

Storm Drainage Master Plan Update

Michael Anderson, Senior Engineer & Project Manager
City & County of Denver Department of Public Works

September 10, 2014

Infrastructure & Culture Committee

Bill Request 14-0694

- * Housekeeping to correct an out-of-date reference in Denver Revised Municipal Code (DRMC) Section 56-110(b).
- * Currently, Section 56-110(b) of Article III of Chapter 56 of the DRMC states that the City's master drainage plan and studies are based upon storm drainage criteria and methodologies established by the Denver Regional Council of Governments.
- * 1969: The Urban Drainage and Flood Control District (UDFCD) was created and now manages this responsibility and has published a 3-Volume Criteria Manual.
- * Request approval of Bill Request 14-0693 to clarify that the master drainage plan and studies are based upon UDFCD storm drainage criteria and methodologies.

Resolution Request 14-0693

- * Section 56-110(e) of the Denver Revised Municipal Code states:
 - * The master drainage plan formulated and developed by the Executive Director of Public Works may not be considered the official master drainage plan of the City until it is adopted by resolution of the City Council.
 - * The master drainage plan shall be updated in no less frequent intervals than five (5) years, including new improvements and developing problem areas and shall be submitted to the city council for evaluation and approval.
- * Current Storm Drainage Master Plan: Adopted October 5, 2009.
- * Request approval of Resolution Request 14-0693 to adopt the September 2014 update to the Denver Storm Drainage Master Plan as the official master drainage plan of the City and County of Denver.
- * Presentation to follow...

What is the Storm Drainage Master Plan & Why do we update it?

- * Inventory of all the storm drainage pipes in Denver
- * Includes storm runoff flow calculations – Technical Appendices
- * Identifies, without prioritizing, all needs for upgrading existing storm drains and installing new drains
- * Update proposed project costs based on current bid data
- * \$1.47 billion in needs city-wide

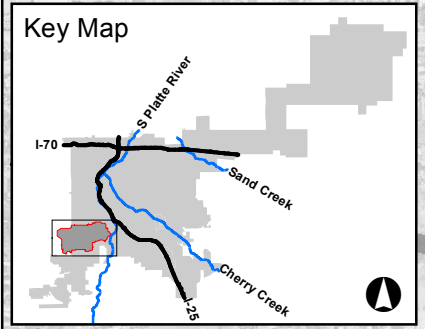
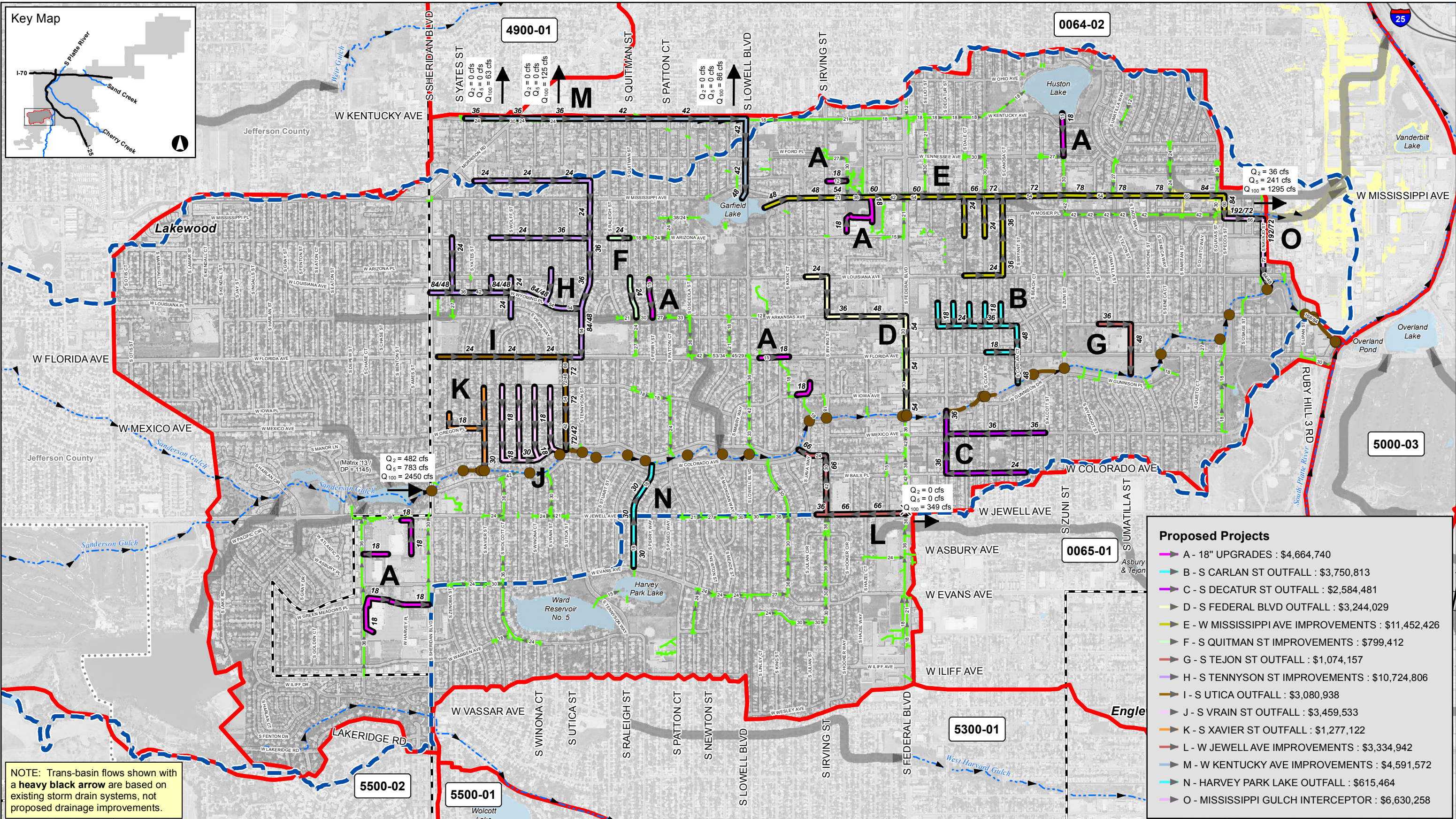
- * Denver Revised Municipal Code: update every 5 years
- * Started 18 months ago; 6,000 hours of work

