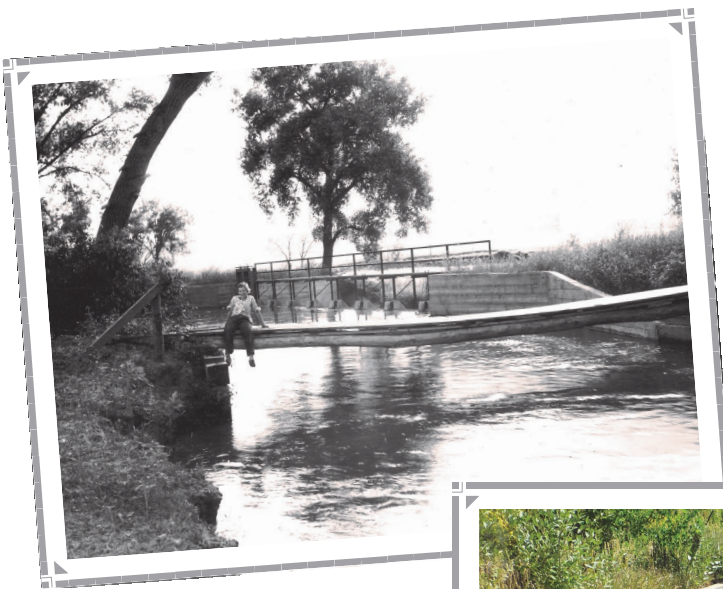


RECONNAISSANCE SURVEY AND PRIORITIZED SURVEY PLAN: HIGH LINE CANAL CORRIDOR



SQUARE MOON



CONSULTANTS LLC



HIGH LINE CANAL
CONSERVANCY

RECONNAISSANCE SURVEY AND PRIORITIZED SURVEY PLAN: HIGH LINE CANAL CORRIDOR

Written and published for the High Line Canal Conservancy



HIGH LINE CANAL
CONSERVANCY

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1. INTRODUCTION

More than 130 years ago, enterprising English businessmen commissioned the construction of the 71-mile High Line Canal (Canal) to irrigate the dry plains of the Denver Basin, and to promote real estate sales of the Kansas Pacific (KP) Railroad Company's vast land holdings in Colorado. The "English" or High Line Canal (also known as the Northern Colorado Irrigation Company Canal) made its dramatic entrance from the South Platte Canyon into the Denver Basin, 20 miles southwest of Denver. The Canal's waters depart the South Platte River about 5,750 feet above sea level, and descend through a tunnel cut into a granite hogback ridge of the Front Range's eastern edge. The largely earthen Canal relies on gradual elevation drops in grade to produce gravity-controlled water velocity and flow, and to chart its sinuous course northeast across the extensive Denver Basin (Chronic and Williams 21-24). The map on the following page shows the 71-mile main High Line Canal alignment.

The construction of the High Line Canal was a staggering feat for its day. It required the boring of a 600 foot long tunnel, the rebuilding of a 120 foot wide diversion dam on a major river, the movement of tons of earth, the construction of more than 3,100 linear feet of flumes and 216 feet of dams, and the installation of numerous other devices needed to operate a 71-mile Canal plus a nearly 15-mile lateral (Sand Creek Lateral). With its completion in 1883, the

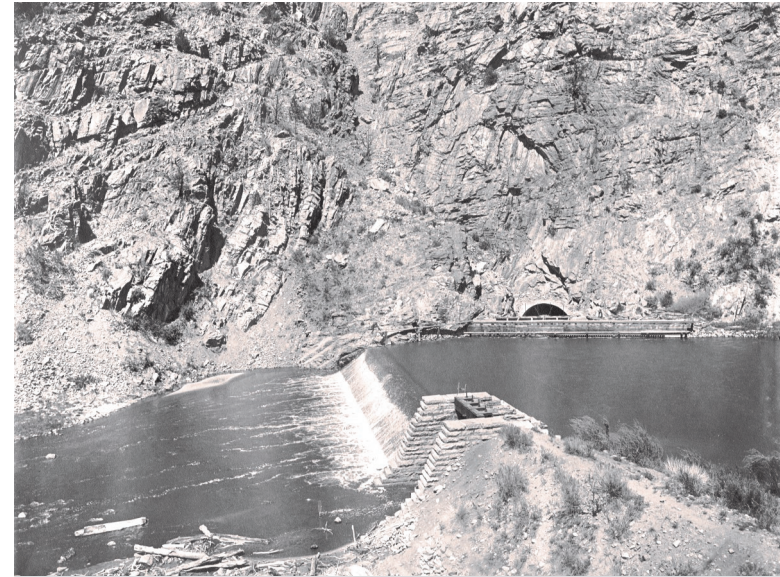
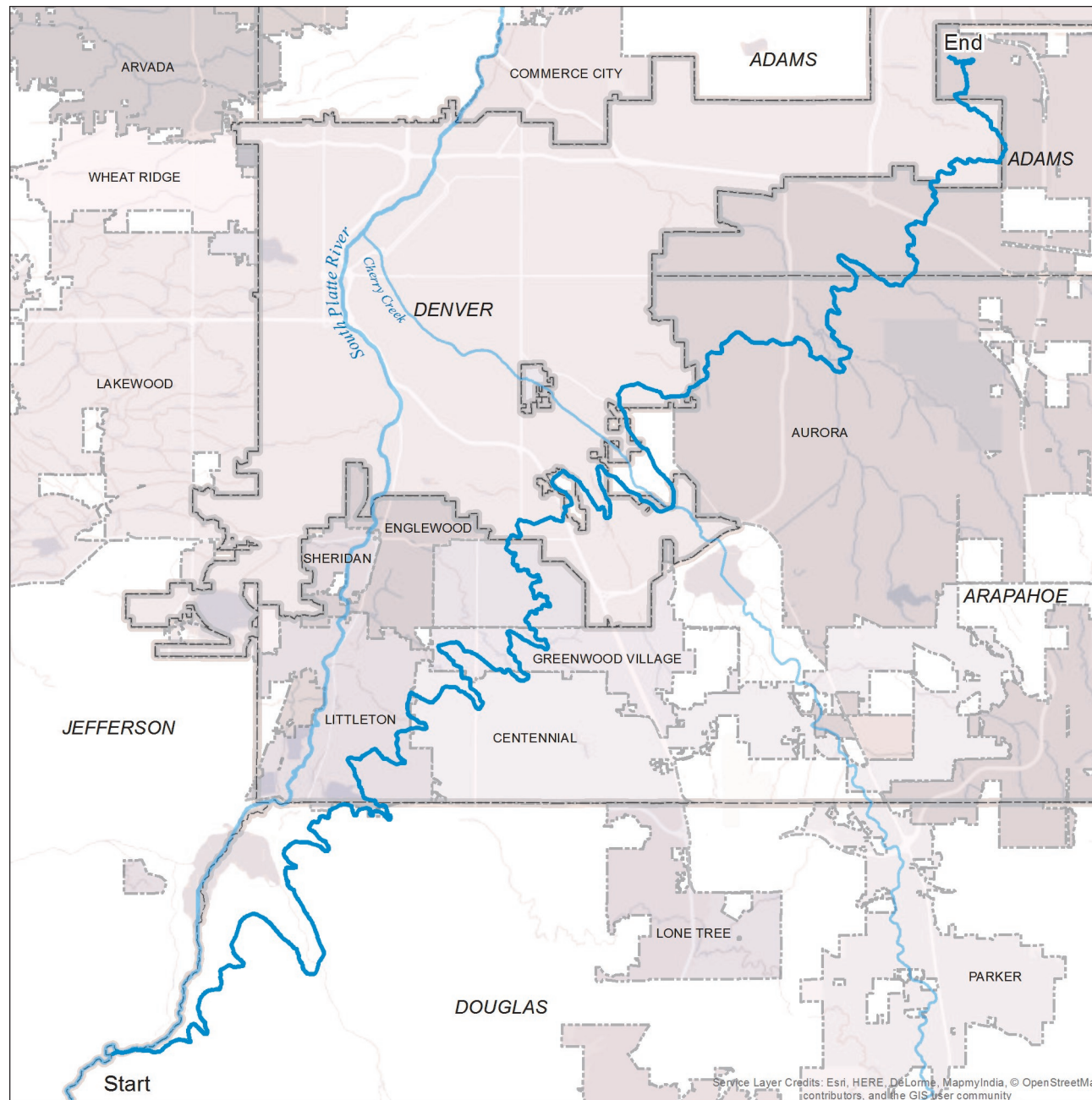


Exhibit 1-1: May 27, 1912 Photograph of High Line Canal Diversion Dam at South Platte River in Waterton Canyon, with sluice gate return to the river in foreground and tunnel with carrying flume in background. Source: Denver Water, Album 29, p. 9, #997.

Canal's \$652,000 price tag made it the most expensive Canal project to date in Colorado (Roberts, Historic American Engineering Record Report)

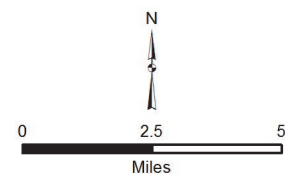
The Colorado Mortgage and Investment Company – the project's parent company – eventually sold 31,000 acres of adjacent land with Canal water rights, recovering some of its initial outlay of costs and claiming some early success. While these land sales promulgated new settlement and farming activity along the Canal's corridor, the Canal never

Overview Map of 71-Mile High Line Canal



HIGH LINE CANAL
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High Line Canal



fully realized its promise to market as many as 400,000 acres of adjacent agricultural lands. The variable nature of the South Platte River, combined with a lack of water storage, severe water seepage issues, and a weak water right, translated into unpredictable water delivery within a few years of the Canal's opening. The juxtaposition of the Canal's grand promise set against the harsh reality of its variable water supply led to upgrades continually to improve performance, shifts in ownership brought on by legal challenges, and changes in user types and practices over the years (1880 Report of the Colorado Mortgage and Investment Company 13; Roberts).

Remarkably, the High Line Canal continues to serve its historic water transportation role today, albeit in a severely reduced capacity. The Denver Water Department (Denver Water) manages the High Line Canal and its water delivery system, while seven different public agencies maintain the adjacent Canal trail. Currently, the Canal is best known in the region as an emerald strand of natural beauty through a bustling metropolitan area and for its use as a recreational trail, a role it began serving in 1970.

While the story of the High Line Canal is well documented, this history is largely not interpreted along the trail (with one known exception), and thus its history is not widely known. While historians and cultural resource professionals have documented specific sections of the Canal over the years – typically in response to a planned highway or water improvement project— no single entity has undertaken

en a comprehensive effort to identify all historic resources along the Canal prior to this study.

This survey was commissioned by the High Line Canal Conservancy (Conservancy), a non-profit organization whose mission is to preserve, protect, and enhance the 71-mile-long Canal in partnership with the public. The Conservancy has established the following goals and objectives (High Line Canal Conservancy 2016):

- Steward the future of the Canal through leadership, education, and advocacy;
- Engage citizens to protect and preserve the Canal;
- Build strong and representative community leadership;
- Establish sustainable partnerships between diverse geographic regions and jurisdictions;
- Adopt an ambitious and transformative future vision and master plan for the Canal; and
- Champion and oversee implementation of the Canal master plan.

In furtherance of its mission, and stated goals and objectives, the Conservancy commissioned an initial and limited historic property study of the 71-mile High Line Canal corridor in August 2016. The time frame for the project was approximately 10 weeks. The purpose of the study is three-fold:

1. To research and locate historic resources along the

Canal corridor, through a sample research, reconnaissance survey, and identification effort. This is the first step to identifying important historic Canal-related resources and features that warrant preservation and protection in the future;

2. To identify priorities for future historic resource survey work, including geographic areas to cover, additional research needed, and methodology for these efforts. The “lessons learned” from the preliminary survey of the 71-mile linear historic Canal can inform more comprehensive survey efforts in the future.
3. To identify next steps for preserving and interpreting historic Canal-related resources for the public’s benefit. This includes identifying short-term and long-term opportunities to preserve important Canal-related historic resources, and to identify opportunities to teach the story of water use in the West and the need for water conservation through the Canal’s history and historic resources.

This preliminary study is important since it lays the groundwork for a better understanding of the Canal’s history and its associated historic resources. The study also identifies some of the best opportunities to protect and leverage historic Canal-related resources, while also enhancing the public’s experience along the Canal trail.

This report is divided into five major sections:

Section 1, Introduction lays out the project’s purpose.

Section 2. Methodology delineates the methods used to complete the limited reconnaissance survey project.

Section 3, Historic Background briefly reiterates the history of the Canal, and identifies its most important historic themes, focusing on the evolution of the physical Canal and the Canal’s users over time.

Section 4. Reconnaissance Survey summarizes and highlights the types of historic resources found along the High Line Canal Corridor, and documents key remaining historic resources.

Section 5. Recommendations identifying next steps for future historical research and historic property survey work, as well as priorities for future preservation and interpretative initiatives.

2. METHODOLOGY

This section details the Methodology of this study. This information is intended not only to convey information on how the team performed the preliminary study, but also to inform future Canal survey and documentation efforts. A priority of this project was to uncover readily available information pertaining to historic resources in and along the High Line Canal, and to identify and document Canal-related properties through sample field survey efforts.

A primary focus of this study was to achieve an overall understanding of the types and numbers of Canal-related historic properties – features, structures, buildings, etc. – surviving today, and their potential historic significance.

To this end, the project pursued three different tracks:

1. Review previously recorded Canal-related resources in History Colorado’s cultural resource database called Compass, the state’s records of previously recorded historic-age resources 45 years old or older;
2. Perform primary and secondary research to uncover readily available information on buildings, structures, districts, objects, and sites associated with the Canal’s infrastructure and use.
3. Perform a prioritized (limited, sample) reconnaissance survey along the Canal, relying heavily on data from steps 1 and 2 above to identify resources asso-

ciated with the Canal’s history.

Previously Recorded Properties – History Colorado

One of the project team’s first actions was to obtain a list of previously recorded Canal-related resources and associated geographical data from History Colorado. The state agency’s Compass database provided a list of recorded historic-age resources and archaeological sites within 500 feet of the 71-mile main High Line Canal and associated laterals. Compass includes information on properties listed in or eligible for the Colorado State Register of Historic Properties and the National Register of Historic Places (all historic *properties*), as well as undesignated properties (all historic *resources*) recorded by cultural resource professionals in the field, typically as the result of state and federally funded projects requiring environmental compliance. History Colorado offers different survey/inventory forms to record different types of properties, with the names and purposes of these forms changing periodically over time. Currently, the Architectural Inventory Form is used to log buildings and structures, a Historical Archaeological Component Form applies to sub-surface artifacts, and the Linear Component Form records linear resources such as canals and ditches, railroads and highways. In many cases, these more specific forms are each completed in combination with a Management Data Form, which collects holistic information on a property with multiple components or features.

All Compass survey forms include a unique assigned inventory number, a basic description, a map showing location and boundaries of the identified resource, and geographic information such as the Universal Transverse Mercator (UTM) reference points and the United States Geological Survey (USGS) 7.5 minute scale quadrangle map name. Most historic district forms, as well as prehistoric and historic archaeological site forms, demarcate an area bounded by at least three UTM points. Survey forms for objects, structures, and buildings can identify their location by either a specific point, or by multiple points depicting an area, depending on the circumstances. While some survey/inventory forms include very basic descriptive and locational information, others include more substantive information such as detailed property histories, survey photographs, evaluations of historic significance, and formal recommendations/determinations of eligibility for listing in the Colorado State Register of Historic Properties and the National Register of Historic Places. (Note that additional information on the five key property types covered by the state cultural resource forms – buildings, structures, objects, sites, and districts – are discussed in more detail in Section 4 of this report.)

In an effort to be as inclusive as possible, this project initially looked at all types of cultural resource survey forms. As such, the initial extraction of data from History Colorado produced a total of 110 forms. The team's professional archaeologist and architectural historian then performed an

initial review of this information. During this initial review, the team eliminated survey forms on resources meeting one or more of the following criteria:

- Properties not historically related to the Canal's construction or use (such as prehistoric archaeological sites that pre-date the Canal);
- Properties known to be no longer present (such as a 1999 form covering a 1940 bridge subsequently removed in 2002);
- Properties known to post-date 1970 (after the beginning of the conversion of the Canal rights-of-way to a recreational trail);
- Incomplete or indecipherable survey forms;
- Inventory numbers for which Compass survey forms could not be located.

Using this criteria, all properties identified through the Compass database search were classified as either "no survey" or "field visit" candidates. This evaluation eliminated 64 forms, bringing the total number of previously recorded sites earmarked for this project's reconnaissance field visit phase to 46. In all, the team visited 34 of these sites, focusing on properties located in high and medium priority survey areas. The remaining 12 sites were viewed as important, but not as high priority. As such, these sites should be revisited in the new phase of the study. A list of the

previously recorded properties culled from History Colorado and their survey classifications has been provided to the High Line Canal Conservancy separately.

The reconnaissance phase of the project prioritized resource visits for all previously recorded properties earmarked as “field-visit candidates,” during this initial review. For additional information on the survey protocol, refer to the discussion in the reconnaissance survey methodology below.

Historical Research

The project team identified and reviewed primary and secondary sources readily available on the High Line Canal. Fortunately, several other historians have conducted substantial prior research on the Canal, particularly regarding its corporate and legal history, tapping into primary records and compiling extensive bibliographies. Considerably less research has been conducted on the physical construction and evolution of the Canal itself, and on the Canal’s direct impact on the development of surrounding communities and specific Canal water users. Information available on the Canal itself tends to be very specific and piecemeal in nature, such as a report on the condition of a particular Canal segment or flume, or a historical narrative on a particular farmstead built adjacent to the High Line Canal.

The most concise overview histories on the High Line Canal are found in the three Historic American Engineering Record (HAER) studies on the Canal: the 1992 report on the

High Line Extension Canal, the 1994 report on the main High Line Canal, and the 1998 report on the Sand Creek Lateral.



Exhibit 2-1: 1998 Photograph of the High Line Canal’s Sand Creek Canal Lateral on Rocky Mountain Arsenal. Source: Historic American Engineering Record, HAER CO-43-A.

Other good secondary sources are David Skari’s *High Line Canal: Meandering through Time*, and James E. Sherow’s 1998 article in Colorado State Historical Society’s Colorado Heritage Magazine titled “Watering the Plains.” Michael Holleran’s 2005 *Ditches and Canals in Colorado* presents a comprehensive study on Canals and ditches in Colorado, including contextual information on the High Line Canal and canals in Colorado generally, as well as

descriptive information on various canal and ditch infrastructure components such as diversion dams, tunnels, flumes, siphons, debris grates, etc. The reconnaissance phase of this survey relied heavily on Holleran's descriptions of canal infrastructure components to classify High Line Canal features and to evaluate their potential historic significance.

Other worthwhile overview histories that include information on the High Line Canal are found in the bibliography of this report, as well as in the references of the aforementioned HAER reports. Many of these sources can be found at the Denver Public Library and the Stephen H. Hart Library at History Colorado. It should be noted that Denver Public Library's collections include several historic photographs of the Canal by famed photographer William Henry Jackson.

Denver Water's archives contain several good unpublished manuscripts on the history of the Canal, including Charles Fisk's 1957 "History of the High Line Canal and Antero Reservoir," A.D. Wall's 1933 letter to E.G. Plowman titled "High Line Canal (Historical)," and K.M. Gambrill's 1981 "The High Line Canal." Denver Water also inherited records from the Northern Colorado Irrigation Company, the shareholder company that constructed and first operated the Canal. These records include company minutes from 1880 through 1935, photo albums, and miscellaneous files. Denver Water's archives include more comprehensive Canal records beginning in 1915 when the City-County initially pur-

chased the High Line Canal and Antero Reservoir, through the 1930s when Denver Water completed extensive improvements of the Canal system. These records include studies and reports to document the High Line Canal's capacity, use and ownership history, and to respond to continuing legal challenges regarding the Canal's capacity and associated water rates. They also include information on Canal improvements, including affidavits, reports, photograph albums, and maps. Two photograph albums showing mid-1960s improvements to the High Line Canal system are also valuable sources. (Refer to Exhibit 2-2.)



Exhibit 2-2: Recent photograph showing archival materials on High Line Canal available at Denver Water. The City inherited many of the Canal's records when the City purchased the Canal in 1915.

A few additional primary sources are worth mentioning. One of these is the collection of Biennial Reports of the State Engineer beginning in 1883, accessible online from the Colorado Department of Natural Resources, Division of Water Resources website. These reports provide information on water measurement and allocations for each stream from which water was diverted in the state, including information on the High Line Canal (in Water District No. 8). They provide good overviews of the distribution and use of water via Canals and ditches in Colorado, and cover other relevant water-related topics of the day, such as passed and pending legislation and legal actions on water-right issues, the status of Canal and reservoir construction in the state, and information on crop acreage utilizing irrigation in various areas of the state.

Another important information source is the collection of Biennial Reports of the General Meetings of the Colorado Mortgage and Investment Company of London, the parent company of the Platte Land Company, Limited, and the Northern Colorado Irrigation Company. The former company oversaw land sales adjacent to the Canal through an agreement with the Kansas Pacific Railway Company and the Denver Pacific Railway and Telegraphy Company. The latter company was responsible for Canal construction and operation, and the provision of water rights to lands adjacent to the Canal. These reports provide valuable information on land sales, and the status of Canal construction and operations. Reports dating from 1878 through 1892 are

available in the Denver Public Library's Western History and Genealogy collection on microfilm.

A surprise find was the Kassler Oral History Project, available now only in hard copy transcriptions from Denver Water staff at the Kassler Center, the department's education center named after the former worker community that operated its historic and sprawling slow-sand water filtration system at the mouth of Waterton Canyon in present Littleton. These files consist of two three-ring binders containing manuscripts of oral histories conducted by Philip Glatfelter from 1998 to 2000. Mr. Glatfelter interviewed 16 individuals, including several who lived near and worked on the High Line Canal from the early 1900s through the 1980s.

Also a good find was the Colorado Historic Newspapers Collection available online. Searches of "High Line Canal" resulted in some 100 articles in local newspapers in Douglas, Arapahoe, Denver, and Adams Counties. These articles varied from reports on legal actions and legislation related to the Canal, to updates on Canal breaks and physical conditions, to accounts of daily life along the Canal. An Oct. 11, 1901, article in the *Castle Rock Journal* described a young man bathing under the flume at Plum Creek and catching a chill that eventually resulted in his death. A July 11, 1913, article in the *Record Journal* of Douglas County recounted neighbors near the railroad settlement of Acequia "enjoying a picnic dinner on July Fourth in a shady spot on the banks of the High Line." The many available newspaper articles from this source could be further culled for

interpretative exhibits and web information conveying personal stories about the angst and everyday experience of living and working near the High Line Canal.

