

FINAL
Walden Ponds Wildlife Habitat
Management Plan



Adopted
by
Board of County Commissioners
August 31, 2010

Parks and Open Space



Boulder County Parks and Open Space

Mission Statement

To conserve natural, cultural and agricultural resources and provide public uses that reflect sound resource management and community values.

Boulder County Parks and Open Space

Vision Statement

Mountain vistas, golden plains, scenic trails, diverse habitats, rich heritage...a landscape that ensures an exceptional quality of life for all.

Goals of Parks and Open Space

1. To preserve rural land.
2. To preserve and restore natural resources for the benefit of the environment and the public.
3. To provide public outreach and volunteer opportunities to increase awareness and appreciation of Boulder County's open space.
4. To protect, restore, and interpret cultural resources for the education and enjoyment of current and future generations.
5. To provide quality recreational experiences while protecting open space resources.
6. To promote and provide for sustainable agriculture in Boulder County for the natural, cultural, and economic values it provides.
7. To develop human resources potential, employ sustainable and sound business practices, and pursue technological advancements.

**Walden Ponds Wildlife Habitat
Management Plan
August 2010**

This Boulder County Parks and Open Space management plan describes the existing conditions and the direction for managing Walden Ponds Wildlife Habitat including the Heatherwood Trail and Trailhead into the future. The adopted plan will help managers make decisions about managing the site's natural resources, visitor uses, and facilities for the next 15 or more years. Some issues addressed in this plan are water management, habitat management, facilities and amenities, recreation, education and outreach, operations and maintenance, implementation, and monitoring.

A 30-day public review of the draft plan was conducted between May 28 and June 26, 2010, and a public meeting was held on June 10, 2010. Minor updates were made to the draft plan following the public review, and the plan was presented to the Parks and Open Space Advisory Committee (POSAC) on July 22, 2010, at their regular monthly meeting held in the County Commissioner's Hearing Room on the 3rd floor of the Boulder County Courthouse (1325 Pearl St. Mall, Boulder). POSAC recommended to the Board of County Commissioners (BOCC) that the draft management plan be adopted as written. The final plan will be presented to the BOCC for final approval in August 2010. The POSAC and BOCC presentations included public hearings. For questions about this document, write to Boulder County Parks and Open Space 5201 St. Vrain Road, Longmont, CO 80503, call 303-678-6200, or e-mail POSinfo@bouldercounty.org.

To stay informed of upcoming events and meetings regarding Walden Ponds Wildlife Habitat or other county open space properties, please visit www.BoulderCountyOpenSpace.org.

Parks and Open Space Department • Boulder County

RECOMMENDED:

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8-30-10
Date

Lisa Dilling
Parks and Open Space Advisory Committee

7/22/10
Date

ADOPTED:
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31 Aug 10
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LIST OF ACRONYMS

Acronym or Abbreviation	Full Phrase
BCAS	Boulder County Audubon Society
BCPC	Boulder County Planning Commission
BCRM	Boulder County Road Maintenance
BOCC	Board of County Commissioners
CDOW	Colorado Division of Wildlife
CFO	Colorado Field Ornithologist
IGA	Intergovernmental Agreement
HCA	Habitat Conservation Area
POS	Boulder County Parks and Open Space
POSAC	Parks and Open Space Advisory Committee
NRCS	Natural Resource Conservation Service

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EXECUTIVE SUMMARY

INTRODUCTION

Walden Ponds Wildlife Habitat Management Plan was prepared by and for Boulder County Parks and Open Space Department (POS) and sets forth the future management direction for Walden Ponds and the connected Heatherwood Trail and Trailhead. This plan replaces the original management plan for Walden Ponds, which was written in 1982 and has been the guiding management document since that time. Because of significant changes in site conditions and much outdated information in the 1982 plan, the Walden Ponds planning team chose to prepare a completely new plan. The purpose of the management plan is to update the vision, goals, objectives, and management strategies for future management of the site. Property-specific decisions and management activities for Walden Ponds, which are intended to guide the site to the desired future-state, are outlined in this management plan. These decisions and activities are based on the best available science, best management practices, and community values. This plan also catalogues existing site conditions including the natural resources, site history including past land uses and property acquisitions, property-specific opportunities and constraints, visitor use and services, and projected future trends and management needs.

POS has overseen Walden Ponds since 1975 after taking over management of the first three, newly reclaimed Boulder County gravel pits from County Road Maintenance. Two other sites within the west half of the property were later mined and reclaimed in the 1980s and 1990s. Each pond and wetland at Walden Ponds was specifically reclaimed for wildlife habitat, while allowing compatible recreation and environmental education. Today, the site consists of Wally Toevs Pond, Cottonwood Marsh, Duck Pond, Bass Pond, and Ricky Weiser Wetland. As a testament to its success, the approximately 100-acre open space property currently contains unique and important wildlife habitat and provides excellent public recreation and education opportunities. The mosaic of wetlands, riparian vegetation, grasslands, mud flats, and open water provides for numerous wildlife species, especially a large diversity of water birds. The water levels within the groundwater-fed ponds and wetlands fluctuate seasonally and annually, thus providing an ever-changing environment that provides for a variety of species and demonstrates the natural hydrologic cycle of the Front Range of Colorado. To provide supplemental water to the site and provide options for management, POS filed for a water right for Walden Ponds in 2002. At the time of this management plan (2010), the water right has not been decreed.

Centrally located and easily accessible, Walden Ponds is a very popular and well-used open space that hosts many different user groups. Visitors to Walden Ponds enjoy hiking, running, or biking on the approximately 2.9 miles of trails, as well as connecting to trails on the adjacent Sawhill Ponds. Other popular activities include bird watching, nature study, fishing, picnicking, or just relaxing. The Boulder County Volunteer Naturalist Program is housed at Walden Ponds, and many outreach programs are conducted at Walden Ponds annually.

PLANNING ISSUES

Based on information collected during the initial public comment period and from the internal POS scoping process, the project team identified the following key planning issues that are addressed in this management plan:

- Water availability and management including the current water diversion and delivery system between ponds and wetlands
- Protection and preservation of habitat for wildlife, especially a diversity of waterbirds, and native plant communities
- Recreational and educational opportunities
- Facilities maintenance and improvements including trailheads, trails, and disturbed areas

- Safe and environmentally sound access for educational programs and fishing
- Communication and coordination amongst staff and other agencies
- Long-term management and monitoring

MANAGEMENT DIRECTION

The following is an overview of POS staff's recommendations for the future management of the property, including the vision for the property and a brief description of the major management actions that will be taken following the adoption of this plan. The management direction provided in this plan is based on current knowledge and understanding about the site's history, hydrology, soils, wildlife, vegetation, existing habitats and ecological relationships. Likewise, POS has taken into consideration the wishes and needs of Walden Ponds' diverse population of visitors sought out during the formal public comment period and gleaned from staff's daily interactions with them. Moreover, the plan carries on the department's desire to provide high quality visitor services, including trails, bird viewing and fishing opportunities, and exceptional educational programs. Finally, the policies of the *Boulder County Comprehensive Plan*, the mission and goals of POS, and the restrictions of Colorado water law and administration have helped set the management direction.

The vision for Walden Ponds Wildlife Habitat Area is...

...a wildlife haven of ponds, wetlands, and uplands on former gravel mines blanketed by native cottonwoods, willows, grasses, marsh species, mud flats, and open water for a diversity of species...

...an easily accessible place on the plains of Boulder County where people can observe and learn about the evolving landscape and natural cycles ...

...an open space with peaceful trails, exceptional wildlife viewing, captivating interpretation, and accessible fishing.

It is POS's intent to continue managing Walden Ponds primarily as high quality wildlife habitat, allowing compatible and minimal-impact human uses to continue. Because water is a limiting factor at Walden Ponds, it has in the past and continues to play a pivotal role in the management of the site. A key consideration in thinking about future water management at Walden is that POS is primarily managing water for wildlife, including sport fish, and wetland and riparian vegetation. To the extent possible based on available water, POS will actively manage the water resource based on specific management objectives for each pond and wetland. These objectives balance the needs of a diversity of wildlife, visitors, and other concerns. Water management will be accomplished through both natural and managed means. At times, groundwater levels will be naturally high due to adequate precipitation, and all ponds and wetlands will be filled to their maximum extent. At other times, water levels will be shallow or non-existent due to drought conditions. In years when POS gets approval from the Water Commissioner to divert water off of Boulder Creek, either under "free river" conditions or via an eventual water right, ponds and wetlands will be filled based on individual pond and wetland management objectives and installation of appropriate water management infrastructure.

POS will continue to provide a number of visitor facilities and amenities with some necessary, but minor, changes. The three trailheads (Wally Toevs Pond, Cottonwood Marsh, and Heatherwood Trail) will each be upgraded to provide better and more efficient parking and access. POS will continue to provide and maintain 2.9 miles of multiple use trails including the Walden Ponds Trail and the Heatherwood Trail, as well as the Cottonwood Marsh boardwalk and the Wally Toevs Pond fishing pier. The trail around Bass Pond and Ricky Weiser Wetland and the Heatherwood Trail will be converted from a natural surface two-track trail and asphalt trail, respectively, to crusher fine trails. Other amenities such as picnic tables and shelters, restrooms, and benches will remain with some minor upgrades, where and when necessary. The Walden Ponds Administrative Building will continue to be used for the Volunteer Naturalist Program. Finally, safer and less

environmentally damaging accesses to Duck Pond and Wally Toevs Pond will also be provided for fishing, bird watching, and interpretive programs.

Management zoning will be used as a management tool, which would limit the number of closure areas, but help to maintain the desired ecological condition and visitor use experience. A portion of the site (i.e. Cottonwood Marsh, Ricky Weiser Wetland, and Bass Pond) would be zoned to have minimal to no development, and thus, provide a more natural experience for the user. The other portion of the site (i.e. Wally Toevs Pond, south side of Cottonwood March, Duck Pond, Heatherwood Trail, and around the administrative building) would be more developed with trailheads, benches, restrooms, and picnic facilities. This zoning would not only help managers know what types of uses and facilities are appropriate for a given location, but also allow visitors to know what to expect in a particular zone.

Overall, POS does not plan to make any dramatic changes to visitor use management with some minor exceptions. Current visitor uses including hiking, wildlife viewing, fishing, horseback riding, and educational programming, among others, will continue. The current Cottonwood Marsh closure area will be expanded to help protect sensitive wildlife habitat and would be designated as a Habitat Conservation Area (HCA), and thus be closed to the public, including fishing. This HCA would not impact other visitor uses, however, including adjacent trails or the boardwalk. Another change would be to allow individuals 15 years and younger to fish at Wally Toevs Pond, which has historically been exclusively for seniors (64 years and older) and disabled individuals, if a senior or disabled individual is with them. This will allow these individuals to share in the fishing experience. Finally, POS and the Volunteer Naturalist Program will continue to host education and outreach programs on site.

Based on available funding, POS will continue to provide the staff and resources necessary to manage Walden Ponds as outlined in this management plan. Coordination and communication amongst POS staff and with relevant outside agencies are essential for the efficient and effective management of the site. With significant wildlife and habitat values, water management concerns, a variety of recreational opportunities, unique interpretive programs, and overall visitor experience at stake, relevant staff must communicate regularly with each other and outside stakeholders to ensure that the site's vision is upheld and its management goals, objectives, and strategies are met. Finally, staff and volunteers will monitor the site regularly to ensure the vision for the property is upheld and the goals and objectives are met.

CHAPTER 1 – INTRODUCTION

1.1 PURPOSE OF THE PLAN

Walden Ponds Wildlife Habitat (referred to throughout the document as Walden Ponds, Walden, or the planning area and includes the Heatherwood Trail and Trailhead) has been a popular open space within Boulder County for individuals, families, and groups since its inception in the mid-1970s. The site has attracted numerous hikers, wildlife watchers, anglers, picnickers, equestrians, trail runners, and those seeking a reprieve from the sights, sounds, and stresses of the urban environment, among others, for over three decades. The primary focus for many is the accessible and easily manageable trail system, as well as the diverse and well-used habitats that blanket the landscape. Abundant wildlife can be found in the ponds, wetlands, and uplands throughout the year. In particular, a wide variety of birds, including shorebirds, dabbling ducks, diving birds, geese, rails, passerines, and raptors, take advantage of the diversity of habitats provided within the ponds and wetlands. From mud flats, shallow water wetlands, and deep, open water aquatic habitats to the surrounding upland and riparian areas, Walden meets the needs of a variety of species and provides a unique visitor experience within the Boulder County Parks & Open Space (POS) system.

The original management plan for Walden Ponds was written in 1982 and has served as the guiding document for management since that time (POS 1982). This management plan revises, updates, and supersedes this original plan and will include the adjacent Heatherwood Trail and Trailhead. POS chose to revise the 1982 plan for a number of reasons. These include the extensive amount of time that has elapsed since the first plan, the completion of on-site mining and reclamation, the evolution of the site since reclamation, and an overall better understanding of the various opportunities and constraints posed by the site. Since the last management plan, Walden Ponds has truly succeeded in meeting its original goal of reclaiming wildlife habitat from former gravel mines and now enters into a new era of management. This plan moves the site from its reclamation past to its fulfillment as a sanctuary for wildlife and an open space for recreation and education.

The purpose of the current *Walden Ponds Wildlife Habitat Management Plan* is not necessarily to document all past management activities that have occurred at Walden Ponds, but rather to update the vision, goals, objectives, and management strategies for future management of the site. Property-specific decisions and management activities for Walden Ponds, which are intended to guide the site to the desired future-state, are outlined in this management plan. The management direction is based on current knowledge and understanding about the site's history, hydrology, soils, wildlife, vegetation, existing habitats, and ecological relationships. Likewise, POS has taken into consideration the wishes and needs of Walden Ponds' diverse population of visitors sought out during the formal public comment period and gleaned from staff's daily interactions with them. Moreover, the plan carries on the department's desire to provide high quality visitor services, including trails, bird viewing and fishing opportunities, and exceptional educational programs. Finally, the policies of the *Boulder County Comprehensive Plan*, the mission and goals of POS, and the restrictions of Colorado water law and administration have helped set the management direction. The planning team strove to provide enough flexibility to ensure open space staff can adaptively manage the property, as long as the overall vision, goals, and objectives for the site are upheld. Although this management plan entirely replaces the 1982 plan, much of the material herein is taken from the 1982 plan, and the overall vision and many of the goals and objectives have remained. Finally, this plan catalogues existing site conditions including the natural resources, site history including past land uses and property acquisitions, property-specific opportunities and constraints, visitor use and services, and projected future trends and management needs.

1.2 PLAN OVERVIEW

The management plan is presented in four chapters including an Introduction (Chapter 1), Area Profile (Chapter 2), Management Direction (Chapter 3), and Public Involvement and Coordination (Chapter 4). A number of appendices are provided in the back of the document.

1.3 ACKNOWLEDGEMENT

Boulder County Parks & Open Space staff would like to thank the citizens of Boulder County for supporting the open space program and providing the vital funding necessary for the long-term maintenance and management of properties like Walden Ponds Wildlife Habitat. Staff would also like to thank those individuals who provided input throughout the history of Walden Ponds, and especially, during the current management planning process. This input has helped set the future management direction for Walden Ponds.

1.4 OPEN SPACE OVERVIEW

1.4.1 Location

Walden Ponds Wildlife Habitat is located on the eastern plains of Boulder County along the south floodplain of Boulder Creek, approximately 1.5 miles northeast of the City of Boulder, ½ mile south of the Jay Road and North 75th Street intersection on the west side of North 75th Street (Figures 1.1 and 1.2). The communities of Louisville, Lafayette, Erie, and Niwot are each less than 5 miles from Walden Ponds, and Longmont is less than 10 miles away. The approximately 102-acre property is bordered by private property on the west and east and partially on the north (west half). The City of Boulder’s wastewater treatment plant is situated on the east half of the north boundary including the recently installed solar panel field. The Colorado Division of Wildlife’s Sawhill Ponds Wildlife Habitat Area (Sawhill Ponds), which is managed by the City of Boulder’s Open Space and Mountain Parks under a lease agreement, is located south of Walden Ponds and is connected via trails. Boulder County’s Road Maintenance Yard is located immediately south of Cottonwood Marsh Trailhead. The Heatherwood Trail extends from North 75th Street, curves around the north side of the City’s wastewater treatment plant adjacent to the south bank of Boulder Creek until it turns south on the west side of the plant and finally enters Walden Ponds. The Heatherwood Trail Trailhead is approximately 0.15 miles south of Jay Road on the west side of North 75th Street.

1.4.2 Open Space Summary

Walden Ponds was not always the diverse, productive ecosystem that it is today, with 2.9 miles of trail, fishing ponds, and high quality wildlife habitat and wildlife viewing. In fact, the properties that comprise Walden Ponds were originally purchased by Boulder County between 1958 and 1972 for the primary purpose of excavating their gravel resources for use by the County’s Road Maintenance Division (Road Maintenance), as well as for Road District 1 headquarters (Figure 1.2). Active gravel mining occurred on the eastern portion of the property until the mid-1970s. At that time, then County Commissioner Walden (“Wally”) Toevs spearheaded the idea of reclaiming the Boulder County gravel mines to wildlife habitat and as a place for the citizens of Boulder County to fish and recreate (Appendix A). The initial reclamation included Wally Toevs Pond, Cottonwood Marsh, and Duck Pond (Figure 1.2). (Note: The names of the ponds and wetlands at Walden Ponds have changed over time. Only the currently used names will be used throughout this document.) Public facilities such as restrooms, picnic tables, and trails were also constructed at that time. In addition, the ponds were stocked with fish including rainbow and brown trout in Wally Toevs Pond and largemouth bass and channel catfish in Duck Pond and Cottonwood Marsh. As part of the reclamation plan over 3000 trees and shrubs were also planted beginning in 1974. The public grand opening for Walden Ponds was held on October 3, 1975, with the site being jointly managed by Road Maintenance and the fledgling Parks & Open Space Department. Mining within the west portion of the property did not begin until the late 1980s. This area was subsequently reclaimed, and Bass Pond and Ricky Weiser Wetland were created in the mid-1990s. POS took over full management of the site following the release of bond for successful reclamation from the Colorado Division of Reclamation Mining & Safety in the late 1990s.

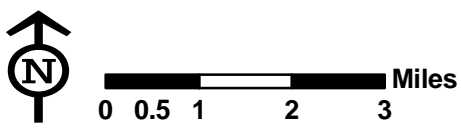
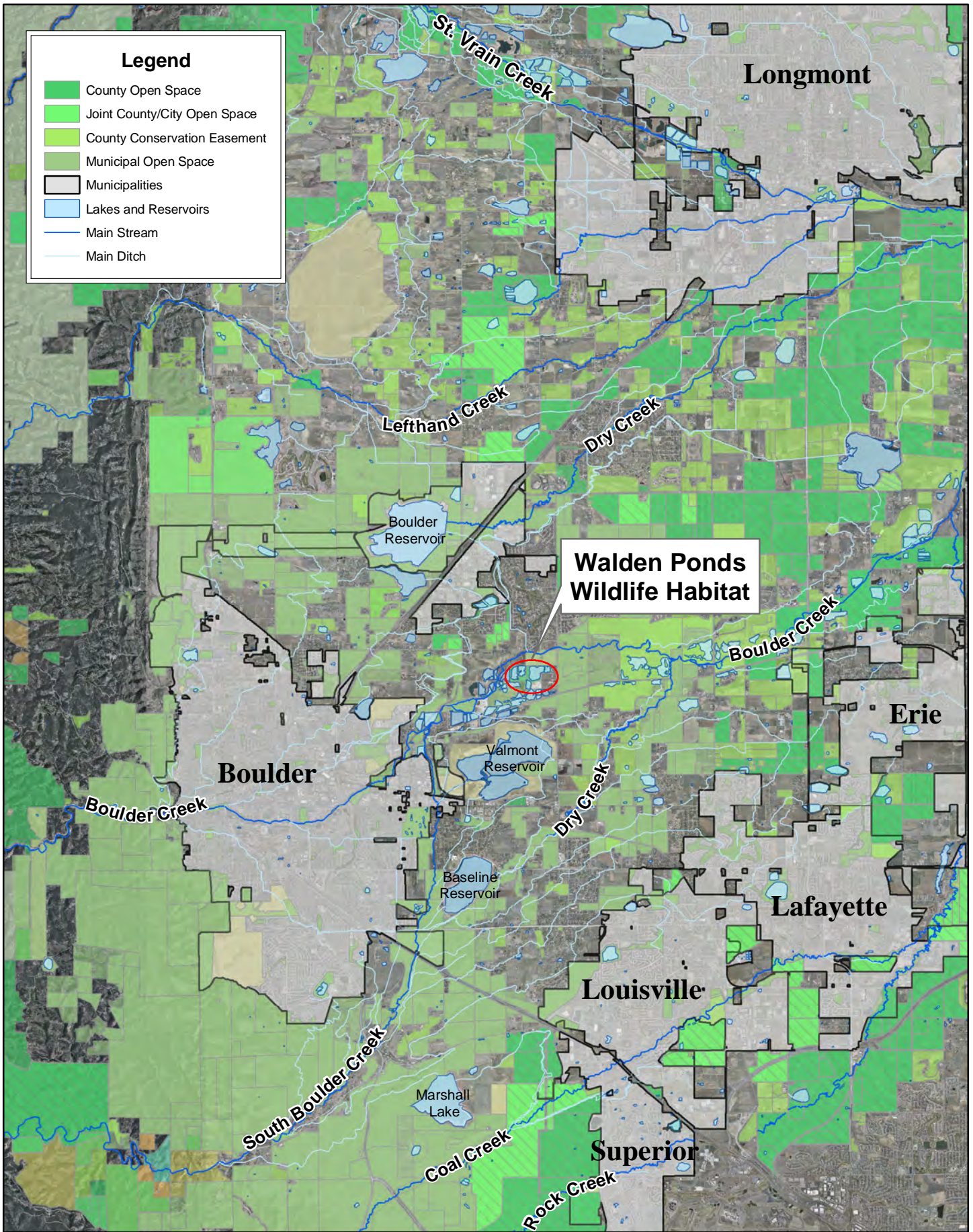


Figure 1.1 Site Vicinity-Regional Context
Walden Ponds Management Plan





* Sawhill Ponds is owned by the Colorado Division of Wildlife and managed by the City of Boulder.



0 237.5 475 950 1,425 1,900 Feet

Figure 1.2 Site Vicinity-Site and Adjacent Properties
Walden Ponds Management Plan



In 1976, a solar-heated A-frame house was completed southwest of Cottonwood Marsh. This building, originally used to house a resident ranger, became the POS ranger field station in 1978 and subsequently became office space for a number of POS personnel in 1989. The structure was torn down in 2006 following the construction of the new POS office building in Longmont, which consolidated all staff into one building. Another building was constructed in 1989 adjacent to the A-frame house (referred to as the B-frame) and also served as office space for POS staff until late 2005. It currently serves as the headquarters for POS's Volunteer Naturalist Program.

The Heatherwood property includes 1.85 acres and was dedicated to the County in 1978 for the Heatherwood Trail (Table 1.1.). The remainder of the trail and trailhead are approximately 1.0 acre in size and are primarily situated on City of Boulder property. The Heatherwood Trail and Trailhead were constructed in 1980. The original intent of the Heatherwood Trail was to connect the Heatherwood Subdivision with the City of Boulder along a proposed regional trail in the vicinity of Boulder Creek. This trail, however, was never completed due to objections by the City of Boulder due to concerns regarding potential impacts to wildlife within Sawhill Ponds. Therefore, the formal portions of the trail end at the Walden Ponds trail system. The natural surface trails of Walden Ponds connect to Sawhill Ponds, but do not exit that property as a regional trail.

Currently, Walden Ponds has a diversity of upland and aquatic habitats that have been developing and evolving over the past 30+ years. The mosaic of wetlands, riparian vegetation, grasslands, mud flats, and open water provides for numerous wildlife species, especially a large diversity of water birds. The water levels within the groundwater-fed ponds and wetlands fluctuate seasonally and annually, thus providing an ever-changing environment that provides for a variety of species and demonstrates the natural hydrologic cycle of the Front Range of Colorado.

One of the distinguishing characteristics of Walden Ponds within the POS system is that it provides a centrally located, easily accessible open space property for diverse populations of users within Boulder County. Visitors to Walden Ponds enjoy hiking, running, or biking on the approximately 2.9 miles of trails and the additional trails on the adjacent Sawhill Ponds. Other popular activities include bird watching, nature study, fishing, picnicking, or just relaxing. Many of the ponds provide fishing opportunities, including Wally Toevs Pond, which is specifically designated for seniors (64 years and older) and individuals with disabilities. The Boulder County Volunteer Naturalist Program is housed at Walden Ponds, and many outreach programs are conducted at Walden Ponds annually. The *Boulder County Parks & Open Space Five-Year Visitor Study – 2005* showed visitors to Walden Ponds were overall satisfied with the open space (POS 2006). The report also documented the types of visitor activities at Walden Ponds, as well as the percent of visitors involved in each activity, which included:

- Hiking (37%)
- Viewing Wildlife (36%)
- Fishing (8%)
- Running (5%)
- Relaxing / Nothing (5%)
- Dog Walking (2%)
- Mountain Biking (2%)
- Family Gathering (2%)
- Other (4%)

1.5 PLANNING PROCESS

Planning for the current Walden Ponds management plan began in June 2009 with an initial planning team meeting where an interdisciplinary team of POS staff began identifying management issues and concerns as well as potential opportunities and constraints for management (see Section 4.7 for list of planning team

members). During summer 2009, staff continued to collect, research, and review the available background information and data and began formulating potential management alternatives.

Following an initial review of available information and analysis of existing issues, the planning team conducted an initial public comment period, which was held between October 23 and November 21, 2009, and included two public open house meetings on October 28 and November 16. The purpose of the initial public comment period was to:

- Identify and document the public’s interests, values, needs, and concerns about management of Walden Ponds
- Identify the types of public activities and level of services desired
- Gather any additional information about Walden Ponds from the public
- Guide the planning process and subsequently help shape the future management of Walden Ponds

A total of 13 public comments were received (Appendix C).

Comments received during the initial public comment period helped the planning team with the next step in the planning process, which was to determine the best future management direction for Walden Ponds and documented and outlined in this management plan. Following the preparation of the draft management plan, the public was encouraged to review and comment on it. Public comments were received between May 28 and June 26, 2010, and a public meeting to review this management was held on June 10. A total of four public comments and one agency comment were received (Appendix I).

Following public review of the draft plan, POS will conduct a public hearing with the Parks & Open Space Advisory Board (POSAC), who will make a recommendation to the Board of County Commissioners (BOCC) for either approval or disapproval of the draft plan. The final plan will then go before the BOCC for final approval and adoption.

1.6 RELATIONSHIP TO OTHER PLANS, PROGRAMS, AND PLANNING EFFORTS

1.6.1 Boulder County Comprehensive Plan

The *Boulder County Comprehensive Plan* (Comp Plan) is an “advisory” document, which sets forth the goals and policies for land use in Boulder County (Boulder County 1999). Its intent is to provide guidance for land use decisions on public and private land. The “Open Space” element of the Comp Plan provides the goals and policies for open space acquisition (OS 1), resource management (OS 2), recreational use (OS 4), trails (OS 6), and public decision-making (OS 8), among others. Appendix B provides pertinent goals and policies from the Comp Plan that relate specifically to Walden Ponds.

In addition to the goal and policies outlined in the Comp Plan, the following designations are also made for Walden Ponds and within its vicinity:

- *Critical Wildlife Habitat* – includes Walden Ponds and the adjacent Sawhill Ponds (“Comprehensive Plan Map - Natural Communities, Rare Plants, Riparian Corridors, and Critical Wildlife Habitat” adopted on March 22, 1995, by Boulder County Planning Commission (BCPC))
- *Significant Riparian Corridors* - along the adjacent reach of Boulder Creek (“Comprehensive Plan Map - Natural Communities, Rare Plants, Riparian Corridors, and Critical Wildlife Habitat” adopted on March 22, 1995, by BCPC)
- *Stream Habitat Connectors* - along the adjacent reach of Boulder Creek (“Comprehensive Plan Map - Environmental Conservation Areas, Natural Landmarks & Natural Areas” adopted on March 22, 1995, by BCPC)
- *Environmental Conservation Area and Natural Areas* – includes the White Rocks / Gunbarrel Hill ECA and White Rocks Natural Area on the east side of 75th Avenue in the vicinity of Walden Pond

(“Comprehensive Plan Map - Environmental Conservation Areas, Natural Landmarks & Natural Areas” adopted on March 22, 1995, by BCPC)

- *Open Corridor, Streamside* - along the adjacent reach of Boulder Creek (“Comprehensive Plan Map – Open Space Plan” adopted on July 17, 1996, by BCPC)
- *Conceptual Trail Alignment* - along the former Union Pacific Railroad line south of Walden Ponds (“Comprehensive Plan Map - County Trail Map” adopted on January 20, 1999, by BCPC)
- *Travel Route* - along the adjacent reach of Boulder Creek (“Comprehensive Plan Map – Archeologically Sensitive Areas” adopted on November 30, 1983, by BCPC)
- *Archeological Sensitive Area* – in the vicinity of White Rocks Natural Area on the east side of 75th Avenue in the vicinity of Walden Pond (“Comprehensive Plan Map - Archeologically Sensitive Areas” adopted on November 30, 1983, by BCPC)
- *Moderate Geologic Hazard Area (Piedmont, flooding, expansive soil or claystone)* – includes Boulder Creek floodplain of which Walden Ponds is a part of (“Comprehensive Plan Map – Geologic Hazard & Constraint Areas” adopted on March 22, 1978, by BCPC)

1.6.2 Boulder Valley Comprehensive Plan

The *Boulder Valley Comprehensive Plan* is a planning document between the City of Boulder and Boulder County, which guides decision making regarding growth, development, preservation, and environmental protection, among other topics and defines the “desired land use patterns for the Boulder Valley”, which includes Walden Ponds (City of Boulder and Boulder County 2008). The BVCP calls for the commitment to open space preservation and the preservation of natural resources. The policies of the BVCP include protection and restoration of native ecosystems (4.06), preservation of unfragmented habitat and ecosystem connections (4.07), maintenance and restoration of ecological processes (4.08), protection of wetlands (4.09), control of invasive species (4.10), and providing access to public lands where appropriate (4.11). In addition, the BVCP shows a “Proposed Trail Conceptual Alignment” in the vicinity of the former Union Pacific Railroad line south of Walden Ponds.

1.6.3 Parks and Open Space Vision, Mission, and Goals

As a department, POS has its own vision, mission, and goals, which help to direct staff in planning for and managing the whole open space system and individual properties, including Walden Ponds. The vision, mission, and goals for the Parks and Open Space Department are as follows:

Vision

Mountain vistas, golden plains, scenic trails, diverse habitats, rich heritage...a landscape that ensures an exceptional quality of life for all.

Mission

To conserve natural, cultural, and agricultural resources and provide public uses that reflect sound resource management and community values.

Goals

- To preserve rural land
- To preserve and restore natural resources for the benefit of the environment and the public
- To provide public outreach and volunteer opportunities to increase awareness and appreciation of Boulder County’s open space
- To protect, restore, and interpret cultural resources for the education and enjoyment of current and future generations

- To provide quality recreational experiences while protecting open space resources
- To promote and provide for sustainable agriculture in Boulder County for the natural, cultural, and economic values it provides
- To develop human resources potential, employ sustainable and sound business practices, and pursue technological advancements

1.6.4 Parks and Open Space Resource Policies

Boulder County Parks & Open Space is currently in the planning phase for a number of resource-based policies, which will provide management direction and guidance for specific resource topics (e.g. forests, grasslands, water, recreation) over larger areas of POS holdings than is currently possible at the property specific management plan level. The policies, which are a new component of POS planning, will provide the broad philosophical and scientific underpinnings for management decisions by topic and provide an opportunity to articulate management goals and decisions across all POS holdings, thus providing “umbrella” guidance and consistency and cohesion in management across the entire system. The policies will be used in conjunction with property specific management plans, such as this plan for Walden Ponds. Once adopted by the Board of County Commissioners following a public participation period, the policies that will be relevant to management of the planning area will include the Wildlife Policy, Water Policy, and Recreation & Visitor Use Policy.

1.6.5 Previous Management Plan

The original management plan for Walden Ponds was prepared in 1982, seven years after the public opening of the open space, but prior to the mining of the west portion of the property (POS 1982). This management plan has guided POS management of the site since that time and helped set the stage for the current plan. The original management objectives were:

1. Reclaim “used land” for wildlife habitat after gravel mining has been completed.
2. Implement the current approved reclamation plan in cooperation with County Road District 1 and manage the reclaimed areas for wetland habitat, encouraging diversity of plants and animals, both resident fauna and migratory songbirds and waterfowl.
3. Both on an interim basis while mining is in progress and after reclamation has been completed, manage the entire Habitat property as a wildlife sanctuary by providing natural food, cover, nesting, and resting areas where appropriate.
4. Minimize the impact of man’s activities on the area and provide protection for the Habitat while allowing enjoyment for current and future Boulder County residents and visitors.
5. Provide for public sport fishing in some of the ponds at Walden.
6. Provide on-site environmental education opportunities for the public and develop examples and demonstrations of the environmental ethic.
7. Provide a good neighbor policy to adjacent landowners

1.6.6 Intergovernmental Agreements

Boulder County POS and the City of Boulder County’s Public Works Department, Utilities Division, are currently renegotiating an outdated Intergovernmental Agreement (IGA) for management of the Heatherwood Trail, which occurs on the City’s 75th Street Wastewater Treatment Facility property. The terms and conditions of the new IGA, in conjunction with this management plan, will dictate management of the Heatherwood Trail. In addition, POS will need to work jointly with the City of Boulder on the outlet ditch from Wally Toevs Pond, which also crosses the city’s wastewater treatment facility property.

1.7 PLANNING VISION AND GOALS

1.7.1 Vision Statement

The *vision* for Walden Ponds is a guiding statement for what we are trying to achieve in the future and is the foundation upon which the site is managed. It was developed by the planning team early in the planning process and was available to the public for review during the initial public comment period. It is based on a combination of current site conditions, opportunities and constraints, desired outcomes of management, and the best-case scenario. In short, the vision is what we want Walden Ponds to be in the future.

The vision for Walden Ponds Wildlife Habitat Area is...

...a wildlife haven of ponds, wetlands, and uplands on former gravel mines blanketed by native cottonwoods, willows, grasses, marsh species, mud flats, and open water for a diversity of species...

...an easily accessible place on the plains of Boulder County where people can observe and learn about the evolving landscape and natural cycles ...

...an open space with peaceful trails, exceptional wildlife viewing, captivating interpretation, and accessible fishing.

1.7.2 Goals

The planning goals set the course for analysis and discussion throughout the planning process. Based on initial scoping meetings, the management planning team and the public identified a number of management issues at Walden Ponds that need to be addressed. A particular goal of this plan is to provide better direction to POS staff regarding water management at Walden Pond, especially if a water right is obtained for the property, and to ensure that this management takes into consideration wildlife needs and visitor uses. The complete list of goals of the planning process is:

- To update the 1982 *Walden Ponds Wildlife Habitat Management Plan*, including removing any outdated information and adding any new, relevant information important for effective and efficient management of the site
- To assess and provide management direction for water management, including decision criteria regarding water diversions, appropriate water management infrastructure between ponds and wetlands, and management objectives for individual ponds and wetlands regarding desired water depths
- To assess and provide management direction for wildlife and vegetation management, including guidance on managing for a diversity of waterbirds and habitat types, management objectives for individual ponds and wetlands regarding desired wildlife species, and on removal of non-native, invasive species
- To assess and provide management direction for visitor use management and services, including upgrades to trails, trailheads, and other facilities, uses of the property, and management objectives for individual ponds and wetlands based on desired visitor uses

1.8 PLANNING ISSUES, OPPORTUNITIES, AND CONSTRAINTS

1.8.1 Issue Identification

Identifying and defining the most significant management issues is one of the first steps in POS's planning process for open space properties. A planning issue is a problem or concern regarding current management that needs to be addressed during the formal planning process. Identifying key issues helps to clarify and focus the management planning effort and to prioritize the most significant needs. Through a number of internal meetings, POS staff, most with many years of experience at Walden Ponds, provided information and

their expert opinion regarding the most pertinent management issues at the site. In addition, the public had the opportunity to give input and comments during the preparation of a management plan early in the planning process.

Based on information collected during the initial public comment period and from the internal POS scoping process, the project team identified the following key planning issues:

- Water availability and management including the current water diversion and delivery system between ponds and wetlands
- Protection and preservation of habitat for wildlife, especially a diversity of waterbirds, and native plant communities
- Recreational and educational opportunities
- Facilities maintenance and improvements including trailheads, trails, and disturbed areas
- Safe and environmentally sound access for educational programs and fishing
- Communication and coordination amongst staff and other agencies
- Long-term management and monitoring

A complete list of issues brought up during the initial scoping process can be found in Appendix C.

1.8.2 Issues Considered but Not Further Analyzed

A few issues were brought up during the initial scoping that did not warrant further consideration because they are unattainable, infeasible, outside the original intent for the open space, or otherwise outside the scope of the management plan. These issues and the reason why they were not further analyzed are included in Table 1.1.

Table 1.1 Issues Considered but Not Further Analyzed in Management Plan.

Issue	Reason Not Further Analyzed
Make ponds and wetlands deeper	The original gravel mining occurred down to the bedrock layer (Pierre Shale). This layer is hard and impermeable, and therefore, it would be difficult, expensive, and environmentally damaging to make the ponds and wetlands deeper by excavating further into the bedrock. In addition, POS would need to obtain a grading permit as well as meet other permitting requirements, which would be a costly and lengthy process.
Convert ponds and wetlands to upland habitat	This suggestion for management is outside the original intent of the open space, which was to convert former gravel ponds and wetlands to wetland and aquatic habitats with surrounding uplands. In addition, converting the ponds and wetlands to uplands would be costly and greatly impact existing vegetation and wildlife habitat.
Provide first-rate fishing experience	Although providing fishing opportunities is and has been a primary management goal since the inception of Walden Ponds, site conditions including the fluctuating groundwater limit the fishing experience. POS has limited control over water levels, and therefore, is not able to consistently provide a first-rate fishing experience, which can be found at other near-by locations.
Work with airport on aviation noise	This issue is outside the scope of this management plan.

1.8.3 Management Opportunities

A number of opportunities (i.e. potential future management options) exist within the planning area. Many of these opportunities provide the means to further protect, enhance, and interpret the natural resources of Walden Ponds and to provide a range of visitor uses and facilities. The following are some of the main management opportunities available to manage the lands and resources at Walden Ponds. The opportunities outlined here, however, do not necessarily represent the actual future management direction for Walden Ponds. Rather, they helped guide the planning team toward the best possible future management direction, which is outlined in this management plan.

