff but also potentially capture a portion of the residential roof runoff. In the parking lot, subsurface stormwater storage/infiltration trenches can be sited underneath the existing parking stalls and repaved with either a permeable or conventional pavement surface. If possible, the existing residential roof downspouts can be disconnected from the existing combined sewer system and instead directed to the new GSI features.

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The Watson Institute school is situated at a relative topographic low point, with the potential to manage runoff from Linden Ave, 11th Street, and Clay Street. The school’s parking lot has been renovated recently, so instead of locating green stormwater infrastructure on site, the GSI features can be located in adjacent roadways. Subsurface storage/infiltration trenches can be located in the parking and travel lanes on Linden Ave, Penn St, and 11th Street, with optional permeable pavements. These systems have the potential to capture runoff flowing down from the intersections with High Street. A subsurface storage/infiltration trench on Clay Street has the potential to manage the school’s playground, which slopes down towards Clay Street. The proximity to the school provides an excellent opportunity for public education.

**Data Sources:**

- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Potential GSI Locations - Subsurface storage/infiltration trenches underneath permeable pavement with optional bioswales

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will be redirected via new separate storm sewers into subsurface storage/infiltration trenches in the parking lot with an optional permeable pavement surface. If vegetated areas are desired, bioswale features could also be included in the parking lot redesign.

Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- City of Pittsburgh: Existing Inlets
- City of Pittsburgh/POC A-42

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The existing lawn areas and parking lot at Homewood Montessori School are prime candidates for integration of green stormwater infrastructure (GSI). Adjacent roadway runoff from Susquehanna St, Clawson St, Hamilton Ave, and several other adjacent streets could be directed to the site via new separate stormwater sewers and managed with subsurface storage/infiltration beds and bioretention features (rain gardens). The feasibility of GSI implementation will depend on the future use of the school building/site as it is currently not in use.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Note: School status needs to be confirmed (currently not in use); GSI feasibility depends on future use of building/site.
Westinghouse Park (located at the corner of Thomas Blvd and N Lang Ave) is a prime candidate for the integration of green stormwater infrastructure (GSI). Adjacent roadway runoff from N Murtland St, N Lang Ave, McPherson Blvd, Thomas Blvd, and Meade Pl could be directed to the site via new separate stormwater sewers and managed with bioretention features (rain gardens) that have subsurface storage/infiltration beds. One of the bioretention features could be located within the existing depression on the east side of the park, near the intersection of McPherson Blvd and N Lang Ave. A second smaller GSI system could be located at the western side of the park, near the intersection of McPherson Blvd and N Murtland St.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The URA-owned vacant lot at the corner of Kelly St and N Murtland St appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from N Lang Ave, Kelly St, Formosa Way, N Murtland St, and several additional side streets. Stormwater runoff will be redirected via new separate stormwater sewers into either tree trenches or bioretention (rain garden) features that have subsurface storage/infiltration beds. The feasibility of GSI implementation will depend on any potential redevelopment plans for the site.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GSI, so all existing sewer system information may not be shown on this map.
The City-owned vacant lot at the corner of N Lang Ave and Frankstown Ave appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from N Lang Ave, Frankstown Ave, Forest Way, and Idlewild St. Stormwater runoff will be redirected via new separate stormwater sewers into a tree trench or bioretention feature (rain garden) with a subsurface storage/infiltration bed. The feasibility of GSI implementation depends ultimately on any future redevelopment plans for the site.

**General Notes:**
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

**Data Sources:**
- **ALCOSAN**: Sewer Structures, Sewer Pipes, Subcatchments
- **Allegheny County**: Parcel Data, Contours
- **JACOBS**: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.*
The existing football field at Westinghouse Academy is a prime candidate for green stormwater infrastructure (GSI) due to its topographic location downhill from many surrounding residential streets. Adjacent roadway runoff from adjacent streets including Beimer St, Kedron St, Hermitage St, N Murfand St, Monticello St, and additional streets could be directed to the site via new separate storm sewers and managed with a large subsurface storage/infiltration trench underneath the field. After construction, the subsurface storage/infiltration trench would not impact the current use of the field.

Potential GSI Location - Subsurface storage/infiltration trench underneath existing football field

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area shown.
2. All potential GSI systems will not impact the current use of the field.

Confirm whether portions of N. Lang SI actually drain onto east and west streets

Existing Inlets

- Proposed Separate Storm Sewer
- Sewer Structures
- Sewer Pipes
  - Combined
  - Sanitary
  - Stormwater
  - Other Sewer Type
- Project Parcel Boundary
- Parcels
- Municipal Boundary
- GSI Footprint
- Impervious Drainage Area (Local)
- Impervious Drainage Area (Enhanced)*
- Surface Water
- Combined Sewer Area
- Runoff To Combined Area
- Separate Sewer Area
- Non-contributing Area (NCA)

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficiency.

