



Metro Stormwater Geodata Project (MSWGP)

Follow-On Document from April 17 and June 12, 2018 Input Sessions:



Metro Stormwater Geodata Summit held on
Tuesday, April 17, 2018
Hennepin County Public Works Facility,
Emergency Operations Center
1600 Prairie Drive, Hamel (Medina), Minnesota
55340



Summary Presentation & Input Session held on
Tuesday, June 12, 2018
Central States Water Environment Association
Offices of H. R. Green
2550 University Avenue West
St. Paul, Minnesota, 55114



Metro Stormwater Geodata Project

Follow-On Document from the events of 4/17/2018 and 6/12/2018

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Metro Stormwater Geodata Project

Purpose, Background and Context:

Purpose of this document. This document is intended to categorize, synthesize and organize the input gathered at the 4/17/2018 Summit Event input sessions for the review and usage of the MSWGP Steering Team to prioritize and execute its work toward developing a data standard, potential pilot project and other relevant project goals.

Background and Context. On April 17, 2018, sixty-two (62) representatives from city, county, regional, state and federal governments and interests from private sector consultants convened at the Hennepin County Public Works Facility Emergency Operations Center in Medina, Minnesota for a project information briefing and business needs documentation session. The session featured several brief presentations to establish context for the project and two facilitated breakout sessions for the discussion and documentation of business needs of the group. The presentations included:

Alex Blenkush of the Hennepin County GIS Office on the Hennepin County Regional Rail Authority's recent efforts to better understand the water and stormwater infrastructure resources and assets in its various corridors and rights of way;

Carrie Magnuson of the Ramsey-Washington Metro Watershed District who provided a contextual overview of the prior efforts in the metro region to develop a stormwater data exchange standard and pilot project to assemble inter-jurisdictional stormwater geodata for multiple uses;

Geoff Maas, coordinator of the MetroGIS collaborative—housed at the Metropolitan Council—provided context on the various needs to be met by a project of this type and examples of other successes being realized in the assembly of standardized park and trail data, road centerline data and address point data in the metropolitan region;

Stakeholder and participant input. In the two facilitated breakout sessions, participants were asked to identify, itemize and describe their general and specific business needs related to geodata representing stormwater systems as well as potential policy issues arising from sharing data. This document organizes this input into itemized categories intending to preserve the original intent and spirit of the comment as advanced at the event.

Appendices. Photographs of the original input (*in the original wording as documented on 4/17/2018*) is provided in an appendix at the end of this document for reference.

Category 1

Stormwater geodata attributes needed and/or desired

Need 1.1

What attributes need to be included in a potential standard, carried in a potential dataset, and maintained by the data producers so it can meet the core needs of the stakeholders?

>>> Routing, Modeling and Capacity Attributes:

- Diameter, material, shape, age, last inspection of pipe
- Elevation of inverts (up and down, e.g. height of the top and bottom of pipe)
- Flow volume/capacity of linear features;
- Storage (volume) capacity of impoundment/containment features (both natural and constructed)
- Geometry and connectivity attributes that facilitate effective routing/flow modeling capability

>>> Feature/Fixture Type Attributes:

- Linear feature type/attributes: Pipe, drain tile, ditch
- Point feature type/attributes: Catch basin, swale centroid, lake centroid, drain, depth, sump, shape, etc.
- Polygon feature type/attributes: Catch basin type and dimensions, swale, pond, lake, etc.
- BMPs by type
- Natural feature by type
- Monitoring device by type

>>> Ownership and Maintenance Attributes:

- The source of the data;
- Ownership of the physical attribute;
- Which maintenance district the feature is in;
- Contact information for who/what agency to call to report an issue;
- What watershed district the feature is in
- Plan number document associated with the feature;

>>> Origin and accuracy

- Determination if the feature is a public or private system (ownership)
- How was the data on this feature collected? (survey, plan drawing, GPS, heads-up digitizing)
- Indication of the level of accuracy of the data collected
- Consistent use of elevation datum and X, Y positioning
- Establishment of a critical minimum for data quality

>>> Other

- Public or private system (ownership)
- Consistent naming conventions for named fields in data;

Category 2

Direct usage of the stormwater geodata

Need 2.1 – Attributes that support routing and flow modeling

Ability to use the data for routing and flow modeling uses and applications

Ability to determine system capacity (e.g. a “volume/time period” measurement);