- Continue to serve many communities including Boulder, Erie, Lafayette, Louisville, Superior, Longmont, and other parts of the county and provide an open space experience for diverse populations within Boulder County, such as seniors, people with disabilities, and youth, among others
- Assess existing and future habitats and determine how much area should be upland, shallow emergent marsh, deep emergent marsh, mud flats, riparian, and open water
- Allow habitat areas to continue developing under current trajectory, thereby letting nature “manage” the site and allowing succession to occur
- Maximize the area of open water habitat
- Maximize habitat diversity by managing water levels
- Maximize habitat diversity by altering the terrain in and around ponds and wetlands
- Determine the most effective and efficient means to manage for desirable habitats
- Further enhance site for key wildlife species through plantings, water management, weed control, etc.
- Install more wildlife structures such as bat boxes to enhance the habitat at Walden Ponds
- Control non-native, invasive species, especially Russian olive, tamarisk, and others
- Individual ponds and wetlands provide different uses and values and may need to be managed individually for specific management objectives, for example some managed for fishing and others for wildlife habitat
- Improve the management of water on site by providing specific management objectives and strategies for individual ponds and wetlands
- Secure a water right for Walden Ponds
- Fill portions of ponds and wetlands with soil to create more diverse habitats and expand uplands
- Increase depths of ponds and wetlands by excavating into shale
- Keep ponds and wetlands filled with water at all times to stop fluctuating water levels and improve aesthetics
- Reconsider or refocus existing uses at Walden Ponds
- Improve trail system including consideration for trail locations and surface types
- Reconsider parking design with consideration for seniors, people with disabilities, bus and horse trailer parking, and other capacity issues (also note lunch time visitors who don’t get out of vehicle while eating lunch in parking areas)
- Reconsider location of existing boardwalk

- Provide safer and more environmentally sound access to ponds and wetlands (e.g. stairs, piers, etc.)
- Clean up and reclaim around disturbed areas (e.g. around former building sites)
- Jointly or consistently manage Walden Ponds with Sawhill Ponds
- Continue using site for interpretive programs and headquarters for POS Volunteer Naturalists
- Change expectation of visitors through better communication of what to expect (e.g. fluctuating water levels within ponds and wetlands)
- Provide alternatives to Walden Ponds for fishing and visitor use when water levels are low
- Review fishing program including whether to keep Wally Toevs Ponds open to seniors and people with disabilities only or expand to other groups (e.g. allow children under 15 to use if with a senior or a person with a disability)
- Acquire adjacent properties for habitat, trails, and access if and when they become available from a willing seller

1.8.4 Management Constraints

In addition to the opportunities for future management, a number of constraints (i.e. potential limitations or restrictions to management) also exist within the planning area. When considering any management action, POS always takes into account budgets, personnel, current policies and other planning documents, regulatory concerns, public sentiment, impacts to resources, and environmental limitations, among other potential constraints. The following are constraints considered in developing the management plan for Walden Ponds.

- May not have the ability to manage the site for some desired outcomes (e.g. management for specific species or habitat type or specific visitor use objectives) due to limitations with water availability
- Potential to negatively impact existing habitat and wildlife with any changes to management
- Potential impacts to wildlife and vegetation from visitor uses such as trails and interpretive programs
- No water rights are currently associated with Walden Ponds
- Water levels within each pond are primarily controlled by groundwater levels, which fluctuate annually and seasonally based on annual and long-term precipitation locally and within the watershed
- Dynamic and fluctuating groundwater within ponds and wetlands makes existing management difficult for visitor use experience, habitat management, and education programs
- If a water right is obtained through the 2002 filing, it would still be unlikely that POS gets water in the majority of years because the water right would be a junior right and the water needs of all senior water right holders downstream would need to be fulfilled before water would be available for Walden Ponds
- Water is typically only available (i.e. when there are no calls for water from downstream water right holders) in wet years, making it less needed at Walden Ponds because the ponds and wetlands are being recharged by groundwater
- New water storage within Walden Ponds may require additional water augmentation
- For freshening flows, inputs would need to equal outputs, which may be difficult to accomplish
- Any additional excavation of ponds and wetlands would require a grading permit and be limited by the presence of the hard shale layer that currently exists beneath each pond

- Additional engineering and hydrologic studies may be required to determine the best method for water management
- Active management of water in the ponds and wetlands may be seen as “tinkering” with nature and may not be sustainable in the long-term.
- May not be meeting some members of the public’s expectations of what they will “find” at Walden Ponds if water levels are low
- Some members of the public may have a negative reaction to seeing low water levels and large mud flat areas and may avoid visiting Walden Ponds during these times
- There are less requests for interpretive programs at Walden Ponds when water levels are low
- Costs of any management action needs to be equal to or less than the ecological or visitor use benefits received
- Climate change and its impact on water availability and habitats

1.9 IMPLEMENTATION, MONITORING, AND MODIFICATION OF THE MANAGEMENT PLAN

1.9.1 Implementation

This management plan provides an overall management vision and specific management goals, objectives, and strategies for the planning area (see Sections and 3.3). It is the responsibility of POS to implement this plan and ensure the vision is upheld and the goals and objectives are achieved. Following approval of this plan by the BOCC, staff will assign specific goals, objectives, and strategies to POS divisions (i.e. Resource Management, Operations, Resource Planning), which will be responsible for and include these tasks in their respective work plans for the coming years as necessary. POS staff, volunteers, or contractors may carry out the actual implementation of any task. Certain items presented within this plan will lead to specific management actions or develop into one-time projects, while other aspects of the plan provide more general management direction or involve on-going management. Therefore, not all goals, objectives, or strategies will have specific tasks to be completed, but each will have the tangible result of upholding the vision for Walden Ponds.

1.9.2 Monitoring

To uphold the vision for Walden Ponds, protect the resources, maintain adequate facilities and amenities, ensure suitable and satisfactory visitor uses, and meet the goals and objectives presented in this plan, monitoring is a critical component of overall implementation and management. The management direction presented in Section 3.3 outlines a three-prong approach to monitoring using both qualitative and quantitative data and information. This approach includes monitoring 1.) to ensure the overall vision for Walden Ponds is maintained over time, 2.) to ensure the goals, objectives, and strategies are implemented, and 3.) to track natural resources, facilities, and visitor uses over time. POS has responsibility for monitoring and will do so periodically and as needed.

1.9.3 Management Plan Modification

Overall, the planning team has tried to be comprehensive and include all foreseeable opportunities and constraints within the planning area, and it is intended that this management plan direct management at Walden Ponds for a minimum of 15-20 years. However, it may be determined prior to the anticipated life of the plan that modifications are warranted. Minor changes to management are allowed within this plan as part of the adaptive management process. The process of adaptive management includes setting goals and objectives as has been done in this plan, implementing management actions to achieve those goals and objectives, monitoring and tracking management actions and visitor and resource responses to these actions, and finally, reassessing and refining the strategies used to more effectively and efficiently manage the site.

This process is reiterative and can be conducted internally amongst POS staff as long as the vision for the property is upheld through the process.

If, however, significant changes to management are proposed within the planning area, it may require further public involvement, as well as presentation to POSAC and approval from the BOCC. The types of changes that would warrant this include:

- Proposed major change in the vision for the property
- Proposal for considerable changes in management goals and objectives if the changes significantly affect visitor use or resources
- Significant change in visitor use (e.g. increase recreational uses) or resources (e.g. T&E species) that would cause a change in management
- Sizeable new land added to the property
- Potential to add significant new trails, trailheads, or other infrastructure
- Staff needs more direction on management issues than current plan provides

CHAPTER 2 – AREA PROFILE

2.1 INTRODUCTION

This chapter provides a brief overview of the land uses and the existing physical, natural, and cultural resources and visitor uses and services currently provided within the planning area. Information from resource-specific surveys, broad-scale assessments, and the knowledge and experience of POS resource specialists provided the baseline conditions for the planning area. Specific aspects of each resource discussed in this section (e.g., wildlife, weeds, recreation, and education and outreach) were raised during the initial scoping period and subsequently considered by the planning team in developing the final management recommendation. The level of information presented in this chapter is commensurate with and sufficient to assess potential outcomes of the management direction outlined in Chapter 3. Acreage figures and other numbers used are approximate projections; readers should not infer that they reflect exact measurements or precise calculations. Acreages were calculated using GIS technology, and there may be slight variations in total acres between resources.

2.2 LAND USE

2.2.1 Acquisition History

The properties that comprise Walden Ponds and the adjacent road maintenance yard were originally purchased by Boulder County between 1958 and 1972. The first three parcels were purchased from Larwill A. and Lois S. Biddle (Table 2.1.). The first parcel, acquired in 1958, consisted of the current road maintenance yard, the area around Duck Pond, the south half of Cottonwood Marsh, and the entrance road right-of-way. The second parcel, purchased in 1961, consisted of the north half of Cottonwood Marsh. The third parcel, acquired in 1962, consisted of the area around Wally Toevs Pond. During the ensuing years, about 60 acres of these three parcels were mined down to the Pierre Shale bedrock. In 1967, an option to purchase was exercised with James B. and Bernice W. Gould for an additional 41.5 acres immediately west and adjacent to the county property. Final purchase of this parcel took place in 1972. The Heatherwood property includes 1.85 acres and was dedicated to the County in 1978 for the Heatherwood Trail. The Heatherwood Trail and Trailhead are approximately 1.0 acre in size (3905 linear feet x 10-foot wide trail plus area of trailhead) and are situated on City of Boulder property.

Table 2.1 Planning Area Land Status

Property Name	Area (Acres)	Year Purchased	Purchase Price
Biddle Property I	70.9*	1958	\$101
Biddle Property II	See note*	1961	\$100
Biddle Property III	See note*	1962	\$100
Gould Property	40	1967	\$103,655
Heatherwood Parcel	1.85	1978	\$0
Heatherwood Trail and Trailhead (City of Boulder property)	1.0	NA	\$0
Total	102.25*		

* Note: All properties were purchased by Boulder County for gravel mining by the Transportation Department's Road Maintenance Division. Management by POS began in the mid-1970s. Area of Biddle Property II and III are included under Biddle Property I. Area of land currently managed by Boulder County Transportation Department (approximately 11.5 acres) subtracted from total. Total land area for Walden Ponds, Heatherwood Property, and Heatherwood Trail is approximately 102.25 acres.

The original intent of the purchased land within Walden Ponds was to excavate the gravel resources for use by Road Maintenance and for the headquarters for Road District 1. By the early to mid-1970s, the use and purpose of the site began to change as reclamation and conversion of the former gravel mines to wildlife habitat began to occur. Since obtaining management responsibility for the site beginning in the mid-1970s and based on direction found in the original management plan, POS has managed Walden Ponds for wildlife habitat and for passive public recreational pursuits (POS 1982). The original intent of the Heatherwood Trail was to connect the Heatherwood Subdivision with the City of Boulder along a proposed regional trail in the vicinity of Boulder Creek and passing through Walden Ponds. This trail, however, was never completed due to objections by the City of Boulder and some members of the public due to potential impacts of the trail to wildlife within Sawhill Ponds and along Boulder Creek. Therefore, the trail was not extended past Walden Ponds.

2.2.2 Existing Land Uses

At some point in the early history of Boulder County, the land that now supports Walden Ponds was transformed from a native prairie and riparian ecosystem to pastures for hay and livestock grazing. This use continued into the 1950s when Boulder County began to purchase the property for its gravel resource. In 1958, gravel mining at Walden Ponds began and continued sporadically until the mid-1990s. Reclamation of the three eastern ponds and wetlands for wildlife habitat began in 1974, and the site opened as a public open space in 1976 with a number of recreational amenities including trails, fishing access, and bird blinds. Gravel mining and subsequent reclamation efforts for the western ponds and wetlands concluded in the mid-1990s. Trails were designated around these ponds and wetlands and incorporated into the existing trail system, and other uses such as fishing were incorporated.

Walden Ponds, therefore, has been operated and maintained as a public open space since the mid-1970s. The current land uses include the five reclaimed gravel pits, which are utilized for wildlife habitat and recreational fishing, and the surrounding upland habitat, which contains approximately 2.9 miles of multi-use trails. One building and its adjacent parking lot is situated near the middle of the site and is utilized as the Volunteer Resource Center for POS's Volunteer Naturalist Program. The planning area contains three trailheads located at Wally Toevs Pond, Cottonwood Marsh, and the start of the Heatherwood Trail.

2.2.3 Access

Walden Ponds has three primary access points (Figure 1.2). The main access to Walden Ponds, Walden Ponds Driveway, is located off of North 75th Street approximately 0.5 miles south of Jay Road. The Wally Toevs Pond Trailhead is approximately 0.1 miles east of North 75th Street, while the Cottonwood Marsh Trailhead is approximately 0.35 miles from North 75th Street. The other primary access point is the Heatherwood Trail Trailhead located along North 75th Street approximately 0.14 miles south of Jay Road adjacent to the south bank of Boulder Creek. Visitors may also access Walden Ponds via connecting trails from the adjacent Sawhill Ponds.

2.2.4 Adjacent Land Use and Ownership

Walden Ponds is surrounded by public and private property. Private property borders the site on the west and east, and partially on the west half of the north boundary. These properties contain low-density residential housing, and many are used for agricultural purposes. The City of Boulder's wastewater treatment plant, including the newly installed solar panel field, occurs on the east half of the north boundary. This property and its buildings and infrastructure provide wastewater treatment for the City of Boulder. The Heatherwood Trail Trailhead is situated immediately north of this facility and the majority Heatherwood Trail occurs on City property. The Colorado Division of Wildlife's Sawhill Ponds, which also consists of a series of former gravel mines and is managed under a lease agreement by the City of Boulder as a public open space, is located south of Walden Ponds. This area contains 17 former gravel pits over approximately 193 acres that are similarly managed as wildlife habitat and for public recreation. The trail systems of Sawhill Ponds and Walden Ponds are connected at designated points (Figure 1.2), and many visitors make use of both properties during their visits. Road Maintenance continues to operate a road maintenance yard south of

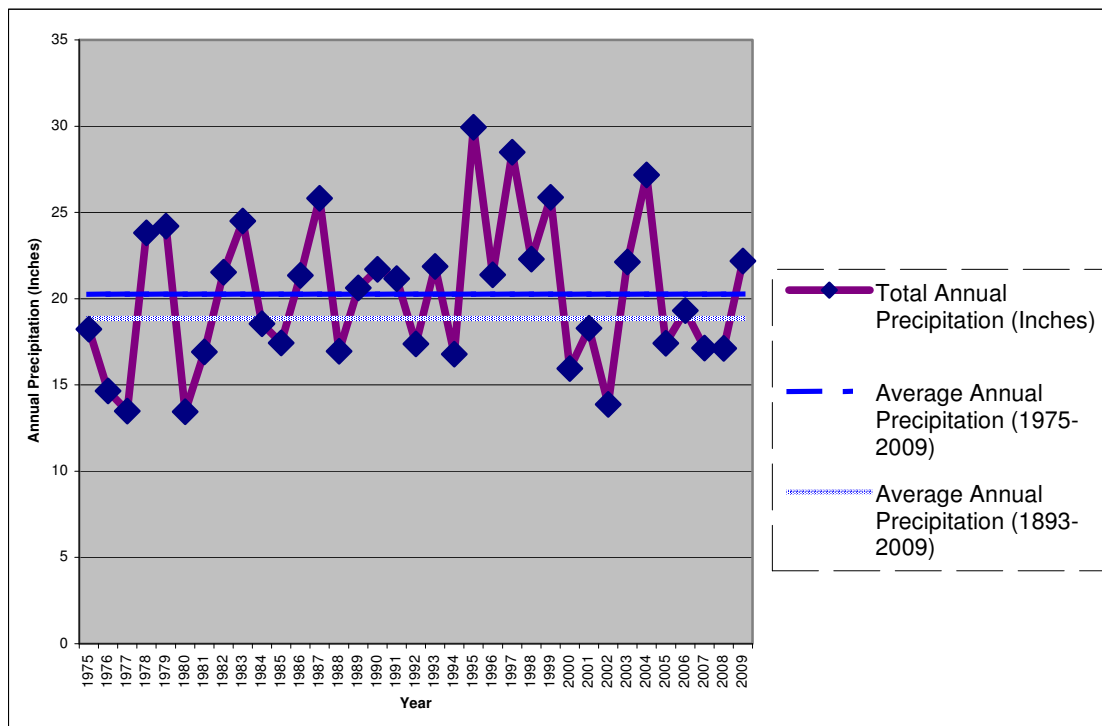
Cottonwood Marsh and east of Duck Pond. The primary purpose of this facility is a base for snow removal operations within the southeast portion of the county, including the storage of salt and sand on site, as well as aggregate storage and production. Walden Ponds Driveway ends at the road maintenance yard, and a number of road maintenance trucks and other vehicles enter and exit the site throughout the day. This facility also contains office and storage space for other Boulder County departments, including the Facilities Department. Walden Ponds is zoned Agricultural by Boulder County Land Use.

2.3 PHYSICAL SETTING

2.3.1 Climate

Climate is one of the primary driving factors at Walden Ponds that determines water availability. Walden Ponds has a continental, semi-arid climate that is greatly influenced by the Rocky Mountains and nearby Front Range. This climate is characterized by hot summers, cold winters, and limited precipitation. Based on weather data collected at the Boulder weather station between 1893 and 2009, the average annual maximum temperature is 64.3°F, and the average annual minimum temperature is 38.3°F (WRCC 2010). July is the hottest month on average (86.3°F), and January is the coldest month on average (20.5°F). Total average annual precipitation is equal to 18.67 inches, with May being the wettest month (average of 2.97 inches) and March being the snowiest month (average of 16.3 inches of snow). Figure 2.1 displays the annual precipitation at Boulder between 1975-2009. This data shows that the area has experienced both wet years (e.g. 29.9 inches in 1995, 28.5 inches in 1997, and 27.2 inches in 2004) and dry years (e.g. 13.5 inches in 1977 and 1980 and 13.9 inches in 2002) (NOAA 2010). For comparison, the average precipitation (20.26 inches) between 1975 and 2009, which corresponds to the existence of Walden Ponds as a public open space, and the long-term average precipitation (18.85 inches) for the period 1893-2009 are provided.

FIGURE 2.1 TOTAL ANNUAL PRECIPITATION (INCHES) FOR BOULDER, CO, BETWEEN 1975 AND 2009 WITH AVERAGES FOR THE PERIODS 1975-2009 AND 1893-2009



Data from: <http://www.csr.noaa.gov/psd/Boulder.mm.precip.html>

2.3.2 Topography

Walden Ponds topography is relatively flat except for the five reclaimed gravel mine pits, which include Wally Toevs Pond, Cottonwood Marsh, Duck Pond, Bass Pond, and Ricky Weiser Wetlands (Figure 2.2). The original reclamation plan called for the creation of peninsulas, bays, islands, gentle side slopes (3H:1V), varied pond depths (shallow to deep), and a variety of pond shapes to increase the diversity of habitat types and plant and wildlife species (Toburen 1974, POS 1982). Elevations at Walden range from 5,130 feet above sea level at the southwest corner of the site to approximately 5,115 feet at the northeast corner. Individual ponds and wetlands, however, have more diverse elevations. Figure 2.2 provides the approximate depths from water surface of each pond based on data collected by POS staff (Dave Hoerath, wildlife specialist) in June 2001 when the ponds and wetlands were at or near capacity. Although not specific elevations, these depths provide the general topography of the ponds and wetlands. In general, Wally Toevs Pond and Bass Pond are the deepest ponds at Walden Ponds with depths of 6-10 feet below water surface (bws) throughout a large portion of each with smaller areas within the 1-6 feet bws range. Ricky Weiser Wetland and Duck Pond each have a wider range of depths with the majority of each pond in the range of 1-5 feet bws and smaller pockets that are 5-10 feet bws. Cottonwood Marsh is the shallowest of all the ponds and wetlands. In fact, a majority of the site has water depths of 0-2 feet bws. The east / northeast corner of Cottonwood Marsh, however, has depths of 3-6 feet bws.

Because the depth to groundwater primarily determines the water level within each pond at Walden, the deeper the pond, the more likely groundwater will be exposed. Shallow ponds on the other hand are more likely to “dry up” with receding groundwater levels and higher evaporative losses. In this way, the topography of each pond or wetland bottom greatly influences the extent of water within each.

2.3.3 Geology and Soils

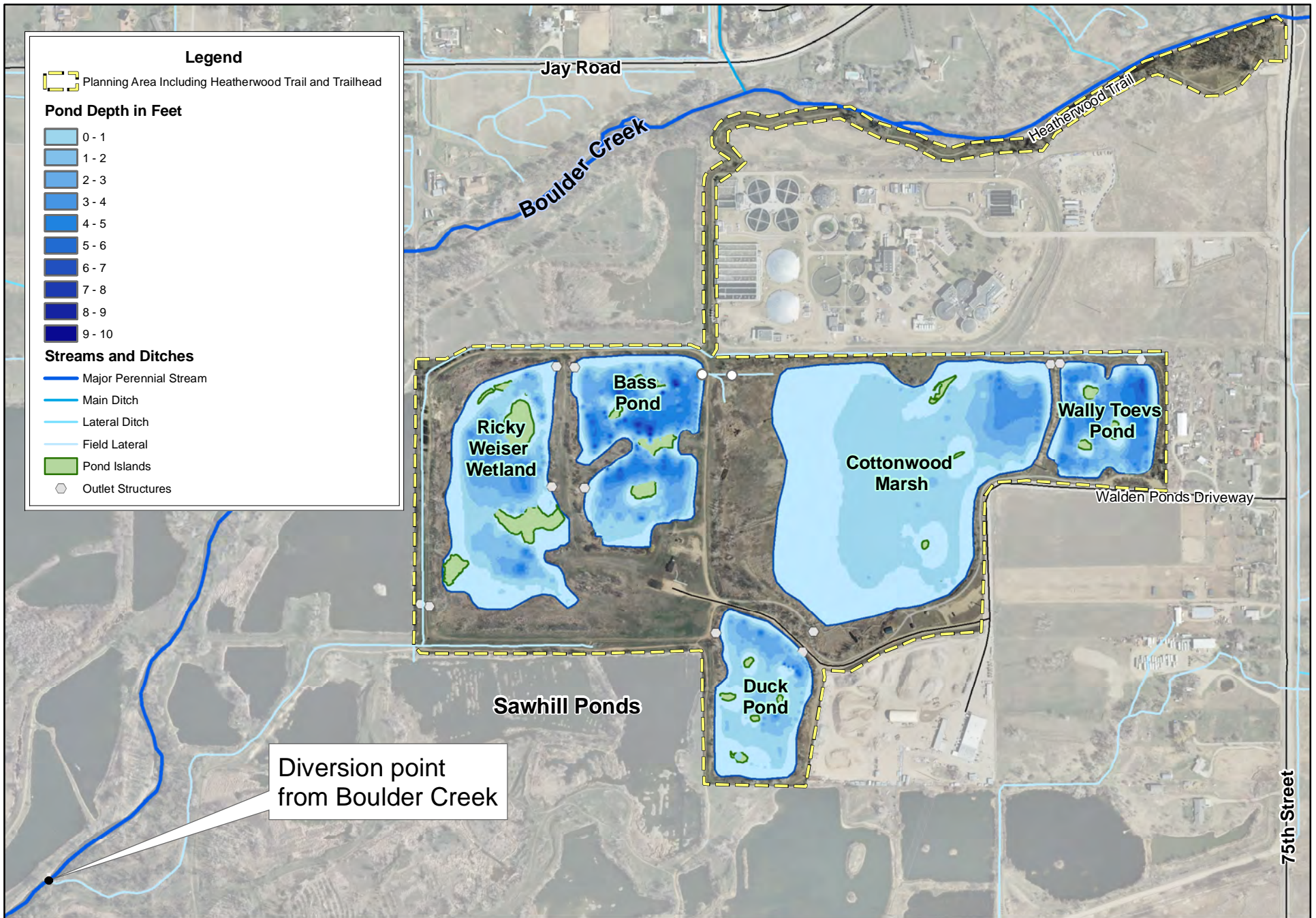
Geology

With the retreat of an ancient sea covering the region and the formation of the Rocky Mountains and Front Range to the west, the eastern Boulder County landscape was exposed to the forces of running water, glaciation, and wind. The effects of these forces on the exposed land surface have resulted in the deposition of large quantities of alluvial (river-transported), colluvial (landslide-transported), eolian (wind-transported), and various glacial sediments and materials of Quaternary age (less than two million years old). These unconsolidated surface deposits include loose sand, silt, gravel and clay.

The high mesas west of Walden Ponds show the former position of the plains. These land surfaces descend away from the foothills in gigantic steps from one terrace level to another, giving 500-1000 feet of relief from the highest mesa down to the present outwash plain of Boulder Creek. At one time, all the streams were at or above the level of the highest current-day mesas (e.g. Gunbarrel Hill, Haystack Mountain, Rocky Flats, etc.), and they meandered across great floodplains. After mountain uplift, the stream flow was rejuvenated and preceded to cut valleys. This process of valley cutting and valley widening was repeated no less than five times in this region. Both the highest mesas and the lower series of terraces reveal the erosion and deposition processes since all are capped with stream-deposited boulders and pebbles.

The gravel deposits in the Walden Ponds area range in size from sand and silt to well-rounded cobbles up to approximately 8 inches in diameter. The deposits consist basically of the same rock types as are found in the more resistant formations of the Front Range, including: Granodiorite, Quartzite, Quartz and feldspar grains, Hornblende gneiss, Mica, and Sandstone. Basalt cobbles from the nearby Valmont Dike are also found. The thickness of the gravel deposits in the Walden Ponds area averages from 5 to 20 feet. Even though the deposits are rather shallow, they are relatively uniform in composition and are considered fairly high grade for construction purposes, thus the deposits at Walden Ponds were mined.

Underlying the gravel beds is an older, more erosion-resistant Upper Cretaceous (80 million years old) sedimentary rock formation known as Pierre Shale. It is 5,000 to 8,000 feet thick and consists of gray to black clay, siltstones, and sandy shales interbedded with bentonite. Because of its high clay content, the Pierre Shale formation is highly impermeable and generally prevents recharge of water to other lower bedrock units.



* Pond depth data collected in June 2001. Data may not reflect maximum depths of ponds when water levels are near capacity.

0 200 400 800 1,200 1,600 Feet

**Figure 2.2 Hydrology
Walden Ponds Management Plan**



At Walden Ponds, bedrock elevations generally descend from west to east along with the gradual decline in topography. The bedrock lies within 15-20 feet below the ground surface of the unmined areas. Most ponds and wetlands were mined down to this bedrock layer. This bedrock layer strongly restricts the movement of the overlying groundwater aquifer to a lateral flow and keeps water perched within each pond.

Classification and Description

The Natural Resource Conservation Service (NRCS) mapped three soil units within the Walden Ponds planning area following gravel mining and reclamation (Figure 2.3). These include Gravel Pits and Mine Dumps, Niwot Soils, and Water. The following are detailed descriptions of each soil type based on NRCS soil survey (NRCS 2010).

Gravel Pits and Mine Dumps. This soil unit comprises about 13% of the total planning area. It consists of spoils from the mining operation and is composed of extremely gravelly sand, extremely gravelly coarse sand, and very gravelly coarse sand.

Niwot Soils. Niwot Soils are the pre-existing soil unit that covered the majority of the site prior to gravel mining. It still is mapped in portions of the site (approximately 13%) primarily around the perimeter. It occurs along floodplains and terraces, is poorly drained, is flat (0-1% slope) and consists of loam within the top foot of soil and gravelly sand below that.

Water. Approximately 74% of Walden Ponds is mapped as Water by NRCS.

Soil Conditions

Overall, the current soil conditions at Walden Ponds appear to concur with the soil units mapped by NRCS. It is known that much of the land surrounding each pond was greatly disturbed during mine operations. Although topsoil was supposed to be salvaged, stored, and respread across the regraded terrain to help with plant reestablishment, it is unknown to what extent this actually occurred. Staff has noted in the past that certain areas have been more difficult to revegetate, which is likely due to the lack of a “healthy” topsoil layer. Without sufficient organic matter and nutrients and good structure in the topsoil, plants are unable to survive or form strong and vigorous communities. In addition, it has also been noted that some introduced materials (e.g. chunks of concrete) were also buried on-site during mining and reclamation, which also may impact the ecological conditions of the site. It is unknown to what degree such factors as excessive soil compaction, contaminants such as oil and gas from mining vehicles and equipment, and other unfavorable factors may have limited site development, though currently, no evidence of such conditions exists.

The majority of the site has been developing for the past 15-30+ years since reclamation, and it is assumed that soil conditions have improved since that time. As the site continues to develop, soil conditions will continue to slowly improve naturally through the addition of organic matter, accumulation of nutrients, and the development of better soil structure.

2.3.4 Water Resources

Water is a vital resource at Walden Ponds. It provides an important visual resource for visitors, fishing opportunities for anglers, unique educational opportunities, and essential and diverse habitats for a variety of native plant and wildlife species. Yet, water at Walden Ponds is never constant. Since its creation, water levels have fluctuated annually and seasonally, at times appearing almost non-existent. This is because water levels within the ponds and wetlands at Walden are primarily controlled by the dynamics of groundwater and evapotranspiration (Ayers Associates 2002, Babcock 2005).

Walden Ponds is located within the Boulder Creek watershed, which is part of the South Platte River Basin. The watershed extends from the Continental Divide to approximately 22 miles east of Boulder, where it enters St. Vrain Creek. The two major streams in the watershed are Boulder Creek and South Boulder Creek. The total tributary area of Boulder Creek is about 440 square miles, of which nearly 320 square miles are upstream of Walden Ponds. The average annual watershed flow is approximately 120,000 acre-feet with

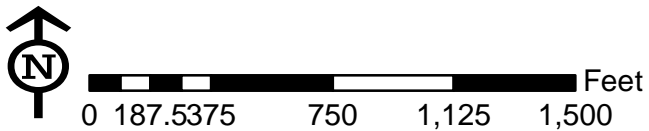
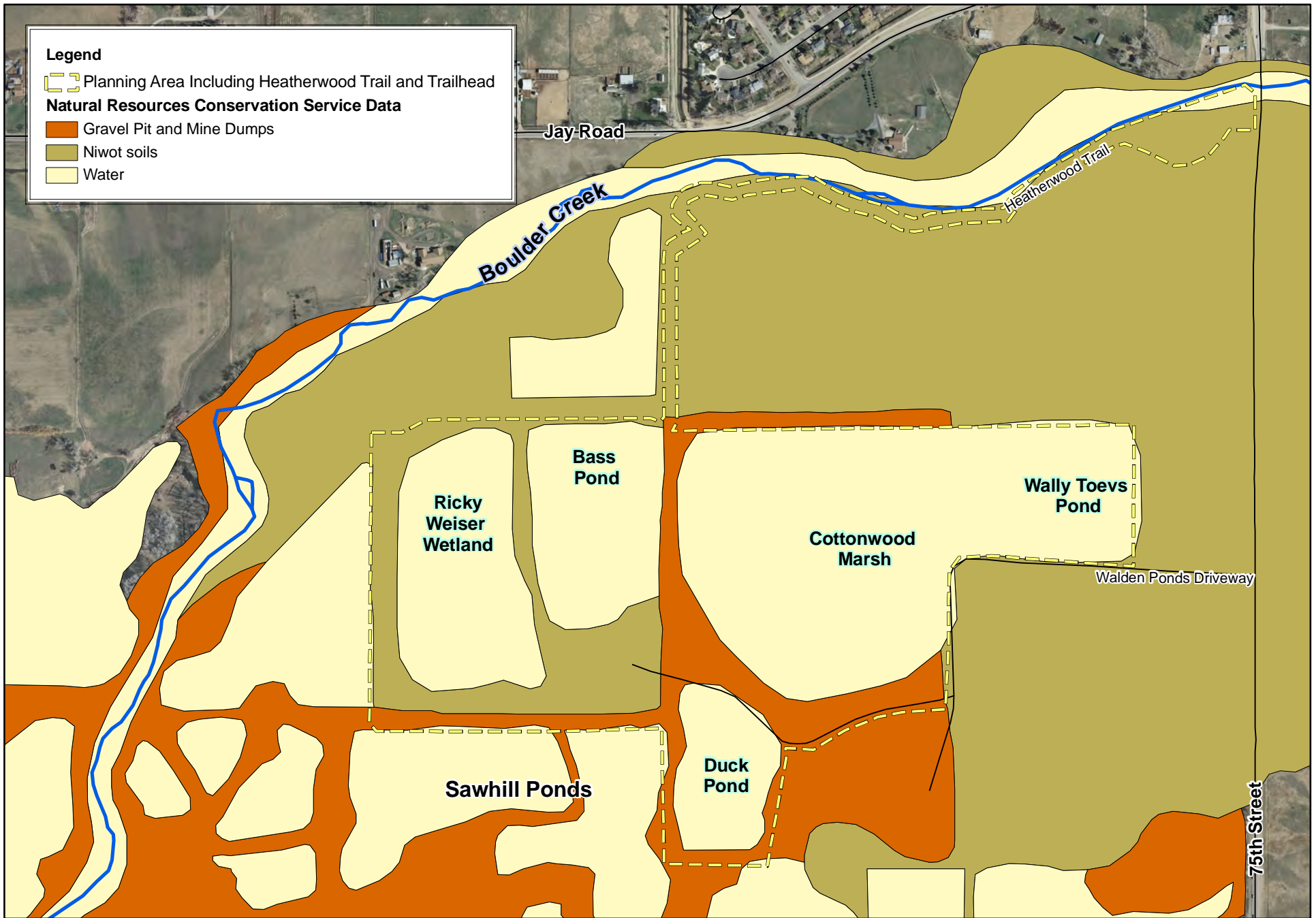


Figure 2.3 Soils Map
Walden Ponds Management Plan



approximately 65,000 acre-feet within Boulder Creek and 55,000 acre feet within South Boulder Creek. The range of combined annual average flows is from approximately 50,000 acre-feet in a dry year to approximately 175,000 acre-feet in a wet year. Low flows usually occur in February, and high flows, which result from mountain snowmelt and spring rain, occur from April to July. Additional water supplies are imported to the area for both domestic and agricultural purposes. These supplies eventually find their way into the waterways and underground aquifers along Boulder Creek. Water is primarily utilized for municipal, industrial, and agricultural uses throughout the watershed.

Groundwater

Groundwater within the vicinity of Walden Ponds occurs in unconsolidated alluvial deposits of materials ranging in size from clay to gravel, which overlie bedrock comprised of clay and shale. The deposits underlying the immediate valley bottom and low terraces along Boulder Creek are approximately one mile wide and trend east and west. The groundwater is largely confined to these gravel deposits due to the impervious nature of the underlying Pierre Shale formation. The general direction of flow in the aquifer in the Walden Ponds area is northeastward. Groundwater levels in the alluvial deposits fluctuate with water table conditions and are hydraulically connected to stream flow in Boulder Creek at certain distances.

Walden Ponds recharge generally occurs from the south and west by percolation of rainwater, natural groundwater flow, and seepage from irrigation ditches. The groundwater slope in the area is approximately 0.5-feet/100 ft (POS 1982). Groundwater levels vary to some degree seasonally and annually depending on inputs and outputs to the aquifer. Appendix D provides groundwater data that was collected at Walden Ponds in 2001, 2002, and 2008 from various wells on site. Based on limited data, the wells showed fluctuations between 0.5 feet to 1.5 feet during the years of data collection (2001, 2002, and 2008). This corresponds to data presented in the original management plan for Walden Ponds, which documented changes in water levels within wells between 0.5 feet and 2.5 feet (POS 1982).

Surface Water

At Walden Ponds, there are presently five main bodies of water including Wally Toevs Pond, Cottonwood Marsh, Duck Pond, Bass Pond, and Ricky Weiser Wetland (Figure 1.2). Each of these was created during gravel mining and the subsequent reclamation. The ponds and wetlands are connected via various culverts, which based on their elevations control the maximum elevation of each pond and wetland (Figure 2.2). Table 2.2 provides the approximate area of each pond and wetland at capacity. Appendix D presents staff gauge data taken at each of the pond and wetland at various times throughout the history of the site. Table 2.3 shows the average depth for each staff gauge, lowest staff gauge reading, highest staff gauge reading, and the years of data collection based on the data in Appendix D. This data was collected sporadically during these time periods, and it is unknown whether any staff gauges were moved during the period of measurements. However, this data shows the seasonal and annual variations that are seen in water depths within the ponds and wetlands at Walden Ponds.

Table 2.2 Ponds and Wetlands at Walden Ponds Wildlife Habitat.

Pond or Wetland	Area (Acres)
Wally Toevs Pond	5.33
Cottonwood Marsh	26.7
Duck Pond	6.32
Bass Pond	9.68
Ricky Weiser Wetland	11.58

Table 2.3 Staff Gauge Readings at Walden Ponds

	Wally Toevs Pond	Cottonwood Marsh	Duck Pond	Bass Pond	Ricky Weiser Wetland
A DEPTH AT STAFF GAUGE (FEET)	2.8	2.9	2.5	2.3	3.6
Lowest Staff Gauge Reading (Feet)	0.42	0.06*	0.04*	0.4	1.75
Highest Staff Gauge Reading (Feet)	5.45	5.6	4.45	4.4	6.26
Years of Data Collection (sporadic measurements)	1977-2010	1977-2010	1977-2010	1989-2010	2006-2010

* Includes lowest reading on staff gauge. Actual lowest reading was below the staff gauge.

Floodplains

The entire planning area is within the Boulder Creek 100-year floodplain. In 1985, the City of Boulder constructed berms around its water treatment facility to protect it from the 100-year flood. To protect adjacent landowners to the east of Walden Ponds, another berm was constructed along the boundary line east of Wally Toevs Pond.

Water Dynamics

To better understand the correlation between groundwater and surface water at Walden Ponds, it would be imperative to have appropriate and adequate long-term water-related data to track changes over time. Unfortunately, consistent data for Walden Ponds does not exist. Although water-related data has been collected periodically at the site (see Appendix D), long-term data on such factors as pond depths and depth to groundwater, as well as information about water management activities, is very limited and has not been collected consistently at the same location and time period. This makes comparisons of annual and seasonal variations in surface water and groundwater to such factors as seasonal and total annual precipitation, temperature, vegetation, and discharge within Boulder Creek, among other factors, difficult. In addition, permitted and unauthorized water diversions from Boulder Creek to Sawhill Ponds and Walden Ponds have occurred sporadically throughout the life of the open space, thus making it even more difficult to understand the specific relationship between groundwater and surface water at Walden Ponds and the impacts of various water management actions.

Some assertions about water dynamics, however, can be made based on limited study and staff observations of the site. It is known that the ponds and wetlands at Walden are primarily groundwater fed (as well as being fed by local precipitation events and runoff), and that the water table is closely related to the amount of precipitation locally and within the watershed, as well as local evapotranspiration. During times of drought and warmer conditions, water loss via evapotranspiration is greater than new inputs, and the local water table goes down. With less groundwater inputs, yet persistent evapotranspiration, the water level of each pond and wetland subsequently drops. During times of higher precipitation and cooler conditions, new water percolates through the soil and moves down through the watershed, thus causing the local water table to rise. The ponds and wetlands at Walden fill accordingly. POS staff has observed the ponds and wetlands drying up during times of extreme drought and filling up during periods of high precipitation. Between 1975 and 2009, the area experienced both wet years (e.g. 29.9 inches in 1995, 28.5 inches in 1997, and 27.2 inches in 2004) and dry years (e.g. 13.5 inches in 1977 and 1980 and 13.9 inches in 2002) (NOAA 2010). Filling and drying up of the ponds and wetlands, respectively, typically follow these extreme events.

Babcock (2005) found a correlation between stream flow and water level in ponds up to 200 feet away from Boulder Creek, but the ponds and wetlands at Walden are much further than that. The closest, Ricky Weiser Wetland, is approximately 650 feet away. Therefore, stream flow within Boulder Creek does not affect the depth and amount of water within the ponds and wetlands at Walden.