Data Sources:
ACOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOB: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

The existing football field at Westinghouse Academy is a prime candidate for green stormwater infrastructure (GSI) due to its topographic location downhill from many surrounding residential streets. Adjacent roadway runoff from adjacent streets including Beimer St, Kedron St, Hermitage St, N Murfand St, Monticello St, and additional streets could be directed to the site via new separate storm sewers and managed with a large subsurface storage/infiltration trench underneath the field. After construction, the subsurface storage/infiltration trench would not impact the current use of the field.
Kennedy Park has significant potential for GSI implementation due to its location and large expanse of open space. In the park, there are multiple opportunities to place small bioretention areas (rain gardens) with subsurface storage trenches to manage adjacent Canal St runoff in addition to several other streets that drain down towards the park. By installing short segments of new storm pipe at strategic locations, a larger potential contributing drainage area can be conveyed across N Canal Street and directed into the park. Vegetated bumpouts on N. Canal can manage roadway runoff while also slowing down traffic. The new GSI features should be sited in a way that does not impede existing park programming and available gathering space for festivals and events. In the parking lot to the west of the park, a subsurface storage trench can be located underneath the existing parking spaces with either a permeable or conventional pavement surface.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets
Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The municipal parking lot at the corner of Main St and 13th St presents an opportunity to manage the immediate parking lot runoff in addition to a portion of both Main St and 13th St. A subsurface storage/infiltration trench can be installed underneath the parking lot and finished with a permeable or conventional pavement surface. Two large existing trees at the southern end of the lot should be preserved. New inlets can be added near the intersection of Main St and 13th St to convey the roadway runoff into the subsurface system in the parking lot. The proximity to the library and post office provide an excellent opportunity for public education.
The Sharpsburg Library site has potential for green stormwater infrastructure implementation. A subsurface storage/infiltration trench can be placed beneath the diagonal parking spaces to the east of the library building and finished with a permeable or conventional pavement surface. This system could manage runoff from Benson Way and Wagner Street, while leaving the existing community garden untouched. The proximity to the library and post office provide an excellent opportunity for public education. Note that the drainage area for UA-31 could also be potentially managed by the municipal parking lot GSI Concept (UA-30).
Potential GSI Location - Bioretention (rain garden) with subsurface storage/infiltration trench. GSI will be sited to preserve existing trees to the extent possible.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

The Urban Redevelopment Authority lot located at the corner of Mount Vernon St and N Homewood Ave, is a prime candidate for green stormwater infrastructure (GSI). Adjacent roadway runoff from N Homewood Ave, Apple Ave, Upland St, and Mount Vernon St could be directed to the site via new separate storm sewers and managed by a rain garden with a subsurface storage/infiltration trench. In addition, a vegetated bumpout with subsurface storage/infiltration can be located in the right-of-way on N Homewood Ave immediately to the west of the site. The GSI within the parcel can be designed to preserve existing trees to the extent possible. There is also potential to close/modify several existing inlets on Upland Street to enhance drainage area capture.

Project Data:
- Impervious Area Captured (ac)
- Construction Cost for Stand-alone GSI
- Construction Cost for Integrated GSI
- Relative Constraint Score
- Runoff Capture (gpyr)
- Overflow Reduction Efficiency (ORE)
- CBD Reduction (gpyr)

*Costs are planning-level estimates with an expected accuracy range of ±25% to ±50%. Including GSI with other planned site improvements is assumed to result in a 30% cost reduction. Efficiency based on construction cost for stand-alone GSI.

Map prepared by JACOBS - Feb 2020

Upper Allegheny
GSI CONCEPT PLAN
UA-34: Urban Redevelopment Authority Lot
City of Pittsburgh POC A-42

Existing Inlets
Sewer Structures
Proposed Separate Storm Sewer
Sewer Pipes
- Combined
- Sanitary
- Stormwater
- Other Sewer Type

Project Parcel Boundary
Parcels
Municipal Boundary
GSI Footprint
Imperious Drainage Area (Local)
Imperious Drainage Area (Enhanced)*
Surface Water
Combined Sewer Area
Runoff To Combined Area
Separate Sewer Area
Non-contributing Area (NCA)

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Proposed green stormwater infrastructure (GSI) for Paulson Playground will capture stormwater runoff from many of the adjacent streets to the northeast, including Paulson Ave, Olivant St, and Easton Way. Stormwater runoff will be directed via new separate storm sewers which will overflow to existing combined sewer.