Ability to determine where floods could occur, rise, persist;

Ability to determine where BMPs could be placed for maximum impact;

- Routing/modeling/connectivity attributes
- Size/volume/material attributes
- Locational/positional attributes
- Ownership/jurisdiction attributes
- Receiving water attributes

Need 2.2 – Emergency Management and Hazardous Spill Containment

Ability to use the data for emergency management applications (containment)

Ability to perform leak prediction of hazardous materials (containment)

Ability to model emergency overflow conditions

- Routing/modeling/connectivity attributes
- Size/volume/material attributes
- Locational/positional attributes
- Ownership/jurisdiction attributes
- Receiving water attributes

Need 2.3 - Cartographic representation of features

Ability to use the data for mapping and data visualization

- Geometry (point, line, polygon)
- Attributes for various symbolization needs

Need 2.4 – Determine efficacy of BMPs

Ability to assess efficacy of established BMPs

- Routing/modeling/connectivity attributes
- Size/volume/material attributes
- Locational/positional attributes
- Ownership/jurisdiction attributes
- Receiving water attributes

Need 2.5 – Ability to edge-match features at jurisdictional boundaries

Need 2.6 – Ability to meaningfully connect surface features to sub-surface features

Need 2.7 – Ability to be readily consumed in user applications like ‘See-Click-Fix’, 311, etc.

Need 2.8 – Ability to use data for enhancing public education

Need 2.9 – Acknowledgement of the limitations of geospatial data

Category 3

Linkage of the stormwater geodata to other materials and systems

Need 3.1– Ability to link to reports, records, inspections, documents and other systems

Ownership and maintenance:

Linkage of the data to maintenance agreement documentation & information;
Linkage to ownership information of asset;
Linkage to maintenance responsibility information of asset;

Monitoring:

Linkage to monitoring devices;
Linkage to monitoring data collected by devices;
Linkage to CCTV monitoring activities;
Linkage to live stormwater/storm event monitoring;
Linkage to Mesonet and advance storm warning systems;
Linkage to retention/restoration operations information;

Permitting, inspections and document records:

Linkage to MS4 inspection records;
Linkage to NPDES permits/records;
Linkage to permit compliance records;
Linkage to specific pollutant monitoring records (chloride, suspended sediment, etc.)
Linkage to BMP inspection records (public and private);
Linkage to code enforcement documents and records;
Linkage to pond sediment reports, documentation and records;
Linkage to fixture maintenance, cleaning, treatment, repair and inspection records;
Linkage to budgets and CIP (Capital Improvement Plan) reporting;
Linkage to original plan documents/as-built drawings;
Linkage to information on preventative maintenance records and practices;

Other geospatial data systems:

Linkage to drain tile and drainage network systems and data;
Linkage to surface water discharge sites (receiving water) identification;
Linkage to data about land use, land cover, land controls (zoning/covenants);

Need 3.2 – Usability/Interoperability of the data with Asset Management Systems/Software:

Ability to consume/utilize the data and attributes in asset management systems/software;
Ability to determine ownership and management of stormwater fixtures/features;

Category 4

Data Policy, Data Governance and Conflict Resolution Issues

Need 4.1 - Clarity on Data Availability Policies

Clarity on the ability for the data to be included in, and available through, the National Hydrographic Dataset and other derivative hydrographic datasets;

Clarity on the ability for data producers and data consumers to be able to freely share the data with one another, with sub-contractors, and with the public;

Need 4.2 - Standardized Document Resources (Disclaimer, License Agreement, Security Level)

Standardized disclaimer language: A shared, standardized, attorney-approved body of *disclaimer language* available to the stakeholder community which clearly states that the data producer assumes no liability for errors or omissions;

Standardized license agreement language: A shared, standardized, attorney-approved body of *license agreement language* available to the stakeholder community which clearly states conditions of use, distribution, etc.

