

Stormwater in the High Line Canal
Business Case Summary of Key Points

January 30, 2026

- **Arapahoe County's role has changed** from High Line Canal (HLC) capital improvement funder to maintenance & operations funder.
- **Current moratorium on requests to add new stormwater** into the canal.
- **The BOCC has shown an interest in allowing new stormwater** in the canal

What Arapahoe County is missing to perform our new role:

1. *Technical criteria & modeling*

a. Criteria

- i. Arapahoe County is only the second county in the state to own a canal
- ii. Arapahoe County and MHFD have stormwater criteria for natural water ways, but no criteria for man-made canals.
- iii. No criteria exist to address open channels crossing the canal or mitigating water migration through soils.
- iv. Criteria must be coordinated with municipalities for consistency & to avoid future conflicts (think municipal land use decisions) between the county's limited jurisdiction in unincorporated areas.

b. Modeling

- i. A new model (known as the STAMP- Stormwater Transition and Management Plan) is based on *historic flows* (tributary flows into the canal when the area was undeveloped).
- ii. The STAMP will identify capital stormwater investments needed to mitigate flooding risks.
- iii. To accommodate new stormwater (new volume), a more refined model will be needed to understand the potential capacity of the canal. Actual survey data, metered flows of all discharges to the canal (both licensed and unlicensed) and additional analysis of sediment transport and seepage should be studied and understood.

2. *Policies*

- a. May be both technical specific (ie no less than 1 foot of freeboard) or broad (local jurisdictions need to prioritize risk mitigation by investing in the alternatives identified in the STAMP prior to changes in flow volumes and manners of flow)

3. *Operational Implementation*

- a. Focus: permitting and review of new stormwater flows
- b. May include a capital improvement program (think connections to existing waterways, stormwater treatment drains, building up embankments, etc.)
- c. Will need to include an enforcement role

Next Steps:

- Mile High Flood District (MHFD) has offered to fund and facilitate meetings with stakeholders on criteria and policy development. Ultimately HLC is our ownership responsibility and the County has final say.
- In the fall 2026, PWD/OS will share with the BOCC the outcomes of this collaborative work and solicit board feedback.
- Magnitude of technical standards and policies will inform the creation of the operational/implementation program (# of FTE, county financial resources needed, potential IT solutions, etc.)

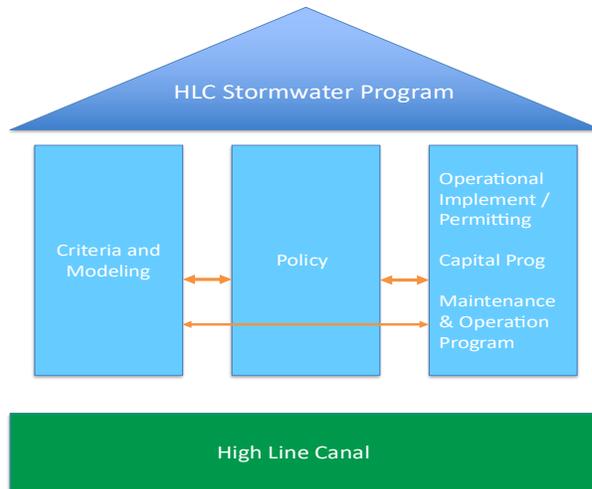
BOCC request: 1) Concurrence to allow new stormwater into the HLC, 2) Support the framework (3 pillar approach) proposed to develop the Program, 3) concurrence that both PWD and OS shall work on this program, and 4) BOCC provided reactions and feedback

**Arapahoe County Open Spaces &
Public Works and Development
Business Case for
High Line Canal Stormwater Management Program**

Executive Summary

Arapahoe County (County) now owns 45 miles (of the 71 miles) of the High Line Canal (HLC). The County must now determine how the Canal property will be managed both within incorporated and unincorporated areas to ensure the protection of life and property while supporting the Canal’s natural resources. The impetus of taking over the HLC was primarily to preserve a natural/recreational amenity. On October 27, 2025, the Board of County Commissioners (BOCC) expressed their interest and general support for creating a program to reduce flood risk and safely add new direct stormwater connections to the Canal. This business case includes a brief history of the County’s acquisition of the Canal and proposed organizational structure for the BOCC to consider when deciding how to move forward with managing this new asset and establishing a new program for administration of stormwater within the HLC.