Potential to modify/close inlets and capture more of Pointview Street

Potential GSI Location - Bioretention or subsurface infiltration underneath existing parking lane/sidewalk

Abandoned pool has been replaced with new playground

Potential GSI Location - Subsurface storage/infiltration trench underneath existing sports field

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Lyndhurst Green will capture stormwater runoff from Lyndhurst Dr, Beechwood Blvd., and Mellon Park. Proposed green stormwater infrastructure (GSI) for Mellon Park and the adjacent Lyndhurst Green will capture stormwater runoff from Lyndhurst Dr, Beechwood Blvd., 5th Ave., and several additional streets and direct it to potential GSI features. Two bioretention areas can be located near the northeastern and southern corners of the park to capture adjacent roadway runoff. Subsurface storage/infiltration trenches with optional permeable pavement surfaces can be placed under existing parking lanes on Beechwood Blvd on the eastern edge of the park. Lyndhurst Green is a prime site for bioretention features (rain gardens). There is also potential to close/modify additional existing inlets on Beechwood Blvd to expand the potential drainage area. If additional drainage area is captured, this could be managed with more permeable pavement parking lanes/subsurface trenches on Beechwood Blvd.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

### Project Data

#### Project UA-37 (Parcel Owner: City of Pittsburgh)

<table>
<thead>
<tr>
<th>Project UA-37 (Parcel Owner: City of Pittsburgh)</th>
<th>Impervious Area Captured (ac)</th>
<th>Construction Cost for Stand-alone GSI ($'000)</th>
<th>Construction Cost for Integrated GSI ($'000)</th>
<th>Relative Constraint Score</th>
<th>Runoff Capture (gal/yr)</th>
<th>Overflow Reduction Efficiency (OPE)</th>
<th>CSO Reduction (gal/yr)</th>
<th>Cost Efficiency ($/gal)</th>
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*Costs are planning level estimates with an expected accuracy of ±20% to ±40%. *Integrating GSI with other planned site improvements is assumed to result in a 10% cost reduction. *Cost Efficiency based on construction cost for stand-alone GSI.

### Data Sources:

- **ALCOSAN**: Sewer Structures, Sewer Pipes, Surface Water
- **Allegheny County**: Parcel Data, Contours
- **JACOBS**: Existing Flood

Not all sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The library parking lot at the corner of Braddock Ave and Library Street has significant potential for managing stormwater runoff from the lot and from adjacent streets to the northeast. A subsurface stormwater storage bed can be installed in the existing parking lot with either a permeable or conventional pavement surface. If additional landscape amenities are desired, bioswales can be added to the parking lot redesign. By installing a new storm pipe and inlets along Library Street and Jones Avenue potentially as far as Baldridge Ave, the entire right-of-way can be disconnected from the existing combined sewer and instead managed at the library parking lot. The proximity to the library, basketball courts, and school provide an excellent opportunity for public education.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
Proposed green stormwater infrastructure (GSI) for the Swissvale Park and Ride features a combination of surface and subsurface stormwater management technologies that can be incorporated into the existing parking lot layout. In addition to managing the immediate site’s runoff, adjacent roadway runoff can be directed from Vernon St via new inlets and piped into a stormwater storage bed below a new parking lot surface consisting of permeable or conventional pavement. If landscape amenities are desired, tree trenches and/or bioswales can be added to the concept. There are several opportunities for pavement removal in addition to slope stabilization and erosion control improvements. The GSI could be designed as an infiltration and/or slow-release system, depending on the subsurface conditions encountered.

General Notes:
1. GSI footprints shown are approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprints will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer, verify if existing storm sewer connects to combined.

Inset Map Showing Full Contributing Drainage Area

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Sewer Inlets
Allegheny County: Parcel Data, Contours