Standardized security level language: A shared, standardized, attorney-approved body of language about *security level information* available to the stakeholder community which clearly states conditions of use, distribution, etc.; concerns over bad actors misusing stormwater geodata

>>> Creation of a standardized disclaimer language, license agreement language and security level language for the use of the data producer community that references relevant Data Practices Act (Mn. Stat. 13) statute language and liability language (Mn. Stat. 466.03, Sub. 21);

Need 4.3 – Legal Review for Risk Assessment of Releasing Data

Review and approval of resources by appropriate agency leadership and attorneys and potentially the Information Policy Analysis Division (Department of Administration);

Need 4.4 – Consistent use of metadata:

Standardized and reliable metadata in use for the data produced;

>>> Awareness and consistent usage of the Minnesota Geospatial Metadata Standard (v. 1.2) by the data producer community;

Need 4.5 – Discrepancy Reporting and Resolution Mechanism(s)

Ability to report and protocol to resolve conflicts resulting from discrepancies identified in the data, ambiguities in inter-agency agreements regarding ownership, maintenance or other responsibilities;

>>> Consistent attribution of ‘authoritative source’ and/or ‘owner’ with agency contact information available;

>>> Development and adoption of a protocol for dispute resolution when discrepancies arise;

Needs 4.6 – Consensus on schedule of data updates and quality assurance

Agreed upon schedule for system data updates by participating agencies (once per year minimum)

Responsibility, agreements and methodology on how to link/snap stormwater feature data at jurisdictional boundaries (refer to Need 2.5);

Need 4.7 – Education and Outreach to Leadership on Data Policy Issues

A body of materials, information, presentations, etc. which can be used to educate elected officials and policy makers on the data, its use, etc.

Need 4.8 – Education and Outreach to Staff/Technical Personnel on Data Policy Issues

A body of materials, information, presentations, etc. which can be used to educate staff/technical personnel on the data, its use, etc.

Need 4.9 – Data Requests: Tracking Requestor and Purpose

Data producer(s) would like to understand how their data is being used, by whom, for what purpose, etc.

Category 5

Indirect and other business needs

Need 5.1 – Identification of flood prone/inundation areas;

Documentation of flood prone areas for preventative maintenance treatment(s)

>>> A point, line or polygon feature could potentially carry a 'flag' attribute indicating that it is within a flood prone area);

Tool to create custom inundation maps

>>> Completed data would help support the creation/use/enhancement of this tool

Need 5.2 – Ability to assess/understand groundwater quality;

Need 5.3 – Documentation of aesthetic characteristics of stormwater features/BMPs;

Need 5.4 – A centralized accessible database that includes watershed and sub-watershed boundaries;

Need 5.5 – Linkage to wildlife management uses;

Need 5.6 – Need for a better hydrologic soils dataset;



Appendix A:

Transcription of the Original Comments received at the 4/17/2018
Stormwater Geodata Summit Input Session

Business Needs

Maintenance agreement info/attributes
Advance-warning systems (Mesonet - emergency mgmt.)
Water storage volume
Trouble spots preventative maintenance (flood prone)
Trouble spots engineering CIP improvements (flood prone)
Input into NHD
System capacity for climate vulnerability
Data source
Metadata standardization & use
Integrated "see-click-fix" type system
Maintenance districts (Public information e.g. who to call)
Flood rise assessment
Assess stormwater BMP efficacy using spatial & water quality data
Hazardous materials - leak predictive modeling
Identification/resolution of storm data discrepancies
Live storm water monitoring data integration to GIS
Monitoring
Televising
Stormwater BMP inspection data sharing
Watershed delineation (scale?)
Pipe up & down invert
Groundwater quality
Modeling water quality
Cartography
Emergency management
Pond sediment
Surface waters discharge identification
Asset mgmt.
Asset management (ownership)
Asset mgmt. - attributes
Drain tile locating / mapping
Mapping BMPs
MS4 on t falls inspections & reporting
BMP's
Diameter
Ownership
Sump - Inspections; - cleaning
Aesthetics
Who owns the pipe?
Material

Catch basin type / dimensions
Map & Identify BMPs by type
Plan number
Invert elevations
Pipe size & materials inverts
Asset Mgmt. software
Data collection public / private
Level of accuracy (documenting w/n geo database
Open data
Centralized accessible data base that includes watersheds sub
watersheds
Private vs public
Better public tools/service
Flexible data mapping (different named fields)
Code enforcement
Inclusion of monitoring data (water levees, flow) to help
w/model calibration
Metadata standardization & use
Metadata standardization
Tool to create custom inundation maps
System to accommodate imperfect / changing data
NPDES Permitting
Emergency response coordination
Wildlife management
Retention / restoration operations
Know your stormwater data limitations
Flow volume vs diameter & size
As-built drawings from others
Connectivity between agencies
Standardized data across boundaries
Standardization of data collected, displayed, etc.
Surface and subsurface connectivity
Connected data that is regularly updated
Responsibility at city borders
Connectivity at city / entity borders
Flow and modeling
Flow modeling
Flow modeling
Modeling
Aggregate/comprehensive stormwater modeling
Public ed. flow path modeling
Interconnect
Budget work

