CITY OF AURORA COLORADO
PARKS, RECREATION AND OPEN SPACE DEPARTMENT

High Line Canal Management Plan

Final Submittal
March 1, 2011

Respectfully Submitted By:
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March 1, 2011

HIGH LINE CANAL MANAGEMENT PLAN – PROJECT INTRODUCTION

March 1, 2011

INTRODUCTION:

Constructed in 1879, the High Line Canal has functioned as a trans-basin diversion, supplying agricultural ditch water to numerous users along its sixty-six mile length. Over time, the number of agricultural consumers of High Line Canal water has been reduced, as cropland has been developed into a variety of commercial and residential uses.

At this time, the furthest downstream consumer of High Line Canal water is Fairmont Cemetery, located approximately 1.5 miles upstream of the western boundary of the City of Aurora.

Denver Water currently operates the canal downstream of Fairmont Cemetery, intermittently and for tree maintenance only. The Colorado State University Department of Bioagricultural Science and Pest Management authored the report *Impact of Canal Water Flow On the Health of Cottonwood Trees Growing Adjacent to Colorado's Historical High Line Canal.* This was the final report submitted to Denver Water in February of 2009, which recommended that releasing water for two weeks in the spring and for two weeks in the fall would be adequate to maintain leaf water potentials within the range required to keep cottonwood trees along the canal from declining due to drought stress. Denver Water has expressed a willingness to continue releasing tree maintenance water in the future.

In recent conversations between representatives of Denver Water and representatives of the City of Aurora, Denver Water has indicated an interest in transferring ownership of the High Line Canal within the municipal boundaries of Aurora to the City of Aurora.

Discussions concerning the transfer of ownership are still ongoing and have yet to be finalized.

In anticipation of the potential transfer of High Line Canal ownership from Havana Street to 38th Avenue, the Aurora Parks, Recreation and Open Space Department has commissioned the development of this comprehensive, multi-disciplinary management plan for the potential High Line Canal acquisition.

As a condition of the property transfer, Denver Water will deliver tree maintenance water, in accordance with the C.S.U. report referenced above, to a point at the western boundary of Aurora. Management of the water, and all associated canal operations from that delivery point downstream, will become the responsibility of the City of Aurora Parks, Recreation and Open Space Department.

PROJECT DESCRIPTION:

Managing For Change:

Beginning in the 1970s, the High Line Canal was in the process of transitioning from agricultural water conveyance to recreation and trails corridor. This transition within the municipal boundaries of the City of Aurora is expected to accelerate with the transfer of ownership. In recognition of this evolving character and purpose, the City of Aurora has commissioned this management plan, which includes a significant operation and maintenance component, as well as the expanded objective of planning, directing and managing for change.

Planning, directing and managing for change requires developing a vision for the future of the High Line Canal - a vision based on understanding the potential of the canal as an open space corridor and recreation resource. Initially, this process will consist of the development of alternative scenarios for planting, site furniture, signage and circulation improvements to facilitate the transition of the High Line Canal from water conveyance to park, recreation and trails corridor. Developing this vision will also require the evaluation of alternatives for organizing, implementing and locating the preferred set of improvements, as required for the evolution of the High Line Canal.

An important component of the evolution of the High Line Canal is the recognition and preservation of its historic impact on the growth and development of the Front Range. Given its size and impact, the High Line Canal represents a de facto Front Range landmark.

In addition to the physical evolution of the canal, the relationship between management agencies is evolving as well. This management plan needs to consider the restructuring of the relationship between agencies responsible for operation, maintenance and management of the canal, and needs to address the required coordination between agencies to facilitate the transfer process.

MANAGEMENT PLAN STRUCTURE:

Each of the study areas identified in the scope of work below is represented as an individual section in the management plan. Each section of the plan begins with an introduction describing the objective, process, conclusions, considerations and supporting documentation for that section. The supporting documentation could be plan sheets at 11" by 17", appendices at 8 ½" by 11" or a combination of both.