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Map prepared by JACOBS- Feb 2020
Hawkins Village is a 157-unit affordable housing community that has the potential for green stormwater infrastructure (GSI) implementation. A large subsurface storage/infiltration trench can be located underneath the existing ballfield at the eastern end of the site. It appears that the entire housing development (roadways, parking lots, and building rooftops) drains to one sewer network, which could be disconnected from the existing combined system and redirected to drain into the proposed storage/infiltration trench. If landscape amenities are desired, bioretention areas can be added to the concept. Note that more information about the existing sewer system is needed to verify that this proposed GSI concept is feasible. If the existing sewer is combined, then new separate storm pipes would be required.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets
Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The municipal parking lot at the corner of McClure and E 7th Avenue presents an opportunity to integrate green stormwater infrastructure (GSI) into any future work in the parking lot or as a stand-alone GSI retrofit. The existing concrete lot could be retrofitted with a subsurface stone storage/infiltration trench and then repaved with conventional or permeable pavement. If landscape amenities are desired, bioswales or tree trenches could be added around the lot perimeter and between the parking lot rows. Due to its topographic location, the lot has the potential to manage a significant portion of the streets to the south and southwest, especially if a new storm sewer is added on McClure St.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The municipal parking lot at the northwest corner of Ann St and E 7th Avenue presents an opportunity to integrate green stormwater infrastructure (GSI) into any future work in the parking lot or as a stand-alone GSI retrofit. A series of hydraulically connected subsurface stone storage/infiltration trenches can be sited underneath the six rows of parking stalls and then repaved with conventional or permeable pavement. Bioswales and/or tree trenches can be added into the existing green strips to add landscape amenities and enhance the parking lot and streetscape aesthetics. This site has the potential to manage portions of Ann St, E 7th Ave, and E 8th Ave with the addition of new storm inlets and a new storm sewer on Ann St.

**General Notes:**
1. GSI footprints shown are approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprints will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

**Data Sources:**
- **ALCOSAN:** Sewer Structures, Sewer Pipes, Subcatchments
- **Allegheny County:** Parcel Data, Contours
- **JACOBS:** Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

**Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.**

**Existing Inlets**
- **Sewer Structures**
- **Proposed Separate Storm Sewer**
- **Sewer Pipes**
  - Combined
  - Sanitary
  - Stormwater
  - Other Sewer Type

**Project Parcel Boundary**
- **Parcels**
- **Municipal Boundary**
- **GSI Footprint**
- **Impervious Drainage Area (Local)**
- **Impervious Drainage Area (Enhanced)**
- **Surface Water**
- **Combined Sewer Area**
- **Runoff To Combined Area**
- **Separate Sewer Area**
- **Non-contributing Area (NCA)**

**Map prepared by JACOBS - Feb 2020**

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### Project UM-32 (Parcel Owner: Redevelopment Authority of Allegheny County)

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<tr>
<th>Local GSI</th>
<th>Impervious Area Captured (ac)</th>
<th>Construction Cost for Stand-alone GSI</th>
<th>Construction Cost for Integrated GSI</th>
<th>Relative Constraint Score</th>
<th>Runoff Capture (gal)</th>
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*Costs are planning level estimates with an expected accuracy range of ±50% to ±60%. Integrating GSI with other planned site improvements is assumed to result in a 30% cost reduction. *Cost Efficiency based on construction cost for stand-alone GSI.
The municipal parking lot at the northeast corner of Ann St and E 7th Avenue presents an opportunity to integrate green stormwater infrastructure (GSI) into any future work in the parking lot or as a stand-alone GSI retrofit. A subsurface stone storage/infiltration trench can be sited underneath the southern row of parking stalls and then repaved with conventional or permeable pavement. A bioswale or tree trench can be added into the existing green strip to add landscape amenities and enhance the streetscape aesthetics. Additional roadway runoff from portions of both Ann St and E 7th Ave could be managed on the site with the addition of new storm inlets and storm pipe but is currently proposed to be more cost-effectively managed by the adjacent parking lots (Concepts UM-31 and UM-32).

Potential GSI Location - Subsurface Storage/Infiltration Trench with Permeable Pavement
Parking Stalls and Tree Trench

Drainage from west side of E 7th Ave and east side of Ann St can potentially be managed by UM-33

Note: All potential GSI will overflow to existing combined sewer

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Parcel Owner</th>
<th>Impervious Area Captured (ac)</th>
<th>*Construction Cost for Stand-alone GSI</th>
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<th>Runoff Capture (gal/yr)</th>
<th>Overflow Reduction Efficiency (ORE)</th>
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*Costs are planning-level estimates with an expected accuracy range of -25% to +50%.
**Integrating GSI with other planned site improvements is assumed to result in a 50% cost reduction. Efficiency based on construction cost for stand-alone GSI.
The playground located north of the Munhall Fire Station is a prime candidate for green stormwater infrastructure (GSI) implementation. Adjacent roadway runoff from Martha Street, E 11th Ave, and several cross-streets could be managed in various GSI features sited in the existing playground area and field to the north of the fire station. The GSI features can be subsurface storage/infiltration trenches that would not affect any existing activities or programming above ground, or if landscape amenities are desired, then optional bioswales or bioretention areas can be added to the concept. The GSI implementation could occur as part of larger playground renovations. In addition, a small rain garden can be placed next to the fire station to manage the building roof runoff.