Elevation datum!
Data quality
Known accuracy of XY positioning
Privately owned BMP tracking
ESRI - Local government information model schema
GPS
Better hydrologic soils data set
Comprehensive urban storm network data set
Land use data standardization (MLCCS) (for modeling)
Linking to record plan sets
Sediment TSS
Public education
Emergency overflow
New BMP types: porous pavement - infiltrative organic soils
Stormwater network analysis
Chlorides
Data connected to 311 systems of cities for reporting purposed
(e.g. localized funding)
Permit compliance
Sewer & stormwater interconnections
Water flow "centerline" map
Surface flow (virtual flow)

Policy Questions/Policy Needs

Maintenance agreement info/attributes
Clarify end use to make sure data is useful to requestor
Open data - Adopt a catch basin - great until someone working
on cleaning out the CB gets hit by a car. Who is responsible
then? City or willing residents?
Staff like to have knowledge of possible development, so they
want to know who and why for data requests
Business vs public need (just for amount of data to digest)
Data access set on an entity by entity basis (by owner)
Need to know what data is being used for - not public
Request/review policy for access
Data practices requests
Data practices requests by general public
I don't know my org's data sharing policies
Security / safety issues - large storm tunnels
Typically, we only share data with the customer we do work for
Info about what data exists so we don't redundantly collect it

We have no current written policy

Staff time

No official policy - will share w/ agencies; - discretion for public

Guidance doc/best practice of fed, state, city privacy & policies

Legal review for risk assessment

Requires paper license agreement

Challenges working with our legal resources

Concerns over data mis-use (no spelunking, no dirty bombs)

don't want to be living with knowledge of contributing to death
or mayhem

Vandalism of monitoring equipment

Disclaimer

Free the data! (legally)

Educate city council

Policy education

Technology available

Standardized security levels

Standardized license agreement



Appendix B:

**Photographs of the Original Comments from the 4/17/2018
Stormwater Geodata Summit Input Session**

Emergen

Clarify end use to make sure data is useful to requestor

Business vs Public needs
Type for amount of data to digest

Data practices request by general public

Security/Safety Issues -
Lg. Storm Tunnels

We have
Current
po

OPEN DATA - About
A CATCH PHRASE - GREAT
WHILE SOMEONE WORKS
ON CLEARING OUT THE CITY
HIT BY A CAR. WHO IS RESPONSIBLE
MAY BE CITY OR VENDOR

Data access set on an entity by entity basis (by owner)

DATA PRACTICES REQUESTS

I don't know my org's data sharing policies

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STAFF LIKE TO HAVE KNOWLEDGE OF FEASIBLE DECISIONS
So they want to know who is actually for data requests