As indicated in the Introduction, this project's purpose is not only to document the history and historic infrastructure of the High Line Canal itself, but also to identify historic properties with historic connections to the Canal. As such, the study team looked for historic information on the Canal and Canal-associated historic resources in Douglas, Arapahoe, and Adams County depositories. This included online researching of local historic preservation boards/commissions, contacting local historical societies and museums, and visiting those depositories with promising information in their archives. As such, the team visited the Douglas County History Research Center in Castle Rock and the Littleton Museum in Littleton, and received information via email from the Highlands Ranch Historical Society. Information was thus found on specific historic resources with direct ties to the Canal, such as the Plews Ranch, Highlands Ranch, and the Miksch-Helmer Cabin in Douglas County. (Refer to Exhibit 2-3.)

These local research efforts indeed produced information on a few surviving historic resources, but the study did not conduct comprehensive research on Canal users or associated developments and activities along the Canal. While some maps and information on specific property owners with Canal water rights were uncovered by this project, researchers did not have sufficient time to conduct follow-



Exhibit 2-3: Ca. 1935 photograph of the High Line Canal traversing Highlands Ranch, once a 2,000 acre operation in northern Douglas County. The vintage print is at the Douglas County History Research Center (call number, 2011.004.0028).

up research on those properties. The corporate minutes of the Northern Colorado Irrigation Company included legal descriptions of properties in the Kansas Pacific Railway agreement. Additional chain of title property research for these lands and other lands along the Canal could yield more comprehensive information on early deeds and conveyances from the Platte Land Company and the purchaser's own Canal history and use. Some level of targeted property ownership research coupled with historical research on early owners would be worthwhile to identify large and/or important historic land owners using Canal water delivery rights.

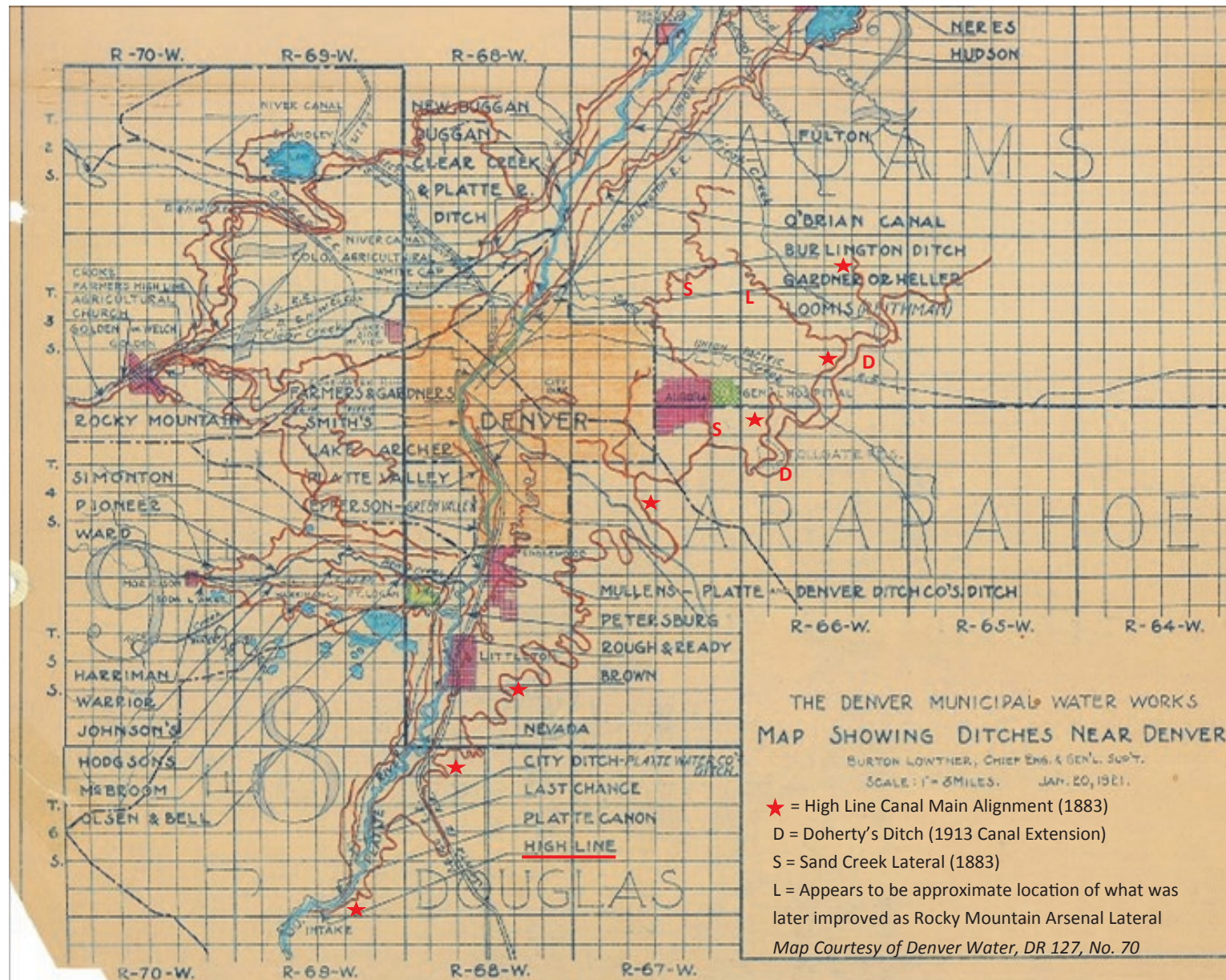
Research on the history of the High Line Canal is undeniably complicated due to the multitude of complex related legal actions, several Canal ownership changes, and the addition and subtraction of Canal laterals over the years. Piecemeal and incomplete records on the Platte Land Company and Northern Colorado Irrigation Company also make research on the Canal's history and historic evolution difficult. Fortunately, the Denver Water Department, the Canal's current manager, has inherited some of the Canal's early records, and has made most of this information accessible to researchers on an appointment basis.

Unfortunately, due to security concerns, most of Denver Water's own construction and maintenance records on the Canal are not publicly available. Without access to this information, dating a particular Canal feature, such as a siphon or a flume, or understanding its alterations over time

become much more challenging. As such, the researcher must rely heavily on previously recorded resource information from History Colorado, as well as on his or her own field observations, to construct a coherent picture of the Canal's surviving physical features and their historic significance. Without more specific locational information on Canal infrastructure from Denver Water's files, the historic-resource surveyor is also prone to miss important properties in the field due to heavy vegetation, physical access issues, and the difficulties of surveying a 71-mile-long system.

Even with these limitations, a more comprehensive research project could catalog all of the available information on the physical Canal, relying heavily on available Denver Water records and photograph collections, to pin down construction and alteration dates on more surviving Canal features. Additional coordination with Denver Water is also recommended, to help achieve historical documentation and interpretation goals. It should also be noted that the research efforts focused on the 71-mile main-line Canal, and not on affiliated ditches or the three main High Line Canal laterals: the original 1883 Sand Creek Lateral, the 1913 Doherty Ditch in Aurora, and the 1942 Rocky Mountain Arsenal Lateral in Adams County. Research on the Antero Reservoir completed in 1909 to supply the High Line Canal was also outside of the study scope. Production of a comprehensive history – ideally a fully developed Historic Context in the format of a National Register Multiple Property Documentation with Property Types and Registration

1921 Denver Water Map: High Line Canal and Other Ditches Near Denver



Requirements to facilitate one or more National Register of Historic Places (NRHP) listings – on the High Line Canal would cover the entire High Line Canal system. See 1921 map of High Line Canal system (and other ditches in Denver area) on the previous page.

Reconnaissance Survey

A primary focus of the study was to perform a reconnaissance survey of historic resources both in and adjacent to the Canal. A 1970 construction cut-off date, for identifying historic-age resources, was based on the year that the first Canal trail agreement was reached, bringing subsequent modern improvements and changes to the Canal alignment. Given the 71-mile length of the Canal, and the project's budgetary limitations, the team relied heavily on geospatial information and analysis to prioritize the survey work. The reconnaissance survey methodology consisted of the following five steps:

1. Survey prioritization based on point data analysis of Canal infrastructure and building datasets;
2. Review of History Colorado Compass survey/inventory forms for previously recorded historic resources, and classification of these resources as either "no survey" or "field visit" candidates;
3. Geo-spatial referencing and mapping of historic USGS maps and key data sets to guide ground-level survey;

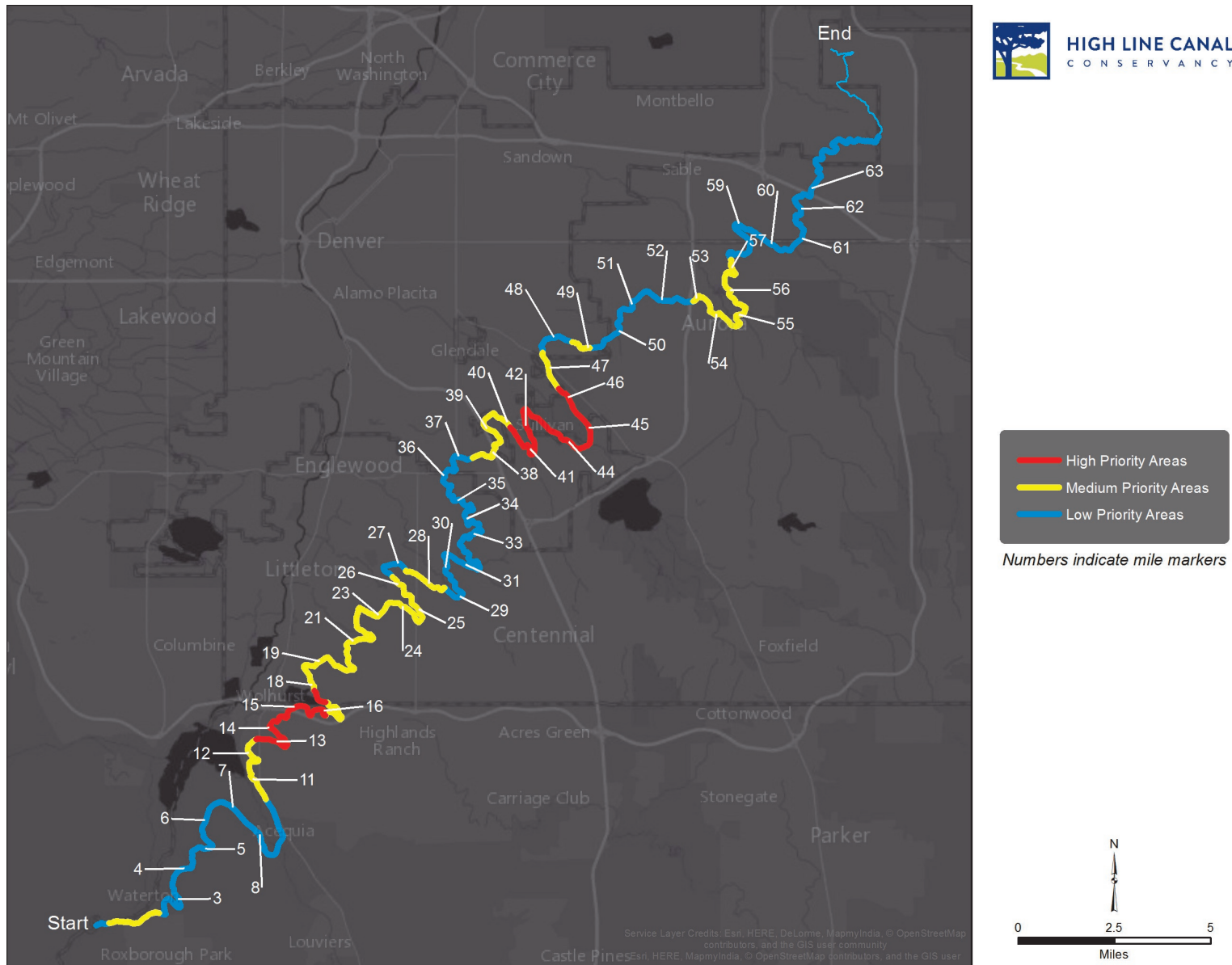
4. Field surveys of high and medium priority areas, using geo-spatially loaded handheld devices to identify features by bicycle, with recordation using Google Earth maps and cameras to document resources precisely;
5. Targeted surveys of other high priority locations outside of high and medium priority survey areas.

First, the project team looked for data sets that largely contained information on Canal infrastructure and building construction dates. The following data sources were identified and obtained:

- National Hydrology Dataset for structures, features, and surface water points of return (this captured lakes/ponds/reservoirs, ditches, dams/weirs, gates, tunnels, wells, diversions, etc.).
- Douglas, Arapahoe, Denver, and Adams County Assessors improvements data for buildings and structures with the year built as 1938 or earlier.
- Denver Water and High Line Canal Conservancy data on access points, bridges, water-flow disruption points, and underpasses.

Using these data sources, the team identified 192 points within 500 feet of the centerline of the High Line Canal. The project used a kernel point density function to determine the number of potential historic-age resources of interest per square mile. It should be noted that this

Point Density Analysis Map: High, Medium and Low Priorities for Reconnaissance Survey



analysis revealed no features along the northern 4.6-mile abandoned segment of the Canal.

Based on this density analysis, the remaining Canal length was categorized as a high, medium, or low priority for field survey. Of the remaining 66.5-mile Canal length, the analysis ranked 10.4 miles (16%) as high priority, 23.1 miles (35%) as medium priority, and 33 miles (49%) as low priority. The Map on page 13 shows the results of the point density analysis.

The second step was to review existing Compass survey/inventory forms from History Colorado. This step is described in more detail under the Previously Recorded Properties discussion above. Once the winnowing process was completed, the team obtained GIS shape files for the 44 properties earmarked for field visits, and loaded their locations onto handheld computer devices.

Next, the project team created geographic data files using the KML (Keyhole Markup Language) format for data sets determined to best assist field survey efforts, and loaded this information onto recent satellite photographs available for viewing on Google Earth and/or OruxMaps. These data sets included county assessor data for buildings with listed construction dates of 1966 or earlier within 300 feet of the Canal; Denver Water data on the Canal itself, as well as Canal bridges and mileposts; High Line Conservancy-provided data on street intersections and underpasses; National Hydrology Data on flowlines, structures and features,

and waterbodies within or adjacent to Canal rights-of-way; and History Colorado shape files for high-priority previously recorded resources within 500 feet of the Canal center-line.

The project team also loaded high resolution historic USGS 7.5 minute topographic maps, available at the relatively large scale of 1:24,000, onto handheld computer devices. The selected USGS quadrangles included: Kassler (1945), Littleton (1950), Highland Ranch (1949), Englewood (1950), Fitzsimons (1957), Sable (1957), and Box Elder School (1957). The geo-referenced maps assisted field efforts substantially since they showed the historic alignment of the High Line Canal itself, including some of its infrastructure components, as well as ponds/lakes and adjacent buildings. Given that many modern residential subdivisions now abut the Canal, the historic building locations on these maps were particularly helpful in pinpointing historic buildings surrounded by 1960s or later developments.

The fourth step was to perform ground-level surveys along the Canal. The team performed field surveys on high priority stretches of the Canal first, and on medium priority areas second. Fortunately, the project time and budget allowed the team to survey all 33.5 miles of high and medium priority survey areas, except for very limited areas not publicly accessible. The team typically traveled by bicycle along the generally reliable Canal trail, carrying the data-loaded handheld devices to pinpoint properties of interest. The data

sets helped the team to detect features in areas of high vegetation adjacent to the Canal, and to locate buildings and other features some distance from the Canal trail (particularly in places where the trail deviated by 10 feet or more from the Canal alignment). The field surveyors also relied on professional observation to locate buildings, structures, objects, sites, and districts in and along the Canal not included in the data set.



Exhibit 2-4. Project field historical archaeologist/historian Christian Driver in the field inspecting a Canal gate from inside the waterway.

The field surveyors recorded information on all high priority previously recorded resources in the data set (including confirmation if the recorded resource was ex-

tant). The team also recorded all identified Canal infrastructure components (flumes, siphons, gates, etc.). Also documented were features crossing or located in the Canal's rights-of-way (such as bridges, underpasses, etc.) documented as or estimated to have construction dates of 1970 or earlier.

In the high and medium priority areas, the team recorded all buildings and structures adjacent to the Canal alignment having a known association with the Canal established through historical research, or that appeared to have a probable connection to the Canal based on age, property type, and proximity to the Canal. An example of the latter case would be an early 20th century grain silo adjacent to the Canal, on land assumed to have once been watered by the High Line Canal. For the most part, the field effort excluded post-World War II subdivisions and buildings, given that they were in plentiful supply, and additional historical research is warranted to determine whether any of these developments have a direct connection to the Canal water delivery system.

The team performed selective field visits and fieldwork in the low priority survey areas demarcated on Map 2. In the low priority areas, targeted field visits were performed for all previously recorded resources in the Compass database, earmarked for a reconnaissance visit during the team's initial phase of work. The team performed field surveys of other historic-age resources identified during the historical research phase of the project as having a direct

affiliation with the Canal's water delivery system. For example, research at Denver Water and an analysis of the historic USGS maps revealed siphons, historic railroad crossings, and other features along an approximately one-mile segment of the Canal adjacent to US Highway 85 extending south to Plum Creek. This segment was surveyed despite the fact that it was initially identified as a low priority area through the point density analysis.

The surveyors used a Google Earth image to record information on each identified property in the field, allowing data to be entered in real time. For each property, the field surveyors assigned the property an inventory number, and recorded the property's name (such as McLellan Reservoir), property type, ownership, level of historic significance, and any additional notes using Google Sheets. Each recorded property was photographed using a digital camera with 12 megapixels resolution, and saved as jpeg files with a minimum 2-megapixel image density. A separate photo log was used to record image data. Additional information on the property type, level of historic significance, and physical condition fields is provided in Section 4, Reconnaissance Survey, of this report.

The surveyors created a way point for each recorded property with OruxMaps, a software that generates locations using the UTM (Universal Transverse Mercator) coordinate system. Because the way points were created from the location of the hand-held device operator, the survey team double-checked and corrected way point locations up-

on returning to the office. These corrections were particularly important to accurately denote locations of properties farther away from the Canal, such as a 19th-century log cabin on private land, 50 feet or more from the Canal limits. Upon completing a day of survey work, the survey protocol called for downloading the waypoints and creating a KML file that could then be loaded onto Google Earth. Using current high resolution satellite photographs on Google Earth, the surveyors double-checked locations of surveyed properties and relocated waypoints in the KML files as needed to



Exhibit 2-5. Ca. 1900 round milking barn at Delaney Farm. The Delaney family developed an extensive agricultural compound east of Aurora adjacent to the Canal during the late 19th and early 20th centuries.

more accurately reflect actual locations. Because of this double-check system, the team estimates overall UTM locational accuracy within 10 meters.

The study methodology was largely effective in meeting the project goal of documenting historic Canal-related resources, and for painting a larger picture of the types and numbers of surviving resources. In all, 191 resources were identified, field surveyed, and documented by the project. As delineated in more detail in the Section 4 Reconnaissance Survey of this report, many different types of properties were discovered, ranging from headgates and sand traps, to ponds and reservoirs, to flumes and siphons, to farmsteads, barns, silos, and golf courses.

As a result of the project's limited time frame and budget, the field survey methodology relied heavily on front end research and data analysis to focus the survey scope. Recording a limited number of fields for each property also was a time saver for the reconnaissance phase of work. Use of a truncated survey "form" via Google Sheet saved on data entry time and expedited the field work.

While the selected survey methodology helped the team to cover a lot of ground in a relatively short time frame, less information per resource was recorded than standard professional practice. Most survey projects in Colorado are conducted consistent with History Colorado's *Cultural Resources Survey Manual* and utilize the agency's Cultural Resource Survey forms. In the case of the High Line

Canal, standard protocol would be to use the Management Data Form, an umbrella form, to provide overview information on the Canal, supplemented by Linear Component Forms providing more information on associated features, such as flumes, siphons, etc. For buildings and farmsteads identified on private property, other History Colorado Cultural Resource Forms, such as the Architectural Inventory Form would be appropriate. Standard practice would also call for completion of Cultural Resource Re-Visitation Forms for many of the previously recorded resources re-surveyed by this project.



Exhibit 2-6. *The project documented the Alum House, an early 20th century Canal building that once functioned as a gauge station at the Platte Canyon Reservoir spillway.*

Also, most professional cultural resource surveys evaluate the significance of identified properties, and make formal recommendations on their NRHP listing eligibility.¹ Typically, these evaluations examine historic-age properties based on developed historic contexts including specific themes, places, and time frames. This study does not include development of a historic context, or NRHP eligibility evaluations. Instead, the research and field work in this study is regarded as preliminary, providing baseline data for future efforts.

¹ The model that is used for most evaluations of historic significance is the National Register of Historic Places, a national landmark designation program that identified properties with local, state, and/or national levels of significance. Typically, for a property such as a Canal district, to be eligible for such a designation, it must have documented significance in at least one of four areas: (1) events that have made a significant contribution to the broad patterns of history (2) the lives of persons significant in our past; (3) embodying the distinctive characteristics of a type, period, or method of construction; and (4) ability to yield information important to history or prehistory. To meet eligibility criteria, a property needs to meet age requirements, and must possess integrity of location, design, setting, workmanship, feeling and association. For more information, refer to *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*.

3. HISTORY

As bicyclists and pedestrians meander the High Line Canal trail today, it is hard to believe that the Canal was constructed more than 130 years ago in a time and setting very different from today. While 1859 mining discoveries promulgated new mining towns and booming growth for cities like Denver, rural agricultural development on the dry eastern plains of Colorado got off to a slower start.

An early Colorado success story was the 1869 Union Colony in Greeley that purchased 12,000 acres of Denver Pacific Railroad lands along the Cache la Poudre River, and diverted its water into ditches that brought 55,000 acres of land under irrigation. The magnitude of effort required for such large-scale irrigation projects necessitated that private enterprise play a lead role in their financing and construction. The Colorado Mortgage and Investment Company, Limited (Colorado Mortgage Co.), of London, England, formed in 1877 to take advantage of real estate opportunities in Colorado. The company's first canal project was the Larimer and Weld Canal near Fort Collins, completed in 1880. The Colorado Mortgage Company's board of directors was led by James W. Barclay, with James Duff, a native of Scotland, acting as the company's general manager in Colorado. (Steinel, 200-204, 1880 *Colorado Mortgage Report*).

The Colorado Mortgage Co.'s early success and optimism over the Larimer and Weld Canal led it to invest in a



Exhibit 3-1: Photograph showing re-sloping of Canal. In 1933. Earth grading of the Canal using horse-and-slips, combined with manpower and simple tools, is reminiscent of the Canal's original 1879 to 1883 construction. Source: Denver Water, Album 41, p. 43, photo #3752.

larger more complex venture farther south called the High Line Canal. An 1879 agreement with the Kansas Pacific (KP) Railway (the agreement also included the Denver Pacific Railway and Telegraph Company, acquired by the KP Railway in 1880), gave the English Canal Company (or the English Company) the right to purchase up to 400,000 acres of excess railroad grant lands for \$1.25 to \$2 per acre in exchange for the construction of "a canal to convey water for

the purpose of irrigating the lands....” of the railroad. The promise of irrigation water would guarantee that the land could be sold at a substantial profit, reaping benefits for both the KP Railway and the Colorado Mortgage Co. (1880 *Colorado Mortgage Report*).