Water Management

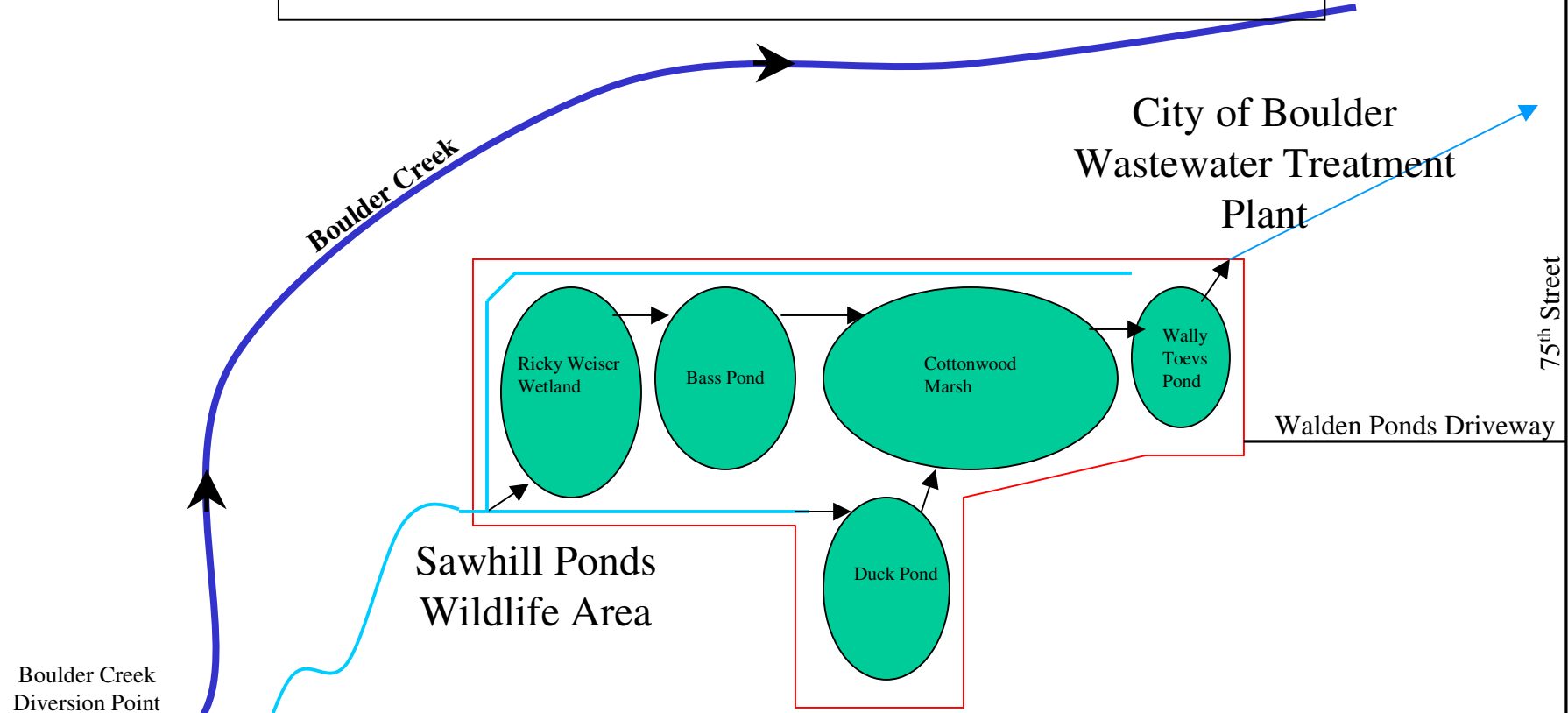
The primary, and most times, only allowable means of filling the ponds and wetlands at Walden Ponds with water is to let natural groundwater enter the sites via natural percolation and lateral movement through the adjacent soil profile. Because of this, the water level within each pond and wetland fluctuates regularly and has done so since the beginning in the 1970s. By the early 2000s, however, drought and changes in management began to substantially impact water levels to the point of near complete dry up in some ponds and wetlands. A 2002 study was funded to examine the water supply at Walden Ponds and Sawhill Ponds and make recommendations for future management (Ayres Associates 2002). Following this report, POS staff sought to obtain a water right for Walden Ponds. In December 2002, the Boulder County Commissioners approved staff's request to move forward with the appropriation of a water right from Boulder Creek (BC Resolution 2002-166), which was quickly followed by POS filing for a water right through the Water Court for Water Division No. 1. The water right would be to fill and store water in the ponds and wetlands with a 2002 priority date at a rate of 8 cubic feet per second. At the time of this management plan (2010), the water right has not been decreed. In addition to filing for the water right, POS also obtained an easement in 2003 from the Colorado Division of Wildlife (CDOW) for the ditch across Sawhill Ponds and installed a water diversion structure on Boulder Creek to divert water to Walden Ponds whenever permitted.

To manage water at Walden Ponds when it is available, a network of water management infrastructure exists including a water diversion structure on Boulder Creek, ditches, headgates, hydroscreens, and inlets and outlets (i.e. culverts, pipes, and stop log structures) between ponds. Figure 2.4 shows a conceptual schematic of how water can be moved into and through the Walden Ponds system. When water can be legally diverted off of Boulder Creek, it is done via an existing water diversion structure constructed by POS in 2004 on Boulder Creek and an existing ditch system, which crosses Sawhill Ponds before entering Walden Ponds (Figures 2.2 and 2.4). Within the southwest corner of the property, water can be diverted from the ditch to either Ricky Weiser Wetland or Duck Pond. If water is diverted into Ricky Weiser Wetland, it will flow from this wetland to Bass Pond to Cottonwood Marsh to Wally Toevs Pond through a series of outlet structures between ponds before exiting the site at the Wally Toevs Pond outlet and ditch. If water is diverted into Duck Pond, it will flow from there to Cottonwood Marsh to Wally Toevs Pond through a series of outlet structures before exiting the site at the Wally Toevs Pond outlet and ditch. For either water diversion scenario, each pond or wetland must be "full" (i.e. water is at or above the elevation of the outlet structure) before water moves to the next pond or wetland.

Currently, water may only be diverted off of Boulder Creek if there is "free river" available, meaning there are no "calls", or requests, for water by downstream senior water right holders within the South Platte River Basin, indicating that their current water needs have been met. Before diverting any "free river" water, though, POS must first get approval from the local Water Commissioner of the Colorado Division of Water Resources. This occurred in spring 2009 when the Water Commissioner allowed POS to divert water to Walden Ponds from Boulder Creek for approximately 30 days in May and June. This allowed POS to fill each pond at Walden Ponds to its maximum extent. The only other legal means to divert water from Boulder Creek is to obtain a water right through Colorado Water Court. As mentioned above, POS currently does not have such a right for Walden Ponds, but did file a water right application in 2002. If and when this water right is decreed, however, it would be a very junior right, meaning all other more senior water right holders must be satisfied before water would be available for Walden Ponds. This would presumably occur only in the wettest years.

In addition to water diversions, Colorado law (§37-90-137(11)(a)(1I), C.R.S.) requires augmentation of any water losses, such as evaporative losses, due to exposure of groundwater caused by a gravel pit in operation after December 31, 1980. At Walden Ponds, POS has augmented water losses due to evaporation from Ricky

Figure 2.4 Conceptual Water Management at Walden Ponds Wildlife Habitat



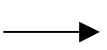



Primary Sources of Water at Walden Ponds

1. **Groundwater** – This constitutes the majority of water at Walden Ponds.
2. **Incidental** – precipitation, overland flow, etc.
3. **“Free River Water”** from Boulder Creek – POS is allowed to divert water from the creek when allowed by the Water Commissioner and there are no other calls for water on the river.

*POS currently does not have a water right associated with Walden Ponds, but applied for such a right in 2002. If this water right is decreed, it would be a very junior right.

Legend

-  Walden Ponds
-  Ditches
-  Diversion Points / Direction of Flow
-  Wetland / Pond

N ↑
Not to Scale

Weiser Wetland and Bass Pond since 1989. Augmentation water (50.4 acre feet per year) is taken from North Boulder Farmer's Ditch and put into Boulder Creek to meet POS's obligations. Wally Toevs Pond, Cottonwood Marsh, and Duck Pond were mined and reclaimed prior to 1980, and therefore, do not require augmentation.

2.4 NATURAL RESOURCES

The existing natural resources of Walden Ponds and the surrounding area are a culmination of a variety of factors including climate, topography, soils, history, native and introduced species, and past and current human uses and management. Historically, the planning area was within the transition zone between the Boulder Creek riparian zone and the more xeric shortgrass prairie. Although some historical accounts exist of the surrounding area (e.g. Beidleman 1947), it is unknown for sure what existed prior to the site being converted to pastures and subsequently mined for gravel, in addition to other changes that have occurred within the watershed over the past 150 years, such as water diversions for agriculture, that have affected the site. It is likely, however, that the site consisted of some riparian trees and shrubs (e.g. cottonwood, chokecherry, box elder, golden currant, and skunkbush sumac), mesic prairie species (e.g. big bluestem, switchgrass, and yellow Indiangrass), and xeric prairie species (e.g. blue grama, purple three-awn, prickly pear cactus, and western wheatgrass). Large wetland or open water habitats were unlikely, though smaller depressions and old stream channels may have supported some wetland and riparian species. The site's location within the Boulder Creek corridor and its transitional nature as an ecotone presumably supported a large diversity of wildlife species that shifted annually and seasonally.

The reclamation, protection, and preservation of wildlife habitat from reclaimed gravel mine pits has been the primary purpose of Walden Ponds since its inception in the 1970s. Toburen (1974) stated, "a variety of habitats is the goal" (p. 21). The 1982 management plan furthers this theme, "the primary purpose of the reclamation project is to create wildlife habitat from "used land" and preserve it as a managed sanctuary for wildlife on into the future" (POS 1982, p. 102) and "wildlife values should take precedent over human uses" (POS 1982, p. 167). Managing for the needs and requirements of a wide range of plant and wildlife species, especially those dependent on aquatic habitats, has been the principal management consideration at Walden Ponds. Walden Ponds currently has a mix of open water, marsh, riparian, and upland habitat (approximately 49, 6, 23, and 22 acres, respectively, as of July 2009 when the ponds and wetlands were at or near capacity for water) that supports a high diversity of native plant and wildlife species. Figure 2.5 shows a typical cross-section of the diversity of habitats provided at Walden Ponds.

2.4.1 Vegetation

The current vegetation at Walden Ponds includes a mix of planted and seeded species, as well as a variety of natural recruits (i.e. plants that have established on their own). Early reclamation efforts included many non-native tree and shrub species primarily based on their benefit to wildlife, including Russian olive, honeylocust, honeysuckle, green ash, hackberry, roman wormwood and caragana (Toburen 1974, POS 1982). Today, many of these species are considered highly invasive and problematic, including Russian olive, which is now a list B species on the State of Colorado's noxious weed list. Many of the originally planted trees and shrubs subsequently died due to drought and poor soils, though some can still be found along the periphery of the property (e.g. Russian olive along the east boundary and eastern red cedar in the northwest corner). Other disturbed upland areas were planted with a mix of pasture grasses and forbs to stabilize and enrich the soil and provide cover for ground-dwelling birds and mammals. With changes in knowledge and management philosophy, non-native species are no longer desirable on most open space properties. Instead, native species such as plains cottonwood, sandbar willow, peachleaf willow, spike rush, Baltic rush, golden currant, blue grama, western wheatgrass, and switchgrass, among many others are encouraged, and in some instances, have been planted or seeded at Walden Ponds. In recent years, POS has focused its noxious weed control efforts on Russian olive, and it has been removed from much of the site. In addition, POS continues to manage a number of other noxious weeds at Walden Ponds on an annual basis.



Typical Pond and Wetland Habitat Cross Section



Mud Flats--- Shallow Emergent---Deep Emergent-----Open Water-----Riparian
(moist) (0-12") (12-36") (> 36")

Shorebirds/Amphibians-----Passerines-----Dabbling Ducks/Geese/Rails-----Diving Birds/Fish-----Passerines/Raptors

Wetland Vegetation

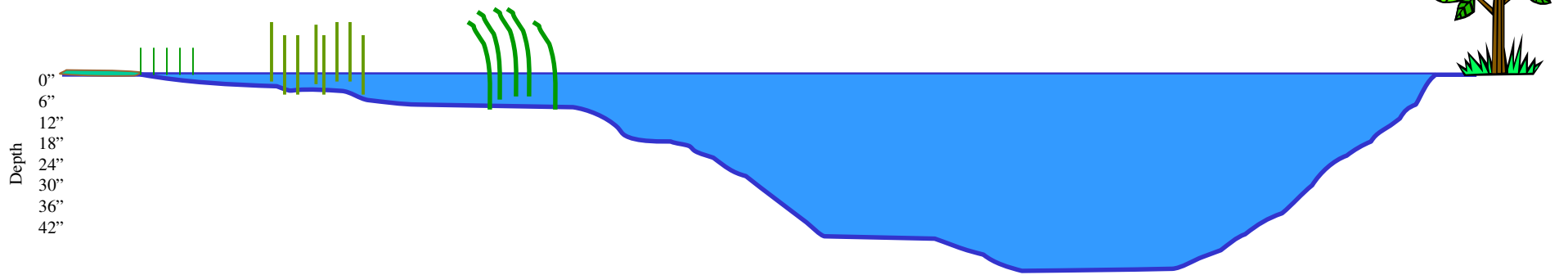


Figure 2.5 Typical Pond and Wetland Habitat Cross-Section
Walden Ponds Wildlife Habitat Management Plan

Fluctuations in water levels have had a strong influence on the vegetation composition at Walden Ponds over time. The original management plan noted that many cottonwoods and stands of cattails were eliminated during periods of high water (POS 1982, p. 39-40). Likewise, periods of drought have removed certain species. Fluctuations in precipitation, and therefore groundwater, however are natural events and shouldn't be viewed negatively from a plant community perspective. Over time, these extreme events have helped the site continue to develop ecologically, leaving a diversity of adapted plant species and a mosaic of habitats, thus benefiting a diversity of wildlife species.

In summer 2009, POS staff (Jennifer Kesler, plant ecology resource specialist) mapped vegetation alliances at Walden Ponds using the U.S. National Vegetation Classification System (Grossman, et al. 1998, Anderson, et al. 1998, NatureServe 2008). The purpose of the vegetation mapping was to document current site conditions, assist with management planning, and provide a means to track long-term changes across the site over time. The inventory delineated boundaries of dominant plant species groupings, called alliances, across Walden Ponds based on geologic and hydrologic characteristics, plant species composition, and the percent aerial cover of each vegetative structural component present at the site. The alliances were assigned names based on dominant species and other site characteristics (e.g. eastern cottonwood temporarily flooded forest alliance). Each alliance was then spatially mapped into a GIS program with all the field data saved into a relational Access database; and a species list of the different plants present within each alliance was generated. The mapping of vegetation alliances does not take into consideration the quality of the plant communities present and is not a species-specific inventory, such as a rare plant inventory.

The results of this vegetation mapping can be found in Figure 2.6. A complete species list from the 2009 mapping effort, including scientific names, can be found in Appendix E. Table 2.4 lists the vegetation alliances found at Walden Ponds along with the total area and percent of total area.

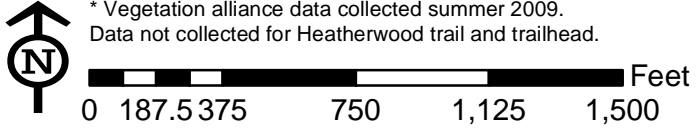
Table 2.4 Vegetation Alliances at Walden Ponds Wildlife Habitat - Summer 2009.

Vegetation Alliance	Area (Acres)
Annual-dominated Upland Disturbance	0.12
Blue Grama Herbaceous Alliance	2.26
Cattail Clubrush Semi-permanently Flooded Herbaceous Alliance	5.82
Coyote Willow/Sandbar Willow Temporarily Flooded Shrubland Alliance	10.41
Crested Wheatgrass Semi-Natural Herbaceous Alliance	0.21
Eastern Cottonwood Temporarily Flooded Forest Alliance	11.82
Herbaceous Restoration Alliance	0.15
Perennial Graminoid Disturbance Alliance	2.54
Purple Three-awn Herbaceous Alliance	0.16
Reed Canary Grass Seasonally Flooded Herbaceous Alliance	0.91
Russian Olive Semi-Natural Woodland Alliance	1.26
Salt-cedar Species Semi-Natural Temporarily Flooded Shrubland Alliance	0.27
Smooth Brome Semi-Natural Herbaceous Alliance	1.8
Western Wheatgrass Herbaceous Alliance	1.91
Standing Water	48.71
Developed	11.32



- Legend**
- Planning Area Including Heatherwood Trail and Trailhead
 - (Coyote Willow, Sandbar Willow) Temporarily Flooded Shrubland Alliance
 - Annual-dominated Upland Disturbance
 - Blue Grama Herbaceous Alliance
 - Cattail Clubrush Semipermanently Flooded Herbaceous Alliance
 - Crested Wheatgrass Semi-Natural Herbaceous Alliance
 - Eastern Cottonwood Temporarily Flooded Forest Alliance
 - Herbaceous Restoration Alliance
 - Perennial Graminoid Disturbance Community
 - Purple Three-awn Herbaceous Alliance
 - Reed Canary Grass Seasonally Flooded Herbaceous Alliance
 - Russian Olive Semi-Natural Woodland Alliance
 - Salt-cedar species Semi-natural Temporarily Flooded Shrubland Alliance
 - Smooth Brome Semi-Natural Herbaceous Alliance
 - Standing Water
 - Western Wheatgrass Herbaceous Alliance
 - Developed

* Vegetation alliance data collected summer 2009.
 Data not collected for Heatherwood trail and trailhead.



**Figure 2.6 Vegetation Alliances
 Walden Ponds Management Plan**



Vegetation Communities

Grasslands

The grasslands of Walden Ponds consist predominantly of reclaimed uplands surrounding each of the ponds and wetlands and are composed of a mix of native (e.g. blue grama, sideoats grama, big bluestem, buffalograss, and western wheatgrass) and non-native (e.g. smooth brome, crested wheatgrass, cheat grass, and Kentucky bluegrass) species (Figure 2.6). Because of the configuration of the property, these areas are primarily thin strips bisected by trails, and therefore, offer limited habitat values. The largest continuous grassland area is located south of Ricky Weiser Wetland and Bass Pond. Much of this area, however, is heavily impacted by such species as kochia, bindweed, and other non-native species.

Riparian and Wetlands

Riparian, wetland, and open water areas provide the core habitat at Walden Ponds. Riparian areas are defined as habitat along a body of water that has a shallow water table and may be intermittently flooded. It is a transition zone between uplands and the water body and has a unique mix of vegetation. At Walden Ponds, riparian areas fringe each of the ponds and wetlands and consist of such species as coyote willow and sandbar willow immediately adjacent to the water's edges and plains cottonwood and lanceleaf cottonwood a bit further beyond (Figure 2.6). The most developed and highest value riparian areas at Walden Ponds occur along the west side of Cottonwood Marsh and the west and south edges of Ricky Weiser Wetland.

Wetlands occur in locales that have saturated soils for part or all of the year, have hydric (i.e. anaerobic) soils, and support a variety of hydrophytic plants. Wetlands are classified based on a variety of characteristics including the depth of water, which in turn influences the vegetation composition. At Walden Ponds, a number of wetland types exist including shallow emergent marsh and deep emergent marsh. Table 2.5 lists the primary characteristics of each including average water depth, typical plant species, and typical wildlife guilds. Naturally, the wetlands at Walden have varied over time as water levels have fluctuated. Plant species composition within these wetlands has responded accordingly, thus providing a mosaic of vegetation. The greatest extent and diversity of wetlands occurs within Cottonwood Marsh.

Table 2.5 Aquatic Habitat Types at Walden Ponds

Habitat Type	Average Water Depth (inches)	Typical Plant Species	Typical Wildlife Guilds
Open Water	> 36	Submergent Vegetation	Fish, Diving Waterbirds, Dabbling Ducks
Deep Emergent Marsh	12 to 36	Softstem Bulrush, Hardstem Bulrush, Broad-leaved Cattail	Dabbling Ducks, Rails, Passerines, Diving Waterbirds, Frogs, Turtles, Fish
Shallow Emergent Marsh	0 to 12	Spikerush, Threesquare Bulrush, Torrey's Rush, Dudley's Rush, Baltic Rush, Nebraska Sedge, Woolly Sedge, Alkali Bulrush	Shorebirds, Dabbling Ducks, Frogs, Turtles, Fish
Mud Flats	0	None	Shorebirds

Two other aquatic habitat types, open water and mud flats, are also important components of Walden Ponds (Table 2.5). Open water areas are those central portions of the pond systems with greater than 3 feet of water, typically with rooted or unrooted, submergent vegetation. Mud flats are areas that have moist (muddy) soils for at least a portion of the year, and otherwise, may have standing water or be completely dry other times of the year. Mud flats do not support vegetation due to their extreme hydrological conditions.

Noxious Weeds

A total of 24 non-native species, including 16 state B and C-listed noxious weeds, were identified at Walden Ponds during vegetation mapping in 2009 (Appendix E). These included teasel, Canada thistle, bindweed, cheat grass, tamarisk, Russian olive, whitetop, and musk thistle, among others. The majority of these are regularly mapped and controlled by POS's weed management program. An integrated pest management approach is utilized to manage State and County listed noxious weeds, as well as other undesirable non-native, invasive species (POS 2004).

Special Status Species

No special status plant species have been documented at Walden Ponds.

2.4.2 Wildlife

General Wildlife

Walden Ponds was established in the 1970s first and foremost as a wildlife preserve on reclaimed gravel pits. The 1982 plan stated "After gravel mining, the primary management direction for the Walden Ponds Wildlife Habitat is to reclaim the "used land" and provide for the food, nesting, and resting needs of as wide a variety of wildlife as possible. The secondary purpose is to provide a public open space area where visitors can view, study, and photograph wildlife in a naturalized setting" (POS 1982, p. 42). During reclamation, the gravel pits were reshaped and recontoured to provide specific wildlife habitat features and benefits per the reclamation design (Toburen 1974, POS 1982). In addition, the site was revegetated with a number of trees, shrubs, and grasses that were specifically selected for their benefit to wildlife as food and cover.

Since that time, Walden Ponds has developed into a wildlife viewing hotspot in Boulder County. This is likely due partially to the ease of access for a number of county residents, but is more likely due to the quality of habitat that has developed at Walden over the years. Large numbers of diverse wildlife species utilize the site, some commonly and others less frequently. The site's connection to a larger complex of relatively high quality riparian, wetland, and upland habitat throughout the Boulder Creek corridor has made Walden Ponds a piece in a puzzle of high quality wildlife habitat within the larger landscape. In this sense, Walden Ponds has truly succeeded in meeting its original goal and now moves into a new era of managing and maintaining the habitat that has developed.

Concern about the dynamic nature of the site has existed since the creation of the open space. Fluctuating water levels within the ponds and wetlands due to fluctuations in the water table have raised concerns about impacts to wildlife and the habitat upon which they depend. Although some species may be displaced when these natural changes occur, others benefit from these changes. For example, some wildlife guilds, especially shorebirds and wading birds, require shallow water habitat (12 inches or less to mudflats), and therefore, do better when water levels recede. Other guilds, such as diving waterbirds, require deeper water (3+ feet deep), and therefore, are more prevalent when water levels are higher. Still others, such as dabbling ducks, geese, gulls, and some passerines, can be found utilizing ponds and wetlands with a wider range of water depths (Table 2.5). Which species utilize a given pond at any given time depends a lot on a species' morphology and behavior, the water level, and the availability of food within the pond, as well as other factors such as time of year. The surrounding riparian areas and uplands, which continue to progress and develop, also provide a mixed mosaic of habitat for several birds, mammals, and reptiles. Because of the presence of diverse habitats and the ever-evolving and fluctuating environment, Walden Ponds is a prime location for numerous wildlife species throughout the year.

Birds

Walden Ponds is known as a birding hotspot in Boulder County. The Colorado Field Ornithologists (CFO) have called the Walden Ponds/Sawhill Ponds complex the "Best birding location in county, great for wide variety of water and land birds" (CFO 1999). Elsewhere, the organization states:

This is one of Boulder's premier birding sites due to its wide variety of habitats...The largest and often the birdiest pond in the complex is Cottonwood Marsh, just north of the Walden Ponds parking lot. When water levels are low it can be excellent for shorebirds; when they are higher, for dabbling and diving ducks. Gulls, waders, cormorants, and other waterbirds are a good bet. During migration, swallows occasionally gather in enormous flocks over the water. (CFO 2010)

The Boulder County Audubon Society (BCAS) has also noted the great diversity at the Walden Ponds/Sawhill Ponds complex:

These reclaimed gravel pits along Boulder Creek support waterfowl, marsh-nesting species, and birds of cottonwood-willow riverbottoms. Summer residents include American Bittern, Cinnamon Teal, Bald Eagle, Spotted Sandpiper, Virginia Rail, Sora, Eastern Screech-Owl, Bank Swallow, and Yellow-headed Blackbird. This is the only known Colorado nesting location for Least Bittern. As many as 75 species have been observed on an early May morning. (BCAS 2010).

At least 237 different bird species have made use of Walden Ponds since its creation, including 37 common, 48 fairly common, 74 uncommon, 71 rare, and 7 incidental species (Appendix F). As the CFO and BCAS note, the reason bird diversity is high at Walden Ponds is because of the great diversity of habitats. This includes a variety of pond and wetland with variable depths of water from deep ponds to shallow wetlands to mud flats, in addition to the surrounding riparian and upland habitats. Seasonal and annual variations at Walden also provide unique habitat opportunities for distinct species. In a study conducted in the San Joaquin Valley of California, it was found that wetlands with shallow water and varied and undulating bottoms tend to support higher diversity of waterbirds, which in their study included many of the species that utilize Walden Ponds (Colwell and Taft 2000). In a subsequent study, Taft et al. (2002) found that the highest diversity of waterbirds was found at average depths of approximately 4 to 8 inches. As is typically found at Walden Ponds, the authors of the study recommended managing ponds along a spectrum, to the extent possible, from shallow to deep, thus providing for the needs of a variety of birds including shorebirds, dabbling ducks, and diving birds.

Waterbirds are the key species that utilize the site. The ponds and wetlands are very important to wading birds (e.g. heron, ibis, and rail species) and migratory waterfowl (e.g. cinnamon teal, redhead, common goldeneye, gadwall, and ring-necked duck). In fact, the majority of every known waterfowl species that migrates through the Rocky Mountain or Central Corridor migratory pathways has been recorded at Walden Ponds. The site also has great value for shorebirds, especially in Cottonwood Marsh, when water levels are appropriate, which includes shallow water and exposed mudflats. Common shorebird species include killdeer, American avocet, greater yellowlegs, spotted sandpiper, long-billed dowitcher, Wilson's snipe, and Wilson's phalarope. American white pelican, double-crested cormorant, green heron, black crowned night heron, great blue heron, and occasionally, snowy egret are some of the larger birds using the ponds. Some species, like the black-necked stilt (2008) and Virginia rail, were historically observed on site, but haven't been observed recently. At least three species of swallows regularly use this site, and bank swallows have again returned after many years absence. Currently, Walden Ponds does not have many known breeding species besides Canada geese. Kingfishers nest on the banks of Boulder Creek and hunt at Walden. Bank swallows and kingfishers have nested in soil piles on the adjacent Boulder County Transportation Department's road maintenance yard in several years. POS is working on refining its agreement with the Transportation Department to protect these nests during the nesting season. Both red-winged and yellow-headed blackbirds have nested at Walden Pond in the past, but that hasn't happened in recent years with the drought. A volunteer bird monitoring effort at Walden Ponds has recently begun and should help POS track and document utilization of the ponds and wetlands by birds over time.

Mammals

Although not as prevalent and easily observable as the large diversity of bird species found at the site, many mammals are present at Walden Ponds. Some of the mammals that have been observed or may occur at Walden Ponds and the surrounding area include mountain lion, black bear, coyote, red fox, bobcat, striped skunk, raccoon, muskrat, beaver, long-tailed weasel, mink, black-tailed prairie dog, white-tailed deer, fox

squirrel, little brown bat, meadow vole, prairie vole, deer mouse, plains pocket gopher, and eastern and desert cottontail (Appendix F).

In general, the site lacks appropriate habitat or space for many mammalian species to be permanent residents, as a result of the relatively small size of the property, the prevalence of non-native species in some areas, and the level of human activity in the area. However, many species utilize Walden Ponds as a portion of their overall range in Boulder Creek corridor. The upland habitat upon which many mammals are found is limited at Walden and makes up about 22 acres. Much of the upland is developed with trails, trailheads, and administrative buildings, making them less suitable for wildlife. However, these areas do provide habitat for rabbits and rodents, as well as hunting grounds, shelter, and denning sites for other species. The riparian areas at Walden support many mammalian species, and in particular, provide protective cover for many larger mammals such as deer. The site also hosts aquatic mammals, including beaver and muskrat, which can be observed swimming in many of the ponds and wetlands. A beaver lodge can be found in the northeast corner of Bass Pond, and active management of beaver activity has occurred at Walden Ponds over the years, including wrapping susceptible trees to discourage beaver from cutting them down.

Fish

Although not of consistent high quality due to the shallow and fluctuating water levels, Walden Ponds has supported a fishery over the years. Primarily, this has included stocked fish such as largemouth bass, smallmouth bass, bluegill, channel catfish, and other species (Appendix F). Rainbow trout have historically been stocked in Wally Toevs Pond, exclusively for senior anglers and people with disabilities. These trout, however, typically do not survive during the warm summer months, and therefore, are restocked in spring and fall each year. In addition to providing recreational opportunities for anglers, the fish populations at Walden also provide prey for many bird and mammal species.

Amphibians and Reptiles

A number of amphibians and reptiles have been observed at Walden Ponds over the years. These have included snapping turtle, painted turtle, western chorus frog, bullfrog, tiger salamander, plains spadefoot toad, shorthorned lizard, fence lizard, racer, plains garter snake, bullsnake, smooth green snake, western rattlesnake, and northern water snake, among others (Appendix F). Some of these species can be found in wetlands and open water of various depths; while others prefer a mix of wetland and upland habitat; and others are found only in the uplands. The diversity of habitat types on-site and the connectivity to a larger matrix of suitable habitats along the Boulder Creek corridor and surrounding uplands provide for a diversity of amphibians and reptiles at Walden Ponds.

Invertebrates

Although surveys of invertebrate populations have not been conducted at Walden Ponds, they are nonetheless a very important component of the Walden Ponds ecosystem. Specifically, they provide a substantial food source for many other wildlife species at Walden. Many migrating species require large quantities of invertebrates such as midge larvae to provide enough fat reserves (i.e. energy) to make their long journeys. Invertebrates are also important for the protein and other nutrients they provide waterbirds, especially during egg laying.

Overall, a number of factors influence the quantity and diversity of invertebrates within a given pond or wetland. These factors include the site's hydrological regime (i.e. the timing, depth, and duration of flooding) and the amount and type of living and dead (i.e. detritus) vegetation within the pond or wetland. As with other wildlife species, the diversity of habitats and regular fluctuations in water level at Walden Ponds benefit the invertebrate population, and thus, also benefit the species that depend on them as a source of food.

Special Status Species

With the delisting of the bald eagle in 2007, there are no Federally Listed Threatened or Endangered wildlife species known to regularly occur at Walden Ponds. Bald eagle, however, remains on the Colorado

Threatened list. Other bird species of special concern at the state-level that may be observed at Walden Ponds include ferruginous hawk, sandhill crane, and peregrine falcon.

Of the amphibians and reptiles sometimes found at Walden, the common garter snake and northern leopard frog are state species of special concern. Prairie dogs, found on adjacent properties and may at times wander onto Walden Ponds, are also a state species of concern.

2.4.3 Overall Biological and Conservation Value

Habitat Conservation Areas

Cottonwood Marsh has had an 8.7-acre public closure area since 1991 (Figure 1.2). The closure area is not currently called a Habitat Conservation Area (HCA), but serves the same purpose as HCAs found on other POS properties. The purpose of this closure area is to protect the habitat values found within the site. These values include the most ecologically developed and largest extent of riparian and wetland habitat at Walden Ponds. In addition, the closure provides a large, insulated area where wildlife, including potential nesting species, are less disturbed by human activity.

Wildlife Linkages and Corridors

Walden Ponds is surrounded by a number of public and private properties that are either managed specifically for wildlife (e.g. Sawhill Ponds and other nearby county and city open space properties) or are not specifically managed, but provide value to wildlife including pastureland and other former gravel pits that are now ponds and wetlands (Figures 1.1 and 1.2). In addition, the proximity of Boulder Creek and its riparian corridor provide an important connection to Walden Ponds and beyond. This corridor allows wildlife to move across and within the landscape as they travel through a matrix of urban, agricultural, and preserved lands. In addition, the number, size, and diversity of irrigation reservoirs, ditches, reclaimed gravel pits, grasslands, wetlands, and riparian area throughout the entire eastern plains of Boulder County and adjacent counties also provide vital linkages, corridors, and habitats for numerous wildlife species, including many bird species. Thus, Walden Ponds is truly a piece of a larger ecological puzzle laid out over the landscape.

2.5 VISUAL RESOURCES

2.5.1 Scenic Resources

Walden Ponds, located within the Boulder Creek corridor and approximately 6 miles due east of the foothills of the Rocky Mountains, has spectacular scenic views of the surrounding landscape. At the right location, a visitor to Walden can experience all in one glance a panoramic view with the ponds and wetlands in the foreground, mature riparian cottonwood forests slightly beyond, the rising foothills including the flatirons in mid-view, followed by the snow covered peaks along the Continental Divide, and then big blue sky above. This view is enhanced by the naturalness of the site and surrounding landscape.

2.5.2 Elements Detracting from Scenic Quality

Although Walden Ponds provide outstanding views, some surrounding land uses may detract from a visitor's appreciation of the scenery. These include the Boulder County Transportation Department's maintenance yard adjacent to the Cottonwood Marsh Trailhead, the City of Boulder's Wastewater Treatment Plant on the north side of the property, two electric transmission lines, and some uses of adjacent private property. POS has no control over these land uses, but has utilized trees in some instances to screen them.

2.6 CULTURAL RESOURCES

Boulder County and the surrounding region have had a long and complex history of human occupation dating back more than 10,000 years; however, much of this history is unknown. Undoubtedly, numerous people and cultures inhabited or passed within the vicinity of Walden Ponds due to its location near Boulder

Creek, as well as its position on the Great Plains adjacent to the Front Range of the Rock Mountains. The area has provided abundant wildlife, water, fertile soils, timber, minerals, shelter, and home sites, among other resources, for millennia attracting people from pre-historic to modern times. Appendix G provides a brief historical account of the region and immediate area, which is taken from the 1982 management plan for Walden Ponds.

Although many past cultures likely utilized the area, no known archeological finds, artifacts, or historic sites exist or have existed at Walden Ponds. In addition, because of the level of disturbance during gravel mining and reclamation, it is unlikely that any such items would remain intact. However, knowing and understanding, to the best of our ability, past cultures and their relationships to the land provides a vital link to modern times and helps us understand and interpret our connection to and stewardship of the land, including modern day Walden Ponds.

2.7 RECREATION AND VISITOR USE

2.7.1 Recreation Opportunities and Visitor Use

Since its inception, Walden Ponds Wildlife Habitat has provided a centrally located, easily accessible open space property for visitors to hike, view wildlife, fish, trail run, picnic, and relax, among other activities. Annual visitor use surveys conducted by POS have found hiking and wildlife viewing to be the top two activities at Walden Ponds, with hikers comprising approximately 34% of total users and wildlife viewers accounting for approximately 30% of users between 2000 and 2008. Fishing is the third most popular activity accounting for approximately 15% of users, while other noted activities include trail running, relaxing, dog walking, mountain biking, and family gatherings. The 2005 POS *Five-Year Visitor Study* found that visitors overall are satisfied with Walden Ponds (rated 8.5 on a scale from 1-10) and enjoy the wildlife viewing opportunities, relative quiet, easy access, and overall natural feel of the open space (POS 2006). Some concerns noted in this study included unpleasant odors from the adjacent City of Boulder wastewater treatment plant, noxious weeds, and litter.

Annual visitation between 2001 and 2007 ranged from approximately 40,000 to 100,000 with an average of approximately 65,500. The number of visitors appears to be at least partly related to water levels within the ponds. When water levels are low, as it was in the early 2000's, visitation tends to be lower as well. Conversely, when water levels are higher, visitation tends to increase. Other factors that typically increase the visitation numbers at Walden Ponds are the sighting of rare or unique bird species or the presence of an overall high diversity of bird species, which tend to bring out larger numbers of bird watchers.

2.7.2 Visitor Management Settings

Visitor management settings are a descriptive categorization of units of land within an open space that guides the type and level of appropriate management and provides visitors with an awareness of what to expect during their visit. Although official visitor management settings have not been designated for Walden Ponds, the site could be divided between more developed and heavily used areas around trailheads, the administration building, and some fishing ponds (e.g. Wally Toevs Pond and north side of Duck Pond) and areas that are more secluded and have a more natural feel to them (e.g. Ricky Weiser Wetland and Bass Pond). The public closure area on the west and north side of Cottonwood Marsh also provides a management setting and provides visitors on the opposite banks with a view of a more natural scene, as well as a refuge for wildlife.

2.7.3 Visitor Services and Facilities

Facilities and Amenities

Walden Ponds has three trailheads, 2.9 miles of trail including the Heatherwood Trail, a popular boardwalk, a fishing pier, kiosks, a number of park amenities including benches and picnic facilities, two public restrooms, and the Walden Ponds administrative building (Figure 2.7). The Wally Toevs Pond Trailhead and the

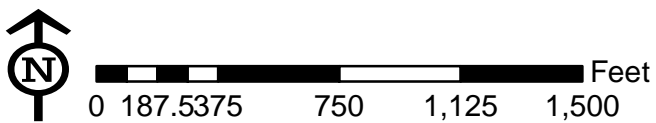
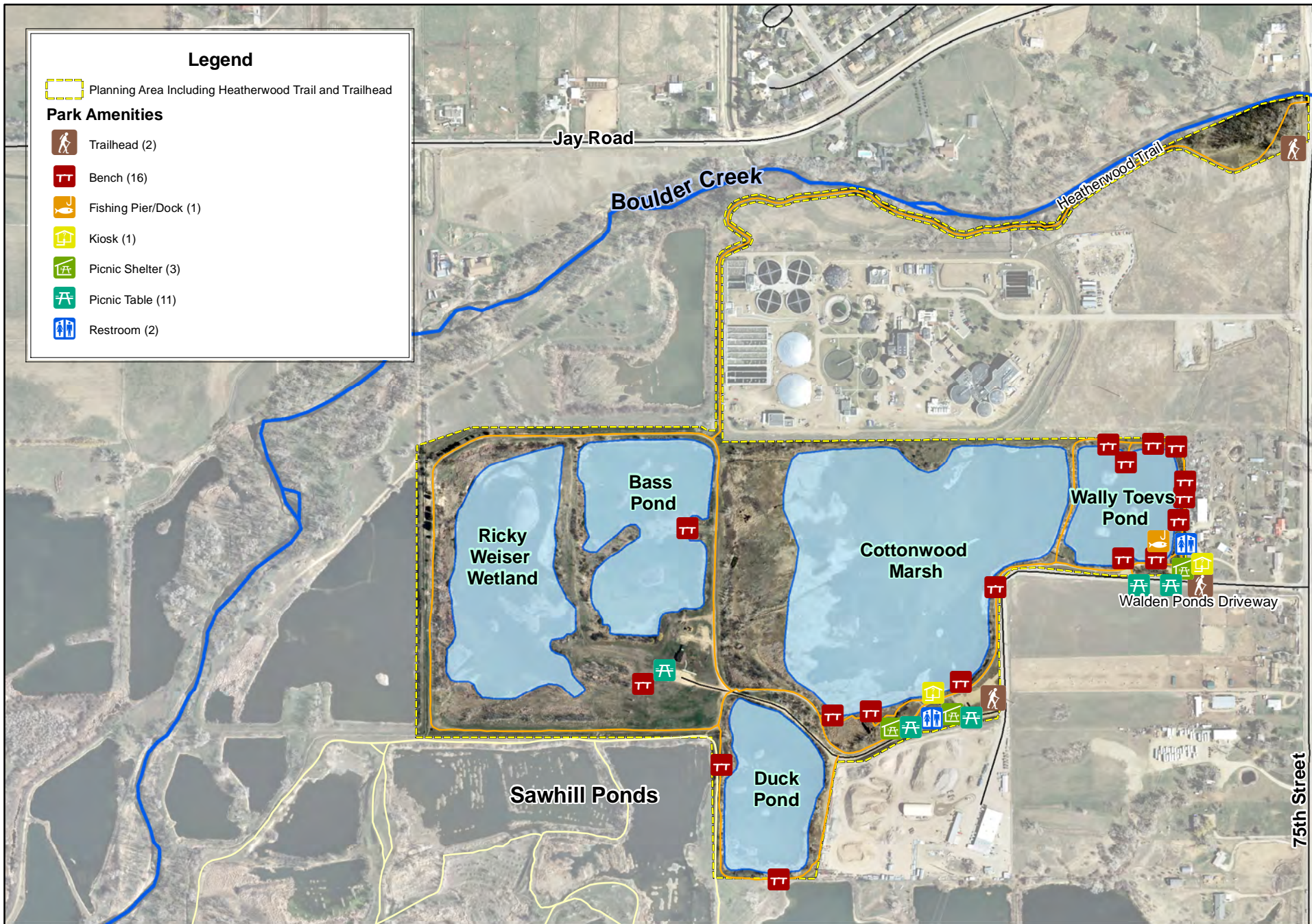


Figure 2.7 Facilities Map
Walden Ponds Management Plan



Cottonwood Marsh Trailhead are located within the boundaries of Walden Ponds and currently provide a maximum of 12 and 24 parking spaces, respectively. The Wally Toevs Pond Trailhead is immediately adjacent to Wally Toevs Pond, which provides easier access to the pond for fishing. It has a restroom facility available, a picnic shelter, picnic tables, a grill, trash receptacles, and an informational kiosk. The Cottonwood Marsh Trailhead is the primary parking lot for Walden Ponds and is adjacent to the south side of Cottonwood Marsh. It consists of the parking lot, a restroom facility, a large and a small picnic shelter, picnic tables, a grill, trash receptacles, and an informational kiosk. As it provides a direct link into Walden Ponds, the Heatherwood Trailhead is also included in this management plan. It can hold a maximum of 8 vehicles and is accessed directly off of North 75th Street immediately south of Boulder Creek. It is solely a parking lot and does not provide any other amenities for visitors.