Who Uses the Storm Drainage Master Plan?

- * Public Works
 - * Wastewater Capital Projects Management Planning and Programming
 - * Street Maintenance Capital Projects coordination
 - * Bridge Group Capital Projects coordination
 - * Policy Planning and Sustainability coordination
- * Development Services
- * Developers and Engineers
- * Community Planning & Development (CPD)
- * Council offices and constituents

Key features of the updated 2014 Storm Drainage Master Plan

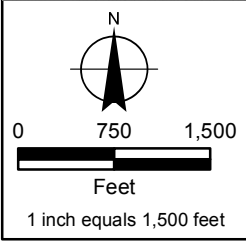
- * Key features of past and current Storm Drainage Master Plans
 - * Identify existing storm drains and needed storm drainage improvements
 - * Storm History updated
- * New features for 2014 Storm Drainage Master Plan:
 - * Urban Drainage & Flood Control District study recommendations
 - * Significant Flooding Locations
 - * Thalwegs and Potential Inundation areas
- * Benefits
 - * Helps identify top priority projects.
 - * Better department coordination
 - * Improved council & constituent potential flooding information



Proposed Projects

- A - 18" UPGRADES : \$4,664,740
- B - S CARLAN ST OUTFALL : \$3,750,813
- C - S DECATUR ST OUTFALL : \$2,584,481
- D - S FEDERAL BLVD OUTFALL : \$3,244,029
- E - W MISSISSIPPI AVE IMPROVEMENTS : \$11,452,426
- F - S QUITMAN ST IMPROVEMENTS : \$799,412
- G - S TEJON ST OUTFALL : \$1,074,157
- H - S TENNYSON ST IMPROVEMENTS : \$10,724,806
- I - S UTICA OUTFALL : \$3,080,938
- J - S VRAIN ST OUTFALL : \$3,459,533
- K - S XAVIER ST OUTFALL : \$1,277,122
- L - W JEWELL AVE IMPROVEMENTS : \$3,334,942
- N - HARVEY PARK LAKE OUTFALL : \$615,464
- O - MISSISSIPPI GULCH INTERCEPTOR : \$6,630,258

NOTE: Trans-basin flows shown with a heavy black arrow are based on existing storm drain systems, not proposed drainage improvements.