Exhibit 3-2: 1912 photograph showing original wooden bench flume just after it exits the tunnel, extending north parallel to the South Platte River. Source: Denver Water, Album 28, p. 80, photo #1109. (Photo also featured on front cover.)

Not surprisingly, the KP land agreement required the Colorado Co. to sell and convey Canal water to settlers purchasing railroad lands. But, the agreement also required the English Canal Company to offer Canal water rights to alternate sections of land owned by the U.S. government, hoping

this would promulgate higher land values for all involved. To further this agreement, the English Company established two subordinate companies, the Platte Land Company, Limited (Platte Land Co.), and the Colorado Ranch Company, Limited, to “buy,...irrigate and sell Land” and “to supply and sell water for purposes of irrigation or for domestic or other uses.” (1880 *Colorado Mortgage Report*).

Late in 1879, Colorado Mortgage Company formed a third shareholder company, the Northern Colorado Irrigation Company (Northern Colorado Irrigation Co.), to act as a subsidiary to the Platte Land Co., with the express purpose of obtaining the legal right to divert water from the South Platte River, and to construct, operate and maintain their High Line Canal (Northern Colorado Irrigation Co. Minute Book, Vol. 1). The typical arrangement was for a settler to purchase land from the Platte Land Co., and to simultaneously acquire shares of Northern Colorado Irrigation Co. stock. The stock translated into rights to access water from the High Line Canal, but not actual percentage ownership of the Canal itself. (Skari 13)

Also, by late 1879, the Northern Colorado Irrigation Co. hired Edwin S. Nettleton – a prominent Colorado engineer who had designed both the Union Colony Canal and the Weld and Larimer Canal – to plan the extensive new Canal project. A second engineer, G.G. Anderson, was listed as the High Line Canal engineer by 1883 (perhaps he replaced Nettleson or was working under him). Nettleton’s

High Line Canal is named after the engineering principle that constitutes the basis for the Canal's design. A "high line" canal's point of origin begins at a high elevation, and then generally follows the contours of the highest natural terrain above agricultural lands to produce gravity induced water flow as it travels downward. A "high line" canal relies on minimal drops in elevation per mile along its course, combined with many twists and turns, to maintain water velocity. Because water flow is driven by gravity, no expensive pumping is required, making a "high line" design cost efficient for a lengthy irrigation system.

Nettleson chose to begin the new Canal two miles upstream from the mouth of the South Platte Canyon, 5,750 feet above sea level, at a high enough point for the Canal to flow 71 miles northeast across the Plains. A substantial diversion dam and headworks was designed to draw water from the South Platte River along its rocky and remote origins. After passing through the main headgate, water traveled through a 600 foot tunnel before flowing 2,700 feet through a dramatic bench flume perched on the steep south bank of the South Platte River. Upon exiting the lengthy wooden flume, the Canal emptied into an earthen ditch and control system, transmitting water in a generally northeasterly direction for another approximate 68 miles. Water was transported by means of gravity at a grade of 21 to 32 inches per mile. At mile 51 in Aurora, the 15-mile-long Sand Creek Lateral split off to the north, while the main Canal continued another 21 miles northeast. The original earthen

ditch measured a standard 40 feet wide by 7 feet deep over the first 46 miles, and a standard 20 feet wide by 4 feet deep for its remaining mileage. Nettleson designed two additional wooden flumes to carry water over Plum and Cherry Creeks (*Engineering News*, Simmons and Simmons 9) .

Prior to finalizing the Canal's design in the Spring of 1880, the Northern Colorado Irrigation Co. had already begun to award contracts to move earth using horses and men with handheld slips to build the Canal infrastructure. Some of the construction contracts were awarded to Benjamin H. Eaton, future governor of Colorado, who had just completed the Weld and Larimer Canal for the English Company. By 1882, High Line Canal construction reached Cherry Creek, a distance of 44 miles. By late 1883, the Canal was complete at an estimated cost of \$652,000 (Simmons and Simmons 9, Roberts 8-9, *Colorado Mortgage Reports*, 1882-1883).

The Northern Colorado Irrigation Co. was awarded water priority number 111, securing water rights to 1,184 cubic feet per second from the South Platte River. Assuming the duty of water as 1.44 cubic feet per second to every 80 acres, the English Company estimated that its allotment would be sufficient to irrigate 60,000 acres or more. This promise seemed plausible in the early years after the Canal's completion. By January 17, 1883, the Platte Land Co. has sold 800 acres "to parties who will occupy and improve...[the acreage] this spring for farming and dairying purposes." (*Platte Land Co. March 1883 Report*) Three years

later settlers had irrigated some 20,000 acres of former semi-arid lands south and east of Denver using water delivery from the High Line Canal (Northern *Colorado Irrigation Company Minute Book*, 1880—1917, Mosley 117, 121-122).



Exhibit 3-3: Ca. 1900 photograph of Osner's farmstead adjacent to the High Line Canal. It can be assumed that Mr. Osner purchased land from the Platte Land Co. and held Canal water shares. Source: Denver Water, Album 85, p. 16, photo #9-242.

However, beginning in 1886 and for the next several years, the water level in the South Platte was below “normal” and users suffered from irregular and undependable service. This was a forecast of things to come. The High Line Canal’s water right was junior to 74 other rights, and those

rights would all receive water before the headgate of the High Line Canal could be opened. In dry weather years the Canal received little to no access to South Platte River water. The greatest quantity of water diverted from the High Line Canal during the first 32 years of operation was in 1906 when 462 cubic feet per second were discharged on May 26 and 27. This amount fell far short of the maximum 1,184 cubic feet water rights it was allowed, providing water was still available after the senior 74 water rights were exhausted. It soon became obvious that the only years the Canal delivered plentiful water to its users was in years that the Canal’s South Platte diversion allocation was supplemented by natural rainfall. The Platte Land Co. itself admitted in 1898 that “owing to the limited quantity of snow on the mountains, there is reason to expect a shortage of water in July unless rains occur....” (*Platte Land Company 1898 Minutes* 42, Comstock 3).

Design problems also limited the Canal’s capacity to hold and deliver water to customers. Unfortunately, Nettleson’s prescribed grade of 21 to 31 inches per mile was overly steep, causing water to cut away the bottom of the ditch and to erode the Canal’s thinner upper banks. In periods of high rain, Canal washouts were a regular occurrence. One such account was reported in the July 3, 1902, edition of the *Castle Rock Journal*: “The High Line Ditch broke...on the Van Wormer place south of town and covered Abe Howarth’s meadow...and washed out the road....A force of

men was put to work at once making repairs and water will be turned on again as soon as they are completed.”

Seepage and evaporation were other maladies affecting the Canal’s water delivery performance. Heavy growth of cottonwood trees, brush, and grasses in and along the Canal banks created an almost idyllic shady environment that attracted picnics and other social activities. But this growth was also disadvantageous to the Canal’s main purpose of water delivery since it weakened the ditch’s banks and consumed its waters. Other water delivery problems



Exhibit 3-4: 1939 Photograph showing the Canal “after the willows have been cut and hauled out by a farmer and one horse.”
Source: Denver Water, Album 42, page 19, photo #6310.

were caused by beavers, prairie dogs, gophers and crayfish who found ideal lodging on the ditch’s banks. Wildlife habitation undermined the Canal banks, created stoppages in water flow, and necessitated additional maintenance expenses and repairs. Ditch water carrying heavy loads of silt and sand was another concern, leading to stoppages, and quick deterioration of wooden drops and flumes (Sherow, *Colorado Heritage*).

As a result of many of the issues delineated above, the High Line Canal required continued maintenance and oversight on the ground, particularly during the irrigation season that usually extended from April through October each year. A superintendent managed the Canal’s operations and fee collections. The foreman and ditch riders oversaw Canal repairs and maintenance, and were responsible for ensuring that the proper amount of water entered gate openings leading to connecting laterals on private lands.

The Northern Colorado Irrigation Company divided operations into six sections, with a ditch rider assigned to oversee water delivery and Canal maintenance of each segment. From early on, the ditch riders and the superintendent were provided housing. These residences were situated adjacent to critical Canal infrastructure, such as an important flume or siphon, where security and maintenance were particularly important to Canal operations. In most cases, the houses were part of a larger complex that included outside and inside areas for stabling horses, and for

storing construction equipment and maintenance supplies. Reports from the 1950s and 1960s list the superintendent's house adjacent to the Cherry Creek Siphon (also called Cherry Creek Station), with six additional ditch-rider houses at or near Platte Canyon, Plum Creek Flume, Bennett Flume, Little Dry Siphon, Sand Creek headgate, and the Sand Creek Lateral. A maintenance yard with some surviving buildings remains at Little Dry Siphon (this location was not inventoried as part of this project due to access issues) and at Cherry Creek siphon. The only remaining ditch-riders house is at Waterton Canyon (*Northern Colorado Co. Minutes, Records of Canal Rights-of-Way*, dated 1957).

The ditch rider's job was physically demanding and during peak season was a 24-hour operation. Bob Rosendale, a ditch rider in the 1950s, recalls working all night, "walking the flume" and removing trash from the front of the Canal's headgates at Waterton Canyon wearing hip boots, and armed only with a pitch fork and trash hook. According to Bob, the ditch riders job was "to go through [the Canal], keep any trash moving, look for any safety hazards, [and regulate] water." In the wintertime, when water was not running through the Canal, the ditch riders would rebuild structures, clean out the canals, and cut down trees (Glatfelder, Bob Rosendale interview). An interview conducted by this project with a current Canal maintenance crew revealed that the job responsibility for Canal workers remains labor intensive, and consistent with traditional du-

ties from prior decades (*Interview with Lance Cloyd and Denver Water High Line Maintenance Crew, September 12, 2016*).



Exhibit 3-5: 1933 repairs to Canal bank washed out by "overtopping during storm." Source: Denver Water, Album 41, page 81, photo #3656.

Maintenance costs of the Canal exceeded expectations, cutting significantly at times into the Northern Colorado Irrigation Company's profits. The company's annual reports include many accounts of unanticipated repairs and costs, due largely to deterioration of original wooden infrastructure components and damage caused by flooding. The replacement and reconstruction of wooden components

created continual maintenance expenses. As such, the company's profits varied widely from year to year. In 1898, the Platte Land Company reported that the 17-year old bench flume in Platte Canyon was "now so much decayed that it would be unsafe to wish it another year...." The cost of a new flume was estimated at \$12,500, a sizeable cost at the time. In 1899 the company reported water rental and interest income at \$40,086 with maintenance costs and other expenses at \$22,579, providing a net income of \$17,507. In other years, income was much less or much more, depending on expenses and maintenance required (*Northern Colorado Irrigation Company Minutes*, Vol. 1 May 2, 1898, and May 1, 1899).

Even in years of plentiful discharge and rainfall, the Canal managers typically could not safely divert more than 500 cubic feet of water, far below the intended 1,184 cubic feet per second. Between 1889 and 1899, the High Line irrigated only 12,316 acres of the 31,000 acres with water rights it had sold to date. The company was never able to irrigate more than 25,500 acres for its customers. Enterprising and resourceful Canal water customers built their own reservoirs and ponds to ensure more reliable water availability for agricultural irrigation. By 1899, Greenwood Ranch had built eight reservoirs along its stretch of the Canal. Some of these ponds and reservoirs were identified during this project. Others may be farther removed from the Canal, or not readily visible from the Canal right-of-way. Realizing the unreliability of the Canal's water supply, many farmers be-

gan experimenting with dry farming techniques within a few years of the Canal's opening. Farmers using dry farming techniques successfully produced wheat, corn, barley, oats, rye, and potatoes, gradually reducing their reliance on crops requiring more regular and greater quantities of Spring and Summer watering (Steinel; Greenwood Village Website).



Exhibit 3-6: The bench flume at Waterton Canyon was subject to constant repair. This Nov. 18, 1934, photograph depicts the replacement of the timber floor with a new concrete floor slab. Source: *Denver Water, Album 41, page 20, photo #3973.*

Within a few years of opening, the Canal's over-commitment of a weak water right, technological problems, and lack of rainfall led to angry farmers and a defensive

management. Unlike many ditch operations throughout the Western United States where land owners had some ownership title to the ditch, the High Line was the first – or one of the first – large irrigating ditches in the West where the land owners' shares in the Canal only entitled them to rent water annually from the controlling irrigation company. Each year, land owners were charged advance rent to access High Line Canal water, typically due on May 1st of each year. This led to particularly hard feelings in years where rent was paid but water delivery fell far short of expectations. Within a few years of the Canal's opening, management faced severe financial problems as maintenance expenses increased, and the Northern Colorado Irrigation Company was on the brink of financial ruin. To address its cash flow shortages, the company began assessing additional royalty fees of \$10 to \$30 an acre in the mid-1880s, a practice that irrigators quickly found offensive, accusing the English Company of depriving irrigators of their water rights. In contrast, the company blamed the terse situation on the farmers, accusing them of constructing poorly designed lateral ditches, wasteful practices, and water theft (Sherow, *Colorado Heritage; Irrigator*).

Several other histories have thoroughly documented the complex court cases and legislative actions that ensued between Canal water users and the English Company. In 1887, farmers formed the Farmers' Protective Association to fight the royalty fee in court, and the state assembly passed

a law outlawing royalty payments. The Colorado Supreme Court upheld the anti-royalty law in 1888 (*Wheeler v. the Northern Colorado Irrigation Company*), finding that all water in the state was part of the public domain. The court determined that ditch companies were "common carriers," subject to state regulation, and could only charge for reasonable expenses related to the operation and maintenance of the Canal, but not for the value of the water itself. Other legal suits also played out in the 1890s, mostly with unfavorable results for the English Company. Undoubtedly, the High Line Canal played a role in shaping the state's complex water law and regulatory system during this period.

With the issue of unreliable and inadequate water in the Canal remaining, Canal farmers incorporated the High Line Reservoir Company in 1891. Seeking to create a more dependable source of water, the new company proceeded to issue stock for the purpose of building the Antero Dam and Reservoir, but the project was abandoned as the result of the economic panic of 1893. A group of Denver and Greeley businessmen reinvigorated the project in 1907, forming the Antero and Lost Park Reservoir Company, and completing the ambitious reservoir project in 1909. In the same year, the Antero and Lost Park Reservoir Company purchased all of the remaining unirrigated acreage of the Platte Land Company, and by 1910 had bought the Northern Colorado Irrigation Company as well. In another curious episode of Canal history that played out from 1911 to 1913, the

Antero and Lost Park Reservoir Company negotiated with the Doherty & Company to extend the Canal near Aurora. Allegedly shady operations by the new Canal owners led to Doherty & Company's termination on the project as it neared completion, and further law suits ensued.

By 1914, the second owners of the Northern Colorado Irrigation Company tired of operating the Canal. Fortuitously, Denver was also seeking more security for its own water supply system at this time. In 1915, the Denver Public Utilities Commission purchased the Antero Reservoir and the High Line Canal and its associated water rights for \$1,050,000. In 1918 Denver voters created the Denver Board of Water Commissioners to oversee what became the Denver Water Department. Subsequent lawsuits over Canal water rights delayed Denver Water from taking full possession of Antero Reservoir and the High Line Canal until 1924. While the Colorado Supreme Court held that the holders of the 11,000 acres had purchased only proportional storage rights, negotiations between Denver Water and farmers eventually resulted in a new contract that guaranteed farmers additional acre feet of water at the Canal's intake.

Denver Water's ownership brought more permanent improvements to the Canal. The longer wooden flumes, such as the one at Coal Creek, were eventually converted to concrete siphons, requiring less repair. Remaining wooden flumes were rebuilt periodically, sometimes replacing timber abutments and pilings with concrete piers, and often

adding concrete aprons on either end of a flume. More research is needed in this area, but Denver Water records suggest that Depression-era funding and labor was used for many improvements completed during the mid-1930s. Photographs of new gates with stone and salvaged concrete wingwalls, and riprap in canal banks from this period suggest involvement of Depression-era work programs, such as the Works Progress Administration.

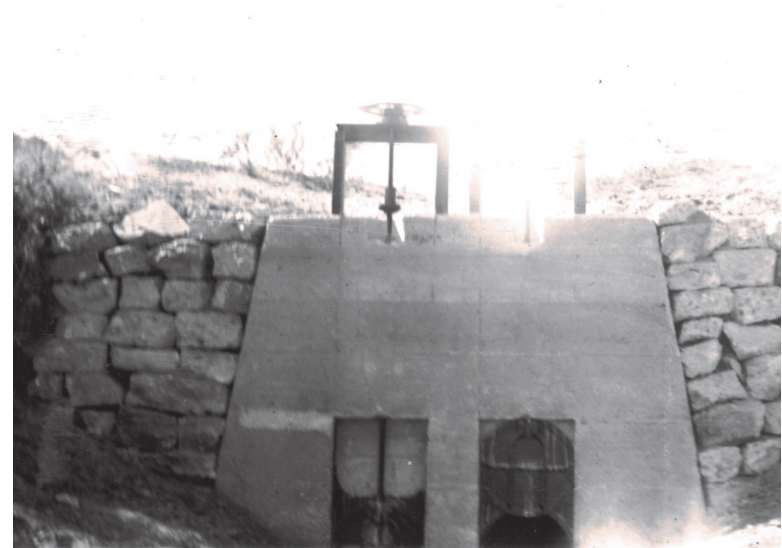


Exhibit 3-7: This photograph shows new twin headgate #79 after its installation in March 1939. The concrete rubble retaining walls suggest that a Depression-era work relief program may have been involved in the project. Source: Denver Water, Album 42, page 19, photo #6307.

Another major episode of Canal infrastructure rebuilding occurred in the 1960s, particularly after the devastating June 14-20, 1965 floods. One photograph album at Denver Water is dedicated to 1960s Canal improvement projects, including the replacement of the timber Plum Creek flume with a concrete siphon in early 1966. It should be noted that many of the Canal's early infrastructure features, such as wooden flumes, have been rebuilt and improved periodically over time, but this replacement of parts and upgrading, does not diminish the overall significance of these features.

During the mid- to late-20th century, developers east and south of Denver began purchasing land along the Canal for residential development. Some residential owners used Canal water for garden and lawn irrigation. The Kassler Water Treatment plant that served Denver's water supply also occasionally used High Line Canal water. Principal users in the 20th century were Rocky Mountain Arsenal (via the Sand Creek and Rocky Mountain Arsenal Laterals), Fitzsimons General Hospital (via the Sand Creek Lateral), Fairmount Cemetery, Denver and Englewood, Englewood's McLellan Reservoir, Skeel Reservoir on the Wellshire Golf Course, and Gallup Park Lake in Littleton. The last agricultural user on the Canal was reportedly John and Katie Bowen of Fly'n B Ranch, formerly the Plews Ranch (refer to SDA.1913 on Map Index 3), who sold their property to a retirement community developer in 2004 (Gambrill),.



Exhibit 3-8: In February 1934, Denver Water installed a concrete siphon at Little Dry Creek. Source: Denver Water, Album 41, page 30, photo #3790.

4. RECONNAISSANCE SURVEY

Using the methodology described in Section 2, the project team conducted a limited reconnaissance survey of the 71-mile Canal. In all, 191 historic-age resources were visited and recorded. The summary inventory forms below highlight many of these properties. In some cases, field visits revealed that previously recorded historic resources were no longer present (presumed destroyed). Those resources are excluded from this report's inventory forms, as well as other locations where:

- the properties were not readily viewable, and extremely difficult to access and photograph;
- the surveyed features were found to have little significance or a weak associative connection with the Canal, or
- the resources were similar in character and qualities to other properties included on inventory forms.

All 191 properties were recorded, however, on the Google Sheet following the survey protocol delineated in Section 2 of this report. The Google Sheet has been provided to the High Line Canal Conservancy, as well as associated survey photographs.

The summary inventory forms that follow feature key information from the field survey spreadsheet (Google Sheet). This includes at least one photograph plus inventory

number, map index key, property type, brief description, level of historic significance, special features, ownership information, and any additional key information not covered by the other fields. The categories of "property type" and "significance" or explained further below.

Each surveyed resource was identified as one the five property types that the Secretary of the Interior uses for listing properties in the National Register of Historic Places. These five property types are: building, structure, object, site, and district. The surveyed resources were further classified into one of 11 sub-*property types*, based largely on *Michael Holleran's 2005 Historic Context for Irrigation and Water Supply: Ditches and Canals in Colorado*, with a few minor variations. The 11 categories are listed below:

1. Linear District – Canal
2. Structure – Conduit
3. Structure – Retention and Storage
4. Structure – Control and Measurement
5. Structure – Diversion (includes turnouts/gates)
6. Structure – Protection and Cleaning
7. Buildings – Canal
8. Associated Building or Structure
9. Associated District or Site
10. Associated Structure—Access
11. Other

Categories 1—7 focus on the Canal and related infrastructure within the Canal right-of-way. These are resources critical to the overall purpose and function of the Canal. Categories 8—10 highlight properties adjacent to or crossing the Canal, such as an adjacent agricultural structure (category 8) and a bridge over the Canal leading to the location of a previous farmstead (Category 10). Category 11. Other captures miscellaneous resources which were difficult to categorize.