Public Works and Development (PWD) and Open Spaces (OS) staff have developed a framework for developing the stormwater program within the HLC. The program essentially involves three pillars – Criteria Development and stormwater modeling, Policy, and Operational Implementation including permitting. Since this is a new asset owned by the County there will be a need for capital investments, as well as maintenance and operations. This structure sets the framework from which to establish specifics in each area via partnership with our local municipalities, Mile High Flood District, and High Line Canal Conservancy.



Staff is requesting concurrence with the three-pillar framework for establishing this new HCL Stormwater Management Program and any guidance on how to proceed with the development of policy and criteria along with implementation of a permitting process.

Background

In June 2024, Arapahoe County (the County) acquired 45 miles of the 71-mile High Line Canal (HLC) corridor in Arapahoe, Denver, and Adams counties for preservation of the recreational and ecological amenities of the property. This section of the HLC property is also now covered by a conservation easement held by the High Line Canal Conservancy (the Conservancy), which will ensure long-term protection of the property's recreational and ecological values. While Denver Water (DW) was working with the County to transfer ownership, several municipalities, Mile High Flood District (MHFD) and the Conservancy started collaborating on a vision for the HLC related to enhancing the stormwater conveyance potential and reducing flood risks in addition to recreational purposes. The HLC currently has a number of direct stormwater connections and has a significant drainage area that drain to the canal. Arapahoe County helped to financially support this work. In addition, the County's initial financial role with the HLC was that of providing grants for improvements. Today, the County's role has shifted to funding operations and maintenance. To support the collaborative vision for the HLC and align it with the County's strategic goals, management of existing and future stormwater discharges, there is a need to protect neighboring property owners and County taxpayers by minimizing liability and risk associated with overtopping of the canal and the flooding of adjacent property.

This portion of the HLC consists of an extensive network of trails and canal infrastructure from water diversions, flumes, waste gates and newer stormwater facilities. DW has reserved the right and will continue to use some of the canal now owned by the County for its water works purposes. HLC facilities and methods of operation can be affected by development occurring in the region. Development which can adversely affect the HLC includes but is not limited to:

- utilities,
- roads,
- wells,
- drainage projects, and
- urban development/redevelopment

While the County has technical standards for roadway and drainage infrastructure related to the built environment, these standards do not fully include requirements that are unique to canals and are only applicable within unincorporated areas of the County. The Mile High Flood District has criteria that targets stormwater facilities such as natural stream restoration, but again not specifically for a man-made canal. Since the HLC transverses incorporated jurisdictions, this program needs to be coordinated with the local jurisdictions while maintaining the County's minimum standards for stormwater management and risk reduction of owning a canal. The HLC Stormwater criteria would incorporate existing stormwater criteria as applicable with enhanced specifics for a canal, such as sediment transport/allowance management, structure details (e.g., headwalls, bank stabilization, and cut-off walls), material specifications for backfill to reduce seepage, freeboard criteria, etc. The consultant that performed the modeling that will be discussed below still has funding within their contract with MHFD and through discussions with the MHFD project team, some of the dollars could be used to have the consultant assist in developing these criteria.

The other aspect of managing the stormwater discharges to the HLC will be the technical standards that should be met when crossing the canal and modifying the canal cross section. The County's existing standards are primarily focused on roadway and stormwater infrastructure with very little available to address open channels or mitigating water migration through soils. Additionally, consideration will be given to how other jurisdictions address these two areas while ensuring that a minimum standard is set through the County's standards.

There is currently an updated hydraulic and hydrologic model that is being used to create a report that is near completion. Once completed, this model will replace the existing model that has been used to determine potential impacts to the HLC from requests to add stormwater discharges. To date, the County has taken a similar stance as DW by not allowing any additional direct stormwater flows into the HLC; only historic flows from when the area was undeveloped is allowed. The new model is supporting a project called Stormwater Transition and Management Plan

(STAMP) which not only identified alternatives to consider for some of the flooding but also improved the accuracy of the model with LiDAR data. This draft report is scheduled to be finalized in February 2026 and as part of the report will be identification of current flowing locations and recommended mitigation improvements (capital investments). However, should the County decide to utilize the HLC for new direct stormwater connections , then adding additional details to the STAMP model may be necessary. For the purposes of analyzing the future improvements needed to reduce overtopping or to understand the potential capacity of the canal, a hydraulic model would need to be created based on actual survey data, metered flows of all discharges to the canal (both licensed and unlicensed), and additional analysis may be needed to understand sediment transport and seepage along the canal. Both Aurora and Cherry Hills Village have conducted more detailed modeling of the Canal in their jurisdiction. The Mile Flood Control District has agreed that they would be able to run modeling using Icon LIDAR model to determine impacts of new water that is proposed into the canal at no cost to the County or municipalities, initially.