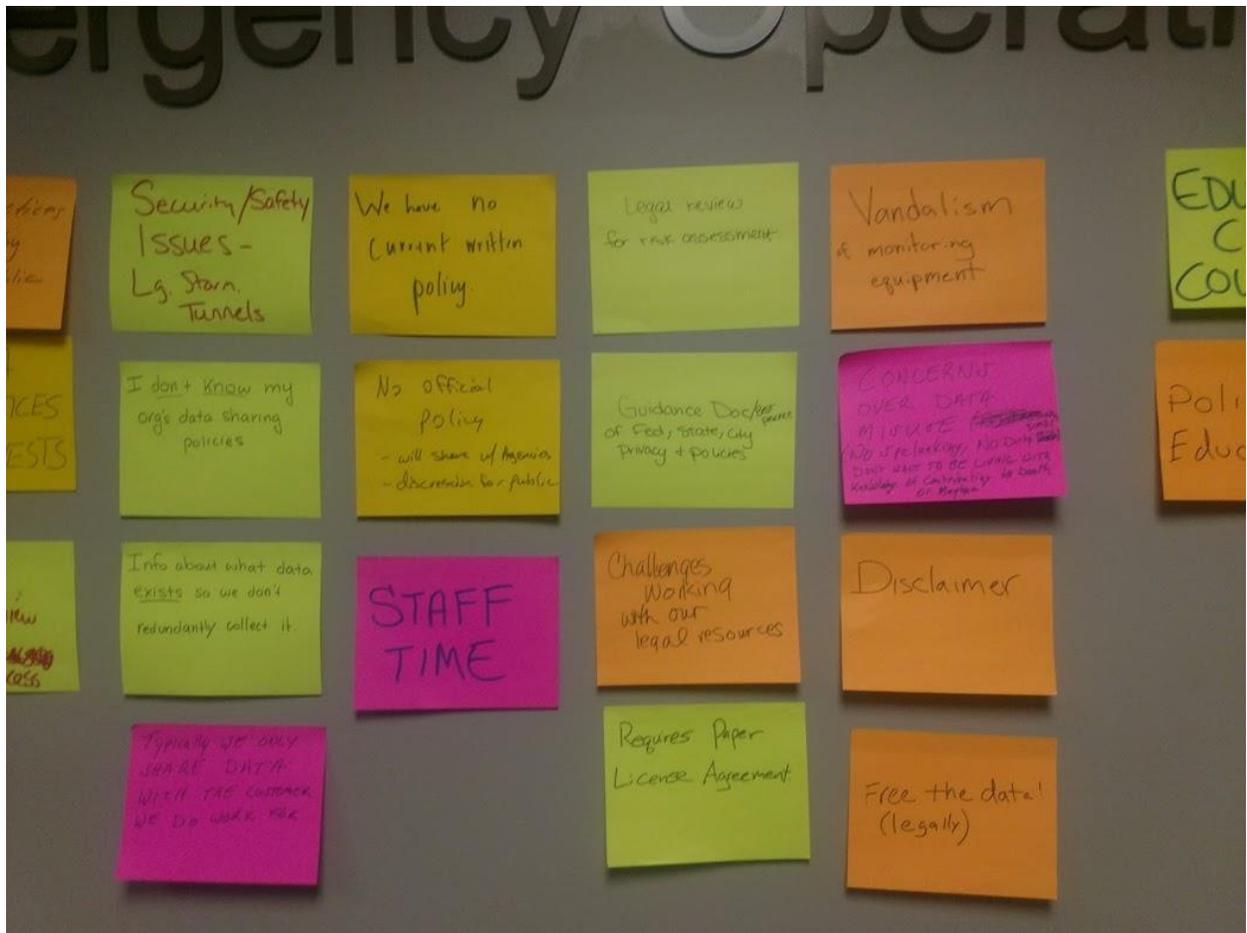
Need to know what data is being used for - Not ~~the~~ Public

Request/review policy for ~~access~~ access

Info about what data exists so we don't redundantly collect it.

STA
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Typically we only share data with the customer we do work for



Emergency Operations

Security/Safety Issues - Lg. Stair Tunnels

We have no current written policy.

Legal review for risk assessment.

Vandalism & monitoring equipment

EDU C COL

I don't know my org's data sharing policies

No official Policy - will share w/ Agency - discretion for public

Guidance Document of Fed, state, city Privacy + Policies

CONCERNS OVER DATA RELEASE - NO IP releasing, No Data Sale, Don't want to be linked with knowledge of community to South of Bay Area

Info about what data exists so we don't redundantly collect it.

STAFF TIME

Challenges Working with our legal resources

Disclaimer

Typically we only share data with the customer we do work for.

Requires Paper Licence Agreement.

Free the data! (legally)

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Policy Educ

STATIONS CENTER

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oring
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EDUCATE
CITY
COUNCIL