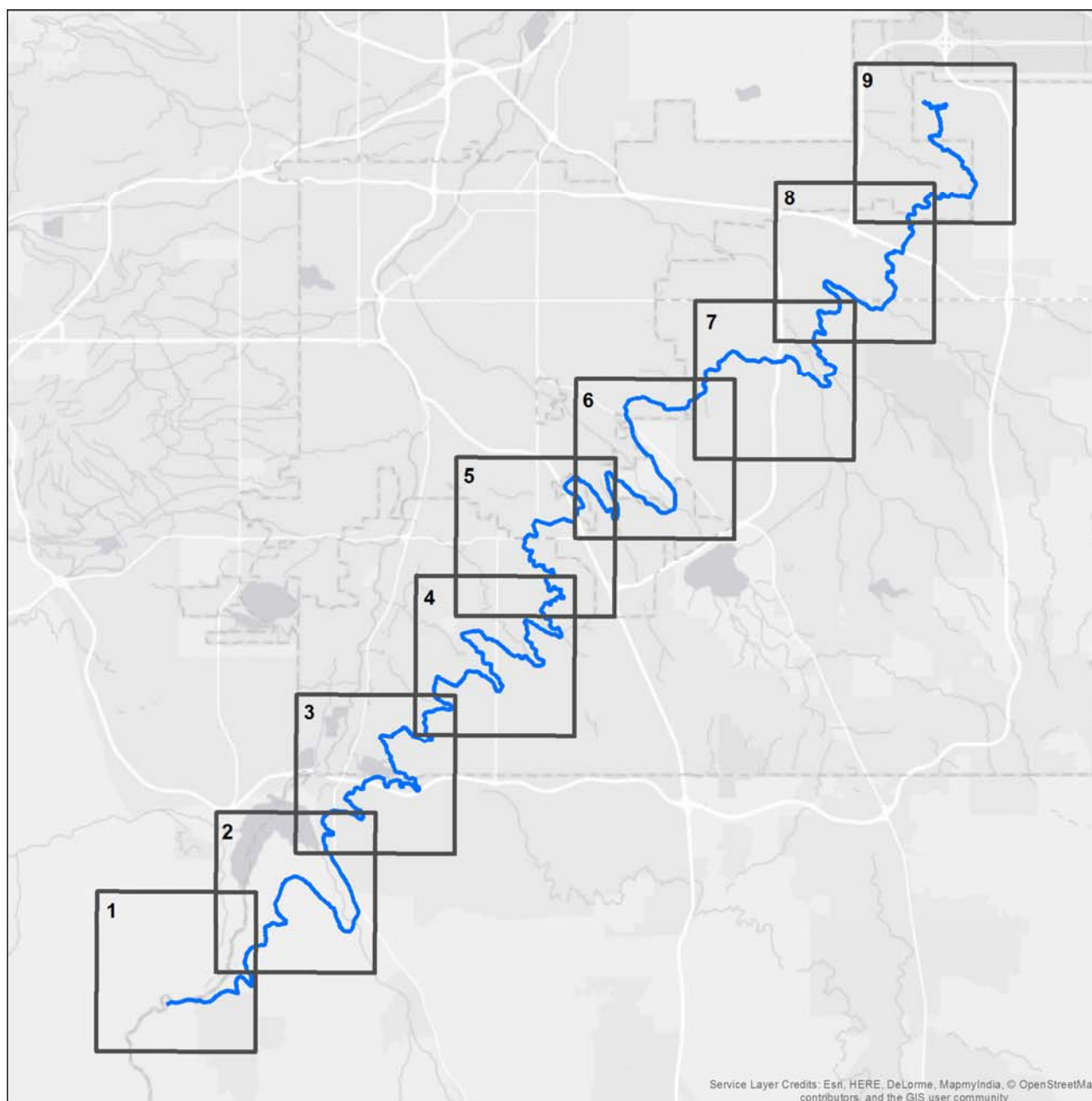
The classification system poses some difficulties given that some structures serve multiple functions (e.g. a Canal siphon with a wasteway to creek and trash gate could readily fall under categories 2, 4, and 6 above). For purposes of simplicity, the project team categorized each resource under a single property-type category, typically choosing the sub-property type that reflects the resource's primary function. If a Canal property sub-type serves multiple purposes, then this information is briefly recorded on the inventory form. In some cases, additional research and conversations with Denver Water's technical staff are needed to clarify the predominant function of each resource.

For the purposes of this project, water-user turnout gates were classified as "structure-diversion," whereas Holleran's classification system considers them turnouts or lateral headgates under the "structure-control and measurement" sub-property type. A subsequent survey could readily recategorize the lateral and ditch headgates, gates, and turnouts according to Holleran's reclassification system.

SURVEYED PROPERTIES BY PROPERTY TYPE AND SUBTYPE	
Property Type-Subtype	Number
Linear District – Canal	10
Structure – Conduit	25
Structure – Retention and Storage	11
Structure – Control and Measurement	14
Structure – Diversion (includes turnouts)	54
Structure – Protection and Cleaning	5
Buildings – Canal (directly related)	3
Associated Building or Structure (indirectly related)	27
Associated District or Site (indirectly related)	13
Associated Structure – Access (bridge, etc.)	20
Other	9
TOTAL NUMBER PROPERTIES SURVEYED:	191

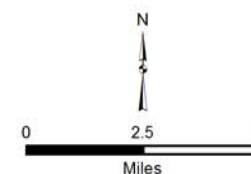
All 191 surveyed properties were classified into one of the 11 property type sub-categories. The table above shows the distribution of surveyed properties by sub-property types.

Another important survey field reflected in the inventory forms below is significance. Keeping in mind that this project is a limited reconnaissance survey and that only very basic information was available on each resource, the project team still attempted to evaluate each surveyed



HIGH LINE CANAL
CONSERVANCY

— High Line Canal
□ Map Index



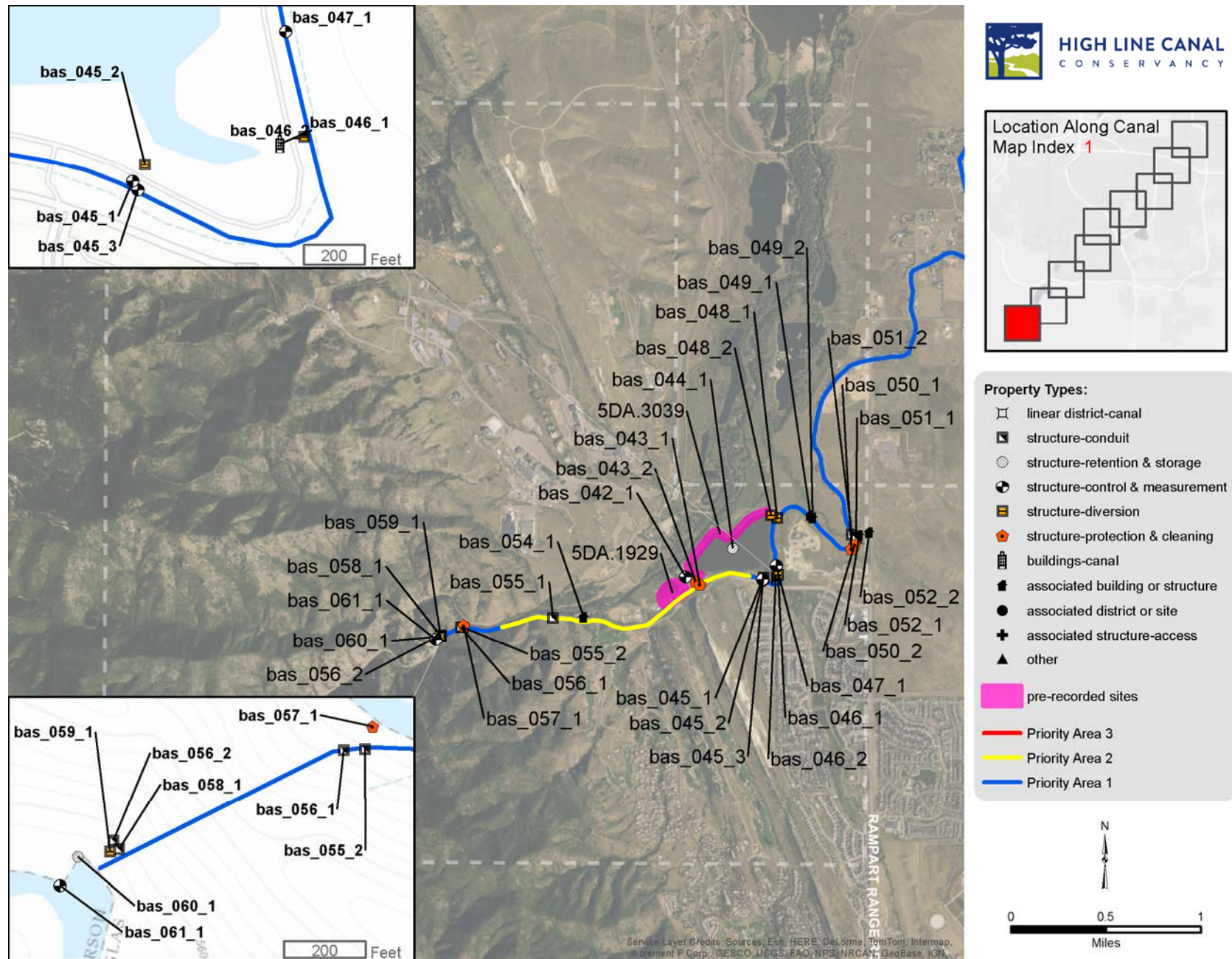
resource using the following rating system:

1. ***Not significant.*** These properties are not historically associated with the High Line Canal system in any important way, or they are historically associated but are severely damaged or altered. The removal of these features would not affect or diminish the Canal's historic significance or the Canal's potential future listing in the National Register of Historic Places.
2. ***Possibly significant.*** These properties might have significance associated with the Canal, but this connection is not readily evident. As such, additional investigation and research is required to determine if the property has historic ties to the Canal, or whether the feature (such as a building foundation) is altogether unconnected to the Canal's history.
3. ***Most likely significant.*** These are features that appear to bear a connection to the Canal, although additional documentation is needed to confirm this association. This classification typically applies to properties adjacent to the Canal, such as an associated building, structure, or site.
4. ***Significant.*** This includes Canal infrastructure generally believed to date (or primarily date) from 1970 or earlier (or to have been rebuilt since 1970 largely using historic methods and materials). It also includes associated properties with documented and important Canal asso-

ciations (such as a farmstead that acquired land from the Platte Land Co. and Canal apportionments from the Northern Colorado Irrigation Co.).

The inventory forms in this section are organized by location, with the 71-mile Canal divided into 9 segments. An overall map key showing the locations of all 9 map segments is provided on the previous page. These segments begin at the Canal's origins (at the South Platte River) and extend northeast to the Canal's point of termination. These segments are displayed on 9 maps included with the inventory pages. The surveyed resources are identified by the site number and its correlating sub-property type symbol on each map. It should be noted that for previously recorded sites located in the Compass database, the History Colorado recordation numbers serve as the site number (i.e., 5DA.921.1). For sites that were newly recorded through this study, a unique site number was provided (bas_001_1, etc.). The maps also delineate the survey priority areas described in Section 2.

In this section, the key map comes first, followed by the survey forms that correspond to that map. As noted above, inventory forms were not created for all properties identified during the field survey due to the project's limited scope. As such, some resources displayed on the map do not have corresponding inventory forms. Key information for all field-surveyed properties was recorded on a spreadsheet provided separately to the High Line Canal Conservancy.





Site Number: bas_060_1 **Map Index:** 1

Property Type: Structure–Retention & Storage

Description: Diversion Dam on South Platte River

Significance: 4

Special Features: Original Dam appears to be partly or completely of stone. Beginning of High Line Canal.

Ownership: Public, Denver Water

Additional Information: In the summer of 2016 (photo) Denver Water is rebuilding the dam; photo shows temporary cofferdam in river to allow construction out of the current.



Site Number: bas_061_1 **Map Index:** 1

Property Type: Structure–Control & Measurement

Description: Sluice Gate and Return to Platte River

Significance: 4

Special Features: Stone sidewalls; steel frame for gate; gate appears to be an upgrade with a slab of concrete.

Ownership: Public, Denver Water

Additional Information: Gate open in summer of 2016 (see photo) to allow rebuilding of adjacent Diversion Dam.



Site Number: bas_059_1; bas_057_1 **Map Index:** 1
Property Type: Structure–Diversion: Headgate
Description: High Line Canal Headgate
Significance: 4
Special Features: Grizzly (debris trap) in front of multiple individual gates in steel frame.

Ownership: Public, Denver Water
Additional Information: Channels river water into Tunnel, first through the grizzly and then through the control gates. Tunnel Inlet visible (photo) in the rock face above the 6th Gate from left.



Site Number: bas_056_1; bas_056_2 **Map Index:** 1
Property Type: Structure–Conduit
Description: Tunnel Entrance; Tunnel Outlet (photo)
Significance: 4
Special Features: Form-cast concrete protection at entrance; natural stone portal at exit.

Ownership: Public, Denver Water
Additional Information: Tunnel moves water from Diversion Dam on South Platte River through mountain ridge that causes a natural bend in the river.



Site Number: bas_057_1 **Map Index:** 1

Property Type: Structure–Protection & Cleaning

Description: Sand Trap, Debris Gates & Spillway

Significance: 3

Special Features: Concrete frame with multiple (4?) steel gates controlled by wheels and screw shafts; textured concrete sand trap below gates.

Ownership: Public, Denver Water

Additional Information: At Tunnel Outlet, allows return of excess water in Canal to South Platte River via spillway and removal of sand prior to return. Historic photos to right courtesy of Denver Water, Album 42, p. 46, #4908, from 07-28-36 (top right), and Album, 42, p. 37, #5200 from 04-12-37 (bottom right).





Site Number: bas_055_1; bas_055_2 **Map Index:** 1
Property Type: Structure–Conduit
Description: Rating Flume beginning with Debris Gate; end
Significance: 4
Special Features: Flume from Tunnel Outlet along South Platte River (Denver Water pipeline and bridge cross Canal and River to north [west] bank [photo top right]).

Ownership: Public, Denver Water
Additional Information: Originally wood; now concrete (top left photo). Historic photos (right top and bottom) courtesy of Denver Water, including top right photo from Album, 28, p 80, #1109, dated 07-29-12; and bottom right photo from Album 42, p. 66, #4779 dated 06-26-35.





Site Number: bas_054_1 **Map Index:** 1
Property Type: Buildings–Canal operation
Description: High Line Canal Caretakers Cottage
Significance: 4
Special Features: L-plan residential Building.

Ownership: Public, Denver Water
Additional Information: Last one remaining out of 7 ditch-rider/caretaker houses on the High Line Canal. Some alterations. Two outbuildings remain here. (Some outbuildings remain at Cherry Creek Superintendent's house and at Little Dry Siphon location).



Site Number: 5DA.1929 **Map Index:** 1
Property Type: Building –Associated with Canal
Description: Slocum Ranch Barn, Granary, and Stable
Significance: 3
Special Features: c. 1900 barn of stacked stones and very wide-span roof. Silo adjacent.

Ownership: Private
Additional Information: 11052 Waterton Road/11118 Caretaker Road. Military land warrant to Benjamin Frink in 1867. Rare early agricultural vestiges from this area. More research needed to determine whether the ranch was using water from the High Line Canal.



Site Number: 5DA.3039 **Map Index:** 1

Property Type: Structure–Control & Measurement

Description: Platte Canyon Dam and Spillway with Sand Trap

Significance: 1 (severe integrity loss)

Special Features: Earthen embankment dam built 1903-4, faced with riprap and imported cobbles on inundated side (dam recorded before being covered and raised in 2012).

Ownership: Public, Denver Water

Additional Information: Includes spillway and sand trap, and valve house containing outlet pipe for dam (all previously recorded before replacement in 2012). Old concrete channel from valve housing (see bas_043_1) to river partly used for 2012 spillway channel (see concrete aging differences in photo).



Site Number: bas_044_1 **Map Index:** 1

Property Type: Structure–Retention & Storage

Description: Platte Canyon (Cañon) Reservoir

Significance: 1 (severe integrity loss)

Special Features: Historic earthen reservoir (expanded and raised 2012).

Ownership: Public, Denver Water

Additional Information: See 2012 wasteway from Canal into east end of reservoir.



Site Number: bas_043_1 **Map Index:** 1

Property Type: Structure–Protection & Cleaning: Turnout

Description: Sand Trap with Headgates

Significance: 4

Special Features: Concrete mass, steel gates. Returns de-sanded water from Canal to river. Two concrete posts (see photo) with holes held a plank walkway across the Canal for ditch riders.

Ownership: Public, Denver Water

Additional Information: Historic 1903–1904 headgates from canal to river, gates operated with hand wheels on screw shafts. Gates were used to wash sand and overflow from the canal, and to avoid sand running into reservoir at main headgate to the north. Concrete sand trap built 1925.



Site Number: bas_043_2 **Map Index:** 1

Property Type: Structure–Protection & Cleaning: Conduit

Description: Wasteway from Canal to Reservoir

Significance: 4

Special Features: Concrete-lined channel from Canal Sandtrap & Headgates.

Ownership: Public, Denver Water

Additional Information: once incorporated 1903–1904 concrete spillway (removed in 2012) on original Platte Canyon Reservoir earthen dam (covered and raised in 2012)



Site Number: bas_045_1; bas_045_3 **Map Index:** 1
Property Type: Structure—Diversion & Measurement; Gate
Description: Main Headgates from Canal to Reservoir
Significance: 4
Special Features: Original concrete mass but new stainless-steel diversion gates; pivoting Check Gate in main Canal to regulate downstream flow.

Ownership: Public, Denver Water
Additional Information: Parts of 1963 diversion group to fill Platte Canyon Reservoir from Canal, and control flow in Canal.



Site Number: bas_045_2 **Map Index:** 1
Property Type: Buildings—Canal Operation
Description: High Line Gauge House & Spillway
Significance: 4
Special Features: Channels are concrete with steel railings; Gauge House is wood-frame, synthetic siding, 1-story wing and 1 1/2-story wing that likely holds the gauging equipment.

Ownership: Public, Denver Water
Additional Information: 1963 gauge house and spillway to divert and measure water from Canal into the Platte Canyon Reservoir.



Site Number: bas_046_1 **Map Index:** 1
Property Type: Structure–Diversion: Turnout
Description: Headgate Remains
Significance: 4
Special Features: Concrete Gate abutments and metal Gate remnants.

Ownership: Public, Denver Water
Additional Information: Modern small building likely contains measuring equipment in current use.



Site Number: bas_046_2 **Map Index:** 1
Property Type: Building–Canal Operation
Description: Alum/Gauge House, Spillway
Significance: 4
Special Features: Wood frame 2-story building with concrete main floor and stoop connecting door with Canal trail; lower level below Canal trail grade.

Ownership: Public, Denver Water
Additional Information: Building originally contained alum storage and application to treat water channeled into Reservoir.



Site Number: bas_047_1 **Map Index:** 1
Property Type: Structure–Control & Measurement
Description: Parshall Measuring Flume and Drop
Significance: 4
Special Features: Constriction of Canal for standard measuring, and drop with concrete retaining walls. Modern shed and steel walkway across Canal.

Ownership: Public, Denver Water
Additional Information: Indentions in concrete sidewalls held measuring equipment.



Site Number: bas_049_1; bas_049_2 **Map Index:** 1
Property Type: Structure–Protection & Cleaning: Wasteway
Description: Reinforced and Depressed Ditch Riders Trail
Significance: 3
Special Features: Concrete slab at trail grade.

Ownership: Public, Denver Water
Additional Information: Allows excess water in Canal to waste into adjacent creek.



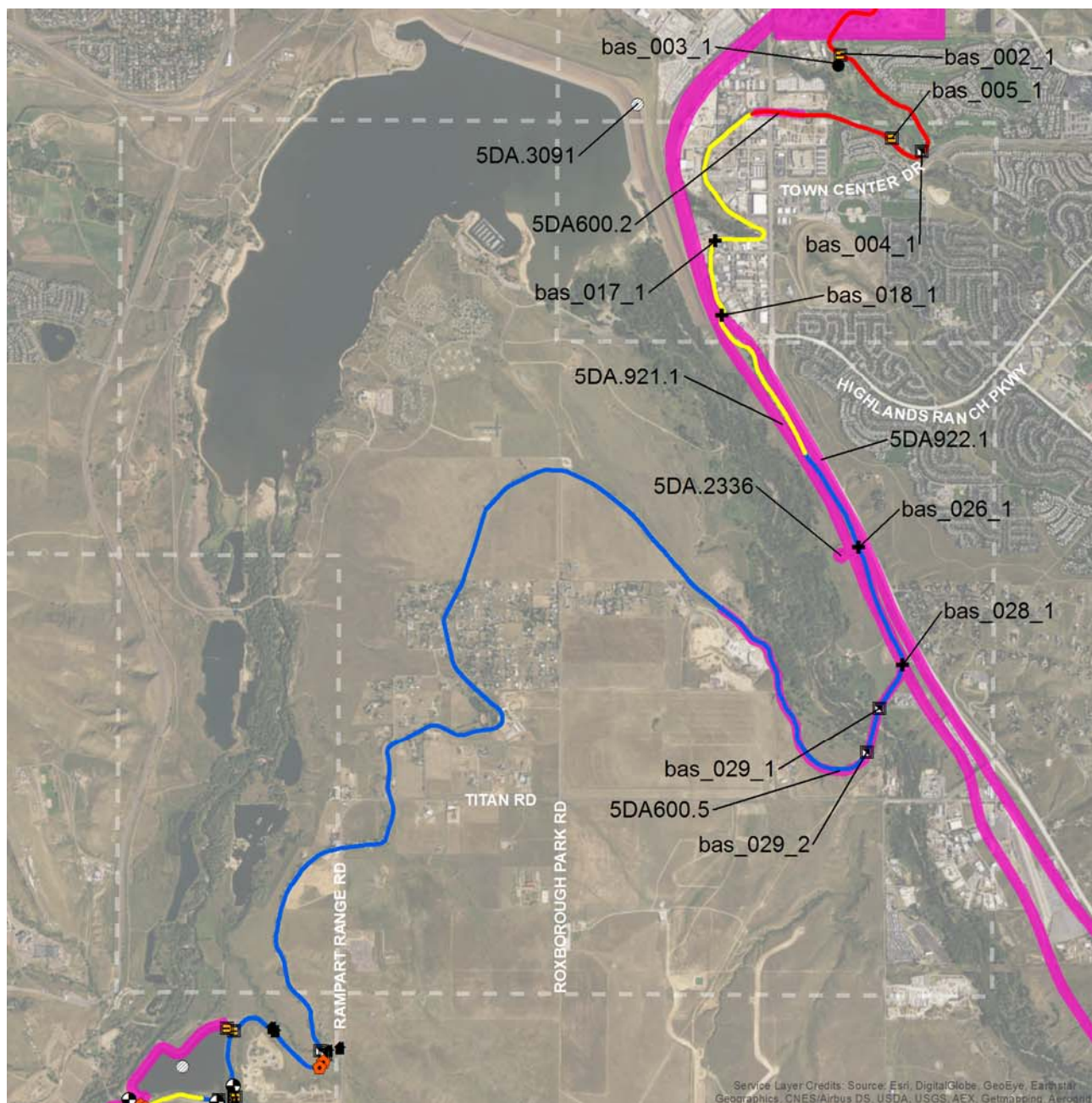
Site Number: bas_050_1; bas_050_2 **Map Index:** 1
Property Type: Structure–Protection & Cleaning
Description: Stone Rip Rap in Canal
Significance: 3
Special Features: Large stones lining hairpin turn of Canal

Ownership: Public, Denver Water
Additional Information: Protects outside Canal berms from erosion during high-velocity water flow, and undermining during water-delivery season.