Mission Statement

The County’s Mission Statement is “We deliver exceptional County services and use resources responsibly to advance quality of life.” Ownership of the HLC embodies this mission statement by the County becoming the steward of a cherished community resource which has enhanced the quality of life for many Arapahoe County residents and visitors. This proposed HLC Stormwater Management Program would further the County services to focus on “Sustainable Growth and Infrastructure” which is one of the areas the County’s Strategic Plan has defined for staff to utilize when planning for new services. The HLC Stormwater Management Program will be focused on reducing flood risks ensuring that any stormwater that is allowed in the HLC can be effectively routed through the canal in a way that minimizes flooding and continues to support the conservation easement that was established for the HLC.

Stormwater Management Program Definition

This HLC Stormwater Management Program is intended to describe the policy, regulations and requirements needed to protect the County’s portions of the HLC as well as minimize the liability associated with flooding. The HLC Stormwater Management Program would further:

- Develop policy and regulations
- Define what historic flows are while considering the potential of new stormwater flows and clearly define the definitions of each for a common understanding
- Develop technical criteria to set minimum standards for modifications to the canal
- Establish a variance process with appeal
- Develop implementing documents for the program to protect the canal and reduce risk
- Develop workflows, roles and responsibilities associated with permitting, not only internally within Arapahoe County but also with our municipal partners
- Establish a fee schedule
- Assist in the deployment of a software platform for tracking and record keeping
- Establish roles and responsibilities for jurisdictions and entities that are partnered with the County to maintain portions of the HLC for stormwater conveyance
- Establish a specific stormwater capital and operations/maintenance plan for the canal

High Line Canal Stormwater Management Program Organization

Understanding that the BOCC is interested in reducing flood risks and allowing new direct stormwater connections where appropriate into the HLC, the need for a program is imperative and a work group to manage that program. One upfront task will be to define what “new stormwater” means. There are three potential models for the organization of the HLC Stormwater Management Program based on what is currently known; however, there are other potential organizational

structures that could be explored. No decision is needed at this time for the structure of the ultimate program and this discussion is being provided for awareness.

The organization of the HLC Stormwater Management Program would likely involve both Open Spaces and PWD departments as well as the partner jurisdictions, DW, the Conservancy, Mile High Flood District, and other entities that have an interest in the HLC. Since the HLC is a County asset, the program should be managed by either Open Spaces or PWD; however, there is a potential for a 3rd party to assist with developing and administering the program. Open Spaces currently coordinates permitting for uses of the HLC ROW which involves temporary uses for existing utilities or recreational assets along with licensing new uses. PWD has been assisting in technical reviews for those requests to cross the HLC with utilities or to discharge stormwater into the canal.

The first option is to build off the existing operations model and continue with Open Spaces as the main point of contact for activities within the HLC ROW. PWD would continue to be a referral entity similar to how the permitting is conducted now. PWD would include in their review confirmation that the proposed stormwater meets the new proposed standards that are developed under the new HLC Stormwater Management Program. Open Spaces would be the primary lead as the program coordinator focusing on recreational and ecological matters and ensuring all relevant parties review proposed projects. Depending on the timing of when this proposed HLC Stormwater Management Program needs to be implemented, it may be beneficial to hire a consultant to assist in the development of the program from a policy, regulation, and standards perspective. This is where the previously mentioned STAMP Report Consultant comes into play with remaining funding to provide assistance on criteria and policy. Furthermore, MHFD has indicated that they would be willing to facilitate the development of the program between the County and municipalities. It is recognized that the County still retains the ultimate decision authority. PWD would assist in that development if the timing of implementation allows. In this organizational structure, Open Spaces would remain as the program coordinator with PWD assisting with technical reviews as the stormwater subject matter experts.

A second organizational scenario would be for PWD to manage the HLC Stormwater Management Program like the existing Land Development Review and right-of-way permitting programs. The Engineering Services Division would be the primary lead as the program manager, and develop the policy, regulations, and standards. Open Spaces would assist in that development to ensure alignment as the property owners. Similar to Option One above, depending on the timing, a consultant could be hired to complete the program development in a shorter timeframe and Mile High Flood would be involved with facilitating the discussions among the parties. PWD would remain as the program manager into the implementation phases.