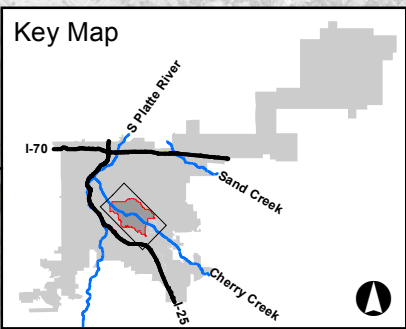


For Detailed Hydrology See Technical Appendix and Work Map

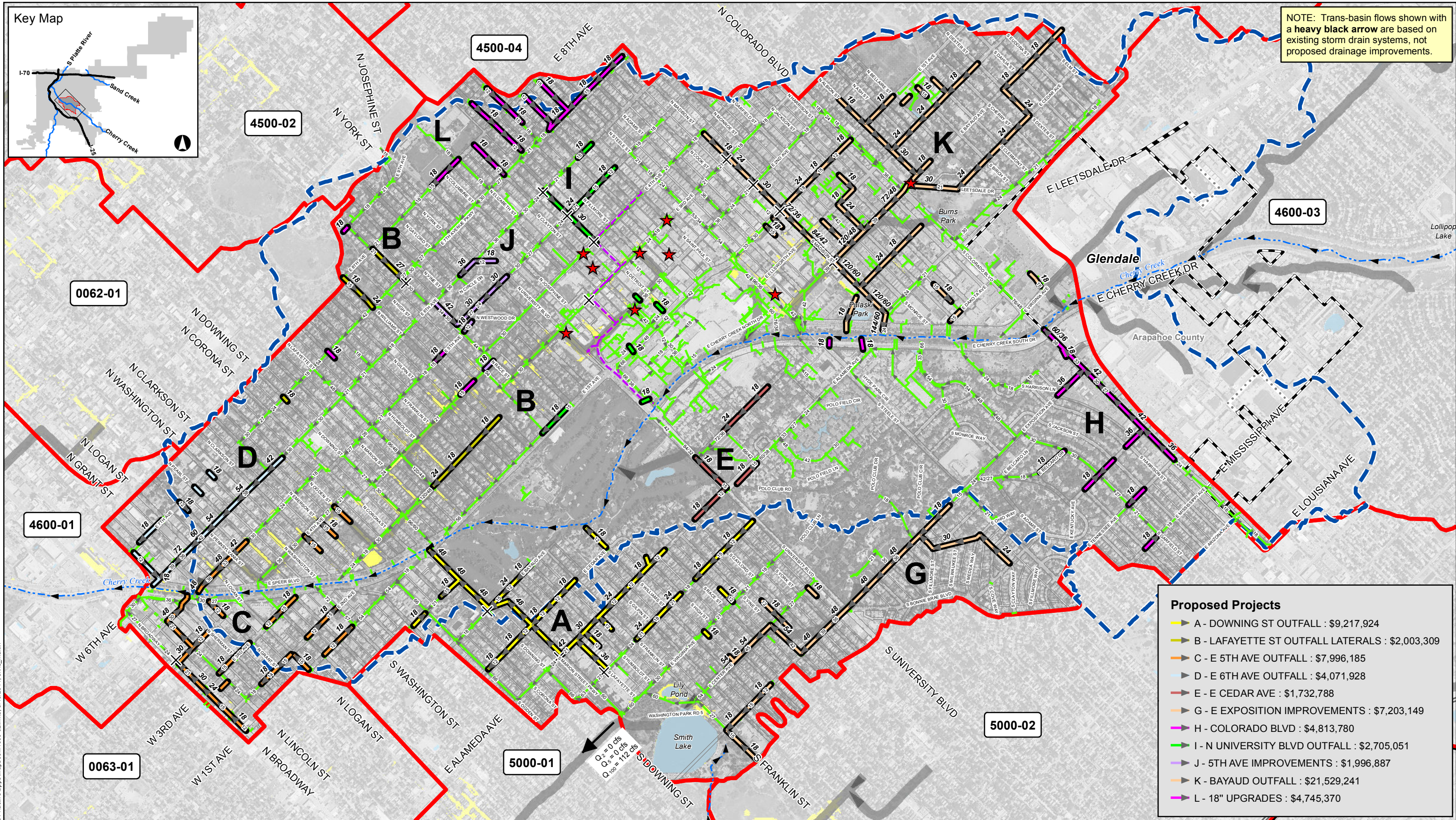
- Legend**
- Collection System Boundary
 - Topographic Basin Boundary
 - Thalweg
 - Proposed Storm Pipe
 - UDFCD Study Recommendations
 - Proposed Pipe Disconnect
 - Existing Storm Pipe
 - Designed Storm Improvement
 - Existing Surface Flow
 - Significant Flooding Location
 - Proposed Detention Basin
 - Existing Basin
 - Potential Inundation Area
 - Planned Transit Line
 - Existing Transit Line
 - City and County Boundary
 - Other Municipalities
 - Other Counties