TECHNOLOGY
AVAILABLE

LEARN
DATA
NO DUTY
TO BE LIVING WITH
MAYOR

Policy
Education

STANDARDIZED
SECURITY
LEVELS

claimer

STANDARDIZED
LICENSE
AGREEMENT







Standardized
Data Across
Boundaries

As Built
Drawing
from Cities

NPDES
Permitting

Connectivity
between agencies

Flow Volume
vs
Diameter/Size

System to
accomodate
Imperfect/Changing
data

Connectivity at
City/Entity borders

How your
organization can
contribute

Tool to create
Custom
Inundation
maps

Responsibility
at city borders

Retention/
Restoration
Opportunities

Metadata
Standardization

CONNECTED
DATA THAT
IS REGULARLY
UPDATED

Wildlife
management

Metadata

Surface and

PRIVATE
VS
PUBLIC

centralized
accessible
database that
includes watersheds

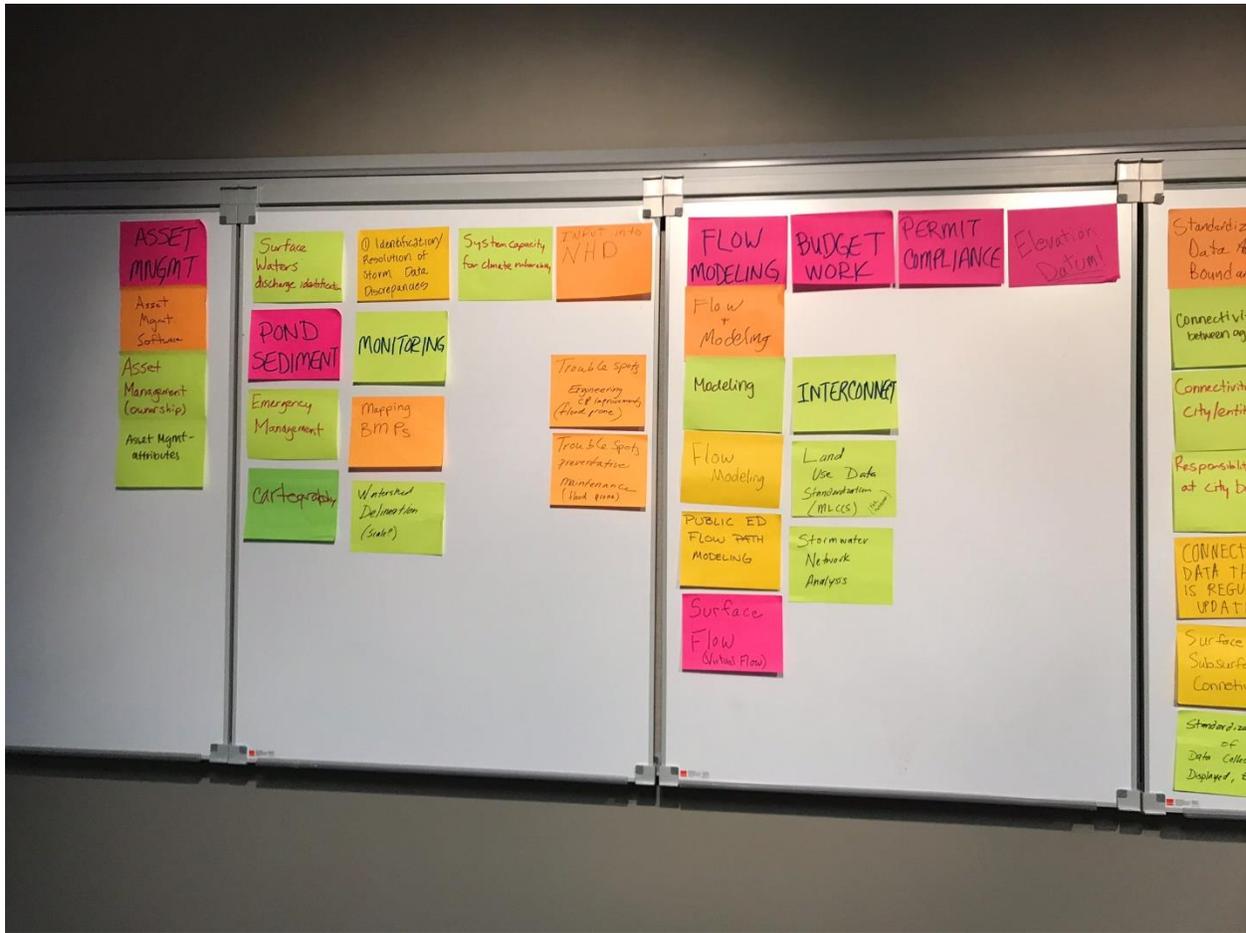
CENTRALIZED
ACCESSIBLE
DATABASE THAT
INCLUDES ^{WATERSHEDS}
SUBWATERSHEDS

Data collected
Public/private

OPEN
DATA

CODE
ENFORCEMENT

Flexible data
mapping
(different record fields)





Appendix C:

Transcription of the Original Comments received at the 6/12/2018
**Central States Water Environment
Association Presentation and Input Session**

General Business Needs:

Identification of combined sewers
Utility half-lives
Planning for aging infrastructure and reconstruction
Age/condition

BMP Placement – Optimizing locations
Identify spots for retro-fit BMPs
BMP Placements
Development of TMDLs
Tracking inspections
Improving water quality
Calculate updated S.W.
Utility factor
How much landowner pays?