A third organizational scenario would be to hire a consultant to be the program manager. The consultant would develop the policy, regulations and standards and implement the HLC Stormwater Management program with respect to the technical reviews and permitting. This scenario requires assistance from Open Spaces as the property owner and PWD to ensure alignment with similar County processes. One of the two departments would manage the consultant from the contract and purchasing perspective with the bulk of the work being completed and managed by the consultant.

In addition to the proposed HLC Stormwater Management Program, which is mostly a permitting and review program, it is suggested that a capital improvement program and an operations program be considered for specifically the canal portion of the HLC ROW. An enforcement aspect may also be needed depending on how the risks are addressed. The capital improvement program would manage the master planning for the HLC so that a 5- or 10-year capital improvement plan could be developed which would identify modifications to the canal to increase capacity or make repairs needed to reduce or eliminate overtopping.

The operations program would look at the day-to-day functioning of the canal and when needed provide maintenance, dealing with homelessness encampments, minor repairs or operations of the waste gate, wasteways, measurement flumes, headgates, siphons, etc. The operations program would also address any emergency responses during an overtopping of the HLC. Enforcement would ensure that illicit discharges to or encampment removal from the canal are

handled accordingly. With the consideration of these other additional programs (which have not been vetted in this business case), a fourth organizational scenario could be a coalition of the various stakeholders interested in utilizing the HLC. This coalition, authority, or metro district would include representatives from the County, DW, the Conservancy, the local jurisdictions and recreation districts. This style of organization would foster collaborative input from the stakeholders while sharing the program development work and implementing the stormwater management program.

Risk Assessment

The risks associated with the HLC are similar to risks with any open channel. The risks that proposed HLC program would identify and suggest mitigation solutions include flooding due to storm events, deferred maintenance within the flowline of the canal, and customer complaints related to perceived damage or injury caused by the water in the HLC.

HLC Stormwater Management Program

The current hydraulic and hydrologic model for the HLC has identified numerous places where the HLC overtops during the 100-year storm event and the updated model being completed as part of the STAMP project identified even more. The goal of the HLC Stormwater Management Program would be to have clear criteria, policies, and an enforceable permitting program. The HLC Stormwater Management Program's goal is to issue authorizations that would reduce or prevent an overtopping that could cause injury or property damage. The new criteria would support consistent reviews of applications against standards that were reviewed by the municipal partners, MHFD, and the Conservancy. New authorizations would protect the embankments and the unique ecology of the HLC. In addition, the HLC is currently considered a state water, which is not regulated under the County's municipal separate storm sewer system (MS4) permit program. If the Colorado Water Quality Control Commission determines that the HLC or portions of the canal is no longer a state water and must be included in the County's MS4 program, then the criteria and permitting program will need to be updated and will require changes to this program.

Policies developed under the HLC Stormwater Management Program would address the County's response to customer complaints related to the flooding potential or the public perception that injury or damage has occurred. These types of concerns are often related to public education to share how waters are conveyed in the HLC and the standards that are used to review potential risks and impacts on the surrounding properties. Any changes that occur within the flowline of the canal may be perceived as causing flooding, which is not accurate as the HLC Stormwater Management Program would be established to mitigate the flooding risks.

A risk for an enforcement aspect of the HLC Stormwater Management Program would be to review encumbrances and encroachments that impact the flow to the HLC. These would be considered through the review process as well as during prioritization of capital projects or maintenance activities.

Capital Improvement Program

Although this business plan does not address the Capital Improvement Projects (CIP) Program in the proposed HLC Program organizational chart, it should be noted that there are risks associated with not having an adequate capital improvement program that would support the other two proposed programs—the HLC Stormwater Management Program and the Operations and Maintenance Program. The draft STAMP plan identifies areas where alternatives could be implemented to address the areas of overtoppings. The four categories include:

- Changing the conveyance (connecting the HLC with existing waterways),
- Bank manipulation (increasing HLC embankments),
- Stormwater treatment drains (connecting the HLC to existing stormwater pipes), and
- Increasing the HLC capacity at roadway crossings.

In order to fully understand the impacts of each of these improvements, the proposed CIP program would conduct a detailed analysis of these identified areas to define the risk mitigation opportunities and prioritize the needs. These

improvements could expand the opportunities for new authorizations under the HLC Stormwater Management Program and could be used as criteria to be met during the review process and could then be part of negotiations with a jurisdiction or a developer that is interested in utilizing the HLC ROW. In addition, CIP projects could also reduce the maintenance needs for sections of the Canal.