MANAGEMENT PLAN SCOPE OF WORK:

1) Geotechnical evaluation and channel integrity assessment.
2) Storm water collection, capacity and mitigation alternatives.
3) Corridor vegetation assessment.
4) Circulation evaluation.
5) Wildlife habitat analysis.
6) Structural, mechanical and electrical engineering assessment.
7) Adjacent private improvements, recreational facilities and view shed analysis.
8) Water augmentation opportunity assessment.
9) Solid waste and water quality evaluation.
10) Operation and maintenance plan.
11) Corridor transition study.

PROJECT SPONSORS:

Sponsor and managing agency:

City of Aurora Parks, Recreation and Open Space

Sponsor:

Arapahoe County Open Space Program

Sponsor:

Adams County Parks and Community Resources Department

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MANAGEMENT PLAN FORMAT AND EXTENTS:

In order to ensure that this management plan functions effectively as both an in-office planning tool and as a field or operations manual, the plan was produced at 11" by 17" with accompanying appendices produced at 8 ½" by 11". The consulting team evaluated a number of alternative scales to show the level of detail necessary for the required analysis and proposed improvements, at the same time keeping the number of individual management planning unit sheets to a reasonable count. The consulting team organized the study area into logical management planning units to facilitate the efficient collection, evaluation and documentation of information. Alternative scales and management planning unit area organization formats were conceptualized and presented as options. Base information was provided by the City of Aurora in the form of aerial photography. A scale of 1" = 300' was chosen as the best balance between detail and sheet count, which resulted in the designation of 24 management planning units.

The first seven management planning units, HLC-1 through HLC-7, are located in unincorporated Arapahoe County, between I-25 and South Holly Street, between South Quebec Street and East Yale Avenue, and between East Iliff Avenue and East Mississippi Avenue.

Management planning units HLC-8 through HLC-21 are located in the City of Aurora between South Havana Street on the west and East 38th Avenue on the north.

Management planning units HLC-22, HLC-23 and HLC-24 are located in unincorporated Adams County east of Picadilly Road and between East 56th Avenue and East 64th Avenue.

The individual management planning units are represented on the following three management planning unit index sheets. The High Line Canal is represented in green. The sections of the canal study area located in unincorporated Arapahoe County and in unincorporated Adams County are outlined in red. In Adams County the canal has been obliterated through a good portion of Green Valley Ranch, and as such is represented as two discontinuous segments.

ACKNOWLEDGEMENTS:

For their patience, support, direction and assistance:

City of Aurora Parks, Recreation and Open Space:

Mr. Tom Barrett – Director of Parks, Recreation and Open Space

Ms. Tracy Young – Manager of Planning Design and Construction

Ms. Pat Schuler – Manager of Open Space and Natural Resources

Mr. Christopher Ricciardiello, ASLA – Principal Landscape Architect

Mr. John Wesolowski – Urban Forestry Manager

Mr. Brian Green – Open Space Superintendent

Ms. Hollie Kikel – GIS Specialist

Aurora Water:

Ms. Lisa Darling – South Platte Program Manager

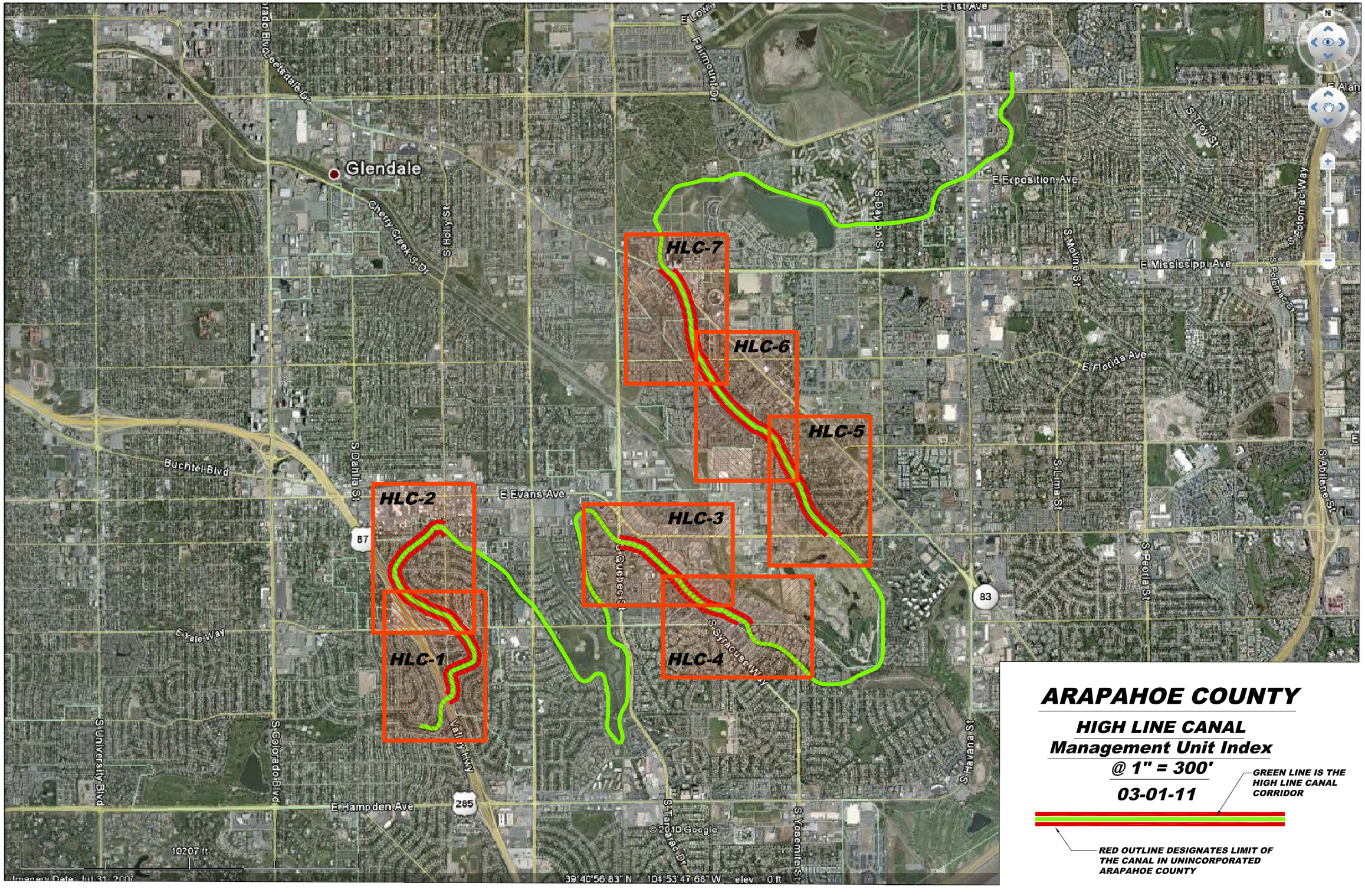
Ms. Dawn Jewell – Engineering Assistant

Denver Water:

Mr. Neil Sperandeo – Recreation Manager

Mr. Kevin Keefe – Superintendent Source of Supply

Mr. Barry Schoger – Assistant District Foreman – Highline Division



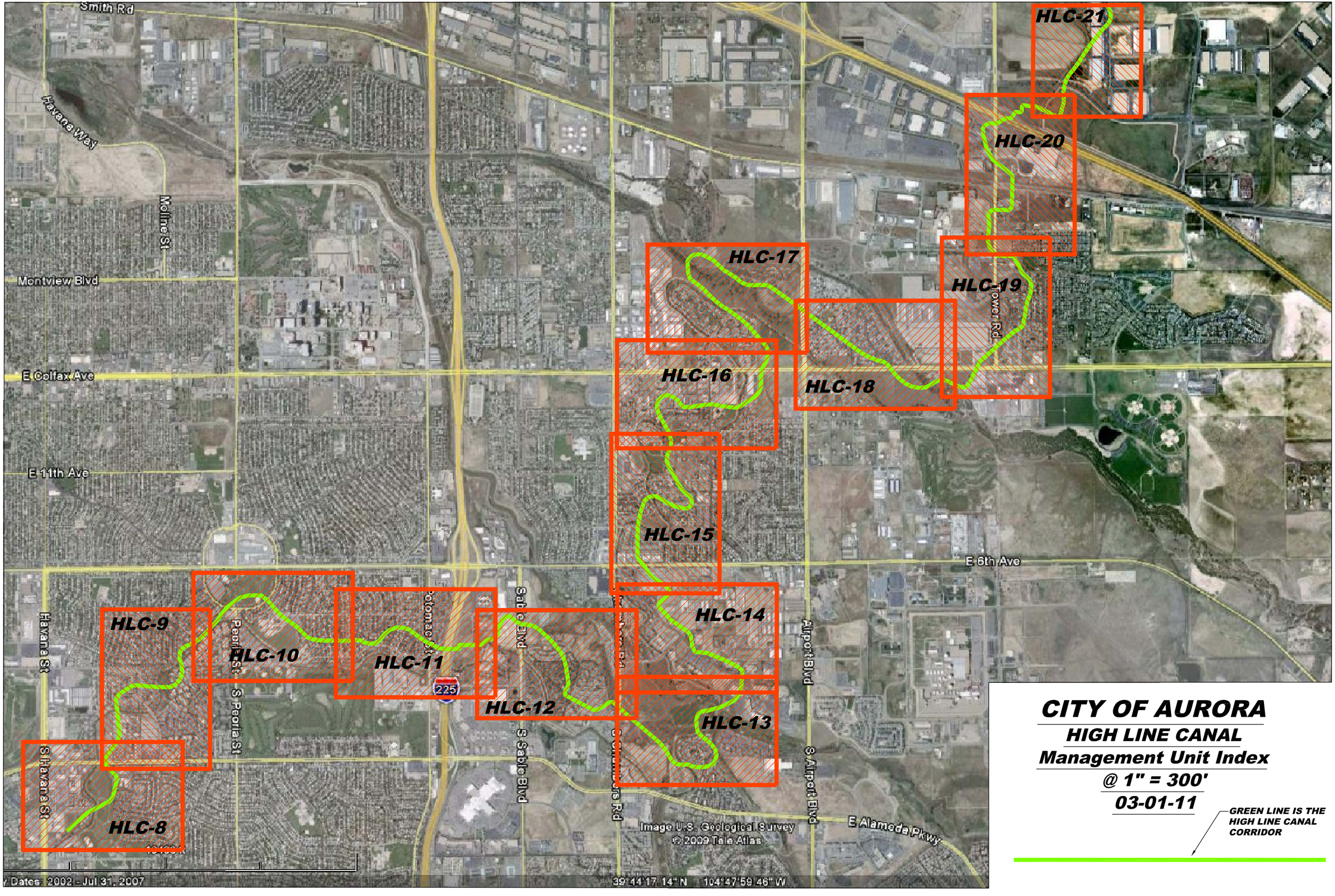
ARAPAHOE COUNTY

HIGH LINE CANAL
Management Unit Index
@ 1" = 300'