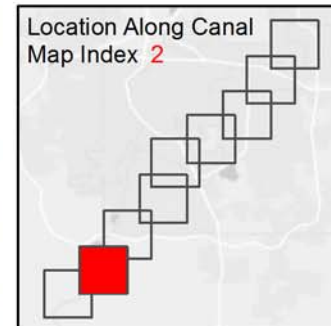


Site Number: bas_052_1; bas_052_2 **Map Index:** 1
Property Type: Building and Structure–Associated with Canal
Description: Miksch- Helmer Cabin, and Helmer Loafing Shed
Significance: 4
Special Features: Single-pen log cabin with attic ventilation, and one-room board-and-batten addition. Amos Miksch homesteaded here on 160 acres in the early 1870s, building this log cabin.

Ownership: Public—Douglas County
Additional Information: Second owner Frederick Neumyer sold a right of way through the land to the Northern Colorado Irrigation Company to build the Canal. The Helmer family bought the property in 1883 and used Canal waters to grow wheat, rye and hay for many years, selling the property in the 1940s.



HIGH LINE CANAL
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Property Types:

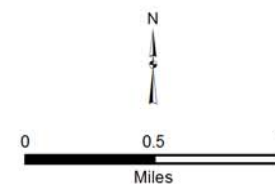
- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

pre-recorded sites

Priority Area 3

Priority Area 2

Priority Area 1





Site Number: bas_029_1; bas_029_2 **Map Index:** 2
Property Type: Structure–Conduit: Siphon
Description: Plum Creek Inverted Siphon, Inlet and Outlet
Significance: 4
Special Features: Concrete floor and sidewalls, steel grizzly at outlet.

Ownership: Public, Denver Water
Additional Information: Moves Canal water under Plum Creek. Outlet pictured; Inlet not accessible during Survey. A long concrete siphon replaced a wooden flume. At this location in 1966 (Source: Denver Water Photo Album 16A-286).



Site Number: bas_028_1 **Map Index:** 2
Property Type: Structure–Associated Railroad District
Description: Railroad Bridge over Canal
Significance: 4
Special Features: Steel Plate Deck Girder with Concrete Abutments.

Ownership: Private
Additional Information: Denver & Rio Grande Western (now Union Pacific) Railroad structure at the beginning of a 2-mile segment of the Canal running between this track and the Atchison, Topeka & Santa Fe (now BNSF) Railway track, all sharing a shelf above Plum Creek.



Site Number: 5DA.2336 **Map Index:** 2
Property Type: Other– Foundation
Description: Railroad Depot Building Foundation
Significance: 2
Special Features: Concrete slab. Associated trash dump nearby. Associated with associated railroad districts.

Ownership: Private
Additional Information: Long-abandoned railroad agency of Acequia station on the Denver & Rio Grande (now Union Pacific) Railroad (track at left—west—in photo, Canal at line of trees on right). *Acequia* is Spanish for irrigation canal.



Site Number: bas_018_1 **Map Index:** 2
Property Type: Associated Structure– Access; Railroad District
Description: Railroad Bridge over Canal
Significance: 3
Special Features: Steel-pile railroad trestle, ballasted deck.

Ownership: Private
Additional Information: Atchison, Topeka & Santa Fe (now BNSF) Railway structure at the north end of a 2-mile segment of the Canal running between this track and the Denver & Rio Grande (now Union Pacific) Railroad track, all sharing a shelf above Plum Creek.



Site Number: 5DA.921.1 **Map Index:** 2
Property Type: Structure–Associated Railroad District
Description: Denver & Rio Grand Western Railroad
Significance: 4
Special Features: Railroad right of way, grade, and track.

Ownership: Private
Additional Information: “Joint Line.” Intact right of way and setting with three conveyances - DRGW (now Union Pacific), ATSF (now BNSF), and High Line Canal - side by side on vast plains protected within Chatfield State Park. (BNSF train in photo is running south on shared UP track.)



Site Number: 5DA.922.1 **Map Index:** 2
Property Type: Associated Railroad District
Description: Atchison, Topeka & Santa Fe Railway
Significance: 4
Special Features: Railroad right of way, grade, and track. Picture just happens to show bridge.

Ownership: Private
Additional Information: “Joint Line.” Intact right of way and setting with three conveyances - DRGW (now Union Pacific), ATSF (now BNSF), and High Line Canal - side by side on vast plains protected in Chatfield State Park.



Site Number: bas_002_1; bas_005_1 **Map Index:** 2

Property Type: Structure–Diversion: Turnout

Description: Highlands Ranch Golf Course Gate

Significance: 4

Special Features: Gates 18 and 19, both Concrete Mass and Stone (or rubble concrete) Retaining Walls, each with a Steel Gate, hand operated wheels and screw shafts.

Ownership: Public, Highlands Ranch Metro District

Additional Information: In use.



Site Number: bas_003_1 **Map Index:** 2

Property Type: District–Associated with Canal

Description: Highlands Ranch Golf Course

Significance: 3

Special Features:

Ownership: Public, Highlands Ranch Metro District

Additional Information:



Site Number: bas_004_1 **Map Index:** 2

Property Type: Structure–Conduit: Flume

Description: Marcy Gulch Flume & Wasteway

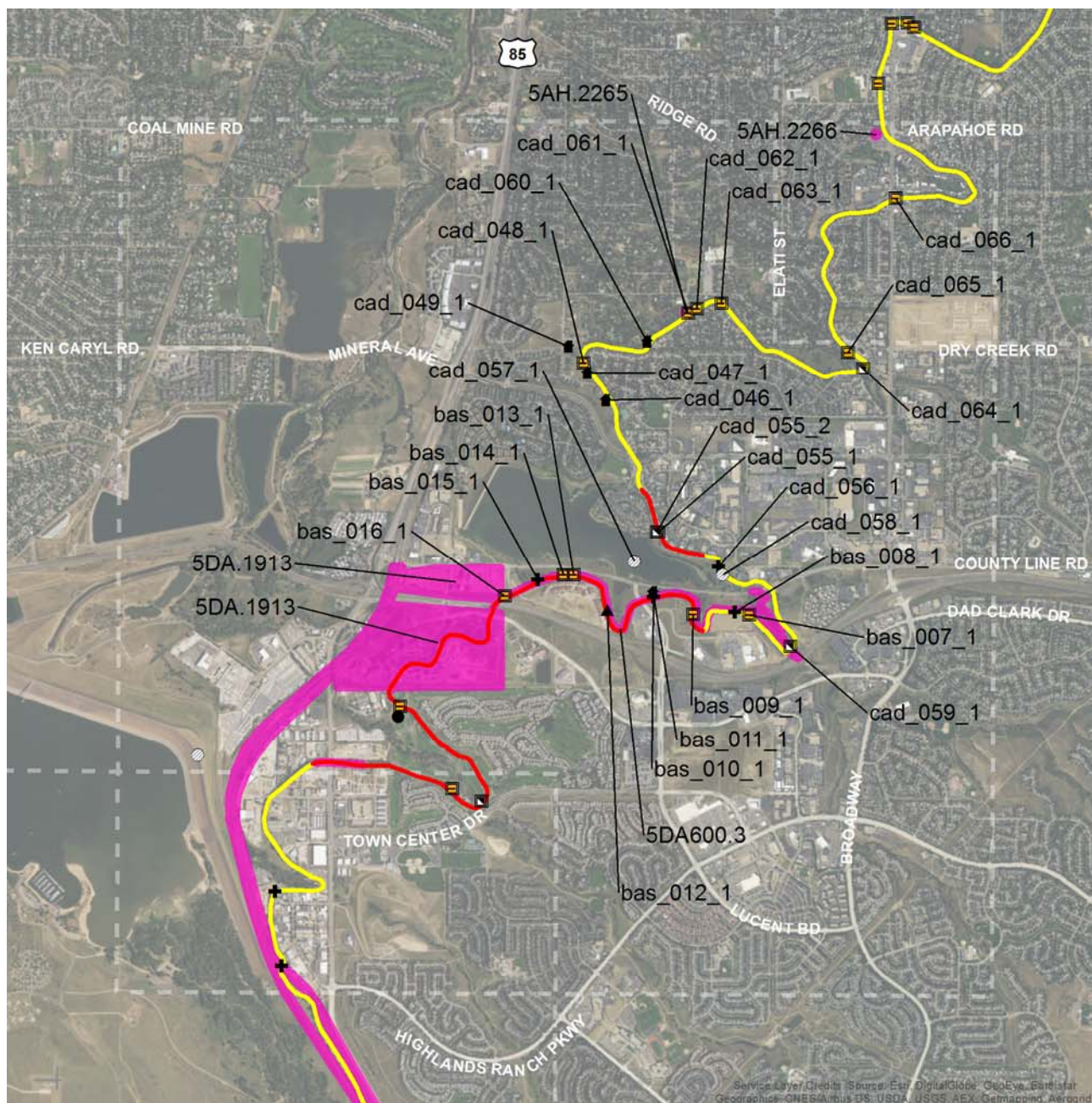
Significance: 4

Special Features: Still in operation. Historic wooden flume with concrete piers and wing walls, and metal gates in center of flume operated by hand wheels and screw shafts.

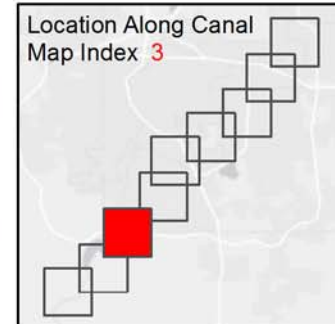
Ownership: Public, Denver Water

Additional Information: Gate allow wastewater to exit into Marcy Gulch. Concrete aprons on either end of flume and new concrete piers supporting flume date from Spring 1961. The timber components were replaced in 1968, and perhaps more recently also. (Source Photo Album 16A—286).





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Property Types:

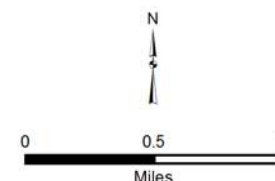
- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

pre-recorded sites

Priority Area 3

Priority Area 2

Priority Area 1





Site Number: 5DA.1913 **Map Index:** 3
Property Type: District–Associated with Canal
Description: Plews Farmstead
Significance: 4
Special Features: Ca. 1907 frame Farmhouse, Cellar, Pond, Fruit Tree Orchards.

Ownership: Pubic, Highlands Ranch Metro District
Additional Information: Fred Johnson and wife Jennie purchased land here from the Platte Land Co, in 1905, but soon after sold the land to Matthew Plews who operated a landscaping business and truck farm here using Canal waters. Subsequent owner, John Bowen, operated a cattle ranch there until 2004.



Site Number: bas_016_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Plews Ranch, Gate 23
Significance: 2
Special Features: Steel Gate in Steel Tube, incorporated into new Concrete Culvert.

Ownership: Public, Denver Water
Additional Information: Probably location of original Gate 23 for Plews Ranch.



Site Number: bas_014_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gate 24
Significance: 4
Special Features: Steel Gate Frame with hand operated wheel raising screw shaft.

Ownership: Public, Denver Water
Additional Information: Heavily vegetated. Unknown if still operable.



Site Number: bas_015_1 **Map Index:** 3
Property Type: Structure–Access
Description: Bridge Abutments
Significance: 3
Special Features: Concrete abutments and wing walls.

Ownership: Public, Denver Water
Additional Information: Bridge removed at unknown date. One abutment used for picnic area overlook of Canal (photo).



Site Number: bas_013_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gate 25
Significance: 4
Special Features: Concrete mass flanked by concrete-rubble riprap; steel frame for wheel and screw shaft.

Ownership: Public, Denver Water
Additional Information: Inoperable; passageway filled with concrete.



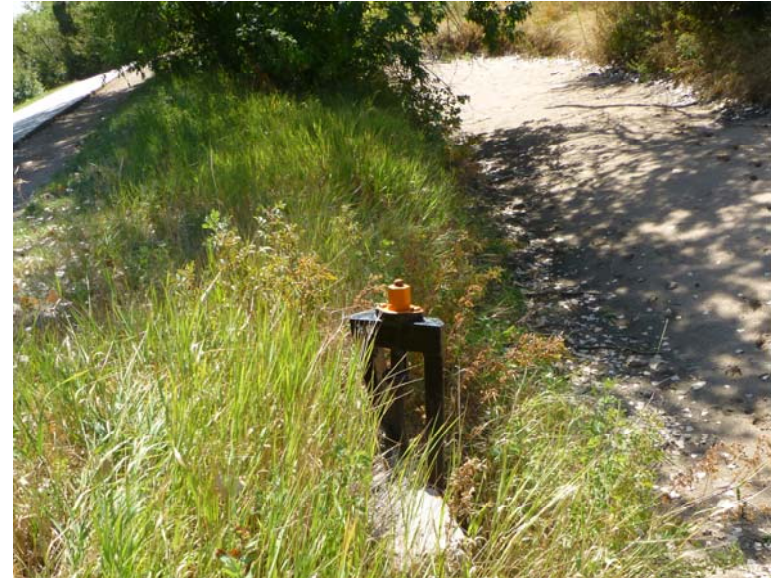
Site Number: bas_010_1 **Map Index:** 3
Property Type: Structure–Associated Access
Description: Bridge abutments
Significance: 3
Special Features: Concrete abutments for small (pedestrian?) bridge, flanking Canal.

Ownership: Public, Denver Water
Additional Information: Bridge removed at unknown date.



Site Number: bas_011_1 **Map Index:** 3
Property Type: Structure–Associated with Canal
Description: Agricultural Silo
Significance: 3
Special Features: Slip-Form Poured Concrete, with sheet-metal covered, vertical unloading slot on side..

Ownership: Private or Non-Profit
Additional Information: Survivor from agricultural use of Canal.



Site Number: bas_009_1 **Map Index:** 3
Property Type: Structure-Diversion: Turnout
Description: Gate 26
Significance: 4
Special Features: Steel Gate Frame with hand operated wheel raising screw shaft.

Ownership: Public, Denver Water
Additional Information: Not known if operable.



Site Number: bas_007_1 **Map Index:** 3
Property Type: Structure-Diversion: Turnout
Description: Gate 27
Significance: 4
Special Features: Concrete mass, Steel Gate Frame with hand operated wheel raising screw shaft.

Ownership: Public, Denver Water
Additional Information: Heavily vegetated. Unknown if still operable.



Site Number: cad_057_1 **Map Index:** 3
Property Type: Structure-Retention & Storage
Description: McLellan Reservoir
Significance: 3
Special Features: Large Reservoir, Earthen Dam

Ownership: Public, Denver Water
Additional Information:



Site Number: cad_059_1 **Map Index:** 3

Property Type: Structure– Conduit

Description: Flume at Dad Clark Gulch (Bennett Flume)

Significance: 4

Special Features: Concrete Abutments and Piers supporting Wood Flume with Steel Braces

Ownership:

Additional Information: Dad Clark Gulch also referred to on maps as Bennett Gulch. Reconstructed in spring 1970 (Source: Denver Water Photo Album 16A-286). Historic photo at lower right courtesy of Denver Water, Album 41, P. 13, #4029, dated 03-02-35. Historic 1935 concrete retaining walls remain.





Site Number: cad_058_1 **Map Index:** 3
Property Type: Structure–Retention & Storage
Description: Spillway, McLellan Reservoir
Significance: 3
Special Features: Concrete Spillway and Channel at south end of Earthen Dam.

Ownership: Public, Denver Water
Additional Information: At Dam for McLellan Reservoir (see cad_057_1, McLellan Reservoir).



Site Number: cad_056_1 **Map Index:** 3
Property Type: Structure–Access Bridge Associated with Canal
Description: Former Roadway Bridge
Significance: 3
Special Features: Concrete Abutments on Canal, east of McLellan Reservoir.

Ownership: Public, Denver Water ROW
Additional Information: Abutments of a former road bridge and several slabs of crowned concrete road on both sides. A recreational bridge was built using the abutments. Original bridge may have been a truss, and perhaps a railroad bridge. A crowned grade descends to the west, now cut off by Reservoir.



Site Number: cad_055_1; cad_055_2 **Map Index:** 3

Property Type: Structure–Control & Measurement

Description: Turnout and Parshall Flume into Reservoir

Significance: 4

Special Features: Concrete Mass, Steel Gate Frame with hand operated Wheel raising screw shaft and cast-steel round Gate; Parshall Flume of Concrete Piers and Steel Chute.

Ownership: Public, Denver Water

Additional Information: Appears to be main fill inlet from Canal into McLellan Reservoir. In operation; updated materials. Parshall Flume is in operation and well maintained with modern materials. Concrete rip rap at outlet leads water into other concrete measuring structure.



Site Number: cad_046_1 **Map Index:** 3

Property Type: Building–Associated with Canal

Description: Gambrel-Roofed Barn

Significance: 3

Special Features: Wood-frame building with hay loft, shed addition.

Ownership: Private

Additional Information: Remnant of irrigated farmstead; appears to be maintained and in use.



Site Number: cad_048_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gates 32 and 33
Significance: 4
Special Features: Concrete Mass and adjacent Retain Wall; Gate screw shaft is inside the concrete, controlled by hand operated wheel on steel frame.

Ownership: Public, Denver Water
Additional Information: Two Gates on southwest bank separated by poured concrete retaining wall. Southern Gate stenciled 32, Northern Gate stenciled 33.



Site Number: cad_049_1 **Map Index:** 3
Property Type: Building–Associated with Canal
Description: Irrigated Farmstead
Significance: 3
Special Features: Anchor Farmhouse is small wood-frame gable-end building; several wood outbuildings.

Ownership: Private
Additional Information: Three outbuildings on an occupied residential property; maps indicate the farmstead pre-dates 1938.



Site Number: cad_060_1 **Map Index:** 3
Property Type: Building–Associated with Canal
Description: Gambrel-Roof Barn, Pond
Significance: 3
Special Features: Wood-frame Building with modern board-and-batten siding, replacement windows.

Ownership: Private
Additional Information: In good condition if altered; survivor of agricultural uses of Canal. Adjacent Pond.



Site Number: cad_061_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gate No. ?
Significance: 4
Special Features: Steel Frame and Wheel visible.

Ownership: Public, Denver Water
Additional Information: Appears to be decommissioned; heavily vegetated.



Site Number: 5AH.2265 **Map Index:** 3
Property Type: Building–Associated with Canal
Description: Farmhouse
Significance: 2
Special Features: Monterrey Style 1– and 2-story 1933 residential building of brick 1st level and frame 2nd level clad with asbestos siding. Outbuildings.

Ownership: Private
Additional Information: Good condition, outbuildings in rear along Canal, all recorded as built in 1933; 7328 S. Windermere St., Littleton. See OAHF form.



Site Number: cad_062_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gate 36
Significance: 4
Special Features: Concrete Mass, Steel Frame supporting vertical-mount hand operated Wheel, screw shaft partly in, partly out of the concrete stand.

Ownership: Public, Denver Water
Additional Information: Vertical wheel is unusual feature; appears intact and operable, although gate was buried in silt in 2016.



Site Number: cad_063_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gate 37
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Date of 9/18/44 scribed into the concrete Gate mass. Appears in good condition; operable?



Site Number: cad_064_1 **Map Index:** 3
Property Type: Structure–Conduit
Description: Cheese Factory (or Lee Gulch) Flume
Significance: 4
Special Features: Wood Flume on wood Trestle. One of 3 surviving flumes, and only one still on timber trestle supports.

Ownership: Public, Denver Water
Additional Information: Early conveyance of Canal across creek obstacle. A new flume was built at this location in spring 1936. Historic photos of that flume's construction closely replicate current flume, although it has likely been at least partially rebuilt. (Source Denver Water Photo Album 42).



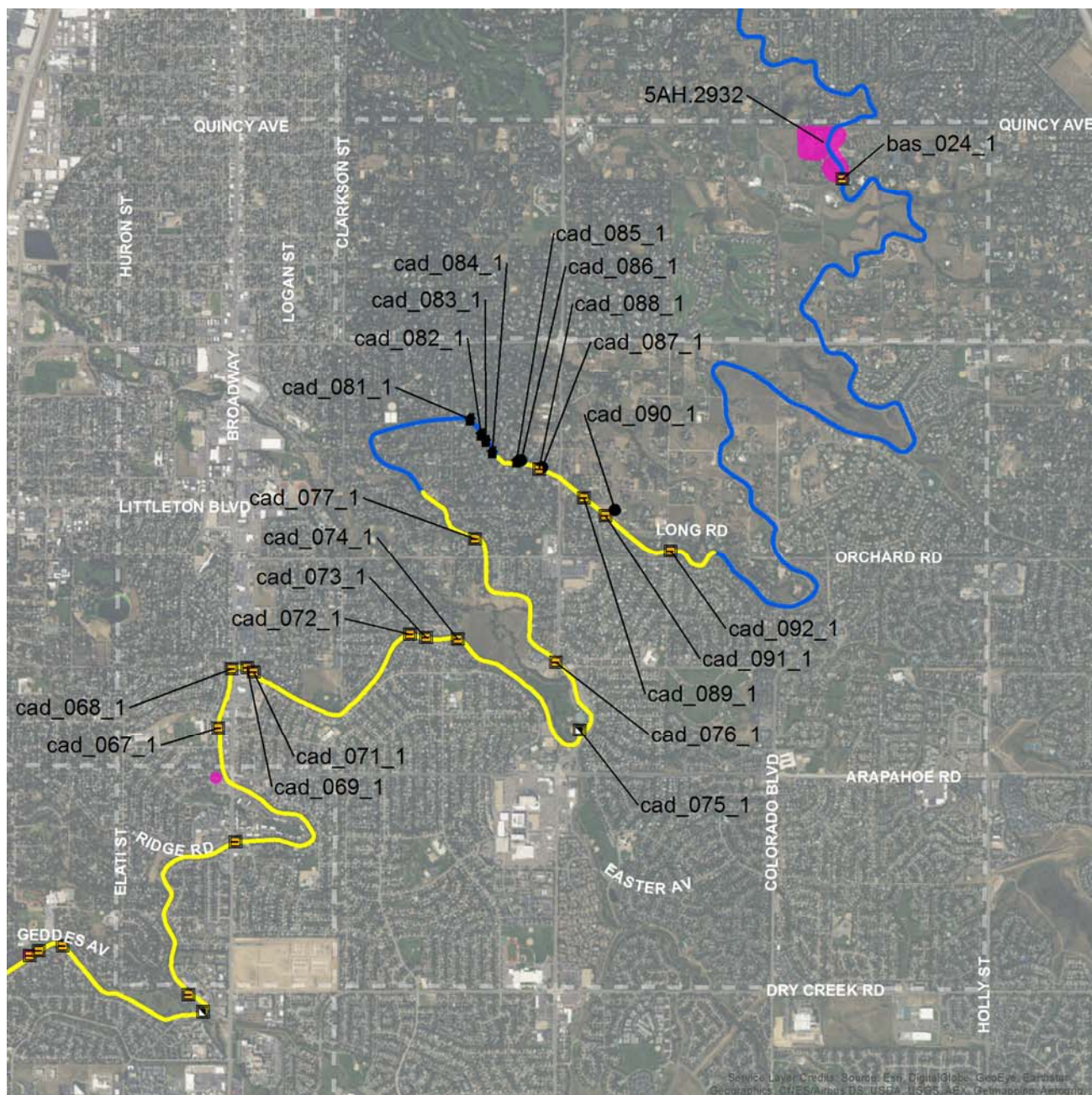
Site Number: cad_065_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gate 39
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Date in concrete: 1-21-43.
Decommissioned.