Operations and Maintenance Program

Although this business plan does not address the Operations and Maintenance (O&M) Program, it should be noted that there are risks associated with not having an adequate O&M program that would support the HLC Stormwater Management Program. Maintenance of the HLC has been minimal and recently several hundred trees were identified as potential hazards. Prior to the County's ownership, a project was implemented to begin mitigation of these hazardous trees and in some instances the remains of trees were kept due to the impact to the canal embankments. Proper maintenance of the section of the canal that conveys the 100-year storm is needed to ensure that the HLC's capacity is not impacted and could support additional authorizations for new stormwater in the Canal. Another potential risk associated with the HLC includes standing water that can promote mosquito habitat, which would also need to be a part of an operations and maintenance program. However, a detailed analysis of routine maintenance needs would be evaluated as part of an operations and maintenance business case for the HLC and not part of this business case other than to indicate the ability of the HLC Stormwater Management Program to include those maintenance needs as part of the review comments.

Resources Needed

The organizational structure and resources needed to develop and implement this program include staff and budget for consultants or new staff. Recommendations and associated decisions for the structure and resources of the program will come through the work product being proposed under this framework. However for a new program, it would typically require a program manager who would be the main point of contact for the program and manages various work flows or identifies changes throughout the life of the program. Currently to establish this program under this framework proposal, it is being estimated that an existing staff member of either Open Spaces or PWD would take anywhere from 25% to 50% of that individuals time depending on how the organizational structure is set. For the long-term needs of the program, the program manager could possibly be a new FTE who may be able to also manage the capital improvement and portions of the O&M programs.

In the short-term, the program manager and technical staff need to be involved in the development of the policy and criteria. The technical staff could be made up of existing County staff and should include MHFD, the Conservancy and interested partners. In fact, MHFD has excess funds available from the STAMP project and has offered to facilitate the development of the program policy and criteria with supporting roles from County staff. Depending on how quickly the BOCC would like the program to be developed would determine the specific staffing needs. PWD and Open Spaces believe that the initial establishment of the Program under the framework discussed herein can be absorbed with existing staff if the deadline for completion is January 1, 2027.

Once the policy and criteria are developed, working relationships and roles/responsibilities of stakeholders, the program manager will move into the implementation phase of the program. Resources needed for the implementation of the HLC Stormwater Management Program would include staff for reviews and permitting, budget for a permitting software platform, and other activities depending on the final program policies and procedures. The current review efforts are being conducted with existing staff and in some instance, as time allows.

The technical expertise of existing staff lacks specific management experience of the waters in a canal which is often housed within a water resources group, water rights group, or a canal company. Open Spaces staff has experience of managing trail and ecological resources along with the uses within the HLC ROW, but they lack the specific experience

with canal waters and the stormwater management aspects. Through the transition, PWD has assisted Open Spaces with drainage reviews which have been conducted based on the existing stormwater criteria set by DW. The existing PWD staff does have expertise in stormwater management as it relates to land development, stormwater conveyance and municipal separate storm sewer system (MS4) permit compliance. It is important to note that existing PWD staff have expertise in some aspects of the anticipated HLC Stormwater Management Program, but not all activities related to a canal. At some level this includes developing policies related to canals; review and approval of permanent water quality facilities in canals; model development, interpretation, and updates; regulating across jurisdictions; and/or legal issues related to canals. Staff's ancillary experience with canals through design projects and hydraulic modeling was used to assist Open Spaces staff through the ownership transition.

The long-term staffing and budgetary needs are highly dependent on the policy and criteria that is established. The short-term staffing and budgetary needs are highly dependent on the timing of when the program needs to be developed and how the organization of the program will be structured.

If the desire is to have the HLC Stormwater Management Program completed prior to January 1, 2027, then alternative resources to internal staff would be needed, including a new FTE or utilization of a consultant to represent the County in the development of criteria and policy.

Summary/Conclusions

The HLC Stormwater Management Program is essential to protect the County's new HLC assets and minimize liability associated with a canal if stormwater is to be allowed into the canal. A framework for developing a program along with several scenarios and alternatives have been described above with how the program could be established Staff is requesting

1. Concurrence of the desire of the BOCC to allow new direct stormwater connections into the HLC
2. Support of the framework proposed to develop the HLC Stormwater Management Program
3. Concurrence that both PWD and OS shall work on this program
4. BOCC provided reactions and feedback

Additionally, BOCC direction on the timing of when this program should be implemented is needed as that affects being able to use internal staff for the development of the first two pillars of the program by January 1, 2027.