Basin 5100-01 Sanderson Gulch

Denver Storm Drainage Master Plan

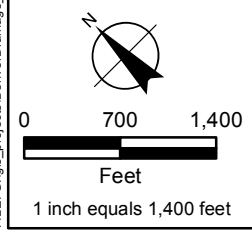


NOTE: Trans-basin flows shown with a heavy black arrow are based on existing storm drain systems, not proposed drainage improvements.



Proposed Projects	
A - DOWNING ST OUTFALL	\$9,217,924
B - LAFAYETTE ST OUTFALL LATERALS	\$2,003,309
C - E 5TH AVE OUTFALL	\$7,996,185
D - E 6TH AVE OUTFALL	\$4,071,928
E - E CEDAR AVE	\$1,732,788
G - E EXPOSITION IMPROVEMENTS	\$7,203,149
H - COLORADO BLVD	\$4,813,780
I - N UNIVERSITY BLVD OUTFALL	\$2,705,051
J - 5TH AVE IMPROVEMENTS	\$1,996,887
K - BAYAUD OUTFALL	\$21,529,241
L - 18" UPGRADES	\$4,745,370

FILE: G:\gis_projects\DenverDrainage_2014\active\apps\Mapbook\4600-02.mxd, 8/19/2014, chris_martin

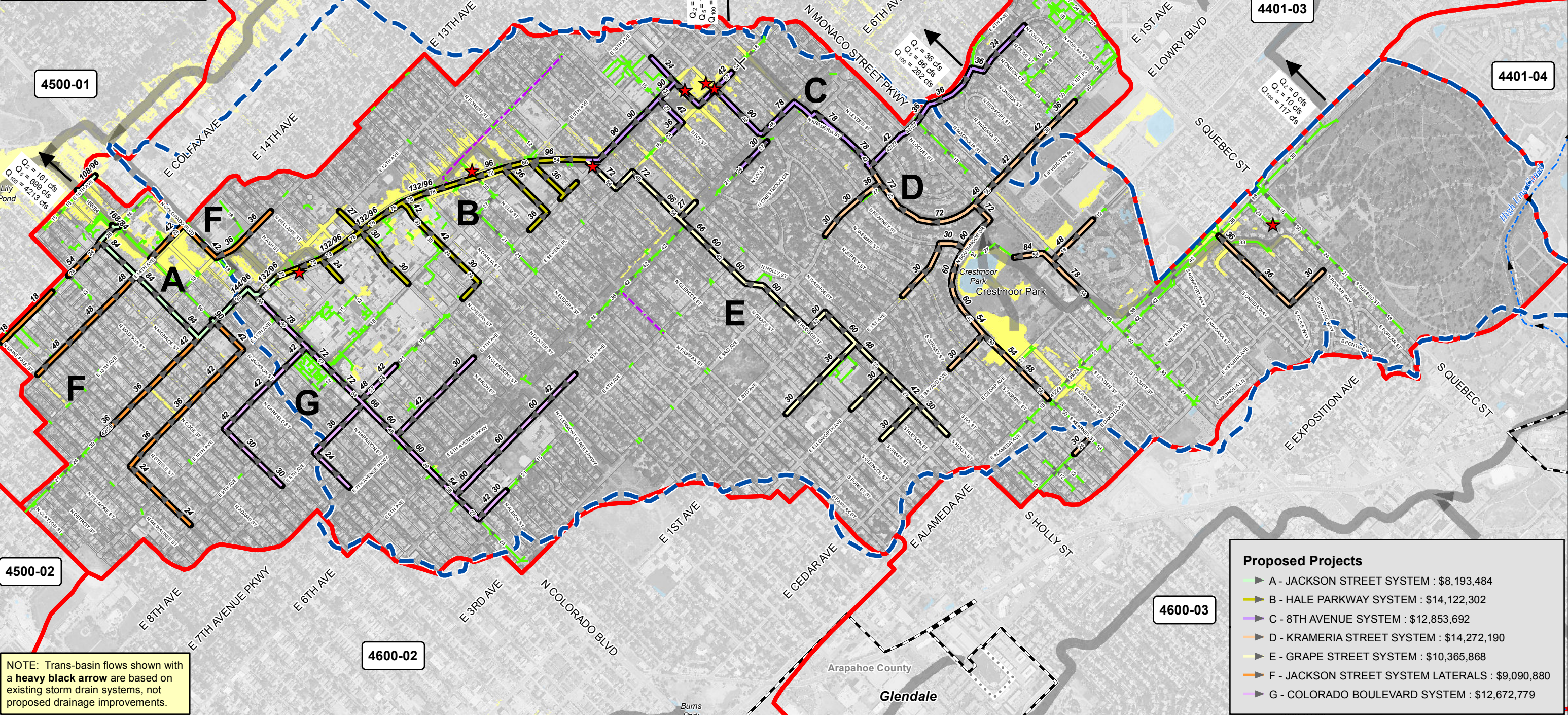
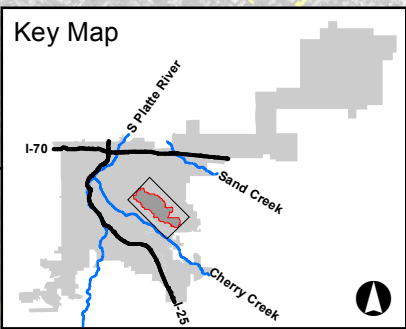