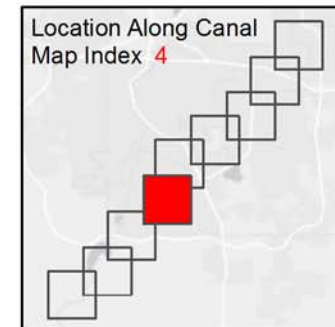


Site Number: cad_066_1 **Map Index:** 3
Property Type: Structure–Diversion: Turnout
Description: Gate 43
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Date in concrete: 9/9/44.
Decommissioned.



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Property Types:

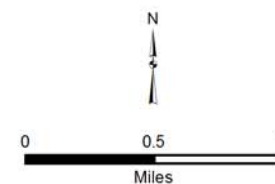
- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

pre-recorded sites

Priority Area 3

Priority Area 2

Priority Area 1





Site Number: cad_067_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate 46
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Decommissioned.



Site Number: cad_068_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate 47
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; hand operated Wheel attached to screw shaft in concrete apron integral to roadway bridge.

Ownership: Public, Denver Water
Additional Information: Appears operable.



Site Number: cad_069_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate 48
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Gate buried in silt. Decommissioned.



Site Number: cad_071_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate No. ?
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Gate buried in silt. Apparently decommissioned.



Site Number: cad_072_1; cad_073_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate 53, and Gate 53-0200
Significance: 4
Special Features: Each: concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Date in Gate 53 concrete: 8/12/40. Both decommissioned.



Site Number: cad_074_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate 54
Significance: 4
Special Features: Concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Still in use. Date in abutment concrete: 4-10-96.



Site Number: cad_076_1; cad_077_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate No. ?, and Gate, No. ?
Significance: 4
Special Features: Each: concrete mass, with steel frame for screw shaft; wheel removed.

Ownership: Public, Denver Water
Additional Information: Gates buried in silt. Decommissioned.



Site Number: cad_081_1 **Map Index:** 4
Property Type: Building–Associated with Canal
Description: Log Building
Significance: 3
Special Features: 1-story, 2-pen log building appears to be for live-stock. Date unknown.

Ownership: Private
Additional Information: Other outbuildings: cad_082_1, 083, 084, 085, 086. Unknown if all originally related to one farmstead.



Site Number: cad_075_1 **Map Index:** 4

Property Type: Structure–Control & Measurement: Check Dam

Description: Little Dry Creek Check Dam, Gates, and Drop

Significance: 4

Special Features: Concrete Dam across Canal, Steel Walkway with pipe railings, 3 Gates, Concrete Apron for Drop. Gates operated by inserted rotating handle.

Ownership: Public, Denver Water

Additional Information: Substantial Concrete Abutments on each flank of Dam.



Site Number: cad_087_6 **Map Index:** 4

Property Type: Buildings–Associated with Canal

Description: Barn and Outbuildings

Significance: 3

Special Features: Farmstead Building complex, board and batten construction and exposed eaves on most visible

Ownership: Private

Additional Information: Farmstead may include house out of view.



Site Number: cad_088_1; cad_089_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate 64, Gate 65
Significance: 4
Special Features: Both: Concrete Mass, Steel Frame and hand operated Wheel moving screw shaft in concrete.

Ownership: Public, Denver Water
Additional Information: #64, almost completely destroyed; concrete base. #65 (photo), not clear if completely decommissioned; concrete base wider than Gate 64.



Site Number: cad_092_1 **Map Index:** 4
Property Type: Structure–Diversion: Turnout
Description: Gate 66
Significance: 4
Special Features: Concrete Mass, Steel Frame. Wheel missing from screw shaft in concrete.

Ownership: Public, Denver Water
Additional Information: Appears refurbished and in operation.



Site Number: 5AH.2932; bas_024_1 **Map Index:** 4

Property Type: District–Associated with Canal

Description: Hopkins Farm, 4400 E. Quincy Ave., Englewood

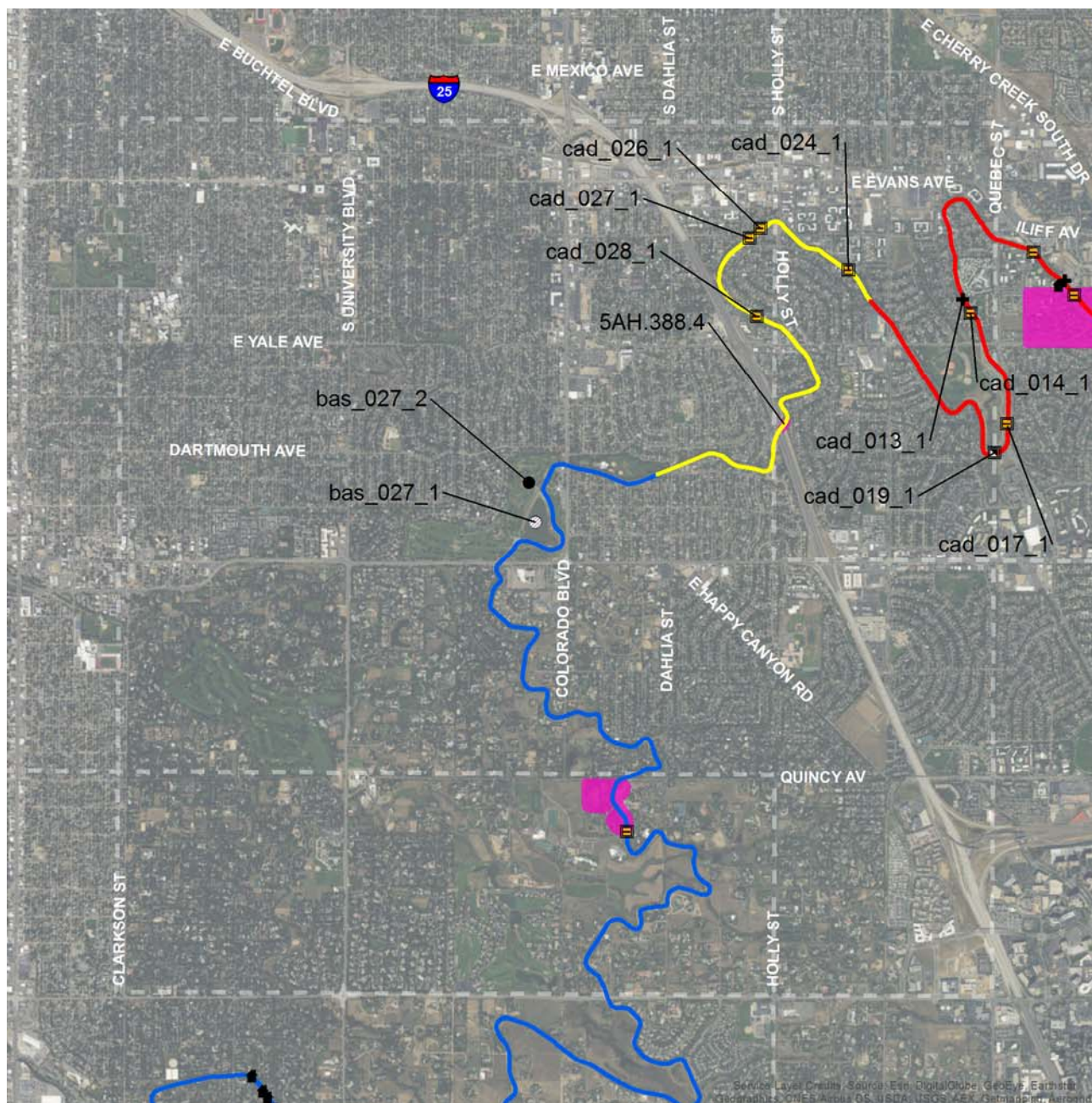
Significance: 4

Special Features: Intact irrigated Farmstead. Includes 1898 classic brick cottage (not shown). 1934 frame house, and garage shown above. Site includes barns, horse stalls, irrigation pond (right), & pump house.

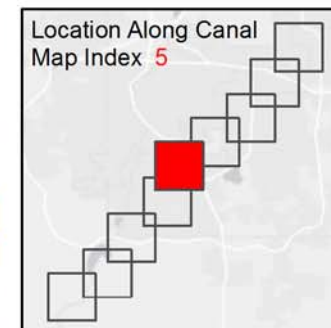
Ownership: Public, Cherry Hills Village

Additional Information: The Platte Land Company sold 160 areas of Union Pacific Railway land to Richard Beeson, along with Canal water rights in 1883. James Hopkins built the 1898 house., and had cattle and orchards here. A third owner built many of the agricultural buildings present today. National Register listed.





HIGH LINE CANAL
CONSERVANCY



Property Types:

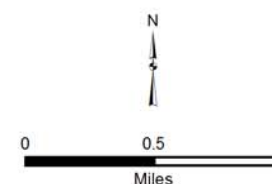
- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

pre-recorded sites

Priority Area 3

Priority Area 2

Priority Area 1





Site Number: cad_028_1 **Map Index:** 5
Property Type: Structure-Diversion: Turnout
Description: Gate No. 90
Significance: 4
Special Features: Concrete Mass, Steel Gate Frame

Ownership: Public, Denver Water
Additional Information: Heavily damaged, but enough material evident to identify it as a historic gate.



Site Number: cad_024_1 **Map Index:** 5
Property Type: Structure-Diversion: Turnout
Description: Gate 97
Significance: 4
Special Features: Concrete Mass, Steel Gate Frame

Ownership: Public, Denver Water
Additional Information: 11-3-37 scribed in concrete.
Decommissioned.



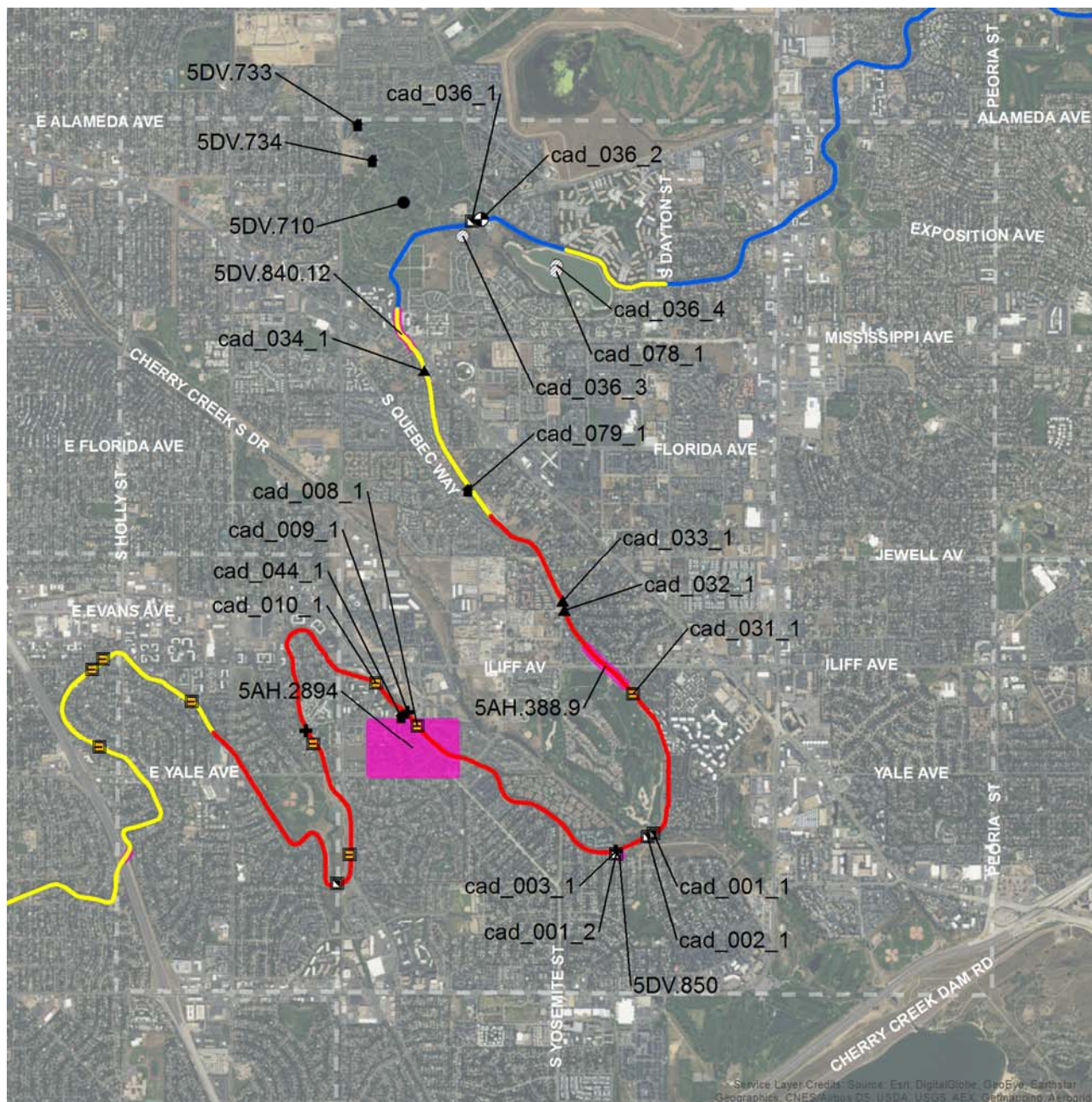
Site Number: cad_027_1; cad_026_1 **Map Index:** 5
Property Type: Structure–Diversion: Turnout
Description: Gate No 94 - 341, and Gate No. 94 - 577
Significance: 4
Special Features: Concrete Mass and Steel Gate Frame.

Ownership: Public, Denver Water
Additional Information: This condition also applied to cad_017_1, heavily silted, and both decommissioned.

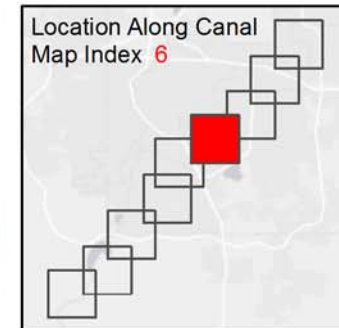


Site Number: cad_014_1; cad_010_1 **Map Index:** 5
Property Type: Structure–Diversion: Turnout
Description:
Significance: 4
Special Features: Concrete Mass and Steel Gate Frame

Ownership: Public, Denver Water
Additional Information: Missing Wheel and Screw Shaft. Cad_010 is on Map Index sheet 6.



HIGH LINE CANAL
CONSERVANCY

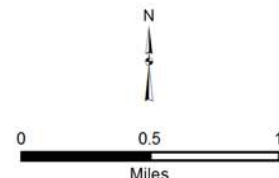


Property Types:

- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

pre-recorded sites

- Priority Area 3
- Priority Area 2
- Priority Area 1





Site Number: 5AH.2894 **Map Index:** 6
Property Type: District, Associated with Canal
Description: Town of Sullivan—Wood Frame Residence
Significance: 2
Special Features: One house survives; other remains likely present. May have archaeological integrity. More research needed.

Ownership: Private
Additional Information: The settlement of Sullivan is associated with Denver [City] Water Co., its pumping station, dam and reservoir plant, under construction from 1890-1892 when a successor company filed receivership, and eventually a court case deeded to Farmers Loan and Trust Co.



Site Number: cad_008_1 **Map Index:** 6
Property Type: Structure—Headgate & Diversion
Description: Gate No. 105
Significance: 4
Special Features: Concrete Mass, Steel Gate Frame

Ownership: Public, Denver Water
Additional Information: Decommissioned, deteriorated, concrete abutment with metal superstructure, missing wheel and much of rod (cut off). Still has base and metal superstructure evident.



Site Number: cad_001_1 **Map Index:** 6

Property Type: Structure-Conduit: Siphon

Description: Cherry Creek Inverted Siphon Outlet

Significance: 4

Special Features: Form-cast Concrete Wing Walls, Collecting Apron.

Ownership: Public, Denver Water

Additional Information: Made of concrete of various ages indicating repairs/additions. Chain link fence on top. Related to cad-002, Siphon Inlet



Site Number: cad_001_2 **Map Index:** 6

Property Type: Structure-Conduit: Siphon

Description: Cherry Creek Inverted Siphon Inlet

Significance: 4

Special Features: Concrete Collection basin with Diversion Gate into Cherry Creek, and Grizzly Protecting Siphon Apron and Inlet. Adjacent to 5DV.850, Cherry Creek Superintendent Residence.

Ownership: Public, Denver Water

Additional Information: Historic photo courtesy of Denver Water, Album 41, p. 25, #3837, with construction date of 1933-34 denoted. While some improvements have been made in ensuing years, including replacement of a stone retaining wall with concrete wall on back side of wasteway, the structure is largely intact.



Site Number: 5DV.850 **Map Index:** 6

Property Type: Buildings–Canal Operation

Description: Cherry Creek Superintendent Residence, HQ

Significance: 4

Special Features: High Line Canal Superintendent’s House and related yard. Denver Water records evidence six additional “ditch rider” houses along the Canal, typically next to important flumes and siphons.

Ownership: Public, Denver Water

Additional Information: Historic photo to right courtesy of Denver Water, Album 42, p. 7, #8334, dated 2-22-56.. The ca. 1900 house was demolished in early 2016. The “double garage with galvanized steel sides and roof” in background remains (Denver Water Ditch Riders House records, Jan. 14, 1941).





Site Number: cad_002_1 **Map Index:** 6
Property Type: Structure–Conduit
Description: Wood Water Pipe
Significance: 4
Special Features: Two Wood-Stave Water Pipes with Steel Retention Rods

Ownership: Public, Denver Water
Additional Information: Partly buried pipes for Canal Siphon under Cherry Creek, oriented northeast–southwest. In line with cad_001_1, Siphon Outlet and cad_001_2, Siphon Inlet.



Site Number: cad_034_1 **Map Index:** 6
Property Type: Structure–Control & Measurement
Description: Measurement Device
Significance: 3
Special Features: Steel Measuring Rod with Black Numbers (Porcelain Enamel?)

Ownership: Public, Denver Water
Additional Information: On northeast bank. Almost completely buried (up to 7 inches). Likely just for measuring level.



Site Number: 5DV.710 **Map Index:** 6
Property Type: District–Associated with Canal
Description: Fairmount Cemetery
Significance: 4
Special Features: Cultural Landscape of Burials, Memorials, Roads, Vegetation.

Ownership: Private
Additional Information: Listed in National Register.

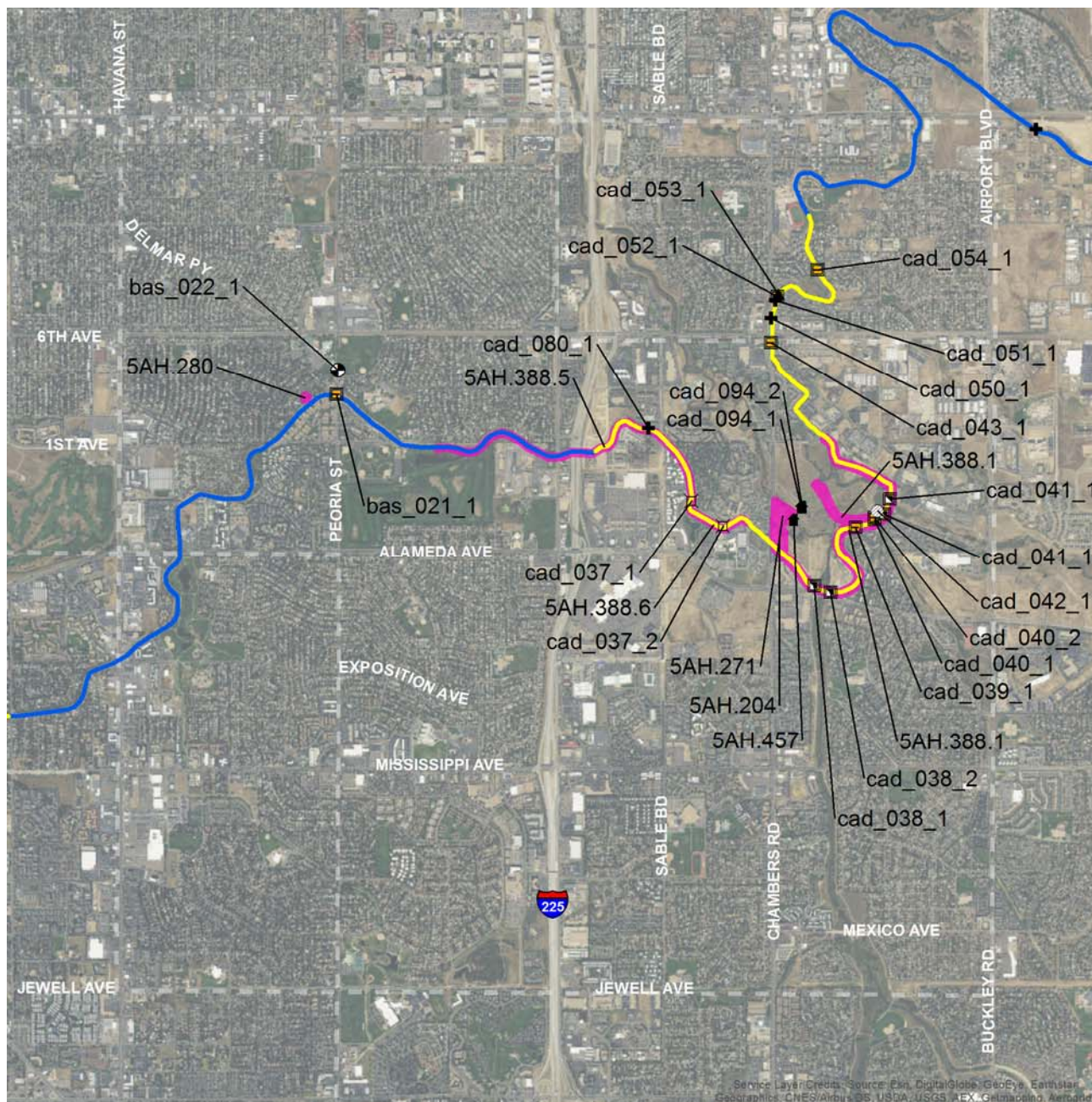


Site Number: cad_036_1 **Map Index:** 6
Property Type: Building, Structure–Control & Measurement
Description: Fairmount Cemetery Water Infrastructure
Significance: 4
Special Features: Numerous metal pipes, discarded large valve, and front gabled stucco building that probably contains pumping or water distribution equipment

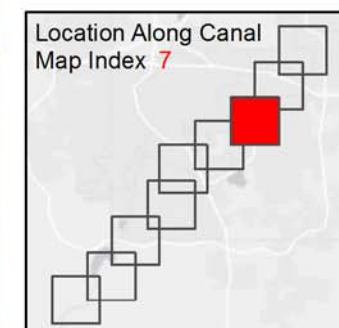
Ownership:
Additional Information: Fairmont Cemetery water infrastructure for drawing water from Canal.



