At the turn of the 20th century, Pittsburgh embarked on its biggest infrastructure improvement campaign, building sewers, water lines, roads, power lines that created the city we know today.
We used to think...
Move the water away quickly
We solved our stormwater and waste issues with a single system.
The system functions differently in dry weather than when it rains.
The Clean Water Act requires us to address our overflows.
We need to create next century green infrastructure.
Pittsburgh’s stormwater story

1 CITY
3 RIVERS
365 DAYS

PW SA’s Clean & Green Plan
The Clean & Green Infrastructure Assessment is the map to our future vision.

The purpose of the City-Wide Assessment is to create a “Green First” approach to regulatory compliance that

- **PEOPLE** increases resiliency and minimizes hazards
- **PLANET** improves our rainwater system functioning
- **PLACE** enhances urban environments
- **PERFORMANCE** stimulates economic growth
We began our planning in areas where green infrastructure can be most effective.
We evaluated the system capacity evaluations and found that green is a key part of a broader solution.
We are attentive to a number of related stormwater issues.
We looked for the most effective projects and systems that would provide community benefit in each shed.
The Clean & Green plan is ENGINEERED

We need to keep rainwater out of the system. We can be most effective by focusing efforts on the sheds that contribute the most to the system.

We identified the **top 30 sheds**
The Clean & Green plan is ENGINEERED

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We identified the top 30 sheds and overlaid other criteria:

- **RISK**: LOWER RISK
- **OPPORTUNITY**: EASY TO IMPLEMENT
- **DEVELOPMENT**: HIGH ACTIVITY
- **SYNERGIES**: multiple benefits
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and chose 6 priority sheds
We are using a methodology that can be used across the city and the region.
The Clean & Green plan works at different scales.

<table>
<thead>
<tr>
<th>At the CITY-WIDE SCALE we are</th>
<th>At the SEwersHed SCALE we are</th>
<th>At the PROJECT SCALE we are</th>
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<tbody>
<tr>
<td>CREATING A CITY WIDE MODEL, POLICY, AND FUNDING STRATEGY</td>
<td>DEVELOPING COMMUNITY INFORMED SEWERSHED MASTERPLANS</td>
<td>IMPLEMENTING PRIORITY PROJECTS &amp; CONNECTED NETWORKS</td>
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</tbody>
</table>
We need to embed green infrastructure in our communities.
Water has always determined the identity of our neighborhoods.
A41 HETH’S RUN
SHED CAPTURE ANALYSIS

We investigated development patterns for each shed.
A41 HETH’S RUN
SHED CAPTURE ANALYSIS

Water Lines
A41 HETH’S RUN
SHED CAPTURE ANALYSIS

Sewer Lines
A41 HETH’S RUN
SHED CAPTURE ANALYSIS

High capture areas were identified.

Historic Streams and Target Areas
High capture areas were identified.

Most sheds share a similar kit of parts:

**STORAGE**
High capture areas were identified.

Most sheds share a similar kit of parts:

- STORAGE
- CONVEY

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working as a system.

These solutions can provide economic opportunity, increase safety and lower risk, and can dramatically improve the places in our communities.
This yields a series of STRATEGIES.

They align with larger city initiatives.
They can offer economic opportunity.
They can be part of ongoing maintenance.
They require interagency cooperation.
They create memorable civic spaces.
SUBSURFACE STORAGE

GREEN ALLEYS

COMPLETE STREETS

CONSTRUCTED WETLAND

IMPROVED STREETS

BIOSWALES

Created with public private partnerships.
Organizational structure needs to follow …

Administration Model
How do we integrate it into other planning processes?

M19 Soho Run
OPPORTUNITIES FOR DISTRIBUTED DETENTION SITES

These sites are open spaces that exist throughout the M19 sewershed. By distributing the infrastructure for detention, the demand for conveyance infrastructure is reduced allowing for more daylit surface flows.
MID BLOCK WATER LINKS

Future Development  Pay-for-Success Water Link

NEW DEVELOPMENT WITH PAY-FOR-SUCCESS WATER STORAGE

Forbes Avenue Streetscape with networked conveyance and detention infrastructure.
3 ZONE STOP + DROP ACCESSIBLE BIKE ROUTE

NETWORKED TREE PITS COLLECT AND CONVEY
UPTOWN PORTAL PARK

Seattle Olympic Sculpture Park
Source: denny/jennie & partners

3 ZONE STOP + DROP ACCESSIBLE BIKE ROUTE
WATER TREATMENT DISCS
EXTEND PARK INTO NEIGHBORHOOD
FUTURE GREEN BRT STOP
STAIR
BUMPOUT INTERSECTIONS
PERVIOUS ALLEY DEDICATED BIKEWAY

M19 SOHO RUN

PGH4O 🐫
DAYLIT SOHO RUN OUTFALL
PHASE 1: 10 YEARS

Lower Codorines Creek Restoration, Albany, NY
Source: Restoration Design Group

STOP AND DROP TO
RIVER

FUTURE RAILS TO TRAILS
POTENTIAL

PGH2O
M19
SOHO RUN
INTEGRATED INTO PLANNING
EcoInnovation District Masterplan
Department of City Planning, Stoss, Interface
INTEGRATED INTO PLANNING
Centre Avenue Plan
Hill Community Development Corp, evolveEA
PROJECT
Herron and Centre Avenues
Grand Opening: June 2018
PWSA
PROJECT
Herron and Centre Avenues
Grand Opening: June 2018
PWSA
Works in progress
O27: WOODS RUN | RIVERVIEW PARK
A42: Washington Blvd | Negley Run

- High Park Riverfront Connection
- Transist Hub Depaving
- Stormwater | Sediment | Flood Control
- GI Workforce Training at the VA Hospital Campus

Leech Farm Road - Before

Leech Farm Road - After
Little Negley Run is a daylighting project that disconnects new development via an open air sewer separation project.

Community vetted project as part of the Choice Neighborhood Planning grant.

Secured $1.2 Million in design funds in a partnership with Army Corps.
M29: FOUR MILE RUN | JUNCTION HOLLOW
This plan **addresses flooding** at the bottom of the 4 Mile Run watershed that impacts nearby residents and businesses.

Stormwater runoff from **Squirrel Hill** is reestablished in the historic Panther Hollow stream channel.
M29: FOUR MILE RUN | JUNCTION HOLLOW

- SCHENLEY DRIVE COMPLETE STREET
- RETROFIT PANTHER HOLLOW LAKE
- RESTORE PANTHER HOLLOW STREAM
- RETENTION BASINS AND CONSTRUCTED WETLANDS
M29: FOUR MILE RUN | JUNCTION HOLLOW

- Retention Basins and Constructed Wetlands
- Distributed Underground Storage
- Constructed Wetlands
- Reestablish Riverfront Connection
M29: WIGHTMAN PARK
August 31, 2014 Rain Event: 1.05” in 15 Minutes

**ISSUES:**
Surface Flooding, 11 Basement Sewage Flooding (Backups) Reported
2015 Homeowner Survey Revealed Chronic 136 Basement Backups
A22 SEWERSHED: HILLCREST PROJECT

1. flex lawn & berm
2. dig flex space
3. weir
4. bioretention plantings
5. curb out
6. gravel bottom retention area
A22 SEWERSHED: HILLCREST PROJECT
A22 SEWERSHED: MELWOOD PROJECT

Gravel bed of bioretention

Limestone block 1 course high to terminate slope

Sidewalk grate
A22 SEWERSHED: SHADYSIDE PROJECT
A22 SEWER SHED: CHATHAM UNIVERSITY
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