03-01-11

GREEN LINE IS THE HIGH LINE CANAL CORRIDOR

RED OUTLINE DESIGNATES LIMIT OF THE CANAL IN UNINCORPORATED ARAPAHOE COUNTY



CITY OF AURORA

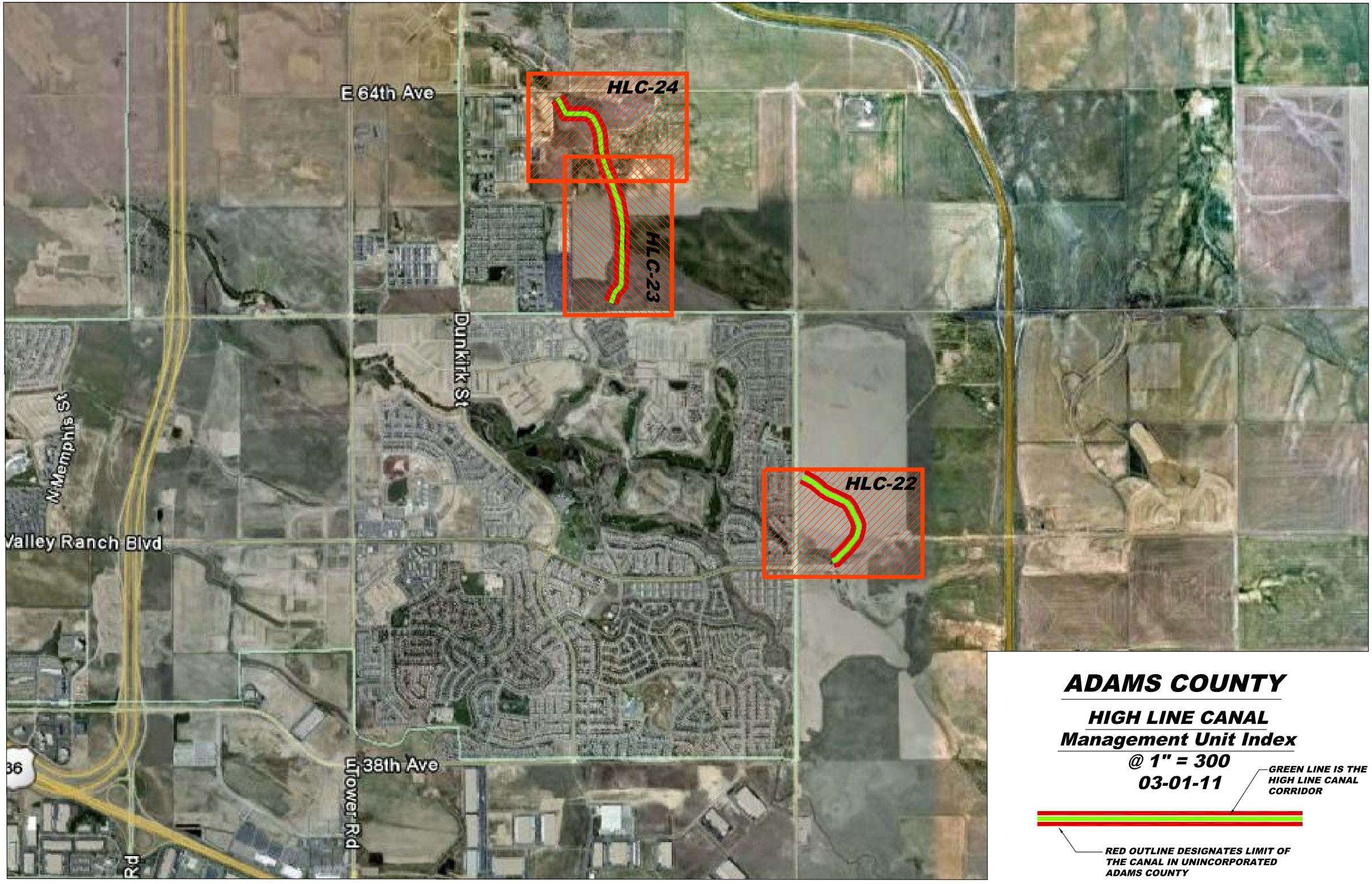
HIGH LINE CANAL

Management Unit Index

@ 1" = 300'

03-01-11

GREEN LINE IS THE HIGH LINE CANAL CORRIDOR



ADAMS COUNTY

HIGH LINE CANAL
Management Unit Index
@ 1" = 300
03-01-11

GREEN LINE IS THE HIGH LINE CANAL CORRIDOR

RED OUTLINE DESIGNATES LIMIT OF THE CANAL IN UNINCORPORATED ADAMS COUNTY

HIGH LINE CANAL MANAGEMENT PLAN – EXECUTIVE SUMMARY:

March 1, 2011

WHAT WE KNEW:

As Hal Borland (American outdoor author and journalist), once said, in the beginning there was the "High, Wide and Lonesome," that expansive, high-altitude rain shadow extending from the Rocky Mountains to the tall grass prairies of the Midwest.

This high altitude, short-grass prairie was among the last areas of the American West to be homesteaded, and one of the first to be abandoned during the Dust Bowl. Large portions of this semi-arid high desert have been returned to the public domain as national grasslands, because prior to the development of central pivot irrigation, farming this region was a tenuous endeavor.