Site Number:	cad_036_2	Map Index:	6
Property Type:	Structure–Control & Measurement		
Description:	Fairmount Cemetery Check Dam		
Significance:	4		
Special Features:	Concrete base and Gate Slots; Removable Wood Slats for Variable Dam Height		
Ownership:	Public, Denver Water		
Additional Information:	Part of Fairmount Cemetery water infrastructure for drawing water from Canal.		



HIGH LINE CANAL
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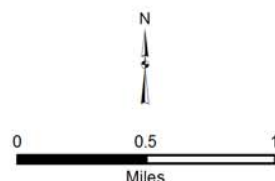


Property Types:

- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

pre-recorded sites

Priority Area 3
 Priority Area 2
 Priority Area 1





Site Number: 5AH.280 **Map Index:** 7
Property Type: Building–Associated with Canal
Description: William Smith House
Significance: 4
Special Features: Denver Square Style, 2-story Brick Residence with Offset Entry and 1-story Wraparound Porch.

Ownership: Private
Additional Information: 412 Oswego Court, Denver, House built 1910. William Smith purchased quarter section of land in 1885 from Platte Land Company. Smith was Scottish and had direct association with Colorado Mortgage Company. Outbuilding and older addition in rear; National Register listed.



Site Number: bas_021_1 **Map Index:** 7
Property Type: Structure–Diversion: Turnout
Description: Headgate to Sand Creek Lateral
Significance: 4
Special Features: Steel Gate, Wheel and Screw Shaft

Ownership: Public, Denver Water
Additional Information: Incorporated into South Peoria Street Bridge's Wingwall (foreground in Photo) in Aurora.



Site Number: bas_022_1 **Map Index:** 7
Property Type: Structure–Control & Measurement
Description: Del Mar Park Check Dam
Significance: 4
Special Features: Concrete Wingwalls and Slab with downstream Integral Buttresses.

Ownership: Public, Denver Water
Additional Information: Footbridge uses Wingwalls as abutments. Well maintained. Deep silt on upstream side.



Site Number: cad_037_1; cad_037_2 **Map Index:** 7
Property Type: Structure–District: Canal
Description: Rebuilt Canal in Aurora
Significance: 4
Special Features: Concrete-lined Culvert

Ownership: Public, Denver Water
Additional Information: Rebuilt at unknown date, but likely following flood damage in 1960s.



Site Number: 5AH_271; 5AH_457 **Map Index:** 7

Property Type: District–Associated with Canal

Description: Delaney Farm

Significance: 4

Special Features: Intact and complete late 19th to early 20th century farmstead adjacent to High Line Canal and West Tollgate Creek. Farm house (upper right) with varied outbuildings survive (above left).

Ownership: Public, City of Aurora

Additional Information: The ca. 1900 Delaney farm milking barn (photo on lower right) is individually listed in the National Register of Historic Places, and is the only known round barn surviving in Colorado. The relocated Gully Homestead (5AH.204) is re-located on the farmstead from about two miles south.





Site Number: cad_038_1; cad_038_2 **Map Index:** 7
Property Type: Structure–Conduit: Siphon
Description: West Toll Gate Creek Inverted Siphon
Significance: 4
Special Features: Concrete Mass and Steel Grizzly (left foreground in photo) protecting Siphon Inlet; Steel pivoting Wasteway Gates (left background in photo)

Ownership: Public, Denver Water
Additional Information: Inlet and Outlet, likely modern, appear to be well maintained. USGA maps mark as Toll Gate Creek Inverted Siphon. Two pivoting Wasteway Gates appear to have remotely controlled electric motors. Chain-link fence protects this infrastructure.



Site Number: cad_039_1 **Map Index:** 7
Property Type: Structure–Diversion: Turnout
Description: Gate No. ?
Significance: 4
Special Features: Broken Concrete Mass and Steel Gate

Ownership: Public, Denver Water
Additional Information: Decommissioned gate similar to others documented. Wheel missing from Screw Shaft.



Site Number: cad_040_1 **Map Index:** 7
Property Type: Structure–Diversion, Turnout
Description: Gate 130
Significance: 4
Special Features: Concrete Mass, Steel Gate and Frame

Ownership: Public, Denver Water
Additional Information: Appears recently rebuilt, but decommissioned.
 Wheel missing from Screw Shaft.



Site Number: cad_040_2 **Map Index:** 7
Property Type: Structure–Diversion, Turnout
Description: Gate 130 - 514 [?]
Significance: 4
Special Features: Concrete Mass, Steel Gate and Frame

Ownership: Public, Denver Water
Additional Information: Appears recently rebuilt, but decommissioned.
 Wheel missing from Screw Shaft.



Site Number: cad_041_1; cad_041_2 **Map Index:** 7
Property Type: Structure–Conduit: Siphon
Description: East Toll Gate Creek Inverted Siphon
Significance: 4
Special Features: Concrete Mass and Steel Grizzly protecting Siphon Inlet.

Ownership: Public, Denver Water
Additional Information: Inlet and Outlet, likely modern, appear to be well maintained. Moves High Line Canal under East Toll Gate Creek and Centre Hills Disc Golf Course. Chain-link fence protects this infrastructure.



Site Number: cad_042_1 **Map Index:** 7
Property Type: Structure–Storage & Retention
Description: Centre Hills Pond and Pump Station
Significance: 3
Special Features: Storage Pond and Pumphouse for Centre Hills Golf Course.

Ownership: Public, City of Aurora
Additional Information: Pond is in middle distance (photo), Pump Station is small building at right distance.



Site Number: cad_043_1 **Map Index:** 7
Property Type: Structure–Diversion, Turnout
Description: Gate No. ?
Significance: 4
Special Features: Concrete Mass, Steel Gate and Frame with Wheel on Screw Shaft

Ownership: Public, Denver Water
Additional Information: Appears operable

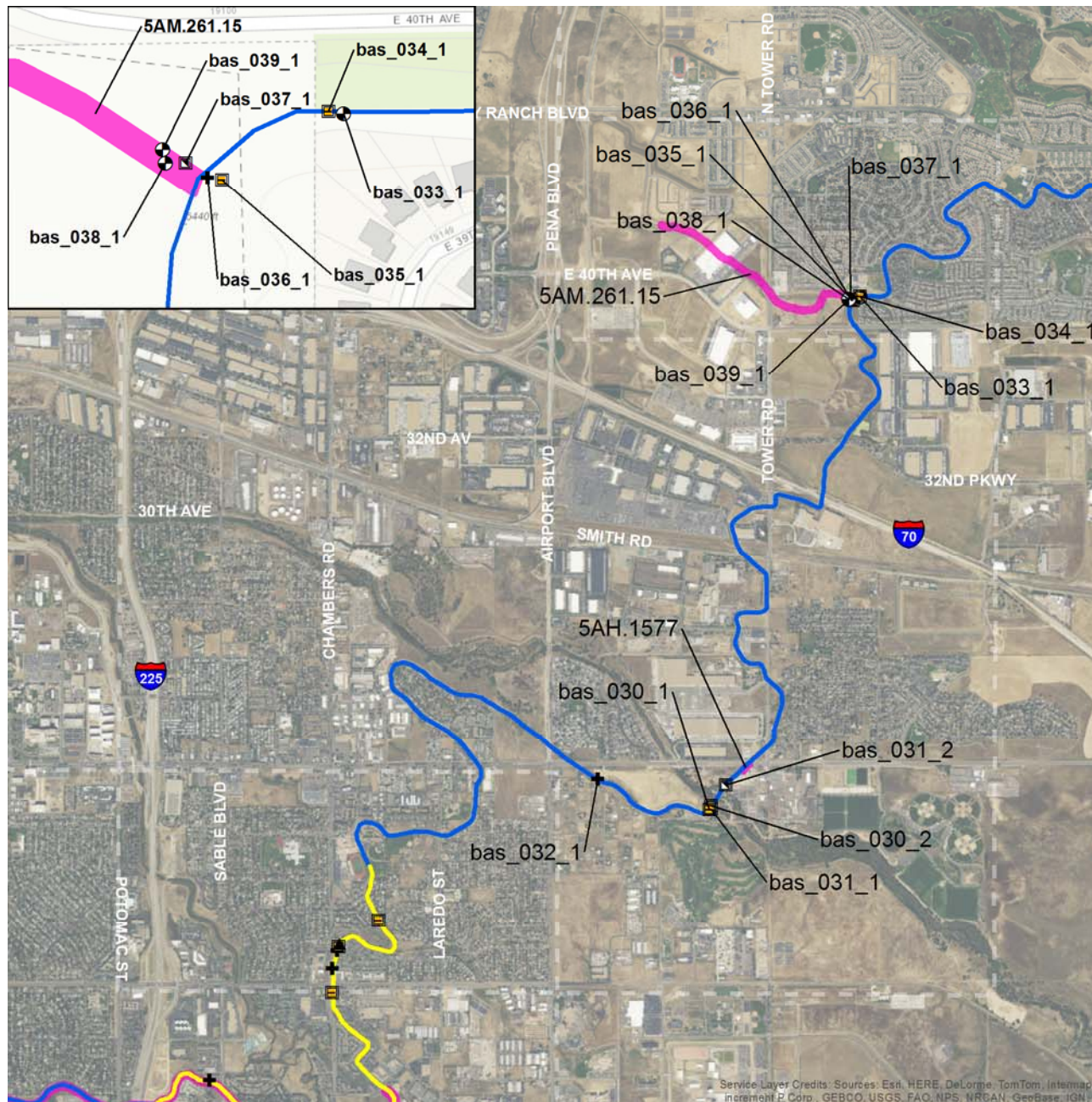


Site Number: cad_050_1; cad_051_1 **Map Index:** 7
Property Type: Structure–Access
Description: Bridge Abutments
Significance: 4
Special Features: Concrete Abutments, Bridges removed

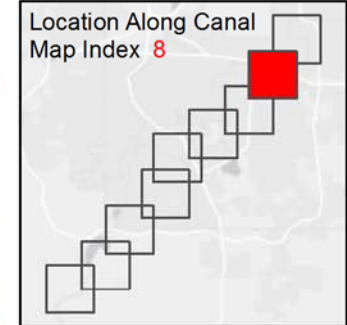
Ownership: Public, Denver Water
Additional Information: Unknown reason for bridges in these locations.



Site Number:	cad_053_1	Map Index:	7
Property Type:	Structure–Control & Measurement		
Description:	Check Dam		
Significance:	4		
Special Features:	Concrete base and Side Walls with slots for progressive planks		
Ownership:	Public, Denver Water		
Additional Information:	Appears unused for some time.		



HIGH LINE CANAL
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Property Types:

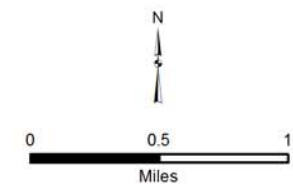
- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

pre-recorded sites

Priority Area 3

Priority Area 2

Priority Area 1





Site Number: bas_030_1; bas_031_1 **Map Index:** 8

Property Type: Structure–Conduit: Siphon.

Description: Sand (or Coal) Creek Inverted Siphon Inlet

Significance: 4

Special Features: Concrete Frameworks with Steel Gates and Mechanisms, and Grizzly protecting Inlet. Also serving control and measurement, and cleaning and protection functions.

Ownership: Public, Denver Water

Additional Information: Siphon Inlet (photo). Gates on Siphon Inlet and Wasteway are both hand-cranked gear boxes with cable-drums. Chain-link fence protects infrastructure. Also covers bas_031_2, concrete Siphon Outlet with Grizzly and chain-link fence protecting.



Site Number: bas_030_2 **Map Index:** 8

Property Type: Structure–Control & Measurement: Wasteway

Description: Sand (or Coal) Creek Inverted Siphon Wasteway

Significance: 4

Special Features: Retaining Wall of Rubble Stone

Ownership: Public, Denver Water

Additional Information: Sand (or Coal) Creek bank protection at discharge of Wasteway Gate adjacent to Siphon Inlet.



Site Number: bas_033_1 **Map Index:** 8
Property Type: Structure–Control & Measurement
Description: Check Dam
Significance: 4
Special Features: Concrete base and Buttressed Side Walls with slots for progressive planks

Ownership: Public, Denver Water
Additional Information: Appears recently used; backs water up for delivery to Turnout Gate bas_034_1.



Site Number: bas_034_1 **Map Index:** 8
Property Type: Structure–Diversion: Turnout
Description: Gate No. ?
Significance: 4
Special Features: Concrete Mass with Steel Gate Frame.

Ownership: Public, Denver Water
Additional Information: Not in use, wheel missing from Screw Shaft.



Site Number: bas_035_1; 5AM.261.15 **Map Index:** 8
Property Type: Structure–Diversion, Lateral Headgate
Description: Rocky Mountain Arsenal Headgate
Significance: 4
Special Features: Steel Gate Mechanism with hand-crank and pinion gears turning Screw Shaft; Concrete Mass not visible.

Ownership: Private
Additional Information: Supplied World War II Rocky Mountain Arsenal with High Line Canal water.



Site Number: bas_036_1 **Map Index:** 8
Property Type: Structure–Access Associated with Canal
Description: Rocky Mountain Arsenal Lateral Culvert
Significance: 4
Special Features: Concrete Culvert Outlet. Culvert and associated road remains in background.

Ownership: Private
Additional Information: Water from Headgate, 5AM.2615, flows through Culvert into concrete-lined Ditch for Measurement. Canal realigned in this area at unknown date.



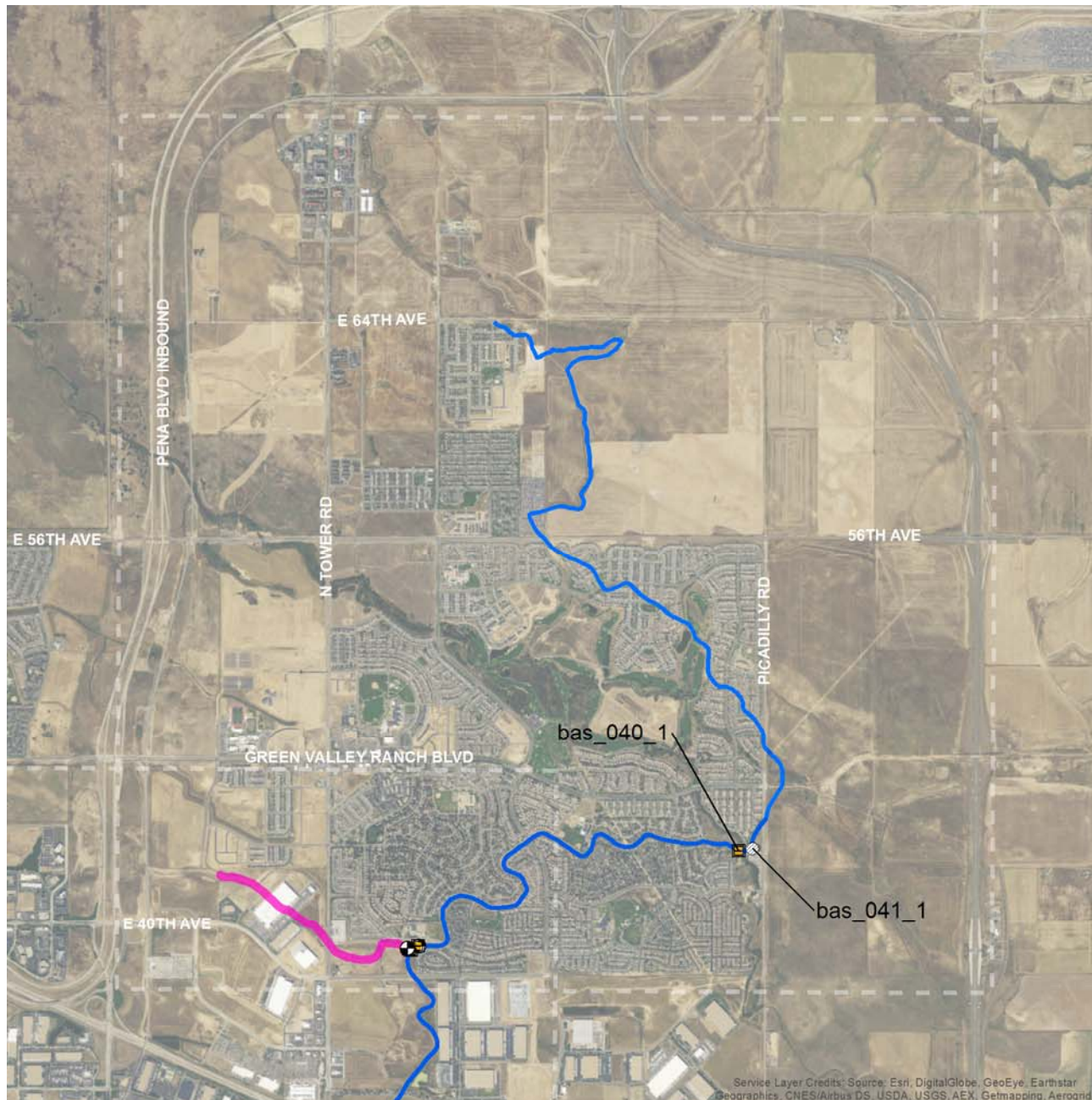
Site Number: bas_037_1 **Map Index:** 8
Property Type: Structure-Conduit
Description: Rocky Mountain Arsenal Lateral Forebay
Significance: 4
Special Features: Concrete-lined Ditch

Ownership: Private
Additional Information: Water from Headgate, 5AM.2615, flows through Culvert into concrete-lined Ditch for Measurement. Canal realigned in this area at unknown date.
 Also includes gauging station bas_038_1.



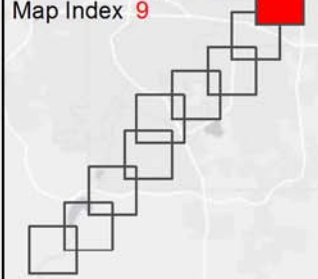
Site Number: bas_038_1; bas_039_1 **Map Index:** 8
Property Type: Structure-Control & Measurement
Description: Rocky Mountain Arsenal Measuring Station
Significance: 4
Special Features: Metal Measuring Devices protected by chain-link fence. Also weir shown in distance on right.

Ownership: Private
Additional Information: Water from Headgate, 5AM.2615, flows through concrete-lined Ditch to Measuring Station. Canal realigned in this area at unknown date.



HIGH LINE CANAL
CONSERVANCY

Location Along Canal
Map Index **9**



Property Types:

- linear district-canal
- structure-conduit
- structure-retention & storage
- structure-control & measurement
- structure-diversion
- structure-protection & cleaning
- buildings-canal
- associated building or structure
- associated district or site
- associated structure-access
- other

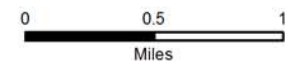
pre-recorded sites

Priority Area 3

Priority Area 2

Priority Area 1

N





Site Number: bas_040_1 **Map Index:** 9
Property Type: Structure-Conduit: Siphon
Description: First Creek Inverted Siphon Inlet
Significance: 4
Special Features: Small Concrete Inlet, protected by rubble armor-
ing.

Ownership: Private
Additional Information: No evidence of Outlet.



Site Number: bas_041_1 **Map Index:** 9
Property Type: Structure-Retention & Storage: Pond
Description: Pond near end of Canal
Significance: 2
Special Features: Earthen Berms create Pond. Need to verify if
pond is fed from Canal waters.

Ownership: Private
Additional Information: Overflow Drain in photo.

5. RECOMMENDATIONS

Punctuated by busy roads and bridges, and surrounded by contemporary developments in many locales, the historic High Line Canal is a rare survivor from an earlier era, still snaking its way 71 miles northeast from the South Platte River at Waterton Canyon and conveying water to its customers. The Canal has endured almost unsurmountable odds. The ditch's insufficient original design, low water right on the South Platte River, and overly ambitious early owners could have – and probably should have – brought the Canal to ruin multiple times.

Through continual physical improvements, ownership transitions, and an ever-changing group of users, the Canal has continued to reinvent itself over its 133 year history. Beginning largely as a water conveyance to attract early settlers for crop and livestock agriculture, the Canal adapted over the years to provide water to residential developments, cemeteries, golf courses, and other uses consistent with the region's burgeoning urban population. Most recently, the High Line Canal's ditch-riders road has been transformed into a hike-and-bike trail for recreational users, with the tree-lined Canal serving as a vital green oasis for urban and county dwellers alike.

As the Denver metropolitan region continues to grow, and new developments rise along the Canal's banks, water customers are diminishing, and the next chapter of the Canal's history is beginning to unfold. Without question,



Exhibit 5-1. Existing interpretative panel on the High Line Canal near Waterton Canyon.

the High Line Canal is a fragile resource in need of careful planning and preservation. In areas where the Canal has been abandoned, or its water use discontinued, its physical form and presence have diminished. New residential construction along the Canal has brought increased recreation use of the Canal's trail, but new developments are also changing the Canal's pastoral viewshed and setting. Early farmsteads that remind us of the Canal's origins, and the everyday people who relied on the Canal for their survival and livelihood, are also disappearing rapidly. Yet, the Canal

still has many important stories to tell – of pioneering settlers drawn to the promise of agricultural prosperity along the Canal, of English capitalists who failed to understand the shortage of water resources in the arid American West, and of hard-working ditch-riders who worked tirelessly to keep the malleable earthen ditch system free of debris and functional for its users – to name a few.

Understanding the Canal’s varied and rich history and its associated historic resources – in and along the Canal – is critical to developing a plan for its future. Delineated below is a set of recommendations to build on the limited research and survey conducted under this study, and to advance efforts to document, interpret and preserve the history and historic character of the High Line Canal. These recommendations fall into three categories: **A. Research, Survey, and Documentation**; **B. Designation and Preservation**; and **C. Education and Interpretation**.

A. Research, Survey, and Documentation

These recommendations focus on uncovering the rich history of the High Line Canal, and obtaining a better understanding of the Canal’s full story, its physical evolution over the years, and the community’s strong cultural and historic connections to the High Line ditch.

1. Fill in the Documentation Gaps:

a. Obtain copies of Denver Water records.

This project collected an immense amount of historic data from the Denver Water Department, including

meeting minutes from the Northern Colorado Irrigation Company, plus reports, maps, and photographs. We obtained high quality scans of 98 photographic prints in the collection, some of which are highlighted in this report. Yet the Denver Water photo collection includes more than 1,000 additional labeled photographs from about 1900 through the 1950s that were not acquired by this project. These photos are contained in albums organized by different construction periods, but otherwise they are not catalogued. Most of the individual photographs in the collection are well-labeled, conveying information on the date, location and purpose of each image. For example, the caption for photograph #1782 in Album 41-A is labeled “Views showing break in High Line Flume at Plum Creek and repairing of same.” Pictures in other albums show construction of a new flume at Plum Creek, other flume repairs, and eventually construction of a siphon.