The 2.9 miles of relatively flat, multiuse trails at Walden offer diverse populations of visitors an easily manageable trail system that winds its way around the various ponds and along Boulder Creek behind the City of Boulder's wastewater treatment plant. The Walden Ponds trail system connects into Sawhill Ponds to the south at three access points, thus providing a more extensive and varied trail experience. The 2.9 miles of trails at Walden include a combination of 3 to 6-foot wide natural surface, crusher fine, and asphalt trails. An approximately 0.5-mile crusher fine trail currently exists between the Wally Toevs Pond Trailhead and the northwest corner of Duck Pond. This connects to natural surface trails around the backsides of Wally Toevs Pond and Duck Pond, as well as the 2-track natural surface trail encircling Ricky Weiser Wetland and Bass Pond. The latter trail is occasionally utilized by POS staff for patrol and maintenance work as an extension of the existing road that leads to the administration building. The Heatherwood Trail is the only asphalt trail and is approximately 0.8 miles long. Although not included in the original management plan, it is included here because of its direct connection into Walden Ponds. The trail occurs on City of Boulder property and has been managed by POS under an intergovernmental agreement since its construction. As of April 2010, a new agreement is being negotiated with the City.

Additional access to Wally Toevs Pond for fishing and Cottonwood Marsh for wildlife viewing and education programs is provided by the 70-foot long wooden Wally Toevs Pond fishing pier and the 610-foot long wooden Cottonwood Marsh boardwalk, respectively. The Wally Toevs Pond fishing pier is immediately adjacent to the Wally Toevs Pond Trailhead and primarily serves as access to a handicap accessible fishing pier. The Cottonwood Marsh boardwalk is a popular amenity that allows visitors to walk into a portion of the cattail marsh away from the trailhead and other distractions and provides exceptional views of the adjacent wildlife habitat. It was constructed in 1991 from a CDOW Watchable Wildlife Program grant. This boardwalk provides a unique bird watching experience, as well as access to the marsh for interpretive programs.

A number of benches also occur throughout the site. These benches provide a resting spot along the trail, a place to take in the view, or a seat while fishing. The benches occur primarily east of Bass Pond with a number of them on the south bank of Cottonwood Marsh and around Wally Toevs Pond. Many of the benches have memorial plaques.

Formerly the main POS headquarters for staff (along with the original A-frame building, which was dismantled in 2006), the Walden Ponds Administration Building (sometimes referred to as the "B-frame") has been utilized since 2006 as POS's Volunteer Naturalist Program headquarters and Volunteer Resource Center. Although not open to the general public, it houses a variety of taxidermied specimens, naturalist literature, and other interpretive materials for use by POS's volunteer naturalists and staff. A 22-space parking lot is adjacent to the administration building and is accessed via an internal 0.3-mile gravel road, which is gated off at the entrance. This parking lot serves POS staff and volunteers and is not open to the general public.

Fishing is currently allowed in all ponds except within the Cottonwood Marsh closure area and from the Cottonwood Marsh boardwalk. Wally Toevs Pond is stocked in the spring and fall with trout and is restricted to seniors (64 years and older) and disabled individuals. The remaining ponds are stocked periodically with largemouth and smallmouth bass, channel catfish, and bluegill. With the exception of Wally Toevs Pond, all

ponds are catch-and-release for bass, and fishing is by artificial flies or lures only. All State of Colorado fishing regulations apply at Walden Ponds, including the requirement for a Colorado fishing license for individuals 16 and older. Creel limits for all species other than largemouth and smallmouth bass must adhere to the Colorado Wildlife Commission regulations. In addition, annually, POS hosts a senior fishing tournament at Wally Toevs Pond in the spring.

Education and Outreach

Because Walden Ponds is centrally located and easily accessible by a diverse population of users, it has been and continues to be an ideal location for a variety of educational programs. Until it was removed from the site, the A-frame at Walden Ponds served for many years as headquarters for the Volunteer Naturalist Program. Since 2006, the existing on-site building (Walden Ponds Administrative Building) has served as POS's Volunteer Resource Center and houses the Volunteer Naturalist Program. Annually, a number of interpretive programs for school groups, organizations, and other interested members of the public are conducted at Walden Ponds. Several interpretive panels can also be found on site. The novel circumstances of Walden Ponds' establishment through ecological reclamation of former gravel pits and the ever-evolving and fluctuating environment, which sustains high biological diversity and assorted habitats, provide unique interpretation opportunities within POS's system. Scarred by past human disturbance, the reclamation and management of Walden Ponds has not only put the land back to an ecologically better state, but has provided a great educational venue for the past three decades. It has also provided a real-world example to use in discussions about land use and environmental ethics demonstrating how humans can interact with the natural world both in an extractive manner (i.e. gravel pit mining) and in a regenerative manner (i.e. ecological reclamation).

Walden Ponds also provides an important picture window into the complex and dynamic nature of water in Boulder County's semi-arid plains environment. At Walden Ponds, water availability is dependent on a complex and interrelated combination of factors including local precipitation events; snowpack and snowmelt in the upper Boulder Creek watershed; water diversions and impoundments; agricultural, municipal, and other human uses; groundwater storage and utilization; and evapotranspiration demands; among other influences. Combined, these various factors control the depth to groundwater and its duration at Walden Ponds, which is the primary determinant of water level within each pond. Because of this, an important educational theme at Walden Ponds has been "water" and its relationship to wildlife habitat and the visitor experience, both when it's present within the ponds and when it's not.

Resource Protection and Visitor Safety

POS's Resource Protection staff regularly patrols Walden Ponds for both the protection of the resources and the safety of visitors. Primary enforcement issues include dogs off leash and parking at Walden Ponds after hours. The parking after hours is of particular concern as many violators are people accessing Sawhill Ponds, which remains open 24 hours a day, via Walden Ponds, which is open sunrise to sunset. Trespass into the existing closure area is another enforcement problem, especially along the north bank of Cottonwood Marsh. When on-site, resource protection staff interacts with the public and provides for visitor safety. In addition, they are on-call in conjunction with the Boulder County Sheriffs Department for emergency situations.

2.8 PARK OPERATIONS AND MANAGEMENT

2.8.1 Staff and Resources

Management at Walden Ponds is dependent on sufficient staff time and resources (e.g. infrastructure, water, etc.), as well as adequate funding. Potential funding mechanisms include the County's general fund, Capital Improvement Projects (CIP) budget, Operation and Maintenance (O&M) budget, and grant awards (e.g. CDOW). Funding for most projects and management activities is competitive, and each project must compete with other projects at other open space properties. Staff time and resources are also divided amongst numerous projects and priorities throughout the entire system. Therefore, projects and

management activities at Walden Ponds must be planned and prioritized along with projects at other properties, and a determination must be made annually to determine which projects are moved forward. Based on past experience, however, POS has been able to meet the overall management needs and obligations at Walden Ponds without significant setbacks due to staff or resource limitations, with the primary exception of water availability.

2.8.2 Existing Maintenance and Park Operations

From the time of its beginning in the mid-1970s to 2006, Boulder County Parks & Open Space staff had a large presence at Walden Ponds. The original A-frame and later the additional administrative building were used first as ranger housing and later as office space for a number of POS staff. With the relocation of staff offices following the construction of the new POS office building in Longmont in 2006, POS staff has had less of a presence at Walden Ponds in recent years. In fact, only one staff member, the Natural History Program Coordinator, still has an office on site, but is usually only there three days a week and at the Longmont office the other two. Although POS offices are no longer at Walden, POS staff still provides regular and semi-regular trail and facility maintenance, patrol, trash removal, weed control, fish stocking and management, wildlife species tracking and special projects (e.g. installation of bat boxes), vegetation mapping, and water diversions and management when permitted. Currently, staff's primary contact with the public at Walden Pond is through the regular patrol by Resource Protection staff, education and outreach programs and events put on by Education & Outreach staff, and special events such as the annual senior fish-off at Wally Toevs Pond.

CHAPTER 3 – MANAGEMENT DIRECTION

3.1 INTRODUCTION

This chapter presents the management direction for Walden Ponds and provides an explanation of the management direction development process. Chapter 3 begins with background information regarding the development of the management direction and continues with a discussion of how the preferred management direction was selected. The greater part of this chapter is provided in table format in Section 3.3. Table 3.2 includes specific management topics that were selected by the planning team for further management direction. These topics are comprehensive and include everything from water and natural resources to visitor use and services to staffing and administration. Under each topic of concern are management goals, objectives, and strategies, which provide the details of how the site will be managed into the future.

3.2 DEVELOPMENT OF MANAGEMENT DIRECTION

3.2.1 Management Direction Alternatives

The POS planning team considered a number of management alternatives during the planning process. These alternatives looked at different ways to potentially manage the site, including maintaining the current conditions and management activities, and were derived from input from the planning team, other POS staff, and the public. Overall, alternatives were considered if they supported the overall vision for Walden Ponds (see Section 1.5) and were considered feasible. In addition, because Walden Ponds has been a success as a public open space, including the significant development of habitat, the diversity of wildlife, and the high visitor use and satisfaction, the planning team did not consider any alternative that would drastically modify the site. Additionally, because the site poses a number of constraints (e.g. lack of a water right, tight property boundaries, etc), certain alternatives were determined to be less practicable, and therefore, not given a lot of consideration.

Because water is a primary issue at Walden Ponds, the planning team spent considerable time thinking about potential ways to maximize the water resource. Some potential alternatives included a *No Supplemental Water Alternative* whereby POS would not divert supplemental water into the ponds and wetlands and rely solely on groundwater recharge, a *Supplemental Water Alternative* whereby POS would seek out additional water to keep all of the ponds filled to the extent possible based on available water, and finally, a *Water Management Alternative* whereby POS would actively manage the water resource within individual ponds and wetlands based on specific management objectives that balance the needs of a diversity of wildlife, visitors, and other concerns to the extent possible based on available water. Table 3.1 provides an analysis of these three alternatives including the goal of the alternative, strategy, justification, and constraints and considerations. Based on this analysis and because it provides the most benefit to wildlife and balances visitor uses, the planning team recommends the *Water Management Alternative*. However, it must be understood that the system is to a large extent still at the mercies of nature regardless of the intent of management. If and when groundwater levels are low and water diversions from Boulder Creek are not available, the ponds and wetlands at Walden Ponds will likely have low water levels and some areas may go completely dry. These natural cycles, though, add to the diversity of the site and shouldn't necessarily be considered a negative phenomenon from the perspective of site development and management.

Table 3.1 Water Management Alternatives at Walden Ponds

Water Management Alternatives	No Supplemental Water Alternative	Supplemental Water Alternative	Water Management Alternative
Goal of Alternative	Allow ponds and wetlands to respond to natural hydrologic conditions	Maximize the amount of water to the extent possible in all ponds and wetlands	Manage water levels to the extent possible to meet specific habitat objectives in individual ponds and wetlands
Strategy	No diversions from Boulder Creek	Continue pursuing water right for Walden Ponds	Continue pursuing water right for Walden Ponds
	Rely solely on groundwater to fill ponds and wetlands	Keep water level at or near capacity within all ponds and wetlands to the extent possible with water right, free river water, groundwater, or other potential sources	Determine the desired range of water levels for each pond and wetland based on management objectives for each
	Allow ponds and wetlands to go dry during times of drought and fill during periods of higher precipitation	Consider changes to water management infrastructure to meet goal of alternative	Manage water levels within all ponds and wetlands to the extent possible with water diversions and infrastructure
			Consider changes to water management infrastructure to meet goal of alternative
Justification	Letting nature take its course	Meets a desire by some individuals to keep ponds full to the extent possible	Meets goal of original management plan
	Allow visitors to witness the natural hydrologic cycle	Better habitat for fish and some other wildlife (e.g. dabblers and divers)	Maximizes habitat values with available water by providing diversity of habitats
	Creating a temporal diversity of habitats across site (i.e. some years will be dry, others wet)	Improves aesthetics and visitor experience by having more water within ponds and wetlands	Increases diversity of water birds (e.g. shorebirds, dabblers, divers, and passerines) and other wildlife
	Least cost and least management	Better fishing	Increases plant diversity and area of wetland vegetation
	No new disturbances	Provides a more desired educational experience	Improves the aesthetics and visitor experience by increasing the diversity of habitats
			Increases the diversity of birds for bird watchers
			Provides continued fishing opportunities

			Provides for a more unique educational experience involving habitat diversity, water, species requirements
Constraints and Considerations	Water level fluctuations may impair the visitor use experience and result in less visitation	POS does not currently have a water right for Walden Ponds or any other potential sources of water	POS does not currently have a water right for Walden Ponds
	May negatively impact certain vegetation and wildlife species due to drought and flooding	Once a water right is obtained, unlikely to get water in the majority of years as it will be a very junior right	Once a water right is obtained, unlikely to get water in the majority of years as it will be a very junior right
	Education and Outreach programs may be cancelled or deferred when ponds and wetlands go dry	Water will likely only be available in years of adequate precipitation, making it less needed at Walden Ponds	Water will likely only be available in years of adequate precipitation, making it less needed at Walden Ponds
	Public perception when ponds and wetlands are dry	Some species such as shorebirds would not benefit when ponds and wetlands are full of water	Cost of new water management structures
		Some vegetation may be drowned out due to high water levels	Requires more active management of water resources
			Public perception of certain habitat types such as mud flats when water levels are low

In addition to the water management alternatives, the planning team also considered alternatives for other uses and amenities at Walden. Management alternatives that generated further discussion amongst the planning team about possible alternatives included the following:

Water Transfer. Whether or not there is a more efficient and effective way to move water between individual ponds and wetlands to meet management objectives

Recommendation: To meet management objectives at Walden Ponds, POS must have an ability to move water between ponds and wetlands. The current system consists of gravity flow whereby any water diverted into Walden Ponds flows from uphill to downhill. This may take the path of Ricky Weiser Wetland to Bass Pond to Cottonwood Marsh to Wally Toevs Pond or may flow from Duck Pond to Cottonwood Marsh to Wally Toevs Pond depending upon whether water is diverted into Ricky Weiser Wetland or Duck Pond, respectively. Besides groundwater seepage through the soil, water is currently delivered between the ponds and wetlands via a system of culverts and pipes. This only occurs once the elevation of the water surface reaches the elevation of the outlet culvert or pipe. Overall, this system has worked when the site has sufficient water, but it has not allowed management of water levels within individual ponds or wetlands, especially when water levels are low.

Due to site constraints and given the limited availability of water, finding a feasible alternative to the existing system of water management is problematic. One alternative may be to connect a ditch between the ponds and wetlands such as between Duck Pond and Wally Toevs Pond to bypass Cottonwood Marsh when necessary. This alternative would require a complex system of ditches between each of the ponds to move the water around and would assume the site has the proper

grades and elevations and sufficient area to add ditches. In addition, this system would only be useable when water levels were at capacity within each of the ponds and wetlands or permission was granted to divert water off of Boulder Creek, both of which only occur infrequently. Thus, utilizing ditches to move water between ponds appears less than feasible. Another alternative would be to utilize pumps to move water between ponds. This has been done in the past at Walden, but can be costly and require a lot of maintenance. In addition, a pump system would be unsustainable and provide an unnatural appearance. Thus, this alternative was taken off the table.

The final alternative considered by the planning team involves replacing some of the existing inlet and outlet structures between ponds with structures that allow more control over the water levels in the various ponds. For example, a stoplog structure would allow staff to set the outlet elevation of a particular pond by removing or replacing boards in the structure. Currently, there is such a structure at the outlet of Duck Pond. The planning team considers this to be the most feasible alternative and recommends replacing the existing culverts and pipes at the following locations (in priority): outlet from Cottonwood Marsh to Wally Toevs Pond, outlet from Ricky Weiser Wetland to Bass Pond, and the outlet from Bass Pond to Cottonwood Marsh.

Habitat Conservation Area. Whether or not to have any areas zoned as a HCA and if so, the location and dimensions of them

Recommendation: Because of the value of the wetland for a wide diversity of waterbirds and other wildlife and its historic public closure area within a large part of it, the planning team agreed to an HCA designation across Cottonwood Marsh. The boundary of the HCA would include the original public closure area and be extended to the south and east shorelines, but not impact any existing trails or uses outside of the marsh. This HCA will protect sensitive wildlife habitat (wetlands, open water, and mud flats), which are important for a number of waterbirds, especially shorebirds and potential nest sites. In particular, staff noted that this HCA will keep people from walking out onto the mud flats when water levels are down, and therefore, protect species utilizing the site, including potential nesting shorebirds.

The team also considered another potential HCA around the west and south edges of Ricky Weiser Wetland. It was determined, however, that a HCA in this area was unnecessary primarily because the existing water and dense vegetation, as well as the lack of good fishing opportunity in the area, was enough to keep the majority of people out of the wetland. In addition, staff has not noticed much impact to the area from people going off trail in this location. Therefore, it was removed from further consideration.

Heatherwood Trail and Trailhead: Whether or not to include the Heatherwood Trail and Trailhead in the management plan

Recommendation: Because of its location and direct connection into Walden Ponds, it was agreed upon by the planning team to include the Heatherwood Trail and Trailhead in the management plan. However, specific details regarding the trail will depend on a new and revised IGA between Boulder County and the City of Boulder regarding management of the trail, which occurs on city property. POS and the City of Boulder are currently working on the terms of this IGA. Based on current discussions with the City, the trail will likely be transformed to a crusher fine trail at some point in the future.

Trail Surface Type: Whether or not to modify the surface type of any trail

Recommendation: The planning team recommends adding crusher fine to the existing trail around Ricky Weiser Wetland and Bass Pond and the existing trail around Wally Toevs Pond. This would provide better access and easier navigation for a number of visitors, minimize maintenance concerns due to muddy trails, limit impacts to natural resources, and provide a consistent trail experience throughout Walden Ponds. The only designated trail that would remain natural surface would be the trail around Duck Pond.

Cottonwood Marsh Boardwalk: Whether or not to modify or change the location of the Cottonwood Marsh boardwalk

Recommendation: The planning team considered the possibility of upgrading and modifying the location of the existing Cottonwood Marsh boardwalk and the potential to add a spur further out into the marsh to better serve the public and educational programs. Based on an assessment of the boardwalk by POS's facilities staff that showed the boardwalk to be in overall good condition, the planning team decided that it does not currently need a complete overhaul and therefore, should be left in its current location. However, individual boards or sections of boards along the boardwalk could be replaced as needed. To increase long-term sustainability, it was recommended that a more sustainable material (e.g. a plastic and wood composite) should be used. In addition, the team decided not to include or designate a specific location for a new spur off of the boardwalk in the management plan, but to leave it as an option in the future within a specific footprint around the existing boardwalk. Overall, it was felt that the spur was not a priority at this time, especially considering existing budgets. However, it was suggested that it could be added at a later date if and when a wholesale upgrade and potential redesign of the existing boardwalk occurs.

Trailhead Parking Lots: Whether or not any of the trailhead parking lots need to be redesigned

Recommendation: Currently, Walden Ponds is served by three trailheads, including the Wally Toevs Pond, the Cottonwood Marsh, and the Heatherwood Trail Trailheads. Each has its own unique issues. The Wally Toevs Pond Trailhead provides easy access to the pond for seniors and people with disabilities. However, the parking lot is not the most efficient and accessible, and lacks well-defined parking for individuals with disabilities and limited mobility. Therefore, the planning team recommends upgrading the parking lot to improve compliance with Americans with Disabilities Act (ADA) regulation as well as general circulation through the lot. The Cottonwood Marsh parking lot also has issues with circulation and could be redesigned to improve capacity. The lot also lacks a well-defined parking space for buses and horse trailers. Therefore, the planning team recommends improving circulation through the lot, enhancing capacity, and improving safety of the lot through traffic calming measures. Finally, the Heatherwood Trail Trailhead parking lot currently does not meet POS's standards for dimensions, safety, and drainage. The planning team recommends each of these issues be addressed in a redesign of this lot.

Social Trails: Whether or not to include existing social trails into designated trail system, and if not, whether or not to reclaim them

Recommendation: Social trails (i.e. non-designated, user created trails) exist throughout the site primarily because of the desire to access various ponds for fishing, wildlife viewing, and reflection. Although POS discourages such trails, it is the department's policy to allow all users on foot or horseback to go off trail. The planning team does not recommend making any of the existing social trails into formal designated trails due to the added expense and resources necessary to maintain them, as well as the fact that designating any specific trail wouldn't reduce and may increase the number of social trail spurs down to the water's edge. Leaving these trails undesignated would also allow visitors to explore less improved portions of the property. In addition, because of the flat terrain and limited amount of impacts caused by the existing social trails, the planning team does not recommend closing any existing social trails.

Future Regional Trail Connections: Whether or not to allow a potential future regional trail connection through Walden Ponds

Recommendation: Although a current regional trail proposal through Walden Ponds is not on the table at this time, POS has in the past received requests to allow a potential future regional trail to cross through Walden Ponds. In fact, the Heatherwood Trail was constructed as part of a proposed regional trail between Heatherwood Estates and the City of Boulder. Overall, the planning team would likely support a regional trail corridor within the vicinity of Walden Ponds (e.g. along the rail

line south of Walden Ponds), as it would provide an alternative means for residents to access the site. However, they are less likely to support a future regional trail connection that crosses through Walden Ponds. The primary concern with this is the impact such a trail would have on the site and the experience of visitors, and thus, the overall vision for the site. However, if the issue ever came up, POS would give it further consideration.

Safe Access to Ponds: Whether or not to include any additional access points to ponds for safety and protection of the resources

Recommendation: The planning team agreed that additional access points to Wally Toevs Pond and Duck Pond would be warranted for visitor convenience and safety, as well as protection of the ponds' side slopes and other resources. An access for educational programs was deemed appropriate for the northwest corner of Duck Pond, where many school educational programs occur. In addition, the northeast corner of Duck Pond and the southwest corner, central east shoreline, and near the middle of the west bank of Wally Toevs Pond were recommended as locations for improved fishing access. In all of these locations, the banks are steep, but visitors are known to use these sites. Therefore, the accesses will provide safer and more sustainable access. Access points may include stairs and / or platforms, which will be created with natural materials to the extent possible and will limit impacts to existing native vegetation (e.g. willows on south bank of Wally Toevs Pond).

Zoning for Visitor Amenities: Whether or not visitor amenities such as benches or picnic facilities should be limited in certain areas

Recommendation: The planning team recommended that the number of amenities benches would not be designated in the plan. However, a zoning approach would be used whereby the east side of the property (i.e. Wally Toevs Pond and south side of Cottonwood Marsh) and immediately around the Walden Ponds Administrative Building would be designated to have a higher number of amenities as it currently does, while the west side (i.e. Ricky Weiser Wetland, Duck Pond, and Bass Pond) would be designated to have a lower number of amenities.

Upgrades to Facilities: Whether or not to upgrade any of the existing picnic facilities and amenities

Recommendation: The existing picnic tables and picnic shelters provide visitors a place to eat, relax, and with the shelters get out of the sun while enjoying the scenery. In addition, the picnic tables provide a meeting location for many groups such as bird watchers and a station for education and outreach programs. Walden Ponds has a larger number of picnic tables and shelters compared to other POS open space properties, which the planning team does not recommend changing due to the unique visitor population and the types of visitor uses. One minor recommendation is to place non-combustible materials around the base of the existing grills. In addition, the planning team recommends formalizing the picnic area immediately south of the Walden Ponds Administrative Building under the existing trees with crusher fines and timbers. Bench design will follow POS standards such that new and replacement benches will be of a consistent high standard.

Bridge Over Ditch: Whether or not to add a small bridge over the ditch in the southwest corner of the site leading to Sawhill Ponds

Recommendation: The team agreed to include a bridge (i.e. low-tech crossing) across the ditch in the southwest corner of the property adjacent to Ricky Weiser Wetland. This crossing is a major access point to / from Sawhill Ponds and is under water during water diversions. This management action would need to be coordinated with the City of Boulder.

Bass Pond Peninsula Crossing: Whether or not to add a crossing from the landside peninsula to the island in the middle of Bass Pond

Recommendation: The team agreed to allow a crossing in the low spots between the peninsulas near the middle of Bass Pond and to the small island. The peninsulas and islands were created when two notches were cut in the levee between the two former ponds to create one larger pond (i.e. Bass

Pond). The purpose of the crossing is to allow anglers and others better access between the east bank and the west bank of Bass Pond and to be able to fish on the island within Bass Pond, which is adjacent to deeper water pockets. The materials used for the crossings will be natural (e.g. small boulders).

Fencing: Whether or not to remove or add fencing throughout the site

Recommendation: The planning team agreed to continue maintaining the existing fences. Fences along the property boundary provide good border and keep visitors from going where they shouldn't. To the extent possible, fences should be made wildlife friendly. In addition, the fencing will allow 3 access points between Sawhill and Walden (southwest corner of site, southwest corner of Duck Pond, and at the west side of Duck Pond). Each of these access points is currently in place. One access point on the south side of Duck Pond will be removed.

Boats on Ponds: Whether or not to allow any boats or other floating devices within the ponds at Walden Ponds

Recommendation: The team discussed whether belly boats or other floating devices should be allowed on the ponds. Currently, they are not allowed. It was determined that the current restrictions should continue, mainly because the ponds aren't large enough or deep enough to support boats and other floating devices, as well as other potential impacts to waterbirds and other wildlife maintaining the goal of Walden Ponds as a wildlife sanctuary.

Fishing Restrictions: Whether or not to remove fishing access from any ponds

Recommendation: It is recommended that fishing not be allowed within Cottonwood Marsh, primarily because this wetland hosts the greatest diversity of waterbirds, is the shallowest pond on site and therefore has a less sustainable fish population, and overall does not provide the best fishing experience. The closure of fishing on Cottonwood Marsh will require visitor notification and education. Fish are present in the pond due to the connectivity with the other ponds, but will only be available to wildlife.

Fish Stocking: Whether or not to stock different, more sustainable fish species

Recommendation: The primary concern was with stocking trout within Wally Toevs Pond, which is not suitable habitat for these cold-water species. It was decided however to continue stocking trout in this pond, primarily because it is a historic use, it provides easily catchable fish, and it provides enjoyment for those users allowed to fish within the pond. No other prescribed changes in fish stocking are recommended for the other ponds.

Youth Fishing on Wally Toevs Pond: Whether or not to allow youth 15 years of age and younger to fish with a senior (64 years or older) or a person with a disability at Wally Toevs Pond

Recommendation: This alternative was brought up as a potential way to teach and encourage youth to fish with family and friends. The planning team agreed with this proposal because of this reason. It should be noted that the age limit was set based on state fishing regulations, which allow youth 15 and younger to fish without a license

Besides the issues listed above, many other management considerations fell into the category of standard operating procedures for POS or were non-controversial in nature, and therefore, were included in the management direction without extensive deliberation regarding alternatives. In addition, some issues such as whether or not to close any of the existing designated trails or whether or not to continue allowing fishing at Walden Ponds were also not considered in depth by the planning team, primarily because they are historic uses of the site and have proved successful over time without any public controversy or public requests for changes. Alternatives for other issues such as maintenance of irrigation ditches or removal of non-native, invasive species were not given much consideration because these activities are necessary for the successful management of the site. Although consideration of alternatives for many of these topics was limited, it does not necessarily limit POS staff from managing the site in alternative ways. Rather, this management plan

provides enough flexibility to POS staff to utilize the best technologies, least cost alternatives, and best available science to effectively and efficiently manage the site and accomplish the vision and management goals and objectives for Walden Ponds.

3.2.2 Preferred Management Direction

Based on an assessment of the various alternatives, the POS planning team developed a preferred management direction. The preferred management direction provided in this plan is based on current knowledge and understanding about the site's history, hydrology, soils, wildlife, vegetation, existing habitats and ecological relationships. Likewise, POS has taken into consideration the wishes and needs of Walden Ponds' diverse population of visitors sought out during the formal public comment period and gleaned from staff's daily interactions with them. Moreover, the plan carries on the department's desire to provide high quality visitor services, including trails, bird viewing and fishing opportunities, and exceptional educational programs. Finally, the policies of the *Boulder County Comprehensive Plan*, the mission and goals of POS, and the restrictions of Colorado water law and administration have helped set the management direction. The following is a brief description of the preferred management direction.

It is POS's intent to continue managing Walden Ponds primarily as high quality wildlife habitat, allowing compatible and minimal-impact human uses to continue. Because water is a limiting factor at Walden Ponds, it has in the past and continues to play a pivotal role in the management of the site. A key consideration in thinking about future water management at Walden is that POS is primarily managing water for wildlife, including sport fish, and wetland and riparian vegetation. To the extent possible based on available water, POS will actively manage the water resource based on specific management objectives for each pond and wetland that balance the needs of a diversity of wildlife, visitors, and other concerns (i.e. the Water Management Alternative). Water management will be accomplished through both natural and managed means. At times, groundwater levels will be naturally high due to adequate precipitation, and all ponds and wetlands will be filled to their maximum extent. At other times, water levels will be shallow or non-existent due to drought conditions. In years when POS gets approval from the Water Commissioner to divert water off of Boulder Creek, either under "free river" conditions or via an eventual water right, ponds and wetlands will be filled based on individual pond and wetland management objectives and installation of appropriate water management infrastructure.

POS will continue to provide a number of visitor facilities and amenities with some necessary, but minor, changes. The three trailheads (Wally Toevs Pond, Cottonwood Marsh, and Heatherwood Trail) will each be upgraded to provide better and more efficient parking and access. POS will continue to provide and maintain 2.9 miles of multiple use trails including the Walden Ponds Trail and the Heatherwood Trail, as well as the Cottonwood Marsh boardwalk and the Wally Toevs Pond fishing pier. The trail around Bass Pond and Ricky Weiser Wetland will be converted from a natural surface trail to a crusher fine trail. A number of amenities such as picnic tables and shelters, restrooms, and benches will remain. The Walden Ponds Administrative Building will continue to be used for the Volunteer Naturalist Program. Finally, safer and less environmentally damaging accesses to Duck Pond and Wally Toevs Pond will also be provided for fishing, bird watching, and interpretive programs.

Management zoning will be used as a management tool, which would limit the number of closure areas, but help to maintain the desired ecological condition and visitor use experience. A portion of the site (i.e. Cottonwood Marsh, Ricky Weiser Wetland, and Bass Pond) would be zoned to have minimal to no development, and thus, provide a more natural experience for the user. The other portion of the site (i.e. Wally Toevs Pond, south side of Cottonwood March, Duck Pond, Heatherwood Trail, and around the administrative building) would be more developed with trailheads, benches, restrooms, and picnic facilities. This zoning would not only help managers know what types of uses and facilities are appropriate for a given location, but also allow visitors to know what to expect in a particular zone.

Overall, POS does not plan to make any dramatic changes to visitor use management with some minor exceptions. Current visitor uses including hiking, wildlife viewing, fishing, horseback riding, and educational programming, among others, will continue. The Cottonwood Marsh HCA will be expanded to help protect

wildlife habitat and would be closed to the public, including fishing, but would not impact other visitor uses. In addition, individuals 15 years and younger will now be allowed to fish at Wally Toevs Pond, which has historically been exclusively for seniors (64 years and older) and disabled individuals, if a senior or disabled individual is with them. This will allow these individuals to share in the fishing experience. Finally, POS and the Volunteer Naturalist Program will continue to host education and outreach programs on site.

Based on available funding, POS will continue to provide the staff and resources necessary to manage Walden Ponds as outlined in this management plan. Coordination and communication amongst POS staff and with relevant outside agencies are essential for the efficient and effective management of the site. With significant wildlife and habitat values, water management concerns, a variety of recreational opportunities, unique interpretive programs, and overall visitor experience at stake, relevant staff must communicate regularly with each other and outside stakeholders to ensure that the site's vision is upheld and its management goals, objectives, and strategies are met. Finally, staff and volunteers will monitor the site regularly to ensure the vision for the property is upheld and the goals and objectives are met

3.3 MANAGEMENT DIRECTION

The management direction for Walden Ponds is identified by the overall vision for the property (see Section 1.5.1) and the goals, objectives, and strategies for individual resource (see Section 3.3). The *vision* is a guiding statement for what POS is trying to achieve at Walden Ponds now and into the future and is the foundation upon which the site is managed. *Goals* are statements about a specific desired outcome or end result and are consistent with the vision statement. Derived from the goals, *objectives* are specific measurable management outcomes that are expected to occur within a specified time period. *Strategies* are specific management actions taken to achieve the goals and objectives. A final component of this management scheme is *monitoring*, which is done periodically by POS staff and others to ensure that the goals and objectives outlined in this plan are being met, as well as ensuring the overall vision is upheld. Monitoring can take the form of focused efforts to obtain quantitative data on specific resources or may consist of qualitative assessments of site conditions. Although monitoring could be included under each goal, objective, and strategy, it is included here as its own topic with specific goals, objectives, and strategies.

Based on input from the planning team and the public, the following topics have been addressed in this planning effort:

Resources

- Water (WT)
- Habitat - Including Vegetation and Wildlife (HB)

Facilities and Visitor Use

- Facilities and Amenities (FA)
- Aesthetics Considerations (AC)
- Recreational Opportunities (RO)
- Education and Outreach (EO)
- Resource Protection and Visitor Safety (RS)

Management and Monitoring

- Communication and Coordination (CC)
- Staff and Resources (SR)
- Monitoring (MG)

Management goals, objectives, and strategies for each topic are presented in Table 3.2. In addition, recommendations made under “Management Direction Alternatives” (Section 3.2.1) and the details provided under “Preferred Management Direction” (Section 3.2.2) are also incorporated under this management direction. Figure 3.1 presents many of the on-the-ground management recommendations.

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Resources
<i>Water (WT)</i>
Goal WT-1 – To recognize and appreciate the natural, fluctuating characteristic of water in Boulder County’s semi-arid plains environment
Objective WT-1.1 – Employ realistic and practical water management strategies
Strategy WT-1.1.1 – Follow management prescriptions based on management objectives for each pond
Strategy WT-1.1.2 – Work with POS water resource specialist and other staff prior to making management decisions involving water at Walden Ponds
Objective WT-1.2 – Educate and inform staff and the public about the natural water dynamics and water management systems at Walden Ponds and across the Front Range
Strategy WT-1.2.1 – Provide educational materials such as brochures or interpretation panels, which describe the local hydrologic cycle, water management in Boulder County, and their effects at Walden Ponds
Goal WT-2 – To manage water depths based on management objectives for individual ponds
Objective WT-2.1 – Water levels within each pond will be managed accordingly:
<ul style="list-style-type: none"> • Wally Toevs Pond will have deep water with depths of approximately 4-8 feet deep, to the extent possible based on available water and existing topography • Cottonwood Marsh will have shallow water with depths of approximately 0-4 feet deep, to the extent possible based on available water and existing topography • Duck Pond will have shallow to deep water with depths of approximately 1-6 feet deep, to the extent possible based on available water and existing topography • Bass Pond will have shallow to deep water with depths of approximately 1-10 feet deep, to the extent possible based on available water and existing topography • Ricky Weiser Wetland will have shallow to mid-depth water with depths of approximately 0-5 feet deep, to the extent possible based on available water and existing topography
Strategy WT-2.1.1 – Install new outlet structures (e.g. stoplog structures), where necessary, that allow water level manipulations at correct locations and elevations to meet water management objectives. The outlet to Wally Toevs Pond in the northeast corner of Cottonwood Marsh is the highest priority.
Strategy WT-2.1.2 – Manage outlets, as necessary, over the long-term to meet water management objectives
Strategy WT-2.1.3 – For all ponds, staff gauges will be placed in locations that accurately and easily measure water depth.
Strategy WT-2.1.4 – The maximum allowable depth will be marked on each staff gauge for easier interpretation
Strategy WT-2.1.5 – All staff gauge readings will be recorded regularly in the spring, summer, and fall
Strategy WT-2.1.6 – If and when water is available to be diverted off of Boulder Creek, water levels within each pond will be brought up no further than the maximum allowable depth on each staff gauge
Strategy WT-2.1.7 – Periodically inspect and maintain all water management infrastructure including diversion

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

structure, ditches, headgates, screens, drop structures, outlet structures, staff gauges, etc.

Goal WT-3– To utilize water resourcefully in order that the needs of a diversity of plant and wildlife species are met

Objective WT-3.1 – Water will be managed, to the extent possible, to encourage a mosaic of native aquatic, wetland, and upland plant communities, as well as mud flats and open water

Strategy WT-3.1.1 – Impacts of water level management on vegetation will be taken into consideration when managing water

Objective WT-3.2 – Water management activities will take into account the multiple needs of wildlife and their habitat, such that:

- Water levels will be managed in Wally Toevs Pond primarily for sport fish, to the extent possible based on available water
- Water levels will be managed in Cottonwood Marsh primarily for shorebirds, wading birds, dabbling ducks, rails, diving birds, geese, and passerines, to the extent possible based on available water
- Water levels will be managed in Duck Pond primarily for sport fish, wading birds, dabbling duck, rails, geese, and diving birds, to the extent possible based on available water
- Water levels will be managed in Bass Pond primarily for sport fish, wading birds, dabbling duck, rails, geese and diving birds, to the extent possible based on available water
- Water levels will be managed in Ricky Weiser Wetland primarily for shorebirds, wading birds, dabbling ducks, rails, diving birds, geese, and passerines, to the extent possible based on available water

Strategy WT-3.2.1 – If and when water is available to be diverted off of Boulder Creek, POS management staff will consider potential species present and potential nesting, especially by shorebirds

Strategy WT-3.2.2 – Records of water depth (staff gauge readings) and species presence will be compiled over time to determine species response to water management actions

Strategy WT-3.2.3 – An adaptive management approach will be taken toward managing water for wildlife. Management actions will be adjusted based on data collected on water levels, wildlife use, and other habitat attributes

Goal WT-4– To have efficient, effective, and operational water management features

Objective WT-4.1 – Maintain water management features including the water diversion structure on Boulder Creek, ditches, headgates, hydroscreens, inlets and outlets between ponds, and outlet and outlet ditch from Wally Toevs Pond

Strategy WT-4.1.1 – Regularly inspect and maintain per water management objectives

Strategy WT-4.1.2 – Repair non-functioning features as necessary in a timely manner

Objective WT-4.2 – Install new outlet structures where necessary

Strategy WT-4.2.1 – Determine the most effective type of structure (e.g. stoplog structures)

Strategy WT-4.2.2 – Install based on order of priority, which are 1.) Cottonwood Marsh to Wally Toevs Pond, 2.) Ricky Weiser Wetland to Bass Pond, and 3.) Bass Pond to Cottonwood Marsh

Strategy WT-4.2.3 – Regularly inspect and maintain per water management objectives

Objective WT-4.3 – Make use of cost-effective tools available for water management, including diversion structure, ditches, outlet structures, etc. that meet management objectives

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Strategy WT-4.3.1 – POS will seek the lowest cost alternative for water management features, while ensuring management objectives are met

Habitat - Including Vegetation and Wildlife (HB)

Goal HB-1– To recognize and appreciate that different wildlife species have different habitat needs and that Walden Ponds Wildlife Habitat through its varied topography, hydrology, and plant communities provides for many of these diverse needs

Objective HB-1.1 – Consider waterbird groups and other wildlife prior to management actions, especially those related to water delivery

Strategy HB-1.1.1 – Follow management prescriptions based on management objectives for each pond

Strategy HB-1.1.2 – Work with POS wildlife specialists prior to making management decisions that may impact wildlife, including nesting birds

Objective HB-1.2 – Educate and inform the public about the diverse habitat needs of wildlife species and how Walden Ponds provides for many of those needs

Strategy HB-1.2.1 – Provide educational materials such as brochures or interpretation panels, which describe the needs of different waterbird groups and other wildlife and the effects of management

Goal HB-2– To provide a mosaic of habitats that varies over time and space and meets the needs of a variety of wildlife species

Objective HB-2.1 – Habitat management will strive to maintain a mosaic of terrestrial and aquatic habitats throughout Walden Ponds, including grasslands, riparian, mud flats, shallow emergent marsh, deep emergent marsh, and open water

Strategy HB-2.1.1 – Periodically survey and map plant communities and open water habitat

Strategy HB-2.1.2 – If necessary, alter management regime (e.g. water management, weed management, planting, seeding, etc) to maintain diverse habitats based on best available science and the feasibility of implementing new management strategies

Objective HB-2.2 – Enhance habitat values along shorelines, on islands, and elsewhere as necessary and appropriate

Strategy HB-2.2.1 – If the opportunity presents itself and is warranted and feasible, enhance steep pond and wetland banks (particularly around the north and east side of Cottonwood Marsh) by minor regrading of slopes, improvement of soils, and installation of native vegetation.