For Detailed Hydrology
See Technical Appendix
and Work Map

Legend			
Collection System Boundary	Proposed Storm Pipe	Existing Storm Pipe	Proposed Detention Basin
Topographic Basin Boundary	UDFCD Study Recommendations	Designed Storm Improvement	Existing Basin
Thalweg	Proposed Pipe Disconnect	Existing Surface Flow	Potential Inundation Area
	Significant Flooding Location	Existing Transit Line	Planned Transit Line
		City and County Boundary	Other Municipalities
		Other Counties	

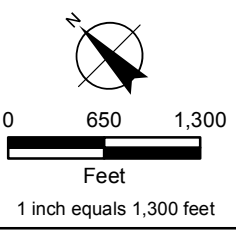
Basin 4600-02 Cherry Creek Mall

Denver Storm Drainage Master Plan



NOTE: Trans-basin flows shown with a heavy black arrow are based on existing storm drain systems, not proposed drainage improvements.

Proposed Projects	
A - JACKSON STREET SYSTEM	: \$8,193,484
B - HALE PARKWAY SYSTEM	: \$14,122,302
C - 8TH AVENUE SYSTEM	: \$12,853,692
D - KRAMERIA STREET SYSTEM	: \$14,272,190
E - GRAPE STREET SYSTEM	: \$10,365,868
F - JACKSON STREET SYSTEM LATERALS	: \$9,090,880
G - COLORADO BOULEVARD SYSTEM	: \$12,672,779



For Detailed Hydrology See Technical Appendix and Work Map

Legend					
	Collection System Boundary		Proposed Storm Pipe		Existing Storm Pipe
	Topographic Basin Boundary		UDFCD Study Recommendations		Existing Surface Flow
	Thalweg		Proposed Pipe Disconnect		Significant Flooding Location
	Proposed Detention Basin		Existing Basin		Existing Transit Line
	Potential Inundation Area		Other Municipalities		Other Counties
	Planned Transit Line				

Basin 4500-04 Park Hill - 6th Avenue

Denver Storm Drainage Master Plan

Summary

- * The City's Storm Drainage Master Plan is required by ordinance to be updated every 5 years
- * The Storm Drainage Master Plan requires council approval by Resolution in order to be considered the official master drainage plan of the city
- * Request approval of Resolution Request 14-0693 for consideration by City Council
- * Upon adoption by City Council: Available on City's Website www.denvergov.org
- * Questions / Discussion