An effort to obtain copies of all photographs in the collection, and to organize them by location and project type is recommended since this would paint a fuller picture of the Canal’s physical evolution and history over time. A project to obtain copies of these photographs would also provide excellent opportunities to share this fantastic publicly owned photograph collection with the community.



Exhibit 5-2: The photographic prints in the Denver Water Department's collection are well-labeled but variously organized. Above is photograph #1782 in Album 41-A, p. 54 with the caption "Views showing break in High Line Flume at Plum Creek and repairing of same." Photo is dated June 30, 1917.

b. Coordinate with Denver Water to obtain additional records on the High Line Canal (to extent possible).

Denver Water makes many records and historic photographic collections available to historians researching the Canal. However, lists and locations of gates and other features such as check dams and drops, including historic data, are proprietary and are not available for viewing. Increased availability of this information, if possible, would narrow locations and assist field survey efforts for historic resources along

the 71-mile Canal. Greater access to engineering and maintenance records would also assist efforts to date Canal infrastructure features and their alterations, and to evaluate their relative significance. For example, this project's surveyors noticed several types of gates and gate superstructures. Denver Water records may provide more information on the types of gates and gate superstructures used in different periods.

c. Complete primary research on the High Line Canal.

As noted in Section 2, Methodology, the current project located numerous primary resources with valuable first-hand information on the Canal's history. Some of these materials, such as the Biennial Reports of the General Meetings of the Colorado Mortgage and Investment Company of London (parent company of the Platte Land Company, Limited, and the Northern Colorado Irrigation Company) do not appear to have been tapped by other researchers. A "deeper dive" into primary sources uncovered by the research phase of this project as delineated in Section 2 of this report is highly recommended. Further investigation into early property ownership along the Canal, and surviving buildings and features (barns, silos, farmsteads, agricultural accessory buildings and structures, etc.) is also needed. This research will lead to a fuller understanding of the Canal's history, and further opportunities to interpret the Canal's complex historic connections with agricultural

settlement and water use along the dry plains of the Denver Basin.

2. Record the “Full Story” of the Canal:

a. Develop a comprehensive history of the Canal.

Most of the available histories on the Canal are excellent, but for the most part they focus on telling just one part of the Canal’s history. For example, the Historic American Engineering Record (HAER) studies highlight the physical development and operational challenges of the Canal and its laterals, while other histories organize information by mileposts for recreational trail users. Individual histories on some of the most important surviving historic farmsteads along the Canal are typically found in the form of National Register of Historic Places (NRHP) nominations and History Colorado’s Compass database survey forms. All of this information provides valuable insights into the Canal’s history, but is very piecemeal.

An effort to compile a fully developed Historic Context on the Canal should cover all of the relevant historic aspects, such as:

- ***Physical development and evolution of the Canal over time, including periods of redevelopment, construction, and improvement.*** The story of the Canal’s initial construction has been told numerous times, but the efforts undertaken to operate and improve the Canal over the years have largely not been told. The story of the ditch riders who lived

and worked along the Canal is significant, as are the continual maintenance challenges of the Canal particularly during periods of drought and flooding, and episodes of major infrastructure improvements and upgrades. This project’s historians noted that several references hint that Denver Water used federal Depression-era (New Deal and other) funding to rebuild many of the Canal’s infrastructure components in the 1930s; more research is needed in this area as well.

- ***Documentation of the Canal’s full system, including major laterals*** and their individual histories. These include the Sand Creek Lateral, Rocky Mountain Arsenal Lateral, and Doherty’s Ditch.
- ***Overall history of the Canal’s origins, water control and distribution, legal challenges, and ownership shifts over time.*** Some of this history is already well documented for the most part, but more information on the particular role that the High Line Canal played in the debate and development of water rights in the West is recommended.
- ***Settlement and agricultural cultivation along the Canal.*** This aspect includes the story of early settlers who acquired land from the Platte Land Company, Limited; the struggle to sustain irrigation water-dependent crops along the Canal, and the gradual shift from irrigation water-dependent farming to dry farming techniques.

- ***Water– and land-use history along the Canal,*** including the Canal’s early connection with adjacent land sales and uses. Also relevant is the gradual shift in adjacent land uses from ranches and farmsteads that depended heavily on the Canal, to residential development and recreational uses, and the gradual decline of the Canal as a dependent source of water for human occupation and livelihood.
- ***Cultural traditions and connections,*** such as the Canal’s influence on lifeways and social patterns. This particularly includes agricultural communities where farmers often joined forces to contest Northern Colorado Irrigation Company management and worked communally to make Canal repairs, and where picnics and outdoor recreation often occurred along the Canal’s banks. Numerous existing oral histories already contain many such stories, such as the oral histories of John and Katie Bowen, Lorraine Alsum, Louise Wenstra, Betty Dystra and Kay Schans, available from the Douglas County History Center, and interviews recorded and transcribed from the 1998-2000 Kassler Oral History Interview Project. Early newspapers from communities along the Canal also provide a snapshot into life patterns along the Canal.

b. Develop the historical context to state and federal standards..

The Historic Context should be developed consistent with the *Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation*, including *Planning, Identification, Evaluation, and Registration*. Following these standards, the Historic Context would develop each of the Canal’s important historic themes, describe surviving historic



Exhibit 5-3: July 24, 1935, photograph of a girl sitting on a bridge over the High Line Canal at Big Dry Creek. Children who lived on farms along the Canal were known to swim in the Canal, and to play along its banks. Photo #4793, Denver Water (Photo also on front cover of document.)

infrastructure and features that relate to those themes, and set out requirements (e.g., degree of alterations that are acceptable) for individual types of properties (buildings, structures, districts, objects, and sites) to qualify for a future historical designation. This will aid evaluations of surveyed properties, and facilitate future historical designations of the Canal, if desired in the future.

3. Finish the Canal Survey:

a. Coordinate with History Colorado to complete a comprehensive survey of historic Canal infrastructure, and historic resources along the Canal.

The current survey project used a point density analysis and evaluation of previously recorded historic properties to prioritize field survey efforts. While this methodology led to this study's success in identifying many of the key historical assets in and along the Canal, the survey project was not comprehensive, and some important structures and features were almost certainly missed. Also, as noted in Section 2 of this report, most survey projects in Colorado are conducted consistent with History Colorado's *Cultural Resources Survey Manual* and utilize the agency's Cultural Resource Survey forms (available on its website). Given the Canal's extent in distance and features, further coordination with History Colorado is recommended to determine how best to supplement and further the identification efforts of this inaugural Canal

survey effort.

The future comprehensive field survey effort should:

- ***Build on the technology-driven efficiencies utilized by the current limited survey effort*** given the lengthy extent of the High Line Canal;
- ***Rely heavily on Denver Water records (see 1.b. above) to prioritize survey work***, and to ensure that critical resources (such as gates in heavy vegetation) are not missed;
- ***Occur in Fall/Winter if possible to maximize visibility*** of walls, gates, and other Canal features; and
- ***Formally evaluate surviving Canal properties***, to identify which features contribute most significantly to the Canal's story, and are most critical to preserve (follow National Register *Evaluation* protocols).

b. Focus on Canal gates.

While many of the surviving Canal gates are out of use and in poor condition, no features are more important to telling the story of the Canal than its gates. These structures specify where farmers and other users historically diverted water from the Canal to irrigate crops, water nurseries and orchards, and support livestock. While in most cases the farm fields and ranch lands that used the Canal's waters are no longer evident - having given way to modern commercial and residential

developments - the extant gates remind us that earlier users and settlers were here before us, and relied on the Canal's waters for their sustenance and livelihood. It is also important to note that each gate typically served as the "gateway" to a private user's own system of complex piping and irrigation systems that watered agricultural fields and orchards. The surviving gates are all that remain to convey the stories of these prior uses, and of this hidden agricultural infrastructure.

To further identify gates, this report recommends that subsequent survey and research efforts:

- ***Obtain historic records on the gates from Denver Water*** (see l.b. above);
- ***Categorize surviving gate types and superstructures by type, date; and manufacturer to the extent possible.*** Many gates featured scribed dates in concrete wingwalls, and manufacturer information on cast-metal components, so documentation of this information could be a starting point for this effort; and
- ***More thoroughly denote the condition of each gate.***

c. Survey and evaluate adjacent agricultural properties with Canal connections..

During the course of this project, the surveyors reviewed numerous National Register listings and Com-

pass inventory forms on adjacent Canal properties, most commonly early farmsteads. In several cases, for example, the inventory forms note that a farmstead or surviving residence from a farmstead may not qualify for listing in the National Register of Historic Places due to losses in the property's integrity, i.e., removal of agricultural outbuildings, loss of associated farm lands, etc. However, these properties' significance and eligibility for future designation should be re-evaluated based on the Canal's Historic Context developed under A.2. above.

B. Designation and Preservation.

This section lays out recommended measures to recognize and protect the Canal's most significant historic properties and features.

1. Preserve the earthen Canal and its associated infrastructure

A primary conclusion of this survey is that the High Line Canal itself remains incredibly intact, despite its operation as a functional resource continually upgraded and improved over the years. Fortunately, many of the Canal's essential historic infrastructure components—including features that are out of use and in poor condition such as gates, pump houses, and check dams—survive to this day. These remaining infrastructure components are essential to tell the story of the Canal's engineering, evolution, and use. The removal of any

historic feature, such as an operational building (residence, barn, Alum House, etc.), a gate (even one that is highly damaged), a flume (including ones that have been rebuilt) or a bridge abutment, is strongly discouraged. Over time, these removals cumulatively diminish the Canal's historic significance, and erase physical reminders and the very history of a past period and use.

To ensure that the Canal's essential character and historic significance is retained for future generations, this report recommends that preservation efforts focus on the following:

a. Preserving the earthen ditch on its original alignment, and protecting its essential character.

Segments of the Canal, particularly in the northeastern several miles, have been severely degraded, with the original berm grades and banks altered, slumped and eroded. Protection and even re-creation of historic grades and banks is highly recommended.

b. Retaining water flow in the Canal to extent possible.

During the past several decades, the number of Canal water customers has declined, and the Canal has gradually carried less and less water. The extreme northeastern segment of the Canal conveys no water at all. In areas where water no longer flows, the ditch is severely eroded, and it is losing its physical form and prominence. Certainly, the flow of water is the Canal's essential purpose or "reason for being,"

and an active flow reflects the Canal's historic and cultural traditions. This report supports creative ways to continue water conveyance in the Canal, while improving efficiency and reducing seepage and water waste.

c. Retaining and stabilizing all surviving Canal infrastructure components, including features that are out-of-service and in poor condition.

These surviving elements are essential to tell the story of the Canal. Grant funds should be applied if possible to help Denver Water preserve and restore these historic features.

d. Preserving surviving remnants of the original ditch riders road.

In some segments of the Canal, the historic ditch-riders service road has not yet been upgraded to hike-and-bike trail standards. In locations where sufficient right-of-way remains, we recommend that the trail be installed on vacant land, and that the original ditch riders road be retained there in its unpaved condition.

2. Protect remaining historic farmsteads associated with the Canal

Surviving farmsteads are incredibly rare, and are essential to conveying the original intent and ongoing history of the Canal. These properties also afford future opportunities for tourism and expanded recrea-

tional activities along the Canal. Four of the most significant and intact remaining farmsteads with strong Canal associations are:

1. **Miksch-Helmer Cabin**, in Douglas County, owned by Douglas County (site bas_052_1 and bas_052_2 on map index 1);
2. **Plews (or Fly'n B) Ranch**, 2910 W. Plaza Drive, Highlands Ranch in Douglas County owned by the Highlands Ranch Metro District (site 5DA.1913 on map index 3);
3. **Hopkins Farm**, 4400 East Quincy Avenue, Englewood, in Arapahoe County, owned by Cherry Hills Village (sites 5AH.2932 and bas_024_1 on map index 4); and
4. **Delaney Farm**, 170 S. Chambers Road, Aurora, in Arapahoe County, owned by City of Aurora (sites 5AH.271 and 5AH.457 on map index 7)

Preservation of isolated agricultural outbuildings with a Canal connection is also important to convey Canal history.

f. Protecting the Canal's physical integrity and viewsheds. Development along and adjacent to the Canal is inevitable and affords many positive benefits, particularly in terms of attracting new users to the Canal trail. However, some large developments immediately adjacent to the Canal's banks, as well as new raised bridges that cross the Canal, are diminish-

ing the Canal's visual prominence and historic integrity. As such, we recommend that communities encourage thoughtful new developments along the Canal that respond sensitively to the Canal's historic design and setting.

3. List the Canal in the National Register of Historic Places

The High Line Canal was a considerable engineering achievement of its day, despite its many shortcomings,



Exhibit 5-4: Ca. 1907-1912 photograph of the Matthew Plews Ranch, one of the most important surviving farmsteads associated with the High Line Canal. The Plews' family used Canal waters to irrigate crops and fruit trees. Source: The Douglas County Historic Research Center (call no. #2008.050.0001.0005.0002).

and has had a substantial impact on the history, culture, and development of the Colorado Front Range and Denver Basin. The Canal is a valuable publicly owned historic asset that warrants listing in the NRHP. Despite misinformation circulated on this program, a National Register designation would not restrict use or maintenance of the Canal, or add regulatory controls. Land-use controls are triggered by local regulations, such as local landmark or historic district designations, not by listing on the NRHP or State Register of Historic Properties. On the contrary, such a listing could have many positive benefits, such as opening access to state and federal funding for documentation, public interpretation, and preservation initiatives.

C. Education and Interpretation

While many recreational users take advantage of the High Line Canal for its trail offerings and appreciate its pastoral setting, only a small number of users seem to be aware of the Canal's history. This can be at least partially attributed to the fact that the Canal presently offers little in the way of historical interpretation along its trail. As covered in the introduction to this section, the Canal has a rich and complex history with many stories to tell. The surviving Canal infrastructure and adjacent physical properties, such as farmsteads, silos, and barns, afford many opportunities to educate the public about the Canal's history, to engage the community in valuable discussions about the Canal's water history and historic water shortages of the Front Range, and to enrich and broaden the community's experience

along the High Line Canal.

While the topic of public education and interpretation along the Canal warrants its own study, some key recommendations are delineated below.

1. Look for opportunities to expand historical interpretation along the Canal

While some interpretative markers exist on the topics of wildlife and water along the Canal, this project's surveyors observed only one interpretative marker along the 71-mile trail focusing on the Canal's history. In locations where any interpretative markers and plaques are planned or need replacement, consider adding interpretation on various aspects of the Canal's history.

A few other key recommendations are:

- ***Develop and install interpretation at locations where important historic buildings and features are visually prominent and/or in public ownership.*** This would include visually prominent buildings such as the Miksch-Helmer Cabin, and the publicly owned Plews Ranch, both in Douglas County.
- ***Interpret the Canal's most historic and interesting engineering infrastructure,*** such as the Platte Canyon Reservoir's adjacent concrete sand trap, headgates, gauge house and spillway, Alum House, and Parshall measuring flume. Interpretative markers along this segment of the trail are recommended to tell the story of the Canal's engineering history even

through recent decades.

- ***Interpret the connection between historical and natural development.*** This study did not inventory or directly address historic-age vegetation along the Canal. However, many of the large cottonwoods and other large trees along the Canal were purposely planted by early adjacent farmers and ranchers, and

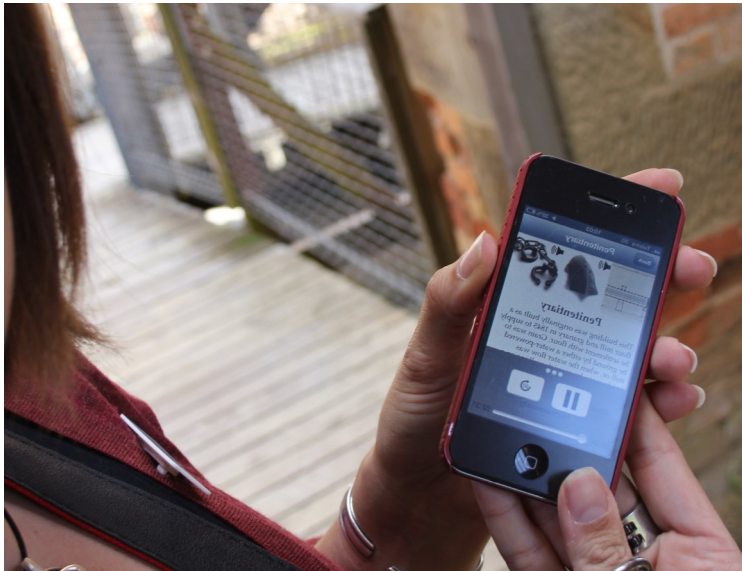


Exhibit 5-5 This photo shows a tourist using a customized application (or app) on her phone to convey historical information while visiting a historical site.

are intricately tied to the Canal's history. Segments of the Canal with mature vegetation afford oppor-

tunity not only to convey information on the trees themselves, but also to relay information on the Canal's historic and cultural traditions, and adjacent agricultural uses.

2 Explore digital and creative interpretation options

Many of the Canal's users are involved in active recreational pursuits, and likely have an interest in interpretation and information that can be experienced while walking or bicycling. This interpretation could take the form of interactive maps, audio tours, and customized computer and phone applications with maps and visual aids (such as historical photos).

Historically themed guided bicycle and walking tours of the Canal would also afford opportunities to enrich the communities understanding of the Canal while engaging in recreational activities along the Canal trail.

Given that it is difficult for the public to understand how the Canal functions, this report also recommends that a video be produced that showcases how water actually flows from the S. Platte River through the Canal, and how it is distributed.

BIBLIOGRAPHY

Appleby, Susan K. History of the Fly'n B Ranch (unpublished manuscript), Douglas County History Research Center.

Code, W. E., and Colorado Agricultural Experiment Station. *Farm irrigation structures*. Fort Collins: Colorado Agricultural Experiment Station Colorado Agricultural and Mechanical College, 1957.

Colorado. State Engineer. *Biennial Reports*, 1880—1900

Norris, Jane E. *Written in water : the life of Benjamin Harrison Eaton*. Athens: Swallow Press/Ohio University Press, 1990.

Colorado Mortgage and Investment Company of London, Platte Land Company Prospectus and Articles of Association, Director Reports, Reports of the Platte Land Company, Limited, Reports of the General Meetings of the Colorado Mortgage and Investment Company, 1878-1892

Denver Water Department (Denver Water), Archives.

"Advantages to the City from an Exchange Agreement with the Antero and Lost Park Reservoir Company," 1920. Drawer 55, No. 1-6

Evaluation of High Line Canal, D.J. Homan, Feb. 27, 1937, Drawer 59, No. 4-1

Guide to the High Line Canal Trail, 1999

High Line Canal Affidavit of Charles W. Comstock, 1915. Drawer 59, Nos. 4-9

High Line Canal Drawings. Drawer 2, 121, 125, 131 and 132

High Line Canal Rate Changes, March 16, 1926. Drawer 59, No. 1-34

High Line Irrigator, S.J. Gilmore, May 1, 1890.

History of the High Line Canal and Antero Reservoir (multiple authors including Charles C. Fisk and A.D. Walls), Drawer 59-No. 1-31.

Denver Union Water Co. Ranch Lands, Map, May 1956. Drawer 147.

High Line Canal, Map, March 1928, 1943, June 1945

"Map Showing Ditches Near Denver," Jan. 20, 1921. Drawer 127. Case B 028.

"Memorandum Regarding Relation of English High Line Canal Water Supply," G.M. Bull, Oct. 10, 1929. Drawer 59, No. 4-2

Northern Colorado Irrigation Company Minutes, 3 Vols. 1880—1935

Northern Colorado Irrigation Co. High Line Canal Right of Way Records, Drawer 64, No. 8.

Photo Albums 26, 28, 29, 41, 41-A, 42, 85, 268, 269-16A

Report of Consulting Engineer, 1890. Drawer 59, No. 5-1

Report by C.C. Hezmalhalch on Ditch Flow and Discharge of High Line Canal, Feb. 21, 1931. Drawer 59, No. 4-4

- Report of John Hayes on the High Line Canal, ca. 1928
Drawer No. 4-5
- "The High Line Canal," unpublished manuscript, K.M. Gambrill, Department of Highways, undated.
- Winding through History* brochure, June 1989
- Denver Water. Interview with Lance Cloyd and High Line Canal Crew, September 12, 2016.
- Douglas County, "Excerpt from the Douglas County Register of Landmark Properties Nomination on the History of the Miksch-Helmer Cabin," 2016.
- Douglas County, "Colorado Historic Resources Maps."
- Glatfelder, Philip. *Kassler Oral History Project*, 2 vols. 1998-2000. Kassler Education Center.
- Glatfelder, Philip. "The History of the Irrigation Ditches in Littleton, Colorado," unpublished manuscript, May 1996. Littleton Museum.
- Greenwood Village Website, "Greenwood Village History 1850-2000," and "The English Ditch."
www.greenwoodvillage.com.
- History Colorado. Compass Historic Resource Database.
- Holleran, Michael. *Historic Context for Irrigation and Water Supply: Ditches and Canals in Colorado*. Colorado Center for Preservation Research, 2005.
- Limerick, Patricia Nelson. *A Ditch in Time: The City, the West and Water*. Golden, CO., Fulcrum Publishing, 2012.
- Norris, J.E. and L.G. *Written in Water: The Life of Benjamin Harrison Eaton*. Athens, Ohio: Swallow Press, 1990.
- Roberts, John J. "High Line Canal: Mouth of South Platte River to Confluence with Second Creek." *Historic American Engineering Record* Report CO-43, May 1994.
- Front Range Associates, Inc. "High Line Canal: Sand Creek Lateral." *Historic American Engineering Record* Report CO-43,-A August 1998.
- Mehls, Steven F. "Highline Extension Canal (Doherty Ditch)." *Historic American Engineering Record* Report CO-67-A March 1992.
- Sherow, James E. "Marketplace Agricultural Reform: T. C. Henry and the Irrigation Crusade in Colorado, 1883-1914." *Journal of the West* (October 1992) 51-58.
- Mosley, Earl L. "History of the Denver Board of Water Commissioners." Denver: unpublished manuscript. Stephen H. Hart Library, History Colorado.
- Sherow, James E. "Marketplace Agricultural Reform: T. C. Henry and the Irrigation Crusade in Colorado, 1883-1914." *Journal of the West* (October 1992) 51-58.
- Sherow, James E. "Watering the Plains." *Colorado Heritage* (1998 Issue 4) 2-13.
- Skari, David. *High Line Canal: Meandering through Time*. Denver, Co.: C&M Press, 2003.
- Steinel, Alvin T. *History of Agriculture in Colorado*. Fort Collins, Co.: The State Agricultural College, 1920.