Strategy HB-2.2.2 – Enhance the value of islands to wildlife to the extent possible with weed control, minor regrading where necessary, and installing appropriate native vegetation

Goal HB-3– To protect core wildlife habitat areas within Walden Ponds Wildlife Habitat

Objective HB-3.1 – Protect and preserve the habitat values with Habitat Conservation Areas

Strategy HB-3.1.1 – Delineate and designate the Cottonwood Marsh Habitat Conservation Area, which will be closed to public use

Strategy HB-3.1.2 – Where deemed necessary, appropriate, and desirable by staff, active management (e.g. weed control, tree planting or pruning, seeding desirable species, etc.) may be undertaken within the HCA

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Goal HB-4 – To provide habitat for sport fish, to the extent possible

Objective HB-4.1 – To the extent possible given the site conditions and based on available water, provide the best possible habitat for trout within Wally Toevs Pond

Strategy HB-4.1.1 – Stock Wally Toevs Pond with trout in spring and fall pending appropriate water levels and available funding

Strategy HB-4.1.2 – Install and maintain appropriate artificial habitat structures and aerators, where necessary and appropriate

Objective HB-4.2 – To the extent possible based on available water, provide appropriate warm water fish habitat within Duck Pond and Bass Pond

Strategy HB-4.2.1 – Periodically stock ponds with appropriate sport fish, for example largemouth bass, smallmouth bass, channel catfish, and bluegill

Strategy HB-4.2.2 – Periodically survey for species, numbers, and size

Strategy HB-4.2.3 – Install and maintain artificial habitat structures, where necessary and appropriate

Objective HB-4.3 – Work with Colorado Division of Wildlife, as necessary, on appropriate fish stocking and habitat enhancement

Strategy HB-4.3.1 – Implement CDOW recommendations, where necessary and conform with management plan

Goal HB-5 – To encourage a diversity of appropriate native plant species throughout the site

Objective HB-5.1 – Control non-native, invasive species

Strategy HB-5.1.1 – Manage State and County listed noxious weeds and other undesirable non-native species utilizing the County approved integrated pest management plan

Objective HB-5.2 – Maintain healthy stands of native vegetation throughout Walden Ponds utilizing appropriate management tools

Strategy HB-5.2.1 – Manage vegetation composition via water manipulations, to the extent possible based on available water

Strategy HB-5.2.2 – Revegetate disturbed areas as needed with appropriate native species

Strategy HB-5.2.3 – Utilize prescribed fire if deemed necessary and appropriate and with proper permits and approvals

Strategy HB-5.2.4 – Where desirable, plant or seed areas with native vegetation to improve species diversity and habitat values

Strategy HB-5.2.5 – Prune or remove diseased or dying trees where necessary and desirable

Goal HB-6 – To manage nuisance species that have undue impact on site

Objective HB-6.1 – Actively manage nuisance species that significantly impact native vegetation, water management infrastructure, trails, and other facilities

Strategy HB-6.1.1 – To the extent possible and as necessary, protect trees and infrastructure with fabricated protective measures such as wire fence

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Strategy HB-6.1.2 – If necessary, remove individuals following all local, state, and federal laws and guidelines as applicable

Goal HB-6– To continue to allow the site to develop and evolve from its original reclamation

Facilities and Amenities (FA)

Goal FA-1– To provide safe, functional, aesthetically pleasing trailheads that meet the needs of the diverse users of Walden Ponds

Objective FA-1.1 – Redesign and renovate Wally Toevs Pond Trailhead

Strategy FA-1.1.1 – Improve parking layout to use space more efficiently and enhance circulation

Strategy FA-1.1.2 – Provide ADA accessible parking spaces proximate to other ADA accessible trailhead amenities

Strategy FA-1.1.3 – Remove weedy and invasive tree species and install trees to provide shade for site users

Strategy FA-1.1.4 – Provide routine maintenance

Objective FA-1.2 – Redesign and renovate Cottonwood Marsh Trailhead for diverse user groups

Strategy FA-1.2.1 – Enhance vehicular and pedestrian circulation throughout the parking lot

Strategy FA-1.2.2 – Improve the capacity of the parking lot up to 30% more parking spaces

Strategy FA-1.2.3 – Provide a minimum of one parking spot for a bus or horse trailer

Strategy FA-1.2.4 – Improve access road to administrative building into parking lot redesign to eliminate multiple intersections at trailhead and along internal circulation road

Strategy FA-1.2.5 – Design traffic calming measures to slow vehicular traffic entering parking lot

Strategy FA-1.2.6 – Install trees to provide shade for site users

Strategy FA-1.2.7 – Provide routine maintenance

Objective FA-1.3 – Redesign and renovate Heatherwood Trail Trailhead

Strategy FA-1.3.1 – Enhance parking lot to meet vehicular parking dimensional standards, improve drainage, and improve ingress/egress visibility upon approval of management agreement with the City of Boulder.

Strategy FA-1.3.2 – Provide routine maintenance as outlined in management agreement with the City of Boulder

Objective FA-1.4 – Provide informative kiosks at trailheads

Strategy FA-1.4.1 – Retain one full-size kiosk at Cottonwood Marsh Trailhead

Strategy FA-1.4.2 – Provide a POS standard mini kiosk at Wally Toevs Pond Trailhead

Strategy FA-1.4.3 – Provide a POS standard mini kiosk at the Heatherwood Trailhead upon approval of management agreement with the City of Boulder

Goal FA-2– To offer the public low maintenance, accessible, multiple use trails for passive recreation

Objective FA-2.1 – Retain 2.9 miles of trail including Walden Ponds Trail and Heatherwood Trail

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Strategy FA-2.1.1 – Officially designate the trail system at Walden Ponds as the “Walden Ponds Trail”
Strategy FA-2.1.2 – Include Heatherwood Trail in Walden Ponds management pending approval of management agreement with the City of Boulder
Objective FA-2.2 – Convert and maintain all designated trails to crusher fine trails except the natural surface trail around Duck Pond
Strategy FA-2.2.1 – Retain existing crusher fine trails between Wally Toevs Pond and Walden Ponds Administrative Building
Strategy FA-2.2.2 – Add crusher fine to trail around Wally Toevs Pond
Strategy FA-2.2.3 – Add crusher fine to trail around Ricky Weiser Wetland and Bass Pond
Strategy FA-2.2.4 – Retain natural surface trail around backside of Duck Pond
Strategy FA-2.2.5 – Convert Heatherwood Trail to a crusher fine trail, pending approval of a management agreement with the City of Boulder and available funding
Strategy FA-2.2.6 – Repair all trails as needed and routinely maintain designated trails
Objective FA-2.3 – Improve accessibility along Walden Ponds Trail to the extent possible
Strategy FA-2.3.1 – Modify grade of trail between Cottonwood Marsh and the Walden Ponds Administrative Building to improve accessibility
Strategy FA-2.3.2 – Improve trail surface and layout around Wally Toevs Pond to make it more accessible to seniors and individuals with disabilities
Strategy FA-2.3.3 – Work with the City of Boulder to continue and improve access between Walden Ponds and Sawhill Ponds including installation of a bridge over the ditch at the southwest corner of Walden Ponds
Goal FA-3 – To provide appropriate infrastructure and open space amenities
Objective FA-3.1 – Provide low maintenance, accessible, and safe access options to Wally Toevs Pond for seniors and individuals with disabilities
Strategy FA-3.1.1 – Retain existing fishing platform on the southeast corner of Wally Toevs Pond
Strategy FA-3.1.2 – Design and construct new accessible fishing areas along the southwest corner and east shoreline of Wally Toevs Pond
Strategy FA-3.1.3 – Provide routine maintenance
Objective FA-3.2 – Provide low maintenance, accessible, and safe access for anglers, educational programs, and other visitors at Duck Pond
Strategy FA-3.2.1 – Design and construct a new access point to the shoreline on the northwest corner of Duck Pond for educational programs
Strategy FA-3.2.2 – Design and construct a new access point on the northeast corner of Duck Pond for anglers
Strategy FA-3.2.3 – Provide routine maintenance
Objective FA-3.3 – Retain the Cottonwood Marsh boardwalk for visitors and educational programs
Strategy FA-3.3.1 – Continue to maintain the existing boardwalk and replace planks and railing, as necessary, preferably recycled, low maintenance, highly durable material

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Strategy FA-3.3.2 – If in the future it is determined that the whole boardwalk is in need of replacement, consider minor changes to the location and design of the boardwalk to better suit the needs and desires of the public and educational programming, including the potential to extend the boardwalk with a new spur to a maximum 150 feet beyond its current location

Objective FA-3.4 – Provide a limited number of benches at fishing ponds, along trails, and at wildlife viewing areas

Strategy FA-3.4.1 – Focus benches around Wally Toevs Pond and the south shoreline of Cottonwood Marsh, and to a lesser degree, around Duck Pond and on the east side of Bass Pond

Strategy FA-3.4.2 – Provide routine maintenance and replace and standardize as necessary

Objective FA-3.5 – Provide picnic facilities and amenities at Wally Toevs Pond Trailhead, Cottonwood Marsh Trailhead, and adjacent to Walden Ponds Administrative Building

Strategy FA-3.5.1 – Retain picnic shelter, picnic benches, and grill at Wally Toevs Pond Trailhead

Strategy FA-3.5.2 – Retain group picnic shelter, small picnic shelter, picnic benches, and grill at Cottonwood Marsh Trailhead

Strategy FA-3.5.3 – Ensure all picnic facilities and amenities are safe and in good condition and meet visitors' needs to the extent possible

Strategy FA-3.5.4 – Add and maintain non-combustible material around base of grills

Strategy FA-3.5.5 – Replace or repair items that are not in good working condition

Objective FA-3.6 – Retain restrooms at Wally Toevs Pond Trailhead and Cottonwood Marsh Trailhead

Strategy FA-3.6.1 – Provide routine maintenance and cleaning

Strategy FA-3.6.2 – Repair restrooms as necessary

Objective FA-3.7 – Provide trash and recycling receptacles at Wally Toevs Pond Trailhead, Cottonwood Marsh Trailhead, and adjacent to Walden Ponds Administrative Building

Strategy FA-3.7.1 – Provide additional receptacles at these locations if capacity is not sufficient to meet demand

Strategy FA-3.7.2 – Provide routine trash/recycling pick-up

Objective FA-3.8 – Provide clear and informative signs that allow users to easily understand access throughout the site and rules and regulations governing the property

Strategy FA-3.8.1 – Update and implement sign plan for Walden Ponds including the Heatherwood Trail

Strategy FA-3.8.2 – Provide entry signs that help visitors find their bearings

Strategy FA-3.8.3 – Provide rules and regulations signs at entry points not served by a kiosk

Strategy FA-3.8.4 – Provide a minimum of one sign per pond with pond name and fishing regulations

Goal FA-4 – To make beneficial use of the Walden Ponds Administrative Building

Objective FA-4.1 – Continue to utilize administrative building as office for POS staff and as the Volunteer Resource Center for the Volunteer Naturalist Program

Strategy FA-4.1.1 – Remodel as necessary to efficiently and effectively utilize space

Strategy FA-4.1.2 – Regularly clean and maintain facility

Strategy FA-4.1.3 – Provide regularly scheduled grading and maintenance and seasonal snow plowing of the

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

access road
Goal FA-5 – To retain Walden Ponds boundary fences
Objective FA-5.1 – Provide appropriate and adequate fence around perimeter of property to maintain boundaries
Strategy FA-5.1.1 – Work with adjoining property owners to the extent necessary on fencing issues
Strategy FA-5.1.2 – Utilize wildlife friendly fences to the extent possible
Strategy FA-5.1.3 – Close off existing access point between Walden Ponds and Sawhill Ponds at south end of Duck Pond, thus providing three access points between the properties instead of four
Strategy FA-5.1.4 – Regular inspect and repair fences as necessary
Aesthetic Considerations (AC)
Goal AC-1 – To make landscaped areas fit into the natural environment to the extent possible
Objective AC-1.1 – Minimize landscaped areas that require routine maintenance to the extent possible
Strategy AC-1.1.1 – Landscaped areas will only occur around trailheads, including picnic areas and restrooms, and the Walden Ponds administrative building
Objective AC-1.2 – Use appropriate plant species in landscaping
Strategy AC-1.2.1 – Only non-invasive species well suited to surrounding environmental conditions will be utilized
Strategy AC-1.2.2 – To the extent possible, utilize native species
Objective AC-1.3 – Provide vegetative screening (i.e. trees and shrubs) along property boundaries to the extent possible
Strategy AC-1.3.1 – Consider vegetative screening along boundary with road maintenance yard
Strategy AC-1.3.2 – Consider vegetative screening along boundary with wastewater treatment plant to the extent possible without interfering with the adjacent solar panels
Strategy AC-1.3.3 – Consider vegetative screening along boundary with adjacent private properties
Objective AC-1.4 – Maintain landscaped areas
Strategy AC-1.4.1 – Provide irrigation or routine watering as necessary to establish new plants
Strategy AC-1.4.2 – Provide routine mowing of landscaped areas in and around trailheads
Goal AC-2 – To minimize undesirable scenic impacts
Objective AC-2.1 – Remove refuse from the property regularly
Strategy AC-2.1.1 – Provide trash and recycling receptacles at trailheads
Strategy AC 2.1.2 – Provide regularly scheduled trash/recycling pick-up
Strategy AC-2.1.3 – Host staff and volunteer clean-up events as necessary including adopt-a-trail and adopt-a-park programs
Objective AC-2.2 – Utilize natural materials to the extent possible for habitat structures and for shoreline stability
Strategy AC-2.2.1 – Replace unsightly fish structures with more natural and aesthetically pleasing structures

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

over time
Strategy AC 2.2.2 – Make use of natural erosion control measures (e.g. bioengineering) to the extent possible
Objective AC-2.3 – Prohibit dumping of any off-site materials at Walden Ponds
Strategy AC-2.3.1 – Remove unused and unnecessary buildings and hardscape
Strategy AC 2.3.2 – Clean up, remove sheds and remnants of the north parking lot, revegetate, and reduce the footprint from previous site use around Walden Ponds administrative building
Strategy AC 2.3.3 – Remove old asphalt road along southwest corner of Cottonwood Marsh located in the closure area (old mine road)
Recreational Opportunities (RO)
Goal RO-1 – To continue to offer multiple, passive visitor uses at Walden Ponds
Objective RO-1.1 – Provide and maintain existing multi-use trails for hiking, wildlife viewing, fishing, interpretive programs, horseback riding, biking and other passive recreational uses
Strategy RO-1.1.1 – Retain current 2.9 miles of trail including the Walden Pond Trail and the Heatherwood Trail
Strategy RO-1.1.2 – Work with City of Boulder Public Works Department on management of 0.8-mile Heatherwood Trail, which is located on the City property
Strategy RO-1.1.3 – Continue to work with City of Boulder Open Space and Mountain Parks to allow access to Sawhill Ponds via Walden Ponds at three locations (southwest corner of Ricky Weiser Wetland and northwest and southwest corners of Duck Pond)
Objective RO-1.2 – Provide sport-fishing opportunities
Strategy RO-1.2.1 – Enforce all State of Colorado fishing regulations at Walden Ponds, including the requirement for a Colorado fishing license for individuals 16 and older
Strategy RO-1.2.2 – Continue to provide warm-water fishing opportunities in Duck Pond and Bass Pond that are open to everyone
Strategy RO-1.2.3 – Continue to provide trout fishing opportunities in Wally Toevs Pond for seniors (64 years and older) and disabled individual
Strategy RO-1.2.4 – Allow individuals 15 years and younger to fish with a senior or disabled individual at Wally Toevs Pond beginning in 2011.
Strategy RO-1.2.5 – Continue to restrict all watercrafts on all ponds, including boats, vessels, single-chambered air-inflated devices, and float tubes
Objective RO-1.3 – Provide picnic opportunities
Strategy RO-1.3.1 – Continue to provide and maintain existing picnic shelters with picnic tables and grills
Education and Outreach (EO)
Goal EO-1 – To provide the best in environmental education and interpretation at Walden Ponds

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Objective EO-1.1 – Offer creative and innovative interpretive programs to diverse populations of Boulder County that explore the site’s history and reclamation efforts, the importance of water within a semi-arid environment and at Walden Ponds, natural resource management efforts, the site’s distinct habitats including wetlands, and the area’s native flora and fauna with a focus on birds, among other unique topics

Strategy EO-1.1.1 – Continue current environmental education and interpretation programs on a regular basis for school groups, organizations, and other interested members of the public

Strategy EO-1.1.2 – Add new and innovative programs based on interest, opportunity, and need

Objective EO-1.2 – Provide information regarding resources and management at Walden Ponds

Strategy EO-1.2.1 – Design and construct new and compelling interpretive panels regarding water management at Walden Ponds and the importance of diverse aquatic habitat for waterbirds and other wildlife

Strategy EO-1.2.2 – Provide location on water panel for updates on current water conditions and management

Strategy EO-1.2.3 – Install new panels in location easily accessible by majority of visitors

Strategy EO-1.2.4 – Include information about water management and the importance of diverse aquatic habitat for waterbirds and other wildlife in Walden Ponds brochures and on POS website

Goal EO-2– To continue basing the Volunteer Resource Center and the Volunteer Naturalist Program out of Walden Ponds

Objective EO-2.1 – Make use of available space for volunteer naturalist programs and resources

Strategy EO-2.1.1 – Allow volunteer naturalists to access Walden Ponds administrative building and use it to pick up and prepare resources for interpretive programs at Walden Ponds and other POS properties

Strategy EO-2.1.2 – Locate, regularly maintain, and add new interpretive resources for use by staff and volunteer naturalists within the Walden Ponds administrative building

Strategy EO-2.1.3 – Locate the naturalist library within the Walden Ponds administrative building and regularly maintain and add new materials to the library

Strategy EO-2.1.4 – Continue to utilize the group picnic shelter and boardwalk at Cottonwood Marsh to facilitate wetland programming

Resource Protection and Visitor Safety (PS)

Goal PS-1– To protect natural resources, including wildlife and vegetation, and provide for visitor safety, while allowing compatible visitor uses

Objective PS-1.1 – Inform visitors about current rules and regulations, interpretive programs, water levels, water management activities, and wildlife, among other topics

Strategy PS-1.1.1 – Utilize kiosk, brochures, interpretive signs, County website, and other technologies to inform the public of management at Walden Ponds and update as necessary

Strategy PS-1.1.2 – Post signs around parking lots with information regarding the difference in hours of operation between Walden Ponds and Sawhill Ponds and enforcement measures to reduce parking violations

Objective PS-1.2 – Provide regular site visits and patrol by Resource Protection staff

Strategy PS-1.2.1 – Patrol and enforce POS rules and regulations

Strategy PS-1.2.2 – Employ visitor education to the extent possible

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Strategy PS-1.2.3 – Write citations where necessary

Communication and Coordination (CC)

Goal CC-1– To coordinate management activities with relevant public agencies and adjacent land owners when and where necessary

Objective CC-1.1 – Work jointly with the City of Boulder on management issues

Strategy CC-1.1.1 – As necessary and appropriate, communicate and coordinate management with City of Boulder Open Space and Mountain Parks on management of each agency’s respective property including water management, headgate repair, ditch cleaning and maintenance, habitat management, weed management, trails, fences, access points, and interpretation

Strategy CC-1.1.2 – Coordinate with City of Boulder Public Works Department and finalize management agreements for Heatherwood Trail and Trailhead and the Wally Toevs Pond outlet ditch, both of which cross the City’s Wastewater Treatment Plant property

Objective CC-1.2 – Work with the Colorado Division of Wildlife (CDO) on wildlife management issues

Strategy CC-1.2.1 – Coordinate with CDO on wildlife habitat and fisheries management issues including fish stocking program and regulations

Objective CC-1.3 – Work with the Colorado Division of Water Resources on water management issues

Strategy CC-1.3.1 – Coordinate with the local Water Commissioner on water diversions when water is available and needed to meet management goals and objectives

Objective CC-1.4 – Work with Boulder County Road Maintenance (BCRM)

Strategy CC-1.4.1 – Coordinate with BCRM on issues of water quality, aesthetics, truck traffic, wildlife, and other management issues involving the BCRM property and Walden Ponds

Objective CC-1.5 – Work with adjacent private landowners as necessary

Strategy CC-1.5.1 – Coordinate with adjacent landowners on such issues as weed control as necessary

Staff and Resources (SR)

Goal SR-1– To provide the necessary staff and resources to efficiently and effectively manage Walden Ponds

Objective SR-1.1 – In conjunction with other properties and projects, POS will prioritize management actions and needs at Walden Ponds

Strategy SR-1.1.1 – Annually or as necessary plan and budget for management activities including general operations and maintenance

Strategy SR-1.1.2 – Ensure sufficient staff and resources are available to successfully accomplish management tasks

Strategy SR-1.1.3 – Incorporate management needs into staffs’ annual work plans as necessary

Strategy SR-1.1.4 – Include necessary resources in annual budgets (e.g. division budgets, CIP, grants, etc.)

Goal SR-2– To coordinate management activities amongst key POS staff

Table 3.2. Management Direction for Walden Ponds Wildlife Habitat Including Goals, Objectives, and Strategies

Objective SR-2.1 – Key staff meets annually, at a minimum, to discuss management issues and actions at Walden Ponds

Strategy SR-2.1.1 – Key staff including a wildlife biologist, water resource specialist, plant ecologist, weed specialist, education and outreach specialist, and others as necessary shall meet prior to the water season annually to discuss upcoming water management activities

Strategy SR-2.1.2 – Key staff including a trail specialist, facilities specialist, landscape architect, resource protection specialist, education and outreach specialist, and others as necessary shall meet once per year to discuss management issues with trails, trailheads, boardwalk, and other amenities, as well as visitor use concerns

Strategy SR-1.1.3 – Decisions will be documented, approved by division managers, and must be in conformance with the management plan

Monitoring (MG)

Goal MG-1– To ensure the vision for Walden Ponds is upheld

Objective MG-1.1 – Assess condition of property on a regular basis

Strategy MG-1.1.1 – Consider quantitative and qualitative data regarding condition of site

Strategy MG-1.1.2 – Reconsider or make necessary changes to management if property is not meeting overall vision

Goal MG-2– To ensure management goals, objectives and strategies are carried out

Objective MG-2.1 – Track goals, objectives, and strategies on annual basis

Strategy MG-2.1.1 – Keep a record of management actions and decisions

Strategy MG-2.1.2 – Take an adaptive management approach to ensure the most efficient and effective management of site

Goal MG-3– To keep track of natural resources, facilities, and visitor uses at Walden Pond

Objective MG-3.1 – Monitor natural resources, facilities, and visitor uses over time

Strategy MG-3.1.1 – Utilize staff and volunteers to regularly track natural resources including birds and other wildlife, vegetation, and water

Strategy MG-3.1.2 – Utilize staff and volunteers to regularly track facilities such as trails, trailheads, boardwalk, and piers

Strategy MG-3.1.3 – Utilize staff and volunteers to regularly track visitor uses such as types of use and visitor satisfaction

Strategy MG-3.1.4 – Utilize the information to make informed decisions

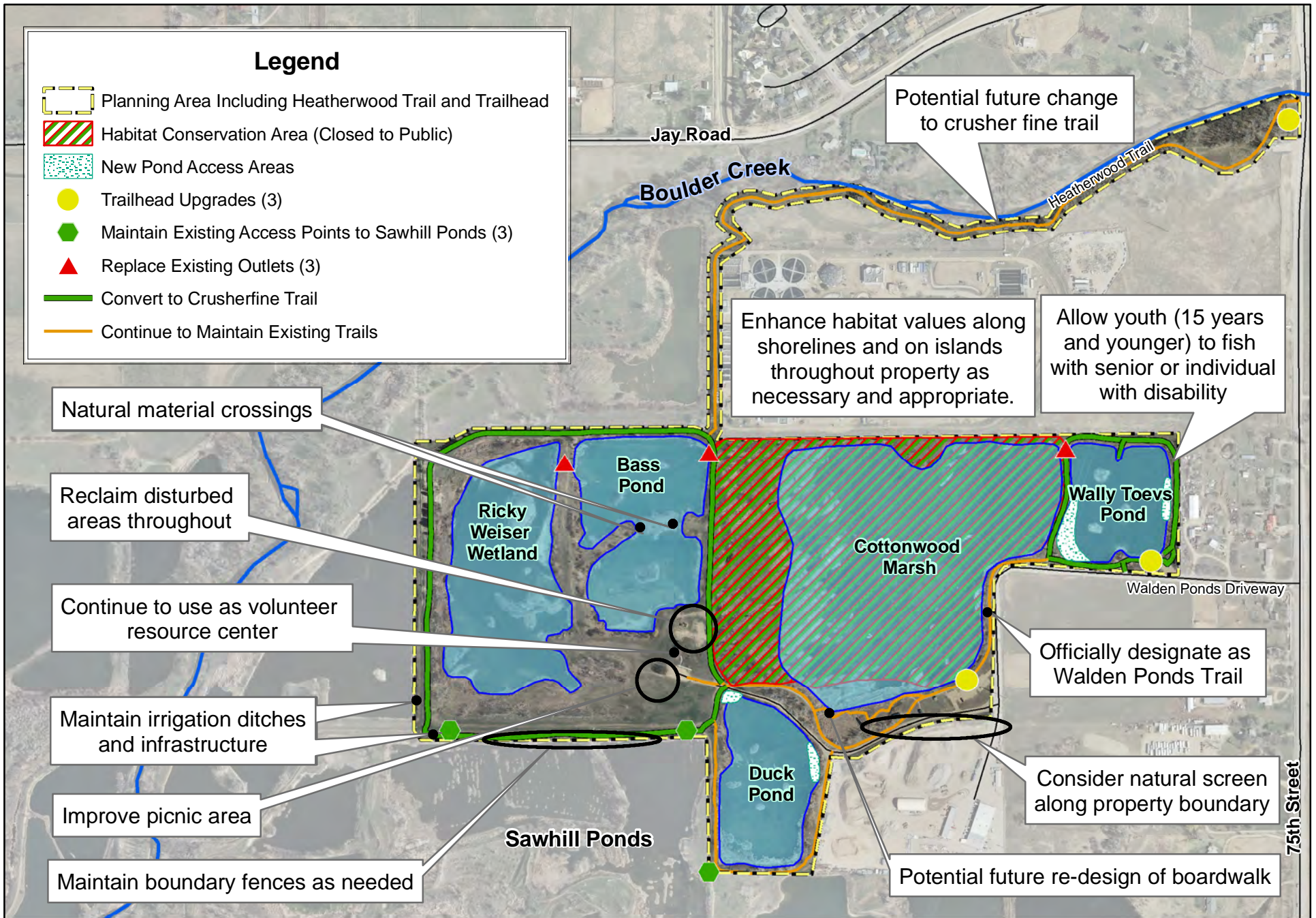
3.4 MANAGEMENT PRIORITIES

As mentioned in Section 1.9.1, it is the responsibility of POS to implement this management plan. Many items outlined in Table 3.2 are on-going management activities (e.g. manage water based on management objectives, manage for high quality wildlife habitat, weed control, maintaining ditch and water management

infrastructure, providing and maintaining trails, providing fishing opportunities, coordination amongst staff and with outside agencies, and provide resource and visitor protection), while others will be immediate changes in administration of the site (e.g. implementing the expanded Cottonwood Marsh HCA, allowing youth (15 years and younger) to fish with a senior or individual with disability at Wally Toevs Pond, and continuing to utilize administrative building for the Volunteer Naturalist Program). Still, others rise to the top as specific projects that will need to be undertaken over time. The following is a list of the highest priority projects, which POS will focus on in the immediate future. It is assumed that these projects will be implemented within 5-10 years depending on available funding for each project. These projects include:

- Continue pursuing 2002 water right
- Replace existing outlet between Cottonwood Marsh and Wally Toevs Pond and others as needed
- Control and/or remove exotic, invasive species, especially Russian olive
- Reclaim disturbed areas throughout the site to improve aesthetics
- Upgrade Heatherwood, Wally Toevs Pond, and Cottonwood Marsh trailheads
- Provide pond access points as outlined in plan at Wally Toevs Pond and Duck Pond
- Convert the trail around Ricky Weiser Wetland and Bass Pond to crusher fine

Specific projects, budgets and timing will be determined in annual work plans and Capital Improvement Projects (CIP) based on overall department priorities, available funding, staffing, grants and other partnerships. CIP projects are outlined in a 5-year plan, which is developed by County staff and reviewed by members of the community, POSAC and approved by the BOCC on an annual basis.



* Water levels within each pond and wetland will be managed to the extent possible based on available water to meet specific management objectives for each that balance the needs of a diversity of species and of visitor uses.



0 195 390 780 1,170 1,560 Feet

**Figure 3.1 Recommended Management Actions
Walden Ponds Management Plan**



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CHAPTER 4 – PUBLIC INVOLVEMENT AND COORDINATION

4.1 INTRODUCTION

This chapter is a description of the public outreach and participation opportunities made available through the development of this management plan and coordination efforts with other stakeholders. This chapter also includes a list of POS staff who helped prepare the document and the agencies, organizations, and individuals that received a copy of the Draft Management Plan for review.

4.2 PUBLIC INVOLVEMENT PROCESS

4.2.1 Scoping

Scoping is a planning term used to define the early and open process for determining the scope of issues to be addressed in the planning process. Scoping allows staff and the public to identify issues related to potential future open space management. The process also helps identify any issues that can be eliminated from detailed consideration. A list of stakeholders and other interested parties is generated and augmented throughout the scoping process.

Scoping for this management plan began in June 2009 with an initial POS planning team meeting. At this meeting, the team brainstormed and discussed current issues at Walden Ponds, began construction of the vision statement for the site, and came up with a list of potential opportunities and constraints for management. Staff spent the next few months reviewing the original management plan, property files, and other background material and considering potential future management options. On September 17, the planning team conducted a second meeting at Walden Ponds, where they toured the site and further discussed management issues. In addition, the team finalized the draft vision statement and continued discussions about desired future conditions and management alternatives.

Following the internal scoping, POS conducted a public comment period between October 23 and November 21, 2009, and hosted two public meetings (October 28 and November 16, 2009) to receive the public's input on future management. The purpose of the public comment period was to:

- Identify and document the public's interests, values, needs, and concerns about management of Walden Ponds
- Identify the types of public activities and level of services desired
- Gather any additional information about Walden Ponds from the public
- Guide the planning process and subsequently help shape the future management of Walden Ponds

The public was encouraged to send comments via mail, fax, e-mail, in person, or through an on-line comment form. Comments from a total of 13 individuals were received. A summary of the findings of the initial scoping can be found in Appendix C. Following scoping, POS began preparation of the draft management plan, including having a number of subsequent meetings to discuss and resolve a variety of management issues identified during the scoping process.

4.2.2 Project Mailing List

POS utilizes a 1500-foot buffer to generate an adjacent property owner mailing list. Each of these adjacent property owners received a postcard regarding the initial public meeting and comment period and will be contacted regarding the release of this document. In addition, POS sought other potentially interested stakeholders who were contacted via postcard and/or e-mail regarding the initial public comment period and the release of the draft plan. Identified potential stakeholders included:

- Boulder County Audubon Society
- Boulder County Nature Association
- Boulder Trail Runners

- Friends Interested in Dogs on Open Space
- Friends of Boulder Open Space
- Colorado Mountain Club - Boulder
- Sierra Club - Indian Peaks Group
- Boulder Mountainbike Alliance
- Boulder County Horse Association
- Boulder Area Trails Coalition
- League of Women Voters
- Boulder Creek Watershed Initiative
- PLAN Boulder County
- Boulder Valley School District Science Coordinator
- Gunbarrel Community Association
- Heatherwood Homeowners Association
- City of Boulder Open Space and Mountain Parks
- City of Boulder Public Works
- Boulder County POS Volunteer Naturalists

4.2.3 Media

POS utilizes its website (www.BoulderCountyOpenSpace.org) to notify the public of current issues and planning and public involvement, including the planning process and public meetings for Walden Ponds. During the initial public comment period and for the draft management plan, POS also submitted media releases to notify the general public about upcoming public comment periods and meetings. Appendix H contains the media releases and articles that were published in the Daily Camera newspaper on October 24, 2009, and June 7, 2010. Notices were also posted on Boulder County Nature Association and Boulder County Audubon Society’s Nature Network e-mail listserv, and fliers were posted at Walden Ponds to notify visitors about the public process.

4.2.4 Public Participation Summary

Public input for this planning process was or will be contributed during the initial public comment period, initial public open houses, draft management plan comment period, public meeting for the draft management plan, POSAC public hearing, and finally the BOCC public hearing. Public process activities are summarized in Table 4.1.

Table 4.1. Summary of Public Process Activities

Activity	Location	Date / Time	Attendance	Comments Received
Initial Public Comment Period	NA	Oct. 23 – Nov. 21, 2009	NA	13
Public Open House – Initial Scoping	Shepherd of the Hills Lutheran Church, 7077 Harvest Road in Gunbarrel	Oct. 28, 2009 / 5:00 – 7:00 p.m.	1*	NA
Public Open House – Initial Scoping	Shepherd of the Hills Lutheran Church	Nov. 21, 2009 / 5:00 – 7:00 p.m.	5	NA

Table 4.1. Summary of Public Process Activities

Activity	Location	Date / Time	Attendance	Comments Received
Draft Management Plan Public Comment Period	NA	May 28 – June 26, 2010	NA	4 public comments; 1 agency comment
Public Meeting – Draft Management Plan	Boulder County Clerk & Recorders Office (1750 33 rd , St. Boulder)	June 10, 2010 / 5:30 -7:00 p.m.	13	NA
POSAC Public Hearing	Commissioners Hearing Room (3 rd Floor of County Courthouse)	July 22, 2010 / meeting begins at 6:30 p.m.	NA	0
BOCC Public Hearing	Commissioners Hearing Room (3 rd Floor of County Courthouse)	August 31, 2010 / 3:30 – 4:30 p.m.	NA	0

TBD = To Be Determined; NA = Not Applicable

* A snowstorm on October 28 prevented some members of the public from attending.

4.3 DISTRIBUTION AND AVAILABILITY OF THE DRAFT MANAGEMENT PLAN

The draft *Walden Ponds Wildlife Habitat Management Plan* is available to the public on POS's website (www.BoulderCountyOpenSpace.org). A copy is also available at POS main headquarters located at 5201 St. Vrain Road, Longmont. The public may also request to receive a copy via regular mail. The public was notified about the release of the draft plan via POS's website, media releases, the public meeting, and mailings and /or e-mails to adjacent property owners and other stakeholders.

4.4 DISTRIBUTION AND AVAILABILITY OF THE APPROVED MANAGEMENT PLAN

The final approved *Walden Ponds Wildlife Habitat Management Plan* will be made available to the public on POS's website (www.BoulderCountyOpenSpace.org). A copy will also be available at POS main headquarters located at 5201 St. Vrain Road, Longmont. The public may also request to receive a copy via regular mail.

Copies of the approved plan will be made available to POS staff for future use. A copy will be kept in the Planning Division's library, given to the Resource Management and Operation Divisions, be located on POS's website, and saved in Boulder County's Content Management.

4.5 COMMENTS RECEIVED ON THE DRAFT MANAGEMENT PLAN

4.5.1 Method of Comment Collection and Analysis

Public comments regarding the draft management plan were accepted from May 28 to June 26, 2010, via mail, fax, in person, e-mail, at the public meeting or through an on-line comment form. All public comments regarding the draft management plan received in writing were reviewed and considered by the POS planning team. A summary of the public comments is included in Appendix I. The POS planning team provided a

written response to each comment in the summary of public comments and indicated whether or not the management plan was changed because of the comment along with a justification for the final decision.

4.5.2 Summary of Public Comments Received

POS received four public comments from individuals and one agency comment from City of Boulder Open Space and Mountain Parks (Table 4.2). Table 4.3 breaks down the number of discrete, individual comments received based on resource or resource use. Most comments (43%) were regarding trails and facilities followed by general comments (22%) and coordination (14%). Other comments dealt with water management, dogs, and other recreational issues not related to Walden Ponds. These comments can be found in Appendix I.

Table 4.2. Number of Written Submissions per Affiliation

Affiliation	Affiliation Code ¹	Number of Written Submissions
Local Agency / Elected Official	A	1
Individuals	I	4
Organization	O	0
	Total	5

¹ Affiliation codes: I=Individual; O=Organization/Business; A= Agency (Federal, State, Local, and Elected Officials)

Table 4.3. Number of Individual Comments Regarding Each Resource or Resource Use

Resource / Resource Use	Number of Individual Comments Received	Percentage of Comments
General	3	22%
Trails and Features	6	43%
Water Management	1	7%
Coordination	2	14%
Dogs	1	7%
Other Recreation (not related to Walden Ponds)	1	7%
	Total	14

4.6 POS PLANNING TEAM

An interdisciplinary team of resource specialists from Boulder County Parks and Open Space helped plan and prepare this management plan (Table 4.4). This team included personnel from education and outreach, resource protection, wildlife, plant ecology, water resources, and operations (i.e. trails, facilities, and design), as well as the director of POS and division managers. The diversity of backgrounds, experience, and expertise helped the team to develop a comprehensive plan.

Table 4.4. Management Plan Planning Team

Name	Role / Responsibility
Ernst Strenge	Planner, Project Manager, Lead Author
Larry Colbenson	Education & Outreach
Karen Martinez	Water Resource Specialist
David Hirt	Plant Ecologist
Dave Hoerath	Wildlife Biologist
Jason Himick	Landscape Architect
Lynette Anderson	Resource Protection
Ron Stewart	Director
Brent Wheeler	Operations Manager
Therese Glowacki	Resource Management Manager
Rich Koopmann	Resource Planning Manager

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Appendices

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Appendix A

A NATURE AREA FOR BOULDER COUNTY:

A Pilot Surface Mining Reclamation Project

by Claudia Toburen



Resources Development Internship Program
Western Interstate Commission for Higher Education

(Boulder County, Dist No. 1; Boulder, Colorado)

This report has been cataloged by the WICHE Library as follows:

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*Property of Jerry McMain
courtesy of Claudia Toburen*

A NATURE AREA FOR BOULDER COUNTY

BY

CLAUDIA TOBUREN

To the many people who
have given so generously
of their time and knowledge
in helping me prepare this
report. April, 1974.