MS4 Compliance
Permitting purposes
Hydraulic modeling
Calculate storm sewer flows
Defining flow paths/connections
Modeling and representation HPSWIM, MECRAS, EE
Watershed planning/network connectivity
Tracking illicit discharges
Understanding inter-community flows
Development reviews
Understanding Long-Term Impacts of Development

Mapping how projects relate
Asset management
Tracking maintenance
Understanding infiltration/recharge
GW (groundwater) modeling
Ground water-Surface water interaction analysis

Forensic from/for flooding events
General location for construction
Interjurisdictional flows and connections

Coordinating w/other utilities
Feasibility studies
Mapping high water levels
Planning and prep for climate impacts

Specific Attributes:

Type of BMP – Infiltration vs. holding/retention
High level infiltration rates
Proximity to well heads, traffic routes, snow plow routes, impaired lakes
Up-to-date parcel data (polygon) for projects
How much water thru stormshed per event
Relationship of storm sewer to sanitary sewer (I/I, Inflow and infiltration)
Emergency planning/routes (flooding)

Material
Structure type (CB, MH, Inlet type)
Owner
Apron type
Last inspected data/maintenance date
BMP Type/Size
Capacity design
Intake configuration
Casting type
Slope
Sump/No Sump
Structure ID
Size/Diameter
Upstream/Downstream Connectivity
Age
Condition/Rating
Elevation
As built(s)
Pond: Dead storage, volume, HWL, NWL
Inspection and maintenance records
Televising/Inspection forms
Adjusting rings
Outlets: weir/orifice elevation
Debris issues – capture amounts
Frequency of monitoring
Storm sewer outfalls
Qual[ity]: Flow monitoring sites
How the data was created/metadata
Stormsewer Info: Pipe size, manhole depth, inverts, material, condition
CSOs (Combined Sewer Overflows), where they are, status of connection
Easement locations

Concerns about sharing data:

Content of disclaimer

Update frequency and cost

Public perception/Increased knowledge

Public perception/shock value

Private infrastructure

Integrity of data over time as changes occur

What is local process to review local data before sharing

How data will ultimately be used (modeling data)

Public Safety Issues

Conflicts w/ other data sources

When is data okay to share? How complete? How accurate?

Data accuracy

Datum issues

Ownership



Appendix D:

**Photographs of the Original Comments from the 6/12/2018
Central States Water Environment
Association Presentation and Input Session**

GENERAL BUSINESS NEEDS

MAPPING HOW

Identification of combined sewers

UTILITY HALF-LIVES

MS 4 COMPLIANCE

Planning for aging infrastructure & reconstruction

Age Condition

BMP PLACEMENT - OPTIMIZING LOCATIONS

Identify spots for retrofit + BMPs

Improving water quality

BMP PLACEMENTS

DEVELOPMENT OF TMDLS

CALCULATE UPDATED SW UTILITY FACTOR HOW MUCH LANDOWNER PAYS?

Tracking inspections

MS 4 COMPLIANCE

GENERAL BUSINESS NEEDS

Permitting purposes

Age Condition

Hydraulic Modeling

MAPPING - HOW PROJECTS RELATE GAPS? TARGETING

ASSET MANAGEMENT

Asset Management

Improving water quality

CALCULATE STORM SEWER FLOWS

Defining flow paths/connections

Tracking maintenance

CALCULATE UPDATED SW UTILITY FACTOR HOW MUCH LANDOWNER PAYS?

MODELING & REPRESENTATION HPSWIM HEZRAS, EE

UNDERSTANDING INFILTRATION/RECHARGE -GW MODELING

Watershed planning / network connectivity

Quality

SEWER FLOWS

MANAGEMENT

Asset Management

CALCULATE UPDATED SW UTILITY FACTOR HOW MUCH LANDOWNER PAYS?