Potential GSI Location - Subsurface Storage/Infiltration Trench Underneath Existing Lawn and Ball Courts

Potential GSI Location - Subsurface Storage/Infiltration Trench Underneath Existing Pavement with Optional Bioretention Area

Disconnect fire station roof drains to capture building runoff and direct into bioretention area

Proposed storm sewer for Enhanced Drainage Area

Proposed GSI Concept Plan: Munhall Fire Playground

General Notes:
1. GSI footprints shown are approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprints will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Data Sources:
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.
The currently vacant lot at the corner of Braddock Ave and Line St is a prime opportunity to integrate green stormwater infrastructure (GSI) with any planned redevelopment activities. A subsurface storage/infiltration trench can be located underneath the existing pavement/lawn area and has the potential to manage runoff from Braddock Ave, Kenmawr Ave, Maple Ave, Otto Alley, Hamilton Ave, and Line St. Roadway runoff can be directed to the GSI feature by installing a new storm sewer along Braddock Ave and smaller portions of pipe across Line St or potentially by intercepting the sewer mapped as separate storm along Maple Ave (if feasible). Depending on the potential redevelopment plans for the site, the GSI can be designed to efficiently integrate with site improvements and include optional bioretention features with or without trees or include permeable paving as well.

### Potential GSI Location - Subsurface Storage/Infiltration Trench with Optional Bioretention Features

1. **Evaluate potential to intercept this existing separate storm sewer and capture additional contributing drainage area.**
2. **Proposed Storm Sewer for Enhanced Drainage Area.**

**Data Sources:**
- ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
- Allegheny County: Parcel Data, Contours
- JACOBS: Existing Inlets

*Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.*

*Enhanced drainage areas show potential additional capture that can be conveyed to proposed GSI footprints via the installation of new separate storm sewers which often result in significant increases in cost-efficient runoff capture.*
Feasibility of GSI implementation depends on confirmation that there is interest in revitalizing/investing in this particular site.

General Notes:
1. GSI footprint shown is approximately sized at a 10:1 loading ratio for the total drainage area (local and enhanced). If only local drainage area is managed, GSI footprint will be less than shown.
2. All potential GSI systems will overflow to existing combined sewer.

Alternative Potential GSI Location - Permeable pavement basketball courts with subsurface storage/ infiltration

Potential GSI Location - Subsurface storage/infiltration underneath existing open lawn with optional bioretention features

Confirm that this is ROW and not privately owned.

The existing open grassy field area at Blair Street Park appears to be a suitable location for potential green stormwater infrastructure (GSI). Proposed GSI features have potential to manage roadway runoff from Lytle St, Courtland St, Chaplain Way, and Blair St. Stormwater runoff will be redirected via new separate stormwater sewers into a subsurface storage/infiltration bed underneath the lawn. If vegetated areas are desired, bioretention features (rain gardens or bioswales) could also be included in the site design. The feasibility of GSI implementation depends on whether there is interest in investing in the revitalization of the park as it appears to be unused and overgrown with idle usage.

Project UM-43 (Parcel Owner: City of Pittsburgh)

<table>
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<th>Impervious Area Captured (ac)</th>
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<th>Construction Cost for Integrated GSI ($/yr)</th>
<th>Relative Cost-Savings</th>
<th>Runoff Capture (gallons)</th>
<th>Overflow Reduction Efficiency (ORE)</th>
<th>CSO Reduction (gallons)</th>
<th><strong>Cost Efficiency ($/gallons of overflow reduction)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local GSI</td>
<td>$170,000</td>
<td>$120,000</td>
<td>-</td>
<td>640,000</td>
<td>-</td>
<td>620,000</td>
<td>$0.27</td>
</tr>
<tr>
<td>Enhanced Drainage Area</td>
<td>$390,000</td>
<td>$200,000</td>
<td>-</td>
<td>1,810,000</td>
<td>-</td>
<td>1,860,000</td>
<td>$0.21</td>
</tr>
<tr>
<td>Project Totals</td>
<td>$560,000</td>
<td>$320,000</td>
<td>-</td>
<td>2,470,000</td>
<td>-</td>
<td>2,580,000</td>
<td>$0.23</td>
</tr>
</tbody>
</table>

*Costs are preliminary estimates with an expected accuracy range of ±15% to ±30%.*
*Integrating GSI with other planned site improvements is assumed to result in a 30% cost reduction.* *Efficiency based on construction cost for stand-alone GSI.

Data Sources:
ALCOSAN: Sewer Structures, Sewer Pipes, Subcatchments
Allegheny County: Parcel Data, Contours
JACOBS: Existing Inlets

Note that limited sewer data information is available in GIS, so all existing sewer system information may not be shown on this map.

Map prepared by JACOBS: Feb 2020