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PERSPECTIVE

"Wilderness is the basic natural resource; the mother of all¹;" "In wilderness is the preservation of the world²;" "Wilderness is the raw material out of which man has hammered the artifact called civilization. This is a plea for the preservation of some of the tag-ends of wilderness, as museum pieces, for the edification of those who may one day wish to see, feel, or study the natural origins of their cultural inheritance³."

Conrad Wirth, Henry David Thoreau, Aldo Leopold and many others have ardently championed the need for wilderness. The vast rich wilderness of North America has been an inspiration and a source of our nation's greatness. To early settlers it was a challenge, a test of strength and independence: the successful among them reaped bounteous harvests of furs, minerals, and crops. They, in turn, respected the wilderness because it gave definition and meaning to their lives.

It was not until the late 1800's that people began to appreciate wilderness as something more than a source of livelihood. With more leisure time and improved transportation, outdoor recreation became a popular pastime. Natural wonders, such as Niagara Falls and the hot springs of Virginia, were set aside as public parks to prevent exploitation by private citizens. Yosemite and Yellowstone, the first National parks, paved the way for a national park system which set aside vast areas of land for the entire public to use. At the same time, large splendid parks were being designed for the cities: Central Park in New York City, and the Lakeshore in Chicago. In 1964, the need for wilderness areas was finally recognized. The Wilderness Act guaranteed the preservation of some areas, "where the earth and its community of life are untrammelled by man. Where man himself is a visitor who does not remain."⁴

It is becoming increasingly clear, however, that national, state, and city parks cannot satisfy the needs of our urbanized population. Because of smoggy cities, traffic jams, high rise living and social tensions, large numbers of people are looking to nature for peace and quiet. This can be seen in the swelling memberships of the conservation groups such as the Wilderness Society, Sierra Club,

Audobon Clubs, Ducks Unlimited, Friends of the Earth, the popularity of the many nature TV shows (Wild Kingdom, Jacques Cousteau, Untamed World, World of Survival, Flipper, Sea World, and geographic specials), movies (Amaluk, Vanishing Wilderness, Born Free, Walt Disney) and books (they occupy a whole section in most book stores). This can also be seen in the constant use and misuse of the words "environment" and "ecology." The public seeks in nature a panacea, an answer to all its problems. Unfortunately, most wilderness areas are only for the primitive arts of travel like backpacking and canoeing, and few people have the time, money and experience for this type of recreation. Also, wilderness areas, as defined by the Wilderness Act, are in limited supply, and it is not within man's gifts to make such wildernesses. Even visiting national parks is often a once in a lifetime experience for urban dwellers. More often, it is an unfulfilled dream.

Nature must become part of people's daily lives. It cannot function as just a backdrop for entertainment and recreation, moreover. People need to see themselves as a part of a natural community, and this can only happen when there are natural areas, miniature wild areas close to their homes. Here they should not find more recreational structures and facilities to add to their already over-structured lives, but the peace and harmony of a natural area offering both relaxation and stimulation. As Aldo Leopold, the father of wildlife biology and a champion of wild areas, said,

"Recreation is valuable in proportion to the intensity of its experience, and the degree to which it differs from and contrasts with workday life. By these criteria, mechanized outings are at best a milk-and-water affair.⁵"

These needn't be spectacular or unique areas, but simply pieces of land with good soil and sufficient clean water and fresh air, set aside as a refuge for plants, animals, and people. Here the public should be able to find quiet, creative entertainment: nature trails to lead them, undetected, to bird nests and beds of wildflowers, quiet pools of water filled with fish and birds. They should be able to leave their bicycles and cars behind and walk or simply sit and observe.

In several ways, these natural areas can serve as buffers for the national parks and wildernesses. First, they can teach people to see nature as living and changing, and very susceptible to injury. They can learn to fish without over-fishing or disturbing the habitat, to enjoy wildflowers without picking them, to watch birds as long as they are careful not to disturb them and discourage them from nesting, to become part of a natural community without destroying it. When they do visit a national park, they will be

more responsive to the needs for environmental protection. There is a feeling among residents of urban communities that their tax money should not be spent on wilderness areas and primitive areas, since they will never be able to visit them. Perhaps if they could have some more tangible benefits, some nature within their own lives, they would be willing to consider the needs of mankind. Third, nature areas may satisfy the wildlife needs of some people so that they will not contribute to the overcrowding of the national parks.

One problem immediately presents itself: how to obtain land when it is such short supply and great demand. This report offers a solution to this problem through the reclamation of used land, in this case a gravel pit, as a wildlife habitat. Used gravel pits are readily available and not in great demand since they can be quite expensive to reclaim for housing or industry. In Boulder County, hundreds of acres have been mined for gravel and only partially reclaimed. This land must not be left to simply erode away or only be put to uses such as water storage. It must be reclaimed so that it can once again become a contributing part of the natural community in and around Boulder County.

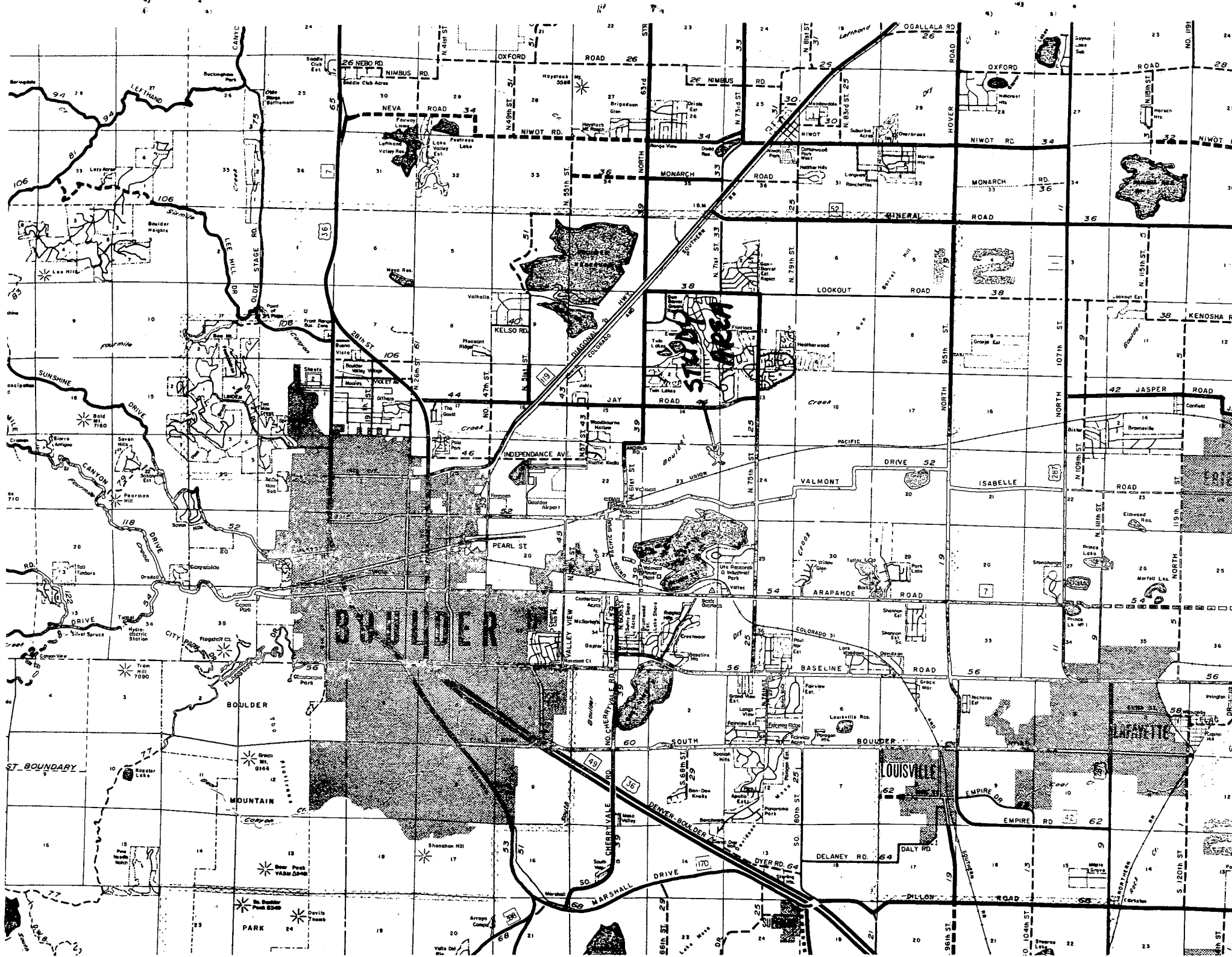
There is an open debate on whether or not disturbed land can ever be set aside as wilderness. Many conservationists believe that land can return, if permitted, to a pristine condition. More attention should be given to reclaimed areas, especially in the eastern United States where true wilderness is scarce. The piece of land discussed in this report will never become a wilderness however. It is too close to Boulder and will have to be managed to meet the needs and demands of the community. But it can regain much of its wildness and become an attractive and stable nature area. If the land is reshaped to prevent erosion, the area will reclaim itself, but the variety and quality of wild life can be greatly improved by providing water and planting for food and cover. Government assistance is available through federal, state and local agencies such as the Soil Conservation Service, United States Forest Service, and the Bureau of Sport Fisheries and Wildlife. Community involvement is recommended so that the public will take personal pride in the project. They will enjoy it more and be less likely to let it be destroyed.

In this report, a design is presented for the reclamation of the Boulder County Gravel Pits, located in the flood plains of Boulder Creek. Once a riparian woodland, the site is now a combination of wetland created by the excavations, and upland pasture. By constructing one large pond or three smaller ponds to be stocked

with trout, retaining the marshes, and planting cover and food in the pasture; it should be possible to attract and support a wide variety of wildlife. Nature trails will be provided for the public, as well as photographic blinds. Here the public should be able to hike and fish and enjoy the wildlife without disrupting it.



Forty acres of land which have not yet been mined will be planted with fruit shrubs and grasses to attract pheasant, quail and songbirds.



UNMINED

GRAVEL PILES

MINED

CITY
SEWAGE
TREATMENT
PLANT

mont





The large excavation on the north side of the site will be shaped into a deep pond and stocked with trout.



Cattails growing in the shallow excavations provide good cover for pheasant, ducks and wading birds.

DESCRIPTION OF THE SITE

The flood plains of Boulder Creek in Boulder County have traditionally been used for pasture lands in the past, but they are being used more and more for gravel pits. The Boulder County gravel pits, which occupy 110 acres of land in these floodplains, were purchased in 1958 when the area was still largely agricultural, and have been mined intermittently ever since. 70 acres have already been mined, while 40 acres which will be mined in the future are being used as a horses' pasture. During this time, the surrounding land has been developed for housing and commercial gravel mining.

The gravel pits are located 7 miles from downtown Boulder, near the intersection of Valmont Road and 75th Street. On two sides the land is bordered by gravel mines. On the south the land is bordered by Sawhill ponds, former gravel pits now filled with water and owned by the Colorado Game, Fish and Parks Department. On the west the site is bordered by an active private gravel mining company. To the north is the City of Boulder water treatment plant and to the east are private residences.

In a semi-arid area like Boulder, water rights are extremely important and valuable possessions. The land for the mines was purchased with the water rights on the property, and Boulder County has the right to pump water out of the excavations into the irrigation ditches in the northeast end of the property as desired. This water now fills the marsh ponds and parts of the trout pond and will be pumped out of the large pit to use in watering the trees. No water rights are owned on Boulder Creek, although several irrigation ditches from the creek pass through the property. With this water and perhaps the water to be stored by the city, there should be no problem filling the ponds and watering the plantings in the nursery and around the property.

Samples of soil from the site were sent to the soil testing labs at CSU in Fort Collins, and complete analyses were run. The topsoil which is about 6" to 1' thick in the areas where most of the planting is planned was found to have a sandy clay loam texture, near neutral pH, good salt, nitrogen, phosphorous and iron levels. It is excellent soil for planting trees, shrubs or grasses. Below this are 5 to

15 feet of pale brown coarse sand and gravel, which is neutral and has a deficiency in nitrogen and phosphorus. This gravelly soil will form the bottom of the ponds and marshes, and may require some fertilizing if water plants are to be grown. Beneath this lies several feet of the bedrock pierre shale.

The site offers a variety of terrain and plant growth. Of the 70 acres which have been mined, 10 acres form a shallow marsh with a mixed growth of cattail plants, grasses and weeds. The water depth varies with the seasons but never dries up completely. Gambusi fish were stocked in one of the small ponds by the city and seem to be doing well but their effect on the mosquito population is unknown. Golden shiner minnows are also found in the shallow ponds. Snowy egrets have been reported in the marsh, as well as redwinged and yellow headed blackbirds and kingfishers.

The largest area of excavation, a 50 acre pit, has been partially reclaimed by cottonwood trees and cattail marshes. The alkaline unfertile soil has limited the growth to these two plant communities and various hardy grasses and weeds. The shallow ponds have algae and water cress growing in them, as well as golden shiner minnows and other small fish. A pair of red fox have a den in the northern wall of the excavation and have three young this year. In the cattail marshes, redwing blackbirds and mallards are nesting. The remaining 10 acres of mined or disturbed land are occupied by the garage, mining and crushing equipment.

Forty acres which are currently used as a horse pasture have not yet been mined and are not scheduled for mining. A mixture of brome grass and some bluestem grass covers most of the site, with some well-cropped snowberry bushes, rabbit bush, wild roses, wild plums and other indigenous plants. The red fox use this area for hunting, as evidenced by the remains of a mallard, 13 striped squirrel and several mice.

This variety of terrain, plants and wildlife make it ideal for a wildlife habitat. It is hoped that none of the variety will be destroyed, but rather can be supplemented and expanded.

DEFINITION OF WILDLIFE HABITAT

It is necessary, first of all, to understand just what a wildlife habitat is. By definition, "It is the kind of site or region with respect to physical features naturally or normally preferred by a wildlife species. It is a type of area in which a species can commonly be found." Wildlife have very specific needs for food, water, cover and space which must be met for their survival and comfort if the area is to be a suitable habitat. Wildlife is rarely limited by an overabundance of antagonists, predators or hunters, but more often is limited by a shortage of one of these necessities. For this reason, wildlife can best be increased by improving their habitat so that it gives more food, water, cover or space, whichever is found lacking, rather than by removing predation. In this report, a wide variety of plants and terrain are recommended which will meet the habitat requirements of a wide variety of desirable species, as described in the following examples. The needs for food and water are fairly obvious. Cover and space requirements are harder to detect and measure.

Food must be nutritious, available and palatable. Wildlife, like man, needs a balanced diet of proteins, carbohydrates, fats, and vitamins, as well as varying amount of roughage. The foods must be readily available to them. Quail can only reach short grasses and shrubs, a fact which is often overlooked in planting food for them. Grasses with weak stems are matted down and covered by snow so that they aren't available in the winter when they are most needed. And even if the food is nutritious and available, wildlife will not necessarily eat it. They seem to have favorite foods which they prefer above all others. Backup foods are foods which they eat when preferred foods are short, and emergency foods are only eaten when nothing else is available. Obviously, it is important to know the preferred foods and encourage their growth if wildlife are to be attracted to the site.

As with food, water must be in an accessible form and in sufficient quality and quantity. Steep sides ponds are dangerous for non-swimming wildlife because the young can fall in and drown. Then, different species of fish have different requirements for water temperature, clarity, pH, saltiness, plankton contents, and depth. Diving ducks, such as canvasbacks, mergansers, redheads, and

goldeneyes prefer a large open body of water. Puddle ducks, mallards, pintails, widgeons and woodducks prefer shallow water less than three feet deep where they can find water plants and insects to eat. It is important to consider all of these requirements in designing the water structures in a wildlife habitat.

Wildlife also needs cover: escape cover to protect them from their enemies, nesting cover, breeding cover, travel cover, cover for rearing young, resting or loafing cover, and winter cover.

Cover is usually thought of as dense vegetation that protects wildlife from extreme weather and predation. Pheasant need tall grains, shrubs and hedgerows in which they can escape hawks, foxes, hunters and other predators, and can travel to feeding areas. Briar patches have long been associated with rabbits for the same purpose. Various ducks use dense cattail or bulrush stands around marsh ponds for nesting. Most wildlife habitat improvement involves plantings to create good, dense cover.

Cover can also mean open areas. Quail need an open sandy or gravelly patch of ground for taking dust baths; ducks use floating logs or islands for loafing areas; and Canada geese seek an elevated or exposed site so that they can see in all directions. Similarly, tall open trees provide perches for mergansers, from which they can watch and attack young ducks and fish. These open areas are extremely important for the survival of wildlife and must be included in the wildlife habitat design.

Winter and nesting cover are most frequently in short supply in Colorado, and therefore must be carefully managed. Deciduous trees like cottonwoods, lilacs, plums, and caragana provide excellent food and cover in the summer, but are poor comfort in the winter when they lose their leaves and fruit. Then evergreens, junipers, cedars, pines, and plants such as Russian olive and sumac which hold their fruit become important. Brushpiles, which accumulate fallen leaves and grasses as well as cattails and rushes, provide excellent winter cover. Winter food can usually be found by wildlife, if they have good protection from weather and predation and are in good health. Artificial feeding in the winter serves only to prolong their death, often making it more painful, without solving the problems which have caused it. Birds become dependent on the artificial food supplies, and starve if they are stopped for any reason. Improving winter cover is a much more beneficial means of increasing wildlife in the winter.

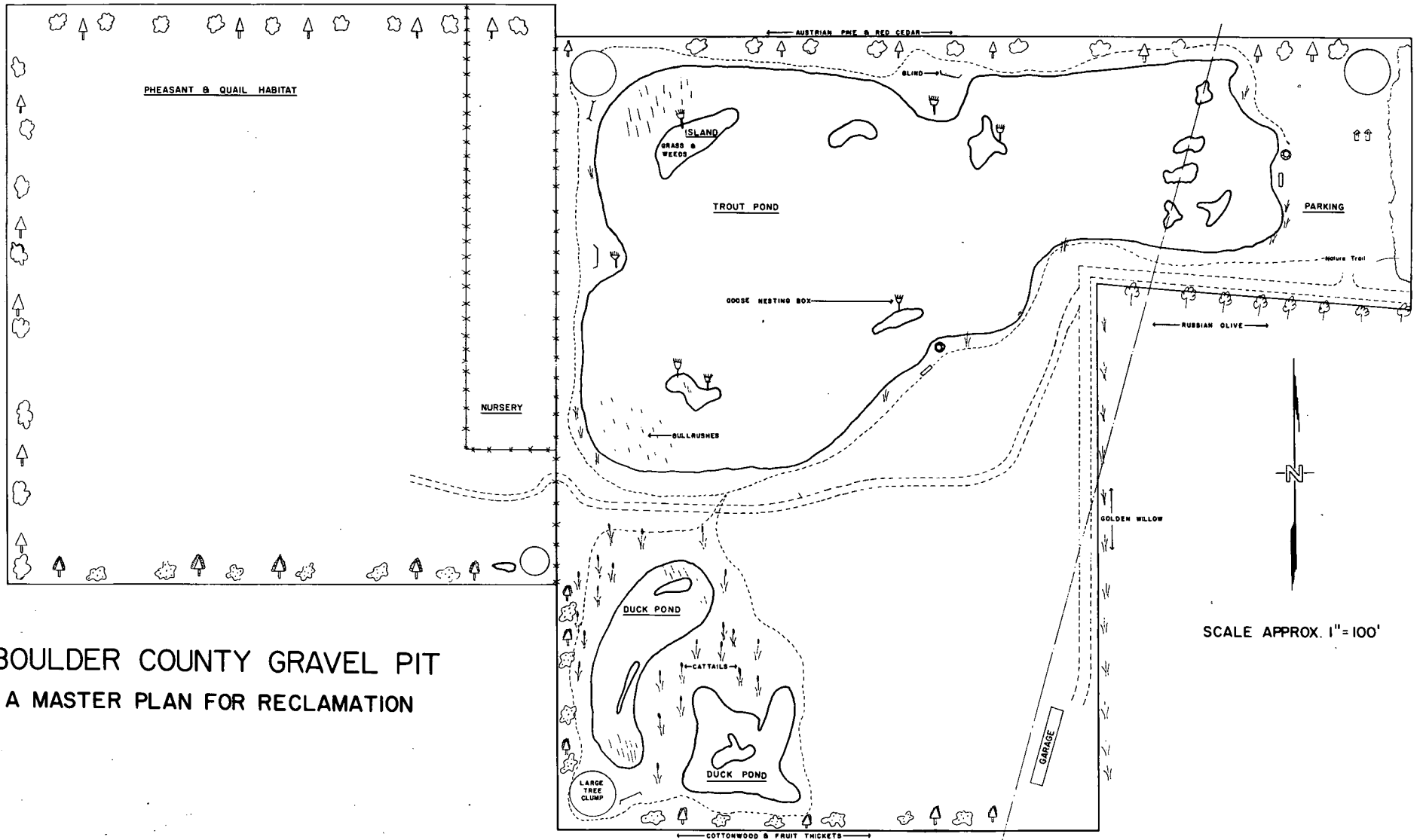
Nesting and breeding cover are critical in the successful production

of young wildlife. If parents are disturbed, they will often abandon their young and attempt a second brood. Later broods have less chance of survival since less food is available, and winter weather sets in while they are quite young. Early mowing of roadsides and fields disturbs nesting ground birds, often killing the mother birds so that even later nesting is impossible. Thus, mowing should be postponed until late June or early July when most of the nesting is completed. Curious visitors to a nature area who wish to watch or even handle the young wildlife can upset the parents, causing them to abandon their families. Only restricted use of the wildlife area should be allowed during the breeding season. The use of photographic blinds will minimize the intrusion.

Just like human beings, wildlife suffer from overcrowding. They become more susceptible to diseases and predation and often show abnormal behaviour. Too often we aggravate this problem by controlling natural predation while restricting available range. Their space requirements are not simply a matter of size but also arrangement. If there is only one patch of winter cover in many acres of good food, even a small population will be overcrowded. If more winter cover can be placed around the food, the wildlife can be greatly increased. Wildlife habitat improvement often simply involves re-arranging existing conditions and improving the quality of the habitat rather than the quantity. Wherever two or more habitat types come together, you have an edge which is a more favorable wildlife habitat than any of the individual areas, a principle known as the "edge effect." In combining areas, you create greater variety, which will meet the needs of a much greater variety of wildlife. Variety is the key to managing a small area to provide the greatest possible population of wildlife and wildlife experiences and to creating a stable, natural community. This should not be taken to mean the introduction of exotic plants and wildlife, since this tends to create unstable communities. The variety can easily be found within native flora and fauna.

To successfully develop this area as a wildlife habitat, we must decide which species would be most beneficial and natural to the area, and then design it to meet their specific needs. Since hunting will not be appropriate, nongame species should be stressed. This should include songbirds, waterbirds, and small mammals such as the red fox already on the site, muskrats, raccoons, cotton tails, and weasel. Care should be taken to encourage plants and wildlife which will not require intensive management, since this would detract from the naturalness of the area. The use of poisons or traps would not be popular, so natural controls should be designed within the habitat wherever possible. Hawk nesting structures could be constructed

to attract hawks as a rodent control. They would also add greatly to the variety. Flexibility must also be included in the plan since wildlife do not always behave as expected and will necessitate frequent alterations in the plan.



**BOULDER COUNTY GRAVEL PIT
A MASTER PLAN FOR RECLAMATION**

SCALE APPROX. 1" = 100'

RECLAMATION PLAN

The one access into the area will be through the gate facing 75th Street, presently used for mining operations. By the entrance, which will be lined with Russian olive and golden willow, there will be a small landfilled parking lot. Cars and bicycles must be parked here, since all traffic except maintenance vehicles will be on foot. Besides the environment damage the vehicles would cause, the cars would miniaturize the area. With a car, the area could be toured in a matter of a few minutes, cruised like a drive-in, and deprived of all its air of wildness and seclusion. On foot, the area will provide many hours of pleasure and a feeling of privacy.

From the parking lot, a large trout pond can be reached. It will be the center of many of the area's recreational activities. The pond will offer convenient fly fishing for stocked rainbow trout for senior citizens, as well as entertainment for bird watchers and nature lovers. A deep central zone will give the fish protection from the winter and summer kill. Open water always attracts a wide variety of birds and animals, providing excellent subjects for photography, sketching or outdoor teaching.

A foot trail leads along the northern side of the pond through the Austrian pines and red cedars to a photographic blind. Along the trail there will be numerous places to stop and fish, picnic or simply enjoy the view. The blind will be placed facing a shallow marshy area which should attract water birds such as dabbling ducks and herons or egrets as well as water loving muskrats and weasels. Further out there will be an island with a goose nesting box to attract Canada geese. From the blind it should be possible to watch the wildlife and their young without disturbing them.

Following the trail to the south, around the pond, you will walk beside a large nursery. Here can be found a selection of many of the plants to be placed on the site: Colorado blue spruce, Austrian pine, eastern red cedar, lilac, caragana, plum, honeysuckle, sumac, nanking cherry, golden willow, Russian olive, hanson hedge rose and others. In the remaining space in the center of the nursery, grasses and grains will be planted as wildlife food. Some of the plantings

will be left in the nursery as permanent cover, but most of them will be planted around the site as reclamation proceeds.

The trail then leads to the south, across the access road, into a cattail marsh. Dense cattails grow around the small open ponds, designed to attract puddle ducks, wading birds, swallows, kingfishers and various mammals. In a steep bank on the west side of the marsh, 3 inch pipe will be drilled into the bank to attract swallows. In the ponds, pondweed, duckweed, alkali bulrushes and sedges will be encouraged or introduced for food and cover. This area will be the least modified and the first completed, since it already is a desirable wildlife habitat.

Bordering the marsh are the Sawhill ponds, former gravel pits, now the home of a wide array of birds. The City of Boulder is negotiating with the Colorado Department of Game, Fish and Parks for the ownership of the ponds, in which case they will develop them as a wildlife area. The ponds are largely deep open ponds with little vegetation for food or cover, and will need reshaping and planting. The City and County should be able to work together so that the areas can be managed compatibly or even co-ordinately to minimize expenses and conflicts.

In the marshy ponds, as in the trout pond, islands will offer secure resting places as well as nesting sites for wildlife and increase the shoreline. They will be planted with grasses which help prevent erosion without obstructing the view or covered with large well rounded pebbles.

To the west of the ponds, there is a 40 acre horse pasture, an ideal upland habitat. If the area is permitted to remain undisturbed and ungrazed, the native plants will grow up and become quite dense making good natural cover for ground cover for ground birds and mammals. The perimeter will be planted this spring with trees, shrubs and dense clusters of fruit trees. Here bird houses could be placed to encourage birds attracted by the food to stay and nest. Within the pasture, little permanent planting will be done since the area may be eventually mined. Grasses and grains will be dispersed as food along with some legumes such as yellow sweet clover and alfalfa.

After mining is completed on this last 40 acres, or it is decided that the area will not be mined, habitat improvement can be completed on the site. Natural plants should be used as much as possible for food and cover. Native plants can be obtained from a private nursery specializing in Colorado plants or from private land in and around

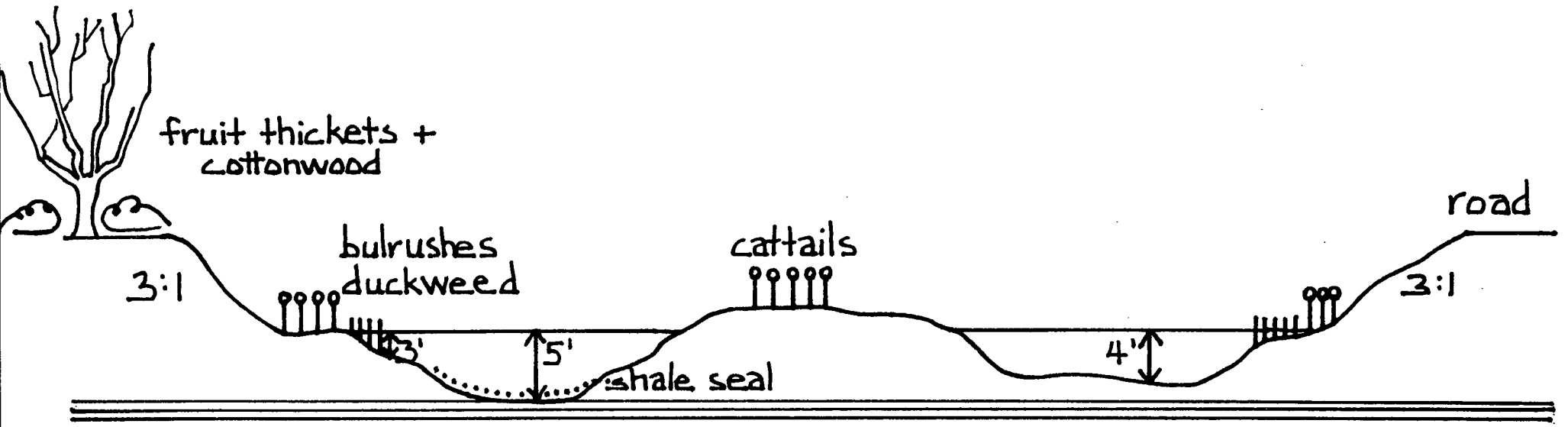
the county, with the permission of the owners. Bridges of cover can be planted leading from the trees and shrubs growing around the edge, leading to and around the food patches. This greatly increases the edges and provides the wildlife with safe traveling lanes.

If the area is to be excavated, landfill will have to be used to restore the land to an upland condition. The landfill could be obtained from private trash collection agencies. The landfilling must be done carefully so as not to create a mess, working only on windless days so that paper and loose trash won't be blown all over the site. The fill must be covered well immediately so that it can't be dug up or exposed by the wind. This could be best done by doing all of the filling in just a few days rather than gradually over the period of weeks and covering it and planting seed the day it is completed. A few acres could be left unfilled in the northwest corner for the construction of a warm water fish pond which could be stocked with large mouth bass and golden shiner minnows.

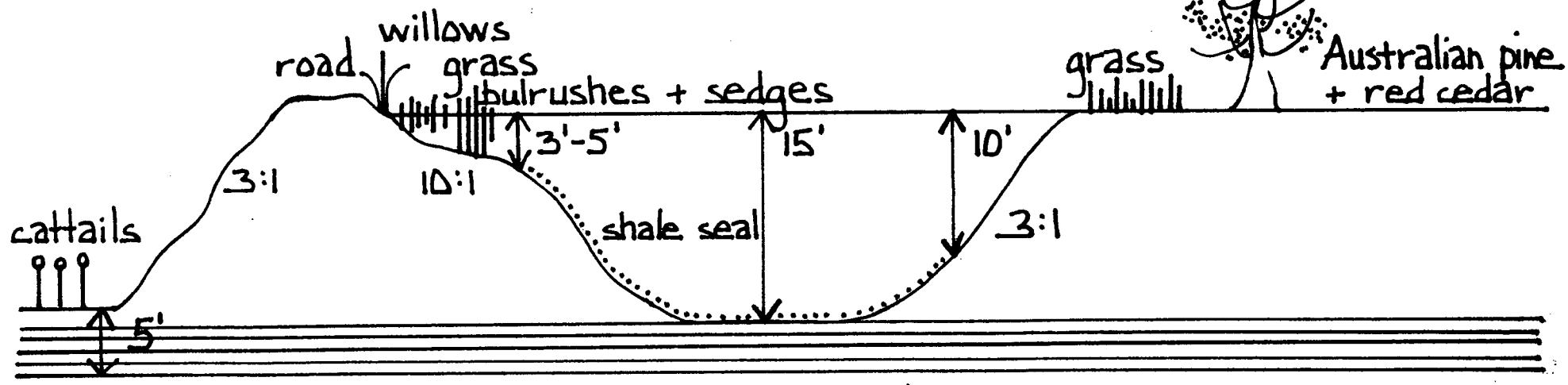
The full effects of this plan will not be seen for many years, but there should be many visible improvements almost immediately. The area should be a suitable habitat for a wide variety of wildlife and a recreational and educational area for the public in just two or three years.



Young cottonwoods growing in the trout pond excavation will be transplanted with a backhoe to a more desirable location.



DUCK + WARM WATER FISH POND



TROUT POND

Drawings by Carolyn Kelley



Steep banks around the trout pond will have to be sloped to permit trees and grass to grow.



Some steep banks around the marsh will be kept to attract bank nesting birds.

POND CONSTRUCTION

Trout Ponds

In constructing the trout ponds several points must be considered. First, the sides of the pond must have at least a 3 to 1 slope, in some places a 10 to 1 slope for safety and to permit plants to grow. Second, the pond must be the right depth to prevent summer and winter kill, and encourage the production of food. Third, the pond must be sealed tight so water won't be lost. Fourth, there should be bays and peninsulas created around the edge to increase the shoreline and provide food and cover for wildlife.

As a preliminary to all reclamation, the walls of the excavation must be reshaped to at least a 3 to 1 slope. Since plant growth is impossible, as steep as they are now they will continue to erode, silting up the pond. Also, although swimming is not to be permitted, it is inevitable that children will fall in the pond and it would be very difficult for them to climb up the steep banks. The exposed eroding banks give the area a scarred appearance which detracts from the feeling of wildness which is being created.

The sloping can be accomplished by either pushing fill up from the pond and then spreading topsoil over it, or by breaking the bank down from the top. Filling from above is much easier and less destructive and should be used whenever there is enough land as on the western end of the trout pond. A wide enough margin must be left around the edge of the ponds so the trees can be planted with a tractor and tree planter or posthole digger. The topsoil should first be scraped off the bank to be sloped and then spread over the bank after it has been sloped as desired. Whichever method is used, the finished banks must be seeded immediately and mulched with straw or grass cuttings.

To deepen the pond, a central zone must be excavated into the pierre shale to produce a final water depth of 15 to 17 feet. With this depth it will be possible to remove up to 10 feet of water without endangering the fish. Around the shore the water depth should vary with intended use. On the eastern end of the pond which will be a fishing area, the deep water should extend as close to shore as is safe. At the western end of the pond, as indicated on the map, there will be some shallows areas planted in water

weeds and grasses to provide wading areas for various wildlife and a variety of attractions for children, for they will be able to find tadpoles and small fish here as well as a myriad of water insects. Once again, a variety of habitats is the goal.

In deepening the pond, some of the shale and clay should be excavated and saved. After the walls and bottom have been sloped to their desired shape and the islands have been constructed, the excavated shale should be spread over the exposed surfaces several inches thick. The shale is hygroscopic, soaking up water and swelling up to form a water tight seal. If the pond is to be filled simply with water from the spring runoff, the seal will be extremely important as a control over the water level. If the pond is to be used for water storage, the City will want a good seal to prevent water loss.

Variety is also the key in designing the shape of the ponds. To simply fill the pits as they stand would add little to the variety of the area. Sawhill ponds, like many other reclaimed ponds, have ample deep open water, but a depth of marsh or upland areas. In shaping the banks into the bays and peninsulas, the shoreline can be increased without decreasing the volume of the pond, thereby increasing the land which can be planted and used by wildlife. Dabbling ducks and wading birds like the great blue heron and snowy egret do most of their eating right along the shoreline where they find frogs, small fish and water plants. The most varied possible shore will be sought without requiring unreasonable amounts of landfilling.

Work on the trout ponds should begin by fall so that they can be shaped and sealed before the spring runoff. The major land moving will have to be done first before the ground freezes up, while the final shaping and smoothing can be done in the winter. If the City is going to fill the pond, the exact timing of the completion will have to fit their schedules.

By shaping the sides and varying the depth, the trout pond or ponds can be constructed to provide a highly varied wildlife habitat and should attract many kinds of wildlife as well as offering recreation for the public.

Marsh ponds

Shaping of the marsh ponds will be much simpler than the trout pond, but will follow a similar procedure. The walls of the excavation need to be resloped where possible and some areas of the pond deepened to five feet so that warm water fish can be stocked. The ponds

need not be sealed since the fluctuation of the water level is important for marsh growth. The vertical bank on the western side of the southwest corner cannot be easily sloped because the land is too narrow on top to shape it from above and the land fill operation too destructive to fill it from below, so it may be left exposed as a habitat for bank nesting birds such as kingfishers and swallows. The rest of the banks have been or will be sloped and planted with grasses and clover. Construction in the marshes will be completed as quickly as possible and then left undisturbed so that it can be used this spring for nesting.

Islands

Islands will be part of both the trout pond and marsh designs. They improve the quality of the wildlife habitat and thereby increasing the edge by increasing the shoreline, for they will be used by ducks, geese and mammals as secure resting places, inaccessible to human visitors and desirable nesting areas. The islands must be carefully constructed so that they will not be washed away by wave action or water level fluctuation. This can be best be accomplished by giving the islands an arrow, horseshoe or cross shape, with the narrowest point facing west to northwest into the wind. Rocks of coarse gravel can be used to reinforce the windward tip which can have a fairly steep slope (3 to 1). The leeward side should be gently sloped, at least 5 to 1, so that ducks can lead their families up them easily, and should be planted with grass and weeds. The plantings will provide some cover for the duck nesting without obstructing the view for geese. Some of the islands can be covered completely with large pebbles or coarse gravel for a warm sunning and resting place.

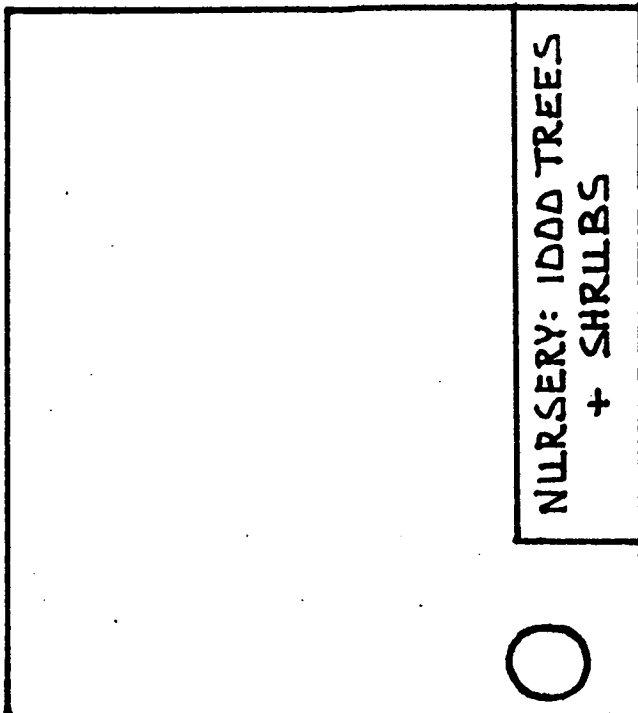
To construct the islands, piles of fill should be about 17 feet high so that they will stand at least 2 feet above the high water level on locations corresponding to the map which will be indicated by pickets on the site. The banks must be sloped according to the directions above and then reinforced with rocks and planted with weeds immediately. They must be shaped before the pond can be sealed with shale and filled.