Defining flow paths/connections

Tracking maintenance

MODELING & REPRESENTATION HPSWIM HEZRAS, EE

Watershed planning / network connectivity

UNDERSTANDING INFILTRATION/RECHARGE -GW MODELING

Tracking illicit discharges

GROUND WATER - SURFACE WATER INTERACTION ANALYSIS

UNDERSTANDING INTER-COMMUNITY FLOWS

SPECIFIC ATTRIBUTES

2

PROJECTS RELATE
GAPS? TARGETING

ASSET MANAGEMENT

Forensics from for flooding events

Coordination w/ other utilities

Asset Management

General location for construction

FEASIBILITY STUDIES

Tracking maintenance

Interjurisdictional Flows & Connections

MAPPING HIGH WATER LEVELS - MAPPING

UNDERSTANDING INFILTRATION/RECHARGE - GW MODELING

DEVELOPMENT REVIEWS

PLANNING & PREP FOR CLIMATE IMPACTS

GROUND WATER - SURFACE WATER INTERACTION ANALYSIS

UNDERSTANDING LONG-TERM IMPACTS OF DEVELOPMENT

Coordination w/ other utilities

FEASIBILITY STUDIES

MAPPING HIGH WATER LEVELS - MAPPING

PLANNING & PREP FOR CLIMATE IMPACTS

UNDERSTANDING LONG-TERM IMPACTS OF DEVELOPMENT

TYPE OF BMP
INFILTRATION VS HOLDING/RETENTION

HIGH LEVEL INFILTRATION RATES

PROXIMITY TO WELLHEADS, TRAFFIC ROUTES, SHADY TOW ROUTES, IMPAVED LANES

UP-TO-DATE UPDATED PARCEL DATA (POLYGON) FOR PROJECTS

How much water thru stormshed PER EVENT

RELATIONSHIP OF STORM SEWER TO SANITARY SEWER
I/I (combined flow not a thing)

EMERGENCY PLANNING/WORK (FLOODING)

Material

Structure Type (CB, MH, L4Type)

Owner

Apron Type

Last Inspected/Maintenance

BMP Type/Size

SOIL BORING - INFO WHEN PROT INSTALLED

SPECIFIC ATTRIBUTES

Capacity Design

Structure ID

Intake Config

Size/Diam

Material

Casting Type

Upstream/Downstream Connectivity

Structure Type (CB, MH, L4Type)

Slope

Age

Owner

Sump/No Sump

Condition/Rating

Apron Type

Storm Sewer Info
PIPE SIZE
MANHOLE DEPTHS
INVERTS
MATERIAL CONDITION

Last Inspected/Maintenance

Elevation

BMP Type/Size

combined over catchment CSO's - where - status of connections

How DATA CREATED/ METADATA

CONCERNS ABOUT SHARING DATA

Structure Type (CB, MH, L&FP)

Casting Type

Upstream/Downstream Connectivity

Slope

Age

Owner

Apron Type

Sanp/No Sanp

Condition/Rating

Last Inspected/Maintenance

BMP Type/Size

Elevation

STORM SEWER INFO
PIPE SIZE
MANHOLE DEPTHS
INVERTS
MATERIAL
CONDITION

How DATA CREATED/META DATA

SOIL BORING INFO WHEN PROT. INSTALLED

EMSEMENT LOCATIONS

collected over various CSOs
- where
- status of connections

Structure ID

AS-Built's

Size/Diam

And Dead Storage Volume, HWL, NWL

Upstream/Downstream Connectivity

NWL

Debris Issues
Capture Amount

Age

INSPECTION & MAINTENANCE RECORDS

FREQUENCY OF MONITORING

Condition/Rating

Telemetry/Inspection Forms

STORM SEWER OUTFALLS

Elevation

Adjusting Rings

QUAL FLOW MONITORING SITES

Outlet
Whirl/Orifice
Elevation

How DATA CREATED/META DATA

CONCERNS ABOUT SHARING DATA

Public Safety Issues

Data Accuracy

Content Disclaim

CONFLICTS w/ OTHER DATA SOURCES

Data Issues

Public Perception Increased

WHEN IS DATA OKAY TO SHARE?
- How COMPLETE
- How ACCURATE

Ownership

PUBLIC PERCEPTION

Private Infrastructure

Content of Disclaimer

Update Frequency & Cost

Public Perception/Increased Knowledge

INTEGRITY OF DATA OVER TIME AS CHANGES OCCUR

PUBLIC PERCEPTION

WHAT IS LOCAL PROCESS TO REVIEW LOCAL DATA BEFORE SHARING

Private Infrastructure

How data will ultimately be used (including Data)