The High Line Canal was carved across this high altitude, semi-arid desert in an effort to fulfill a dream and make the desert bloom.

WHAT WE LEANRNED:

Pure ambition is not enough to ensure success. The High Line Canal never fulfilled its expectation of bringing water to and transforming our high altitude, short-grass prairie into productive farm land.

The original estimate was that the High Line Canal could provide enough irrigation water to cultivate 40,000 to 50,000 acres of arid short-grass prairie. Because of the junior water right and technological problems with the delivery system, the maximum area irrigated by the High Line Canal between 1887 and 1906 was never more than 25,000 acres, and in 1889 was as low as 7,551 acres.

Duff, Nettleton and Eaton, the respective financier, engineer and builder of the High Line Canal, must have all passed in disappointment. However, success can be defined too narrowly and value adjusts over time as scarcity changes in response to need.

Little known to the canal's creators, they were to leave us an important legacy, by inadvertently creating a rare and wonderful serpentine trails and open space corridor through our community. Little did they know that the "weeds" growing along the banks of the canal would become the cottonwoods that transport today's recreational trail users to a "wonder woodland."

There are no more farmers downstream of Fairmont Cemetery needing irrigation water from the canal. But there is an entire metropolitan population that needs a place to stand apart from themselves, and to become momentarily immersed in and a part of something larger.

Every failure brings opportunity and every generation dreams about a future filled with possibilities. Only the current generation, our generation is in a position to preserve and restore the High Line Canal to its highest and best potential, as the new High Line Canal Recreation and Trails Corridor.

The operational, maintenance and safety issues of the High Line Canal have been identified in the individual sections of this management plan. All of these issues can be corrected, and we should be encouraged that the preservation and restoration of the new High Line Canal Recreation and Trails Corridor is within our grasp.

WHAT IT MEANS:

Suppose for a moment that the entire late 19th century High Line Canal endeavor had been a complete success, in which everyone made money and prospered. Even in this scenario, we would still be in the position we are in today. The land irrigated with High Line Canal water would still have increased in value to the point where it was developed and absorbed into the metropolitan area, and we would have the same challenges and the same opportunities before us.

Forces larger than the High Line Canal have brought us to this juncture.

We have the ability to create a new future for the High Line Canal, a future where promise is fulfilled and opportunity is realized.

If we take the initiative, the High Line Canal can continue to serve the community in new and meaningful ways.

WHAT IS NEXT:

We should continue to flow the canal at every opportunity. We should take every drop of water that Denver Water has graciously agreed to share. We need to make every effort to formalize an agreement ensuring Denver Water's contribution to the canal for future generations.

We must foster cooperation between sponsors, owners and agencies, all of whom need to partner to ensure a successful and sustainable future for the new High Line Canal Recreation and Trails Corridor.

We have identified the scope and magnitude of the operation, maintenance and safety issues surrounding the High Line Canal. Some of these issues are highly complex and will take considerable effort to correct. However, the recommendations for improvements in the individual sections of the management plan are not mutually exclusive. The improvement process is not strictly linear. We can undertake improvements now that will not preclude future remediation efforts.

As our legacy to future generations, we should initiate a tree replacement program immediately to reestablish the gallery forest along the canal corridor, and sustain it with resource-conserving modern irrigation technology.

This management plan provides a framework for analysis and decision making when defining the vision of the new High Line Canal Recreation and Trails Corridor, and what sort of effort and investment will be necessary to realize the canal's potential.

There are still questions to be answered, negotiations to be conducted and agreements to be reached, all of which are within our grasp. Everyone interviewed during the preparation of this plan was supportive and optimistic about the preservation and restoration of the new High Line Canal Recreation and Trails Corridor.

This management plan provides a framework for the analysis and decision making required to ensure a successful preservation and restoration effort. The High Line Canal of the future will, for the first time in its existence, meet the needs of an entire community as the restored High Line Canal Recreation and Trails Corridor, Colorado's new "emerald strand".