PLANTING MAP

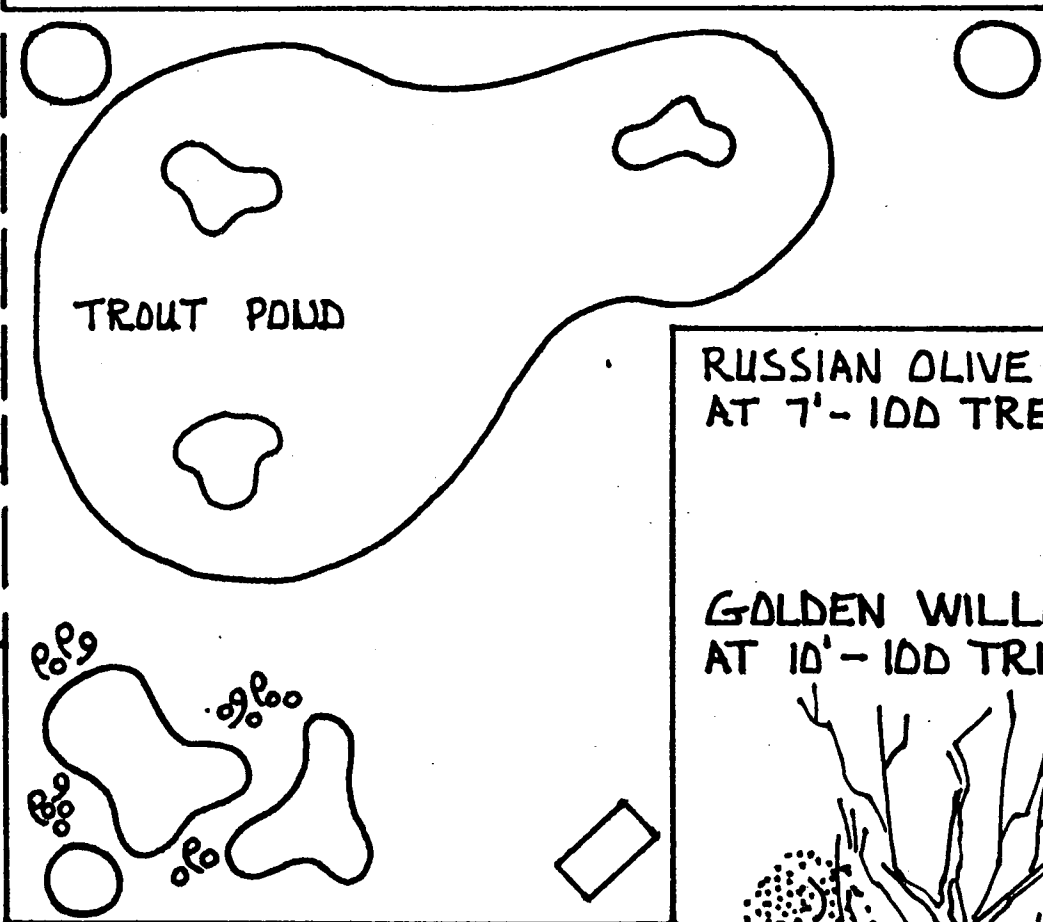
100 A. PINE + 100 RED CEDAR

2 ROWS 16' APART
200 JUNIPER + 200 RED CEDAR
10' APART

100 A. PINE + 100 RED CEDAR



50 COTTONWOOD +
250 FRUIT THICKETS



RUSSIAN OLIVE
AT 7' - 100 TREES

GOLDEN WILLOW
AT 10' - 100 TREES

15 COTTONWOODS
50 PLUM IN THICKETS

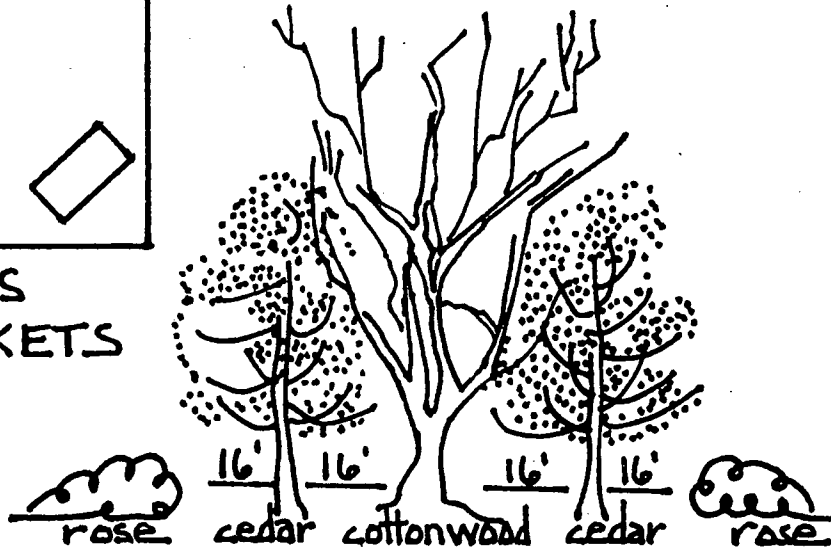
KEY

○ - CLUMP

outer-shrub-hansen
rose or equiv. ~ 75
ea. at 4'

mid-evergreen-e. red
cedar or juniper. 10-15

inner-cottonwood or green
ash or honey locust



CLUMP PROFILE

PLANTING AND CARE OF TREES AND SHRUBS

One problem is going to plague all planting on the site. With excellent soil and ample water, the ground is already covered with a dense stand of rhizomous weeds and grasses which will effectively compete with anything planted. The weeds can only be controlled by individually cultivating every plant. Unfortunately, with 3100 trees ordered and more anticipated, this will be impossible. Several alternatives have been suggested and will be attempted. The areas to be planted will have to be cultivated well before the planting to a distance of four or five feet around each tree or shrub. The dense mass of grasses can be either worked into the earth or cut and saved to be used as mulch on the newly exposed banks around the ponds. After the planting, weeds will return if they are not controlled. The ground around each plant can be mulched with sawdust and woodchips and treated with a chemical herbicide, simazine, at a rate of 3 to 5 pounds per acre. Any manual labor which is available can be put to work caring for the plants in the nursery. The plants will have to be cultivated and watered for two or three years before they will be able to fend for themselves.

Watering the plants may also prove a problem, depending on the weather. The easiest method for watering the perimeter plantings will probably be an irrigation system. A ditch about one foot deep can be excavated around the property at the same time that the ground is being cultivated, and connected to the individual trees. Water can be pumped into the system from the bottom of the large pit or from the irrigation system passing through the horse pasture. The trees will need to be watered every other week their first summer, unless there is heavy rainfall. In watering the plants, the soil should be soaked heavily and not too often so that the plants will be accustomed to the natural rain patterns. The soil should be soaked well several days before the planting and then permitted to dry out to permit easy digging and planting. Within the nursery and along the access road, the trees can be watered with a water tanker available from the highway department.

Both native species and exotics will be used on the site. Exotics are easier to obtain and less expensive, so they will be planted

first to provide cover for the native plants on the site as well as to provide cover for the native plants on the site as well as others to be obtained through private nurseries. The exotics chosen are compatible with the native growth and will add greater variety then would be possible if the habitat were simply permitted to return to a riparian woodland.

Wherever possible, native plants growing in areas which will be excavated, such as the bottom of the trout pond, will be transplanted. There is a large healthy cottonwood in the trout pond which can be moved with a backhoe to the bank adjacent to the Sawhill ponds border. Holes will have to be dug first, then the excavated trees with their roots well encased in dirt, can be placed in the holes. Since the trees have been growing right down on the water table, they will have to be watered well until they have a chance to develop a larger root system. Again, this watering will depend on the amount of rainfall. Cattails can also be transplanted. In resloping the banks around the marsh, many of the cattails will be disturbed. Rootstock from the cattails growing in the trout pond can be carefully dug up, wrapped in mud, and transplanted to the marsh area. This will speed up the recovery rate of the marshes, permitting nesting this spring and summer. The same can be done, as time and man power permit, with the many willows and shrubs growing in the pond or on the banks of the pond which are to be broken down.

Grasses and legumes will also be planted to improve the soil, stop erosion, produce and wildlife food and cover. On the newly sloped banks, immediate cover will be necessary to reduce the loss of soil to wind and water. Mulch should be applied immediately, grass clippings or straw, a few inches thick so that grass and weeds can get started beneath it. Fairway crested wheat grass provides rapid heavy cover, while reed canary grass gives some much needed color in the winter.

In the pasture, a variety of grasses and grains will be planted with various methods to determine which is most effective. Milo and millet will be planted in rows in or beside the nursery, providing wildlife food and travel lanes. In the center of the field and near the clover alfalfa will be planted with a nurse crop of oats of wheat. Some buckwheat which is a good wildlife food may also be broadcast. These plantings will require some cultivation and irrigation, as well as a minimum of fertilization. With the native plants, these plantings should give good food and cover for a variety of wildlife including pheasant if they should be stocked here.

In the marshes and the trout pond, water plants will be an important component of the habitat. They provide habitat for insects which can be eaten by fish and birds. The seeds and shoots are eaten by a wide variety of wildlife while the stalks are an important nesting and wildlife cover. As with other plants, some species have much greater food and cover value than others. Certain plants such as alkali bulrushes, duckweed, pond weed, smartweed, widgeon grass and wild millet are especially desirable. Although birds and animals entering the area will leave seeds of some plants in their droppings, it may be necessary to transplant some of these species from local wetlands. This can be done most simply by digging up the root stock and wrapping it in mud to keep it moist. Great care must be taken in choosing the plants, since the species often look extremely similar, and an accidental introduction is usually an irreversible mistake.

Trees and shrubs should be chosen which require a minimum of maintenance once they have become established, but some pruning will improve their value as wildlife habitat. Pruning fruit trees and shrubs in the fall right down to their base the first two years will cause them to be bushy and dense, with many branches close to the ground where cover is most important. This would not be appropriate for any trees which must serve as windbreaks, but could be used on some of the fruit thickets. After 8 to 10 years, the fruit trees and Russian olives will have a great deal of dead growth around the base, with the fruit high above the ground where it is out of the reach of much wildlife. By pruning these trees back to the base in the fall, new young growth can be stimulated, restoring the tree to its original value.

Planting and caring for seedlings:

1. Cultivate the ground a few days before the expected arrival of the trees. Remove or work in the grass and weeds. Water well.
2. The day before planting, cultivate the ground well again, and treat with simazine.
3. The day of planting, dig 14" holes, deep enough so that the entire root stock will be buried without being turned up or tangled. Remove any obstructing rocks.
4. Keep the trees cool until planting.
5. When the trees are ready for planting, carry the trees in pail with thin soupy mud or water.
6. Place fertilizer pellets in the bottom of the hole if they are to be used.
7. With the tree in place slightly deeper than it stood in the nursery, and with roots spread out, partially fill hole with soil and pack firmly around lower roots and water.
8. Shove in balance of soil, packing firmly to prevent air pockets from being formed leaving a 2" to 3" depression for water.
9. Water.
10. Mulch with dry soil, sawdust or woodchips after water has soaked in.
11. Cultivate several times during the summer to keep down weed growth, or treat with simazine.
12. Water biweekly, or as the weather demands.

Planting potted trees:

1. Do not remove tarpaper pots.
2. Dig hole approximately 6" in diameter and 12" deep.
3. Place 1" of loose soil in the bottom of hole. Place potted tree in hole in upright position.
4. Fill hole $\frac{1}{2}$ full of soil. Fill balance of hole with water and let drain away.
5. Fill hole with soil to top of tarpaper pot, leaving a 2" to 3" depression for future watering. Water again.

WILDLIFE STOCKING

Wildlife stocking can be a very useful tool in wildlife management if it is used carefully and effectively. The effect on existing wildlife populations must be considered, as well as the needs and controls of the introduced population. If effective controls are missing in the habitat, the new introductions can rapidly multiply until they become a nuisance, crowding out native wildlife and destroying the habitat. The wildlife management is then forced to remove the very species they have introduced, a difficult task. More often, the stocked species will not be able to survive in the unfamiliar and often hostile environment. Frequently 90% of the pheasant stocked in an area which has not been sufficiently prepared will die in the first week. This can be a very expensive and frustrating experience. It should be avoided completely. Stocking should only be used when a new habitat has been created and there is not a native population in the vicinity which can provide stock for the area, when a desirable species is not able to reproduce in the area, when a native population has been destroyed by extreme weather, pollution, poisoning, or when intensive use necessitates "put and take" hunting or fishing. "Put and take" refers to the practice of raising fish and game to catchable size and then releasing them to be shot or caught immediately, as is often the practice on hunting preserves and city fishing ponds. In the proposed wildlife area, stocking will only be used for trout, which cannot reproduce in the pond, warm water fish for the newly created ponds, and perhaps pheasant if they are not voluntarily stocked from the surrounding areas.

Fish stocking

The main considerations in stocking fish are water quality and population controls. The latter presents no problem with trout since they do not reproduce in ponds, but can be critical with warm water fish. Trout build nests in the sand or gravel bottom of a shallow rapidly flowing stream, where the current can turn and aerate the eggs after they are laid. Since these conditions cannot be provided in the trout pond, trout will have to be stocked every year or two. Warm water fish, on the other hand, reproduce prodigiously and will rapidly become overpopulous and stunted if the predator and prey populations are not carefully balanced. Warm water fish are

introduced in the familiar combinations - large mouth bass and bluegill, or redeared sunfish in a one to four ration. In Colorado, this is not possible since the bluegill reproduce in the winter, long after the bass have stopped multiplying, so the populations are soon out of balance. Instead, bass are usually stocked with golden shiner minnows.

Since water provides the total environment for fish, it must supply all of their needs for food, water, and cover. There must be not only sufficient quantities of water, but also a sufficient quality of water.

A shortage of oxygen often causes problems in manmade ponds. Oxygen is introduced into the water by surface absorption from the air and the photosynthesis of plants in the water and is used up by the respiration of plants and animals as well as organic decomposition. If the consumption of oxygen exceeds the production, the water will quickly be depleted of oxygen and the fish will suffocate. This happens in the summer on hot, cloudy, windless days when no photosynthesis takes place, so that many small plants die and start to decompose, and there is no wind to aerate the surface waters. Similarly, in the winter when the ice is covered by deep snow for a few days, plants will die and decompose, using up oxygen. Both problems can be solved by adding fresh water or aerating the water. Since the trout pond is to be used for water storage, and will be subject to water level fluctuations, it would be wise to install an aerator to prevent winter and summer kills.

The temperature of the water is also important, since individual species have different requirements. For trout, the water temperature should stay between 33° and 75°, with optimal growth and health between 50° and 65°. Warm water fish prefer slightly warmer water and will survive in temperatures up to 80° or 90°. The water temperature should be considered in choosing fish for stocking.

pH and clarity are also important parameters of water quality. Water with a low pH produced few nutrients and discourages the growth of fish. Warm water fish prefer a pH between 6.5 and 9.0, and will not reproduce at a pH below 5.0. Trout will live at a pH between 6.0 and 10.0, showing the best growth between 6.5 and 7.5. Water can be treated to improve pH. Since the soil on the bottom of the ponds has a pH of 8.8, the water will probably be slightly alkaline, but within the safe range for both kinds of fish.

In Turbid water (water with small particles of clay suspended

in it), fish have trouble seeing food and catching it and will not grow well. This can be caused by bottom fish, especially carp, stirring up the bottom, by sedimentation from the banks, or by the initial construction of the pond. If this occurs, the water can be cleared by broadcasting 50 pounds of superphosphate and 100 pounds of cottonseed meal per surface acre. This should only be done in the spring or fall, since the cottonseed meal could contribute to an oxygen deficiency in the summer. Gypsum can also be used to clear the water (about 12 pounds per 1000 cubic feet of water), as well as bales of hay (7 to 10 bales of hay for each acre of pond surface). Neither of these methods should be used in hot summer weather.

The fertility of the water determines the concentration of phytoplankton, the microscopic plants which are the basis of the fishes' food chain. Ponds can be fertilized to increase fish yield, but this is an expensive, and technically demanding and time consuming process. It probably will not be necessary in these fish ponds.

If the stocking is to be successful, the fish must be caught so that they will not become crowded as they grow larger and begin to multiply. Every pond has a carrying capacity, a maximum number of pounds of fish which can be supported. Obviously, this means many times more small fish can be supported than large fish. If the fish reach this limit while they are still fairly small, and they are not removed by predation and fishing, they will stop growing and become stunted. Fishing should begin the second spring when fingerlings are stocked, after the warm water fish have had a chance to spawn and the trout have grown to catchable size. If larger trout are stocked than can be fished in a few days, after they have a chance to become accustomed to their surroundings there should be a census of the fish that are caught, to make sure that the fish are growing well.

Fish for this project will be obtained through the Colorado State Department of Sport Fisheries and Wildlife, and will be stocked according to their advice. The fish will probably be supplied as fingerlings, 2" to 4" long, and perhaps some catchable sized trout, to be stocked sometime in the spring, summer, or fall. If they are stocked in the fall, they will have a good headstart in growth over the spring stocked fish.

Care must be taken in handling the fish to prevent shock or injury. They must be gradually accustomed to the water in the pond, since dramatic changes in temperatures or pH could be fatal. This should be done by removing half of the water from their travel containers and gradually adding pond water until the water is within 6 to

8 degrees of the pond water. If at any time the fish show signs of discomfort, like floating on their sides, the mixing should be temporarily suspended until they seem normal again. When the mixing is completed, the fish can be poured gently into the pond.

Since gravel ponds have traditionally been used for fish ponds - the Kline trout farm uses a gravel pond as one of its trout hatcheries - these ponds should be easy to stock and should provide good fishing almost year round if careful attention is paid to the water quality and quantity. If there are any indications of oxygen deficiencies, such as fish congregating at the surface and gasping for atmospheric oxygen, or a high BOD (biochemical oxygen demand) reading, the situation should be corrected immediately. Attention should also be paid to the temperature and clarity of the water and whether or not the fish are growing well.

Pheasant Stocking

Pheasant have been stocked in the U.S. since the turn of the century and are one of the greatest success stories in wildlife management. The stocking took place at a time when a new kind of habitat was being created - the vast farmlands, which was not yet occupied by a native species. Thousands of birds were released at the time and have filled nearly all available ranges, so that stocking of large numbers is no longer necessary. In Boulder County, the pheasant habitat has been greatly reduced by clean farming methods and the development of the land for housing and industry, so there is some doubt whether or not there are enough pheasant in the vicinity to stock the area successfully.

The 4H, under the guidance of the CSU Extension Service and the Colorado Game, Fish and Parks Division have a Wildlife Habitat Improvement project which offers as a reward pheasant chicks to release on the newly improved habitat.⁶ This site offers excellent opportunity for this project, since the land is suitable for pheasant and could be fairly easily developed, and the birds would be guaranteed permanent protection since it is public land and cannot be developed for private housing or industry.

The WHI project offers free chicks and food with instructions on their care to their members, who have built their own brooder and have completed a habitat improvement plan. The brooder must offer protection from predation, disease, and adverse weather, controlled heat and plenty of sunshine and space. The chicks are fed and watered and exercised in preparation for their release. They must be taught to find food on the ground and find cover in shrubs and tall weeds, so that they will be able to fend for themselves. If

possible, the chicks should be raised on the site where they will be released so that they can become accustomed to it. When they are a few weeks old, they can be permitted to run around strengthening their legs and searching for native food. After seven weeks the birds are banded and released. From then on, little can be done for the birds except keep the habitat in good shape.

COMMUNITY

The beauty and wildness of the natural area will depend largely on the amount of personal attention given to the reclamation. Heavy equipment will be used for the major reshaping, but the fine details will have to be attended to by hand. If the community takes part in this rehabilitation, they will have to opportunity to become intimately familiar with the area and enjoy its gradual recovery from its disturbed state.

Since the area will be used for environmental education, the education should begin with the disturbed land, its attempts to recover, and the ways in which it can be helped. Here the vitality of the land can be seen, the constant growing and evolving which takes place in the face of change. The changes will be easiest to understand in the beginning with the simple plant and animal communities found on a disturbed land, becoming more complicated and subtle as the land stabilizes.

There will be work for youth groups and individuals and adults either in projects which have been described in this report or any which might be suggested by the public and seem appropriate. The lands belongs to the public and they should have a say in how it is used and a part in its development. Help will definitely be needed to plant the trees and shrubs arriving April 6 from the SCS and care for them this summer. This is one job which will be greatly improved by manual help. If the trees are planted and cared for mechanically and chemically, a large proportion of them will probably die, setting the recovery back by at least a year. With some warm weather and sunshine, this could be a very pleasant project. Some other projects which could use help will be the construction of birdhouses of all kinds, transplanting plants on the site or from surrounding land, designing a nature trail with signs and markers, watching and identifying birds and animals, collecting plants, stocking and caring for fish or pheasant, creating wildlife cover (brushpiles or hedgerows), or any projects which might be suggested by the public.

This natural area will provide the people of Boulder County with a place to find recreation, relaxation and education both during reclamation and when reclamation is through.

SCHEDULE

Spring, 1974

Transplant cottonwoods from the bottom of the large pit while still dormant. Water well. Prepare the soil for the tree planting. Construct fences around the nursery and along access road. Reshape slopes around marsh. Sow immediately with grass seed. Construct access road with a culvert. Rehabilitate marshes. April 6, trees arrive from SCS. Plant grasses and grains in horse pasture. Transplant cattails to marsh. Begin plant and wildlife inventory.

Summer, 1974

Water and cultivate trees and shrubs. Build birdhouses. Transplant native plants on the site. Community projects. Stock warm water fish.

Fall, 1974

Construct trout pond(s) with islands. Finish transplanting cottonwoods. Water and cultivate trees and shrubs. Stock trout.

Winter, 1974

Complete wildlife and plant inventory. Finish trout pond before spring runoffs. Build goose nesting boxes and photo blinds.

Spring-Summer, 1975

Fill and stock trout ponds. Water and cultivate trees and shrubs.

APPENDIX

Photographic Blinds

A photographic blind should be tall enough to stand up in, large enough to move around in without disturbing the wildlife, and sturdy enough to survive the rigors of a penknife or bad weather. Cinder blocks have been chosen for the construction of the blinds for this project for their durability, if not for their beauty. The blinds have 3 sides, will stand about 6 feet tall and 10 feet wide, and 6 feet deep, their exact dimensions to be determined by the amount of use expected and the shape of the site. Slits should be placed at various heights, for adults and children, and should be large enough to accomodate photographic equipment and easy viewing. The blinds should be surrounded by shrubs and trees, so that they can be approached without being detected.

Goose Nesting Boxes

Goose nesting boxes should provide a large flat platform for nesting, good visibility, and predator protection. The type of structure chosen was designed by the Colorado Game, Fish and Parks Department, offers these features and is easy to build and easy to maintain. It has been used at the Sawhill ponds and Valmont Reservoir, so it is familiar to the geese.

Construction Directions: This goose nesting structure is simply a wooden platform nailed to the top of a post with half a snow fence fastened to it. The platform can be built in the shop out of 4 1"x8" lumber, by nailing 1"x4" strips around the top edge to lock and hold the boards in place. Drill holes in the platform for drainage. A frame of 1"x4" of the same dimensions as that used to hold the platform together is constructed for the top of the snow fence. Braces are placed across each corner. A 4 foot snow fence roll is cut in half and nailed to the platform and upper frame. Be sure to use snow fence which has lath spaced 2" apart so goslings can escape from the nest if the hay level goes down. Use 2 cement coated nails in each end of each lath.

Sink a 9' penta treated post, 3' into the ground. Notch upper end and nail 2"x4"x10" boards on either side to level and hold nest box. Nail platform with #16 cement coated nails to these 2"x4"s'. Brace with 2"x4"x29" from the bottom side of the box to the post. Cover the upper part of the brace with galvanized metal to prevent ground predators from climbing on the platform.

Pack nesting box with prairie hay. Leave some sticking out the slats for a natural looking nesting site.

List of materials for one structure:

- 1-6" penta treated post 9'
- 2-2"x4"x10" (Nailed to post to support nesting box)
- 4-1"x8"x32" (Bottom)

FOOTNOTES

- ¹Wirth, Conrad L., "Parks and Wilderness" Origins of American Conservation, Rondal Press Company, New York, 1966.
- ²Thoreau, Henry David, Walden, 1858.
- ³Leopold, Aldo, "Land Ethic," Sand County Almanac, Oxford University Press, 1949.
- ⁴The Wilderness Act, 1964.
- ⁵Leopold, op. cit.
- ⁶"Handbook for Wildlife Habitat Improvement," Colorado Game, Fish and Parks Division, Colorado State University, Extension Service - 4H, 1969.

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board of county commissioners

p.o. box 471 13th and spruce st. boulder, colo. 80302 443-2755

April 4, 1974



Mr. Robert Hullinghorst, Director
WICHE
University of Colorado
Boulder, Colorado 80302

Dear Mr. Hullinghorst:

This is to certify that Claudia Toburen has completed the project consisting of the development of a plan for the reclamation of the Boulder County Gravel Pit. I have read the report and the results far exceed my expectations.

As you may know, we are retaining the services of Claudia through the summer of 1974 in order to implement as much of the plan as possible under her leadership.

If all projects are as successful as this one has been, I am sure that WICHE's Resources Development Internship Program will find that the demand far exceeds the supply.

Sincerely,

Wally Toevs
County Commissioner

WT/clg

Walden D. Toevs
District #1

John P. Murphy
District #2

George Van Booven
District #3

The ideas and opinions expressed
in this report
are those of the author.
They do not necessarily reflect
the views of the
WICHE Commissioners or WICHE staff.

The Resources Development Internship Program
has been financed during 1973 by grants
from the
Economic Development Administration,
Jessie Smith Noyes Foundation,
National Endowment for the Humanities,
National Science Foundation
and by more than one hundred community
agencies throughout the West.

WICHE is an Equal Opportunity Employer

In the interest of resource conservation
and environmental improvement, this report
has been printed on recycled paper.

THE RESOURCES DEVELOPMENT INTERNSHIP PROGRAM

The preceding report was completed by a WICHE intern during the summer of 1973. This intern's project was part of the Resources Development Internship Program administered by the Western Interstate Commission for Higher Education (WICHE).

The purpose of the internship program is to bring organizations involved in community and economic development, environmental problems and the humanities together with institutions of higher education and their students in the West for the benefit of all.

For these organizations, the intern program provides the problem-solving talents of student manpower while making the resources of universities and colleges more available. For institutions of higher education, the program provides relevant field education for their students while building their capacity for problem-solving.

WICHE is an organization in the West uniquely suited for sponsoring such a program. It is an interstate agency formed by the thirteen western states for the specific purpose of relating the resources of higher education to the needs of western citizens. WICHE has been concerned with a broad range of community needs in the West for some time, insofar as they bear directly on the well-being of western peoples and the future of higher education in the West. WICHE feels that the internship program is one method for meeting its obligations within the thirteen western states. In its efforts to achieve these objectives, WICHE appreciates having received the generous support and assistance of the Economic Development Administration, the Jessie Smith Noyes Foundation, the National Endowment for the Humanities, the National Science Foundation, and of innumerable local leaders and community organizations, including the agency that sponsored this intern project.

For further information, write Bob Hullinghorst, Director, Resources Development Internship Program, WICHE, Drawer "P", Boulder, Colorado, 80302, (303) 443-6144.

This report was completed by the following intern:

Name: Claudia D. Toburen
Address: 2309 Stanford Street
Fort Collins, Colorado 80521

Immediately prior to this internship, the intern was a student at:

College: Colorado State University
Major Field: Wildlife Biology
Year in School: M.S. June 1975

This intern report was read and accepted by a staff member at:

Agency: Boulder County, District #1
Address: P.O. Box 471
Boulder, Colorado 80302

If you have further comments about this intern report, please write or phone:

Bob Hullinghorst, Director
Resources Development Internship Program
Western Interstate Commission for Higher Education
P.O. Drawer "P"
Boulder, Colorado 80302

Phone: (303) 449-3333

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Appendix B

**Goals and Policies of the
Boulder County Comprehensive Plan
Relevant to Walden Ponds Wildlife Habitat Area**

Comprehensive Plan Goals

The goals of particular relevance to Walden Ponds deal with Environmental Management, Parks and Open Space, Public Involvement, Cultural Resources, and Sustainability. These include:

Environmental Management

- B.1 Unique or distinctive natural features and ecosystems, and cultural features and sites should be conserved and preserved in recognition of the irreplaceable character of such resources and their importance to the quality of life in Boulder County. Natural resources should be managed in a manner, which is consistent with sound conservation practices and ecological principals.
- B.2 Air, water and noise pollution; inappropriate development in natural hazard areas; and overall environmental degradation should be reduced as much as possible or eliminated in order to prevent potential harm to life, health and property.
- B.3 Critical wildlife habitats should be conserved and preserved in order to avoid the depletion of wildlife and to perpetuate and encourage a diversity of species in the County.
- B.4 Significant natural communities, including significant riparian communities and rare plant sites, should be conserved and preserved to retain living examples of natural ecosystems, furnish a baseline of ecological processes and function, and enhance and maintain the biodiversity of the region.
- B.5 Wetlands, which are important to maintaining the overall balance of ecological systems, should be conserved.
- B.9 Riparian ecosystems, which are important plant communities, wildlife habitat and movement corridors, shall be protected.

Parks and Open Space

- C.1 Provision should be made for open space to protect and enhance the quality of life and enjoyment of the environment.
- C.3 Open space shall be used as a means of preserving the rural character of the unincorporated county and as a means of protecting from development those areas which have significant environmental, scenic or cultural value.

Public Involvement

- H.1 The county shall encourage public participation in the making of decisions by public and quasi-public bodies which significantly affect citizens.

Cultural Resources

- K.1 Every effort shall be made to identify and protect historic sites which meet national, state, or local criteria for historic designation from destruction or harmful alteration.

County-Wide Elements

The following policies are from specific County-Wide Elements from the Boulder County Comprehensive Plan and are of particular relevance to Walden Ponds. These include:

Natural Hazards Element

Erosion

NH 3.01 Erosion from development and other land use activities should be minimized, and disturbed or exposed areas should be promptly restored to a stable, natural, and/or vegetated condition using native plants and natural material.

Environmental Resources Element

Natural Areas Policies

ER 2.07 The county shall identify and work to assure the preservation of critical wildlife habitats, Natural Areas, environmental conservation areas and significant agricultural land.

ER 2.08 The county shall use its open space program as one means of achieving its environmental resources and cultural preservation goals.

Riparian Areas

ER 6.01 The county will work with appropriate management agencies and property owners to protect and restore riparian areas.

ER 6.02 The county shall work toward minimizing human impacts to riparian ecosystems from development, roads, and trails.

ER 6.03 The county will work with appropriate entities to ensure suitable minimum and maximum stream flows that maintain channel morphology, support hydrologically connected wetlands and perpetuate species, both plant and animal, dependent on riparian ecosystems.

ER 6.05 Management of riparian areas shall encourage use or mimicry of natural processes, maintenance or reintroduction of native species, restoration of degraded plant communities, elimination of undesirable exotic species, minimizing human impacts, and development of long-term ecological monitoring programs.

Open Space Element

Open space is defined in the Open Space Element as:

Those lands referred to in the Boulder County Comprehensive Plan, as being intentionally left free from future development, and in which it has been determined that it is, or may in the future be, within the public interest to acquire an interest in order to assure their protection. (BCCP, Open Space Element, p. 2)

In addition, passive recreation is defined as:

Outdoor activities that create opportunities for independence, closeness to nature, and a high degree of interaction with the natural environment and which requires no organization, rules of play, facilities, or the installation of equipment, other than those which may be necessary to protect the natural environment. (BCCP, Open Space Element, p. 2)

The functions of open space are:

- *Urban shaping between or around municipalities or community service areas, and buffer zones between residential and non-residential development;*
- *Preservation of: critical ecosystems; natural areas; scenic vistas and areas; fish and wildlife habitats; natural resources and landmarks; outdoor recreation areas; cultural, historic, and archaeological areas; linkages and trails; access to public lakes, streams and other useable open space lands; and scenic and stream or highway corridors;*
- *Conservation of natural resources, including but not limited to forest lands, range lands, agricultural lands, aquifer recharge areas and surface water;*
- *Protection of designated areas of environmental concern, generally in multiple ownership, where several different preservation methods (including other governmental bodies' participation or private ownership) may need to be utilized; these lands will not be considered for control by the county open space program provided sufficient evidence exists that these lands are to be preserved in a natural state.*

Resource Management

- OS 2.01 The county shall identify and work to assure the preservation of Environmental Conservation Areas, critical wildlife habitats and corridors, Natural Areas, Natural Landmarks, significant areas identified in the Boulder Valley Natural Ecosystems Map, historic and archaeological sites, and significant agricultural land.
- OS 2.02 Significant natural communities, rare plant sites, wetlands, and other important stands of vegetation, such as willow carrs, should be conserved and preserved.
- OS 2.03 The county shall provide management plans and the means for the implementation of said plans for all open space areas that have been acquired by or dedicated to the county.
- OS 2.03.01 The foremost management objectives of individual open space lands shall follow directly from the purposes for which the land was acquired.
- OS 2.03.02 Management of county open space lands shall consider the regional context of ecosystems and adjacent land uses.
- OS 2.03.03 Management of individual open space lands, including those under agricultural leases, shall follow good stewardship practices and other techniques that protect and preserve natural and cultural resources.
- OS 2.04 The county, through its Parks and Open Space Department, shall provide appropriate educational services for the public which increase public awareness of the county's irreplaceable and renewable resources and the management techniques appropriate for their protection, preservation, and conservation.

- OS 2.04.01 The Parks and Open Space Department shall cooperate with schools and non-profit organizations in the county to provide environmental education activities which increase awareness, understanding, appreciation, and support for stewardship of the natural and cultural resources on open space.
- OS 2.04.02 The Parks and Open Space Department shall seek to meet the needs of diverse populations in the county by providing information and programming to accommodate special groups such as disabled persons, young people, senior citizens, and Spanish-speaking citizens.
- OS 2.04.03 The Parks and Open Space Department shall develop and disseminate information through publications, exhibits, and other media on the uniqueness, importance, and appropriate stewardship and management of open space areas in the county.
- OS 2.04.04 The Parks and Open Space Department shall utilize trained volunteers, cooperating groups, and private individuals to assist in the delivery of environmental education and interpretive services.
- OS 2.05 The county, through its Weed Management Program, shall discourage the introduction of exotic or undesirable plants and shall work to eradicate existing infestations through the use of Integrated Weed Management throughout the county on private and public lands.

Scenic Area and Open Corridor Protection

- OS 3.01 Where necessary to protect water resources and/or riparian habitat the county shall ensure, to the extent possible, that areas adjacent to water bodies, functional irrigation ditches and natural water course areas shall remain free from development (except designated aggregate resource areas). The county may preserve these open corridor areas by means of appropriate dedication during the development process, reasonable conditions imposed through the development process, or by acquisition.
- OS 3.02 Where appropriate the county shall continue to acquire parcels of land or right-of-way easements to provide linkages between public lands.
- OS 3.04 Areas that are considered as valuable scenic vistas and Natural Landmarks shall be preserved as much as possible in their natural state.

Recreational Use

- OS 4.02 Except as the county may establish a regional park, such as the Boulder County Fairgrounds, or others similar facilities, the county will provide only a minimum level of maintenance or development on park land (consistent with policy OS 2.03).
- OS 4.03 Recreational use of county open space land may be permitted where such use is consistent with the management plan for the property and does not adversely impact natural and cultural resources or other management objectives of the property.
- OS 4.03.01 Recreational use shall be passive, including but not limited to hiking,

photography or nature studies, and, if specifically designated, bicycling, horseback riding, or fishing. Only limited development and maintenance of facilities will be provided.

OS 4.03.02 Accessibility for special populations such as disabled persons, young people, senior citizens, and Spanish-speaking people shall be addressed on a system-wide basis.

OS 4.04 Requests for special uses or events on county open space shall be evaluated for their impacts to natural and cultural resources as well as other management objectives and maintenance considerations.

OS 4.05 Any development of regional county facilities or of county park or open space land shall be based on a plan approved by the County Commissioners after review by the Parks and Open Space Advisory Committee.

Trails

OS 6.01 Trails and trailheads shall be planned, designed, and constructed to avoid or minimize the degradation of natural and cultural resources, especially riparian areas and associated wildlife habitats.

OS 6.02 Adverse effects on private lands shall be minimized insofar as possible by trail and trailhead placement, posting of rules and signs against trespassing, installation of containing fences where critical, and any other appropriate measures.

OS 6.04 Trails shall provide for pedestrian, equestrian, bicycle, and/or other non-motorized uses, where each is warranted. Incompatible uses shall be appropriately separated.

OS 6.08 Trails constructed by the county Parks and Open Space Department shall be soft-surface except where necessary to prevent erosion and/or other resource damage.

Public Decision Making

OS 8.03 In developing management plans for open space areas, Parks and Open Space staff shall solicit public participation of interested individuals, community organizations, adjacent landowners and the Parks and Open Space Advisory Committee. Plans shall be reviewed by the Parks and Open Space Advisory Committee, including public comment, and recommended for adoption after public hearing by the Board of County Commissioners.

OS 8.04 Significant changes to overall management direction or techniques shall be presented to the Parks and Open Space Advisory Committee and/or the Board of County Commissioners, with opportunity for public comment before a decision is made.

Cultural Resource Element

CR 1.02 Significant archaeological and historic sites and structures acquired by the county both in unincorporated and incorporated areas, shall be documented, protected, preserved, and where appropriate restored.

- CR 1.02.1 After acquisition, an inventory of cultural resources on the property shall be undertaken and the historic significance of each resource shall be determined.
- CR 1.02.2 Resources that meet the criteria for local landmark, or State or National Register status should be nominated for such status by the County.

Sustainability Element

“Sustainability” means the use, development and protection of all our resources in a manner that does not deplete them while enabling the residents of Boulder County to meet their current needs and maintain a fulfilling quality of life without compromising or foregoing the ability of and opportunity for future residents to do the same.

In this context, “resources” includes the land, air and water along with the inherent value of the natural resources, biodiversity, and life-supporting functions associated with them; energy and materials for development and habitation; the essential rural, low-density character of the unincorporated county; the special historic, cultural and geographic composition of distinct rural communities within the county; the diversity of economic activities and opportunities available to individuals; and the people who live within and continue to shape our developed and natural environment. (BCCP, Sustainability Element, p. 5)

Sustainability Element Goals

1. The county recognizes and accepts that weighing individual wants and needs with those of the larger public and society is a complex but essential responsibility of government. Implementing the Comprehensive Plan involves the need to balance competing goals and policies in cases where they cannot be harmonized. With that understanding in mind, Boulder County’s land use management tools and practices should be designed to promote decisions and actions supporting outcomes that are consistent with the principles of sustainability.
3. Sustainability actions or programs undertaken by the county should address the following factors:
 - The origins or causes of wasteful resource practices as well as the harmful effects of such practices;
 - The interrelationship of systems and forces that dictate how resources are used, and;
 - The social constituencies and partners that should be involved in and served by sustainability efforts.
6. The preservation and viability of the increasingly precious resources of open and rural lands, whether devoted to agriculture, forestry, open space, or plant and wildlife habitat, as well as the sustainability of uses that provide for the long-term preservation of such lands, should be fostered and promoted through innovative regulatory and acquisition programs, public-private partnerships, and public education, outreach and participation.
10. The county’s rich and varied natural features, scenic vistas, ecosystems, and biodiversity should be protected from further intrusion, disruption, consumption and fragmentation.

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Appendix C



Parks and Open Space

5201 St. Vrain Road • Longmont, Colorado 80503
303.678.6200 • Fax: 303.678.6177 • www.bouldercounty.org

Summary of Issues and Ideas Identified During Initial Scoping Process For Walden Ponds Wildlife Habitat Area Management Plan Update

December 2009

Summary of Initial Scoping Issues and Ideas

General

- Serves many communities – centrally located on the plains of Boulder County
- Serves diverse populations – seniors, youth, handicapped, bird watchers, Latino, etc.

Coordination

- Coordinate with City of Boulder Open Space and Mountain Parks on management of respective properties including water management, habitat management, weed management, trails, interpretation, etc.
- Coordinate with Colorado Division of Wildlife on wildlife habitat and fisheries management issues
- Coordinate with City of Boulder Public Works Department on management of outlet ditch, Heatherwood Trail, etc.
- Coordinate with Boulder County Road District on issues of water quality, aesthetics, truck traffic, etc.

Water Management

- Dynamic and fluctuating groundwater makes management difficult for visitor use experience, habitat management, and education programs
- However, dynamic and fluctuating groundwater is part of the natural cycle, especially in the semi-arid climate of Colorado, and provides for a patchwork of habitats, which is important for a diversity of species
- Develop a Water Management Plan that meets management objectives for individual ponds (e.g. fishing, bird habitat, shallow wetlands, etc.) and recognizes the natural cycles of water in a semi-arid climate as well as the different needs of a diversity of species
- Continue pursuing water right via 2002 filling
- Improve and maintain water delivery system including Boulder Creek diversion, ditches, headgates, inlets / outlets, hydroscreen, etc.
- Improve communication with public about water management and natural cycles

Habitat / Ecology

- Protect sensitive resources
- Consider filling and deepening small portions of some ponds to improve habitat
- Use as an ecological laboratory

Vegetation / Weeds

- Maintain and enhance a diversity of plant communities, including grasslands, riparian, shallow emergent wetlands, and deep emergent wetlands
- Institute additional weed control measures (e.g. prescribed fire, grass carp)
- Remove remainder of Russian olive adjacent to Wally Toevs Pond and replace with more desirable trees

- Utilize revegetation with native plant species where necessary

Wildlife

- Different species need and require different habitat conditions, e.g. shorebirds require mud flats and shallow water, diving birds require deeper water, dabbling ducks and geese occur across a wider spectrum.
- Provide diverse habitat for wildlife (e.g. shallow emergent wetlands, mudflats, etc.) especially in Cottonwood Marsh via water management
- Provide blocks of undisturbed wildlife habitat
- Install additional bat boxes
- Further enhance site for key wildlife species

Fishing

- Improve sport fishing opportunities
- Identify targeted fishing locations i.e. Wally Toevs, Duck Pond, north end of Bass Pond
- Potentially no fishing in Cottonwood Marsh
- Provide ponds with sufficient water depth for fish, where possible
- Manage for larger fish (e.g. selective harvest of bass in the 10 to 12 inch range)
- Utilize more natural fish structures and remove old tires and concrete over time
- Consider allowing youth (15 years of age and younger) with senior to fish at Wally Toevs

Naturalist Program / Interpretation

- Continue housing Naturalist Program on-site
- Incorporate water dynamic / habitat diversity themes in interpretation program
- Expand naturalist / interpretation program's presence on-site (e.g. facilities, environmental education institute, etc.)

Access

- Provide adequate and safe fishing access especially for seniors and handicapped citizens (e.g. stairs, piers, etc.)
- Limit access around Cottonwood Marsh
- Provide better access for fishing (e.g. add piers)
- Improve access to ponds for education
- Keep trails multiple use, while limiting impacts (e.g. bikes)
- Limit west side access

Restrictions

- Dogs on leash only

Trails

- Trails
 - Don't improve trails, especially on the west side, just maintain
 - Improve trails – consider, for example, 8-foot crusher fine on west side
- Link with Boulder Creek and/or UPRR Boulder-Erie regional trail
- Ensure at least some trails are ADA accessible
- Reconsider designated trails
- Name trails

Parking Lots

- Improve Cottonwood parking lot
 - reconfigure
 - horse trailer and bus parking
 - make safer at exit
 - parking spaces for seniors and handicapped
- Improve Wally Toevs parking lot
 - reconfigure
 - parking spaces (ADA) for seniors and handicapped

Boardwalk

- Inspect and maintain boardwalk regularly to ensure longevity
- Consider additional wildlife viewing opportunities along boardwalk

Other Facilities / Landscaping / General Maintenance

- Site appears abandoned and worn-down especially around the Naturalist Building
- Reclaim disturbed areas with minor grading and planting with native species
- Create an aesthetically pleasing environment, to the extent possible, especially around Naturalist Building
- Make improvements to picnic shelter, grill, outhouse, etc. as necessary
- Do not allow dumping of materials (e.g. logs, vehicles, etc) by County staff or others
- Keep site in a low level state of maintenance
- Maintain the shoreline

Noise

- Work with airport on aviation noise



Parks and Open Space

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Summary of Initial Public Comments for Walden Ponds Wildlife Habitat Area Management Plan Update October 23 – November 21, 2009

The purpose of the initial public comment period was to:

- Identify and document the public's interests, values, needs, and concerns about management of Walden Ponds
- Identify the types of public activities and level of services desired
- Gather any additional information about Walden Ponds from the public
- Guide the planning process and subsequently help shape the future management of Walden Ponds

Comments received during the initial public comment period will help the Boulder County Parks and Open Space planning team determine the best future management direction for Walden Ponds and will be included in the overall analysis of potential future management alternatives.

Summary of Initial Public Comments

Water Management

- “it is necessary to protect this resource by developing a water management plan so that the ponds are always full and protected”
- “Walden Ponds wildlife would profit with better water management. There is not much wildlife (especially shore birds and water fowl) there when the water level is very low.”
- “I am an advocate of managing water outflow (at Cottonwood Marsh) if...diversion of water off of Boulder Creek.”
- “doing ok w/ water levels -- prettier when full -- and water when you can”
- “It seems best that ponds & depths fluctuate with seasonal conditions.”
- “The lack of water is a tremendous issue”

Weeds

- “Walden...has a serious weed problem. The weeds must be controlled or native plants and wildlife will eventually be smothered.”
- “suggest the possibility of introducing grass carp to the trout pond. Right now there is a great deal of weed growth. Some is good, but there is way too much and I'm sure it takes a lot of oxygen that could be used to sustain the trout.”

- “Work with City of Boulder on selected weed control. i.e. tamarisk, Russian olive, purple loosestrife, dame's rocket.”
- “Controlled burning might help with kochia.”
- “knapp weed which is my main concern. Would controlled burns effectively help keep this in check.”

Wildlife / Vegetation

- “please consider making the area birdable, as it is now”
- “Cottonwood Pond...We have had many shorebird and waterfowl sitings because of what is often a unique combination of water and mudflats in that pond, a benefit of semi-arid water bodies...”
- “(fishing) at the edge of a body of water is intrusive and a disturbance to any wildlife in the immediate area”
- “Any changes to enhance scientific support for vegetation or wildlife is a good idea”
- “quite a variety of wildlife, and, for me, this is one of the primary reasons for these ponds and their environs. Please limit your impact on this area”
- “The water levels have affected all types of wildlife with far fewer birds, snakes, frogs, beaver, deer, coyote, etc”

Fishing

- “Water level is critical for winter habitat (for bass and bluegill). The shallower ponds, with vegetation, are at risk of winter-kill.”
- “for Bass Pond...introduce a management plan to maximize bass growth potential, by allowing selective harvest of bass in the 10 to 12 inch range.”
- “The fishing had been great for decades but after the past few year's fluctuations it has become pathetic.”

Access / Restrictions

- “concerned that areas might potentially be closed to anglers. Since the good fishing is not randomly distributed across a given pond, access to all shorelines is imperative”
- “maintain the more restricted activity around (Cottonwood Marsh) so that it can remain a more inviting environment for waterfowl...concerned that the restricted areas on the W/NW side of the pond would more likely be invaded.”
- “Try to limit west side access. Perhaps don't provide crusher fine trails there.”

- “More fishing access for seniors in other ponds-- Perhaps T-shaped piers in appropriate places.”
- “please keep the trails open (to equestrians)”
- “Discourage bicycle use.”
- “Dogs on leash only.”

Trails and Trailheads

- “It would be wonderful if that section of the Boulder Creek Path (the bike path along Boulder Creek west of 75th street) were to be linked with the Boulder Creek Path proper”
- “possibly improve TH parking for a horse trailer or two! “
- “Current trails ok - don't "improve" the one on the west side”
- “do connect with an eventual Boulder Creek regional trail and / or a UPRR Boulder-Erie rail-trail”
- “Trail improvements should be to maintain only.”
- “The walkway and trails are very usable...they are just right during the whole year”
- “Many of the trails are wild and ungroomed which I like and would hate to see changed.”

Maintenance

- “the shore line needs to be kept up”
- “should be maintained in a low level maintenance state.”

Noise

- “frustrated with the constant prop plane noise (much glider tow) so often experienced at the natural areas, I ask the county to make a fuss with the feds about what is essentially a sacrifice area for the dumping of aviation noise.”

For more information about Walden Ponds Wildlife Habitat Area and the current planning effort, visit: www.BoulderCountyOpenSpace.org

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Appendix D

**Walden Ponds Wildlife Habitat
Staff Gauge Readings**

Pond or Wetland	Staff Gauge Elevation (Feet)	Year	Date
Bass Pond	1.76	1989	17-May
Bass Pond	2.18	1990	16-Feb
Bass Pond	2.23	1990	22-May
Bass Pond	1.78	1990	2-Jul
Bass Pond	1.76	1990	17-Jul
Bass Pond	1.73	1990	30-Jul
Bass Pond	1.16	1990	6-Aug
Bass Pond	1.56	1990	24-Aug
Bass Pond	1.42	1990	5-Sep
Bass Pond	1.37	1990	18-Sep
Bass Pond	1.45	1990	26-Sep
Bass Pond	1.44	1990	3-Oct
Bass Pond	1.44	1990	15-Oct
Bass Pond	1.43	1990	22-Oct
Bass Pond	1.46	1990	31-Oct
Bass Pond	1.78	1991	5-Apr
Bass Pond	1.84	1991	20-May
Bass Pond	1.86	1991	28-May
Bass Pond	1.86	1991	25-Jun
Bass Pond	1.69	1991	9-Jul
Bass Pond	1.61	1991	1-Aug
Bass Pond	1.67	1991	7-Aug
Bass Pond	1.41	1991	4-Sep
Bass Pond	1.3	1991	14-Oct
Bass Pond	1.53	1991	25-Nov
Bass Pond	1.72	1992	9-Jan
Bass Pond	1.85	1992	3-Feb
Bass Pond	1.82	1992	29-Feb
Bass Pond	2.63	1992	21-Apr
Bass Pond	2.35	1992	18-May
Bass Pond	2.17	1992	23-Jun
Bass Pond	1.95	1992	8-Jul
Bass Pond	1.51	1992	13-Aug
Bass Pond	2.25	1993	5-Jan
Bass Pond	2.93	1993	13-Apr
Bass Pond	2.88	1993	7-Jun
Bass Pond	3.1	1993	29-Sep
Bass Pond	2.19	1994	20-Apr
Bass Pond	2.48	1994	12-May
Bass Pond	2.5	1994	16-May
Bass Pond	2.48	1994	25-May
Bass Pond	2.06	1994	3-Jun
Bass Pond	1.94	1994	14-Jun

Bass Pond	1.72	1994	1-Jul
Bass Pond	1.54	1994	12-Jul
Bass Pond	1.35	1994	29-Jul
Bass Pond	1.19	1994	10-Aug
Bass Pond	1.27	1994	23-Aug
Bass Pond	0.71	1994	6-Oct
Bass Pond	1.49	1994	16-Nov
Bass Pond	1.57	1994	5-Dec
Bass Pond	1.9	1995	30-Jan
Bass Pond	1.65	1995	13-Mar
Bass Pond	1.58	1995	28-Apr
Bass Pond	1.7	1995	15-May
Bass Pond	1.03	1995	18-May
Bass Pond	2.42	1995	26-May
Bass Pond	3.35	1995	31-May
Bass Pond	2.13	2006	30-Jun
Bass Pond	2.26	2006	11-Jul
Bass Pond	0.40	2006	2-Aug
Bass Pond	1.23	2006	3-Oct
Bass Pond	2.26	2007	12-Mar
Bass Pond	2.34	2007	23-Apr
Bass Pond	2.54	2007	8-May
Bass Pond	2.53	2007	15-May
Bass Pond	4.00	2007	12-Jun
Bass Pond	3.00	2007	14-Aug
Bass Pond	2.65	2007	25-Sep
Bass Pond	2.51	2007	7-Oct
Bass Pond	2.52	2007	5-Nov
Bass Pond	2.87	2008	10-Mar
Bass Pond	2.66	2008	2-May
Bass Pond	2.28	2008	24-Jun
Bass Pond	2.20	2008	30-Jun
Bass Pond	1.80	2008	18-Jul
Bass Pond	1.70	2008	23-Jul
Bass Pond	1.54	2008	30-Jul
Bass Pond	1.39	2008	7-Aug
Bass Pond	1.33	2008	11-Aug
Bass Pond	1.48	2008	18-Aug
Bass Pond	1.34	2008	27-Aug
Bass Pond	1.26	2008	2-Sep
Bass Pond	1.19	2008	9-Sep
Bass Pond	1.28	2008	15-Sep
Bass Pond	1.21	2008	22-Sep
Bass Pond	1.15	2008	29-Sep
Bass Pond	1.40	2008	7-Oct
Bass Pond	1.11	2008	13-Oct
Bass Pond	1.10	2008	20-Oct
Bass Pond	1.08	2008	3-Nov
Bass Pond	1.03	2008	10-Nov

Bass Pond	1.04	2008	17-Nov
Bass Pond	1.02	2008	24-Nov
Bass Pond	3.72	2009	22-Jun
Bass Pond	3.76	2009	22-Jul
Bass Pond	3.71	2009	28-Jul
Bass Pond	3.77	2009	3-Aug
Bass Pond	3.68	2009	11-Aug
Bass Pond	3.6	2009	18-Aug
Bass Pond	3.57	2009	25-Aug
Bass Pond	3.46	2009	3-Sep
Bass Pond	3.39	2009	8-Sep
Bass Pond	3.37	2009	15-Sep
Bass Pond	3.28	2009	21-Sep
Bass Pond	3.24	2009	29-Sep
Bass Pond	3.19	2009	6-Oct
Bass Pond	3.19	2009	13-Oct
Bass Pond	3.2	2009	22-Oct
Bass Pond	3.34	2009	2-Nov
Bass Pond	3.34	2009	11-Nov
Bass Pond	4.4	2009	16-Nov
Bass Pond	3.41	2009	24-Nov
Bass Pond	3.5	2009	3-Dec
Bass Pond	3.48	2009	7-Dec
Bass Pond	3.54	2009	15-Dec
Bass Pond	3.82	2010	1-Feb
Bass Pond	3.85	2010	10-Feb
Bass Pond	3.88	2010	17-Feb
Bass Pond	3.9	2010	22-Feb
Bass Pond	3.9	2010	5-Mar
Bass Pond	4.09	2010	10-Mar
Bass Pond	4.15	2010	16-Mar
Bass Pond	4.25	2010	23-Mar
Cottonwood Marsh	1.86	1977	5-Oct
Cottonwood Marsh	4.39	1979	29-Apr
Cottonwood Marsh	4.03	1979	18-Dec
Cottonwood Marsh	4.88	1980	14-May
Cottonwood Marsh	2.84	1981	7-Dec
Cottonwood Marsh	2.99	1983	17-Nov
Cottonwood Marsh	4.06	1984	11-Dec
Cottonwood Marsh	5.5	1987	10-Apr
Cottonwood Marsh	3.13	1989	17-May
Cottonwood Marsh	2.5	1990	16-Feb
Cottonwood Marsh	3.23	1990	22-May
Cottonwood Marsh	2.78	1990	2-Jul
Cottonwood Marsh	2.64	1990	17-Jul
Cottonwood Marsh	2.59	1990	29-Jul
Cottonwood Marsh	2.36	1990	24-Aug
Cottonwood Marsh	2.13	1990	18-Sep

Cottonwood Marsh	2.14	1990	3-Oct
Cottonwood Marsh	2.12	1990	15-Oct
Cottonwood Marsh	2.45	1991	5-Apr
Cottonwood Marsh	2.53	1991	20-May
Cottonwood Marsh	2.51	1991	28-May
Cottonwood Marsh	2.52	1991	25-Jun
Cottonwood Marsh	2.3	1991	9-Jul
Cottonwood Marsh	2.2	1991	1-Aug
Cottonwood Marsh	2.28	1991	7-Aug
Cottonwood Marsh	1.97	1991	4-Sep
Cottonwood Marsh	1.76	1991	14-Oct
Cottonwood Marsh	2.1	1991	25-Nov
Cottonwood Marsh	2.3	1992	9-Jan
Cottonwood Marsh	2.42	1992	3-Feb
Cottonwood Marsh	2.43	1992	29-Feb
Cottonwood Marsh	3.28	1992	21-Apr
Cottonwood Marsh	3.06	1992	18-May
Cottonwood Marsh	2.94	1992	23-Jun
Cottonwood Marsh	2.75	1992	8-Jul
Cottonwood Marsh	2.45	1992	13-Aug
Cottonwood Marsh	2.54	1993	5-Jan
Cottonwood Marsh	2.45	1994	20-Apr
Cottonwood Marsh	2.52	1994	12-May
Cottonwood Marsh	2.5	1994	16-May
Cottonwood Marsh	2.39	1994	25-May
Cottonwood Marsh	2.38	1994	3-Jun
Cottonwood Marsh	2.24	1994	14-Jun
Cottonwood Marsh	2.1	1994	1-Jul
Cottonwood Marsh	1.93	1994	12-Jul
Cottonwood Marsh	1.8	1994	29-Jul
Cottonwood Marsh	1.74	1994	10-Aug
Cottonwood Marsh	1.8	1994	23-Aug
Cottonwood Marsh	1.61	1994	6-Oct
Cottonwood Marsh	1.63	1994	16-Nov
Cottonwood Marsh	1.63	1994	5-Dec
Cottonwood Marsh	1.68	1995	30-Jan
Cottonwood Marsh	1.78	1995	13-Mar
Cottonwood Marsh	2	1995	28-Apr
Cottonwood Marsh	2.15	1995	15-May
Cottonwood Marsh	2.48	1995	18-May
Cottonwood Marsh	2.61	1995	26-May
Cottonwood Marsh	2.98	1995	31-May
Cottonwood Marsh	0.2	2000	27-Apr
Cottonwood Marsh	0.2	2000	28-Apr
Cottonwood Marsh	below gauge	2000	7-Jun
Cottonwood Marsh	3.30	2006	30-Jun
Cottonwood Marsh	3.48	2006	11-Jul
Cottonwood Marsh	3.00	2006	2-Aug
Cottonwood Marsh	1.98	2006	6-Oct

Cottonwood Marsh	2.90	2007	12-Mar
Cottonwood Marsh	2.87	2007	26-Mar
Cottonwood Marsh	2.79	2007	23-Apr
Cottonwood Marsh	3.00	2007	8-May
Cottonwood Marsh	2.94	2007	15-May
Cottonwood Marsh	3.80	2007	12-Jun
Cottonwood Marsh	2.96	2007	14-Aug
Cottonwood Marsh	2.64	2007	25-Sep
Cottonwood Marsh	2.50	2007	7-Oct
Cottonwood Marsh	2.51	2007	5-Nov
Cottonwood Marsh	2.65	2008	10-Mar
Cottonwood Marsh	2.63	2008	31-Mar
Cottonwood Marsh	2.32	2008	2-May
Cottonwood Marsh	2.87	2008	24-Jun
Cottonwood Marsh	1.76	2008	30-Jun
Cottonwood Marsh	2.58	2008	10-Jul
Cottonwood Marsh	1.44	2008	18-Jul
Cottonwood Marsh	1.32	2008	23-Jul
Cottonwood Marsh	1.19	2008	30-Jul
Cottonwood Marsh	1.04	2008	7-Aug
Cottonwood Marsh	0.09	2008	11-Aug
Cottonwood Marsh	1.25	2008	18-Aug
Cottonwood Marsh	1.12	2008	27-Aug
Cottonwood Marsh	1.06	2008	2-Sep
Cottonwood Marsh	1.00	2008	9-Sep
Cottonwood Marsh	1.16	2008	15-Sep
Cottonwood Marsh	1.00	2008	22-Sep
Cottonwood Marsh	1.01	2008	29-Sep
Cottonwood Marsh	0.06	2008	7-Oct
Cottonwood Marsh	1.00	2008	13-Oct
Cottonwood Marsh	0.08	2008	20-Oct
Cottonwood Marsh	0.91	2008	3-Nov
Cottonwood Marsh	0.87	2008	10-Nov
Cottonwood Marsh	0.85	2008	17-Nov
Cottonwood Marsh	0.84	2008	24-Nov
Cottonwood Marsh	3.45	2009	22-Jun
Cottonwood Marsh	2.14	2009	22-Jul
Cottonwood Marsh	5.6	2009	28-Jul
Cottonwood Marsh	5.59	2009	3-Aug
Cottonwood Marsh	5.49	2009	11-Aug
Cottonwood Marsh	5.37	2009	18-Aug
Cottonwood Marsh	5.28	2009	25-Aug
Cottonwood Marsh	5.18	2009	3-Sep
Cottonwood Marsh	5.19	2009	8-Sep
Cottonwood Marsh	5.05	2009	15-Sep
Cottonwood Marsh	4.98	2009	21-Sep
Cottonwood Marsh	4.93	2009	29-Sep
Cottonwood Marsh	4.88	2009	6-Oct
Cottonwood Marsh	4.88	2009	13-Oct

Cottonwood Marsh	4.87	2009	22-Oct
Cottonwood Marsh	5.03	2009	2-Nov
Cottonwood Marsh	5.02	2009	11-Nov
Cottonwood Marsh	5.08	2009	16-Nov
Cottonwood Marsh	5.07	2009	24-Nov
Cottonwood Marsh	5.14	2009	3-Dec
Cottonwood Marsh	5.3	2009	7-Dec
Cottonwood Marsh	5.34	2009	15-Dec
Cottonwood Marsh	5.3	2010	1-Feb
Cottonwood Marsh	5.45	2010	10-Feb
Cottonwood Marsh	5.34	2010	17-Feb
Cottonwood Marsh	5.3	2010	22-Feb
Cottonwood Marsh	5.43	2010	5-Mar
Cottonwood Marsh	5.5	2010	10-Mar
Cottonwood Marsh	5.54	2010	16-Mar
Cottonwood Marsh	5.58	2010	23-Mar
Duck Pond	1.77	1977	5-Oct
Duck Pond	3.9	1979	29-Apr
Duck Pond	4.45	1979	18-Dec
Duck Pond	4.45	1980	14-May
Duck Pond	2.12	1981	7-Dec
Duck Pond	2.59	1983	17-Nov
Duck Pond	3.33	1984	11-Dec
Duck Pond	3.61	1987	10-Apr
Duck Pond	1.52	1989	17-May
Duck Pond	1.34	1990	16-Feb
Duck Pond	2.13	1990	22-May
Duck Pond	1.79	1990	2-Jul
Duck Pond	1.84	1990	17-Jul
Duck Pond	1.79	1990	29-Jul
Duck Pond	1.76	1990	24-Aug
Duck Pond	1.71	1990	18-Sep
Duck Pond	1.71	1990	3-Oct
Duck Pond	1.69	1990	15-Oct
Duck Pond	2.04	1991	5-Apr
Duck Pond	1.95	1991	20-May
Duck Pond	1.91	1991	28-May
Duck Pond	1.92	1991	25-Jun
Duck Pond	1.73	1991	9-Jul
Duck Pond	1.68	1991	1-Aug
Duck Pond	1.72	1991	7-Aug
Duck Pond	1.45	1991	4-Sep
Duck Pond	1.2	1991	14-Oct
Duck Pond	1.53	1991	25-Nov
Duck Pond	1.78	1992	9-Jan
Duck Pond	1.88	1992	3-Feb
Duck Pond	1.85	1992	29-Feb
Duck Pond	2.57	1992	21-Apr

Duck Pond	2.3	1992	18-May
Duck Pond	2.3	1992	23-Jun
Duck Pond	2.2	1992	8-Jul
Duck Pond	1.96	1992	13-Aug
Duck Pond	2.43	1993	5-Jan
Duck Pond	2.7	1993	13-Apr
Duck Pond	2.29	1993	7-Jun
Duck Pond	1.68	1993	29-Sep
Duck Pond	2.88	1994	20-Apr
Duck Pond	2.82	1994	12-May
Duck Pond	2.82	1994	16-May
Duck Pond	2.67	1994	25-May
Duck Pond	2.59	1994	3-Jun
Duck Pond	2.38	1994	14-Jun
Duck Pond	2.13	1994	1-Jul
Duck Pond	1.9	1994	12-Jul
Duck Pond	1.74	1994	29-Jul
Duck Pond	1.61	1994	10-Aug
Duck Pond	1.69	1994	23-Aug
Duck Pond	1.39	1994	6-Oct
Duck Pond	1.39	1994	16-Nov
Duck Pond	1.4	1994	5-Dec
Duck Pond	1.54	1995	30-Jan
Duck Pond	1.58	1995	13-Mar
Duck Pond	1.58	1995	28-Apr
Duck Pond	1.64	1995	15-May
Duck Pond	1.95	1995	18-May
Duck Pond	2.12	1995	26-May
Duck Pond	2.51	1995	31-May
Duck Pond	2.9	2000	26-Apr
Duck Pond	2.6	2000	27-Apr
Duck Pond	2.54	2000	28-Apr
Duck Pond	2.29	2000	7-Jun
Duck Pond	2.40	2006	30-Jun
Duck Pond	2.54	2006	11-Jul
Duck Pond	1.90	2006	2-Aug
Duck Pond	1.98	2006	3-Oct
Duck Pond	2.39	2007	12-Mar
Duck Pond	2.61	2007	23-Apr
Duck Pond	2.77	2007	25-Apr
Duck Pond	2.81	2007	8-May
Duck Pond	2.77	2007	15-May
Duck Pond	3.40	2007	12-Jun
Duck Pond	2.69	2007	14-Aug
Duck Pond	2.34	2007	25-Sep
Duck Pond	2.20	2007	7-Oct
Duck Pond	2.23	2007	5-Nov
Duck Pond	2.55	2008	10-Mar
Duck Pond	2.55	2008	31-Mar

Duck Pond	2.36	2008	2-May
Duck Pond	1.84	2008	24-Jun
Duck Pond	1.68	2008	30-Jun
Duck Pond	1.46	2008	10-Jul
Duck Pond	1.21	2008	18-Jul
Duck Pond	1.05	2008	23-Jul
Duck Pond	0.80	2008	30-Jul
Duck Pond	0.04	2008	7-Aug
Duck Pond	below gauge	2008	11-Aug
Duck Pond	0.74	2008	18-Aug
Duck Pond	0.51	2008	27-Aug
Duck Pond	below gauge	2008	2-Sep
Duck Pond	below gauge	2008	9-Sep
Duck Pond	0.46	2008	15-Sep
Duck Pond	below gauge	2008	22-Sep
Duck Pond	below gauge	2008	29-Sep
Duck Pond	below gauge	2008	7-Oct
Duck Pond	below gauge	2008	13-Oct
Duck Pond	below gauge	2008	20-Oct
Duck Pond	below gauge	2008	3-Nov
Duck Pond	below gauge	2008	10-Nov
Duck Pond	below gauge	2008	17-Nov
Duck Pond	below gauge	2008	24-Nov
Duck Pond	0.91	2009	9-Mar
Duck Pond	4.21	2009	22-Jun
Duck Pond	3.84	2009	22-Jul
Duck Pond	3.95	2009	28-Jul
Duck Pond	3.89	2009	3-Aug
Duck Pond	3.88	2009	11-Aug
Duck Pond	3.85	2009	18-Aug
Duck Pond	3.78	2009	25-Aug
Duck Pond	3.69	2009	3-Sep
Duck Pond	3.66	2009	8-Sep
Duck Pond	3.6	2009	15-Sep
Duck Pond	3.55	2009	21-Sep
Duck Pond	3.5	2009	29-Sep
Duck Pond	3.46	2009	6-Oct
Duck Pond	3.43	2009	13-Oct
Duck Pond	3.43	2009	22-Oct
Duck Pond	3.55	2009	2-Nov
Duck Pond	3.5	2009	11-Nov
Duck Pond	3.55	2009	16-Nov
Duck Pond	3.5	2009	24-Nov
Duck Pond	3.56	2009	3-Dec
Duck Pond	3.57	2009	7-Dec
Duck Pond	3.53	2009	15-Dec
Duck Pond	3.54	2010	1-Feb
Duck Pond	3.56	2010	10-Feb
Duck Pond	3.57	2010	17-Feb

Duck Pond	3.6	2010	22-Feb
Duck Pond	3.62	2010	5-Mar
Duck Pond	3.57	2010	10-Mar
Duck Pond	3.64	2010	16-Mar
Duck Pond	3.53	2010	23-Mar
Ricky Weiser Wetland	3.14	2006	30-Jun
Ricky Weiser Wetland	3.28	2006	11-Jul
Ricky Weiser Wetland	1.98	2006	3-Oct
Ricky Weiser Wetland	3.12	2007	12-Mar
Ricky Weiser Wetland	3.22	2007	23-Apr
Ricky Weiser Wetland	4.02	2007	8-May
Ricky Weiser Wetland	4.22	2007	15-May
Ricky Weiser Wetland	5.13	2007	12-Jun
Ricky Weiser Wetland	3.55	2007	25-Sep
Ricky Weiser Wetland	3.35	2007	7-Oct
Ricky Weiser Wetland	3.34	2007	5-Nov
Ricky Weiser Wetland	2.54	2008	30-Jul
Ricky Weiser Wetland	2.37	2008	7-Aug
Ricky Weiser Wetland	2.31	2008	11-Aug
Ricky Weiser Wetland	2.47	2008	18-Aug
Ricky Weiser Wetland	2.30	2008	27-Aug
Ricky Weiser Wetland	2.20	2008	2-Sep
Ricky Weiser Wetland	2.10	2008	9-Sep
Ricky Weiser Wetland	2.20	2008	15-Sep
Ricky Weiser Wetland	2.11	2008	22-Sep
Ricky Weiser Wetland	2.01	2008	29-Sep
Ricky Weiser Wetland	1.94	2008	7-Oct
Ricky Weiser Wetland	1.95	2008	13-Oct
Ricky Weiser Wetland	1.93	2008	20-Oct
Ricky Weiser Wetland	1.84	2008	3-Nov
Ricky Weiser Wetland	1.80	2008	10-Nov
Ricky Weiser Wetland	1.76	2008	17-Nov
Ricky Weiser Wetland	1.75	2008	24-Nov
Ricky Weiser Wetland	3.50	2008	10-Mar
Ricky Weiser Wetland	2.98	2008	2-May
Ricky Weiser Wetland	3.41	2008	24-Jun
Ricky Weiser Wetland	3.27	2008	30-Jun
Ricky Weiser Wetland	3.07	2008	10-Jul
Ricky Weiser Wetland	2.71	2008	23-Jul
Ricky Weiser Wetland	6.26	2009	22-Jun
Ricky Weiser Wetland	4.97	2009	22-Jul
Ricky Weiser Wetland	4.91	2009	28-Jul
Ricky Weiser Wetland	2.88	2009	3-Aug
Ricky Weiser Wetland	4.77	2009	11-Aug
Ricky Weiser Wetland	4.59	2009	18-Aug
Ricky Weiser Wetland	4.51	2009	25-Aug
Ricky Weiser Wetland	4.4	2009	3-Sep
Ricky Weiser Wetland	4.31	2009	8-Sep

Ricky Weiser Wetland	4.28	2009	15-Sep
Ricky Weiser Wetland	4.2	2009	21-Sep
Ricky Weiser Wetland	4.17	2009	29-Sep
Ricky Weiser Wetland	4.16	2009	6-Oct
Ricky Weiser Wetland	4.16	2009	13-Oct
Ricky Weiser Wetland	4.17	2009	22-Oct
Ricky Weiser Wetland	4.31	2009	2-Nov
Ricky Weiser Wetland	4.01	2009	11-Nov
Ricky Weiser Wetland	4.38	2009	16-Nov
Ricky Weiser Wetland	4.39	2009	24-Nov
Ricky Weiser Wetland	4.46	2009	3-Dec
Ricky Weiser Wetland	4.46	2009	7-Dec
Ricky Weiser Wetland	4.5	2009	15-Dec
Ricky Weiser Wetland	4.82	2010	1-Feb
Ricky Weiser Wetland	4.56	2010	10-Feb
Ricky Weiser Wetland	4.58	2010	17-Feb
Ricky Weiser Wetland	4.59	2010	22-Feb
Ricky Weiser Wetland	4.6	2010	5-Mar
Ricky Weiser Wetland	4.65	2010	10-Mar
Ricky Weiser Wetland	4.63	2010	16-Mar
Ricky Weiser Wetland	4.67	2010	23-Mar
Wally Toevs Pond	1.95	1977	5-Oct
Wally Toevs Pond	3.58	1979	29-Apr
Wally Toevs Pond	2.2	1979	18-Dec
Wally Toevs Pond	2.2	1980	14-May
Wally Toevs Pond	1.96	1981	7-Dec
Wally Toevs Pond	2.43	1983	17-Nov
Wally Toevs Pond	3.64	1984	11-Dec
Wally Toevs Pond	1.81	1989	17-May
Wally Toevs Pond	1.33	1990	16-Feb
Wally Toevs Pond	2.26	1990	22-May
Wally Toevs Pond	1.76	1990	2-Jul
Wally Toevs Pond	1.73	1990	17-Jul
Wally Toevs Pond	1.63	1990	29-Jul
Wally Toevs Pond	1.37	1990	24-Aug
Wally Toevs Pond	1.19	1990	18-Sep
Wally Toevs Pond	1.27	1990	3-Oct
Wally Toevs Pond	1.2	1990	15-Oct
Wally Toevs Pond	1.33	1991	5-Apr
Wally Toevs Pond	1.35	1991	20-May
Wally Toevs Pond	1.35	1991	28-May
Wally Toevs Pond	1.44	1991	25-Jun
Wally Toevs Pond	1.31	1991	9-Jul
Wally Toevs Pond	1.29	1991	1-Aug
Wally Toevs Pond	1.35	1991	7-Aug
Wally Toevs Pond	1.14	1991	4-Sep
Wally Toevs Pond	0.96	1991	14-Oct
Wally Toevs Pond	1.15	1991	25-Nov
Wally Toevs Pond	1.37	1992	9-Jan

Wally Toevs Pond	1.44	1992	3-Feb
Wally Toevs Pond	1.44	1992	29-Feb
Wally Toevs Pond	2.67	1992	21-Apr
Wally Toevs Pond	2.51	1992	18-May
Wally Toevs Pond	2.32	1992	23-Jun
Wally Toevs Pond	2.1	1992	8-Jul
Wally Toevs Pond	1.57	1992	13-Aug
Wally Toevs Pond	1.1	1993	5-Jan
Wally Toevs Pond	1.55	1993	13-Apr
Wally Toevs Pond	1.43	1993	7-Jun
Wally Toevs Pond	1.05	1993	29-Sep
Wally Toevs Pond	3.15	1994	20-Apr
Wally Toevs Pond	2.5	1994	12-May
Wally Toevs Pond	2.59	1994	16-May
Wally Toevs Pond	2.58	1994	25-May
Wally Toevs Pond	2.62	1994	3-Jun
Wally Toevs Pond	2.55	1994	14-Jun
Wally Toevs Pond	2.41	1994	1-Jul
Wally Toevs Pond	2.23	1994	12-Jul
Wally Toevs Pond	2.06	1994	29-Jul
Wally Toevs Pond	1.95	1994	10-Aug
Wally Toevs Pond	1.99	1994	23-Aug
Wally Toevs Pond	1.68	1994	6-Oct
Wally Toevs Pond	1.74	1994	16-Nov
Wally Toevs Pond	1.76	1994	5-Dec
Wally Toevs Pond	1.92	1995	30-Jan
Wally Toevs Pond	2.02	1995	13-Mar
Wally Toevs Pond	2.19	1995	28-Apr
Wally Toevs Pond	2.38	1995	15-May
Wally Toevs Pond	2.66	1995	18-May
Wally Toevs Pond	2.7	1995	26-May
Wally Toevs Pond	3.28	1995	31-May
Wally Toevs Pond	0.62	2000	27-Apr
Wally Toevs Pond	0.62	2000	28-Apr
Wally Toevs Pond	0.42	2000	7-Jun
Wally Toevs Pond	3.38	2006	30-Jun
Wally Toevs Pond	3.53	2006	11-Jul
Wally Toevs Pond	3.20	2006	2-Aug
Wally Toevs Pond	2.72	2006	6-Oct
Wally Toevs Pond	3.38	2007	12-Mar
Wally Toevs Pond	3.37	2007	21-Mar
Wally Toevs Pond	3.48	2007	26-Mar
Wally Toevs Pond	3.50	2007	23-Apr
Wally Toevs Pond	3.65	2007	25-Apr
Wally Toevs Pond	3.72	2007	8-May
Wally Toevs Pond	3.70	2007	15-May
Wally Toevs Pond	3.64	2007	12-Jun
Wally Toevs Pond	2.93	2007	25-Sep
Wally Toevs Pond	2.84	2007	7-Oct

Wally Toevs Pond	2.86	2007	5-Nov
Wally Toevs Pond	3.02	2008	10-Mar
Wally Toevs Pond	2.98	2008	31-Mar
Wally Toevs Pond	2.77	2008	2-May
Wally Toevs Pond	2.44	2008	24-Jun
Wally Toevs Pond	2.35	2008	30-Jun
Wally Toevs Pond	2.25	2008	10-Jul
Wally Toevs Pond	2.13	2008	18-Jul
Wally Toevs Pond	2.06	2008	23-Jul
Wally Toevs Pond	1.94	2008	30-Jul
Wally Toevs Pond	1.86	2008	7-Aug
Wally Toevs Pond	1.82	2008	11-Aug
Wally Toevs Pond	1.98	2008	18-Aug
Wally Toevs Pond	1.92	2008	27-Aug
Wally Toevs Pond	1.88	2008	2-Sep
Wally Toevs Pond	1.85	2008	9-Sep
Wally Toevs Pond	1.97	2008	15-Sep
Wally Toevs Pond	1.95	2008	22-Sep
Wally Toevs Pond	1.92	2008	29-Sep
Wally Toevs Pond	1.90	2008	7-Oct
Wally Toevs Pond	1.93	2008	13-Oct
Wally Toevs Pond	1.93	2008	20-Oct
Wally Toevs Pond	1.92	2008	3-Nov
Wally Toevs Pond	1.91	2008	10-Nov
Wally Toevs Pond	1.91	2008	17-Nov
Wally Toevs Pond	1.92	2008	24-Nov
Wally Toevs Pond	2.52	2009	22-Jun
Wally Toevs Pond	5.45	2009	22-Jul
Wally Toevs Pond	5.38	2009	28-Jul
Wally Toevs Pond	5.39	2009	3-Aug
Wally Toevs Pond	5.31	2009	11-Aug
Wally Toevs Pond	5.29	2009	18-Aug
Wally Toevs Pond	5.28	2009	25-Aug
Wally Toevs Pond	5.27	2009	3-Sep
Wally Toevs Pond	5.23	2009	8-Sep
Wally Toevs Pond	5.2	2009	15-Sep
Wally Toevs Pond	5.16	2009	21-Sep
Wally Toevs Pond	5.13	2009	29-Sep
Wally Toevs Pond	5.08	2009	6-Oct
Wally Toevs Pond	5.08	2009	13-Oct
Wally Toevs Pond	5.1	2009	22-Oct
Wally Toevs Pond	5.24	2009	2-Nov
Wally Toevs Pond	5.23	2009	11-Nov
Wally Toevs Pond	5.3	2009	16-Nov
Wally Toevs Pond	5.28	2009	24-Nov
Wally Toevs Pond	5.29	2009	3-Dec
Wally Toevs Pond	5.35	2009	7-Dec
Wally Toevs Pond	5.39	2009	15-Dec
Wally Toevs Pond	5.3	2010	1-Feb

Wally Toevs Pond	5.38	2010	10-Feb
Wally Toevs Pond	5.31	2010	17-Feb
Wally Toevs Pond	5.26	2010	22-Feb
Wally Toevs Pond	5.32	2010	5-Mar
Wally Toevs Pond	5.35	2010	10-Mar
Wally Toevs Pond	5.33	2010	16-Mar
Wally Toevs Pond	5.38	2010	23-Mar

**Walden Ponds Wildlife Habitat
Monitoring Well Data**

Date	Well 1 - Depth to Groundwater (feet)	Well 2 - Depth to Groundwater (feet)	Well 3 - Depth to Groundwater (feet)
8/20/01	7.1	13.15	9.4
9/5/01	7.4	13.3	9.65
9/19/01	7.4	13.2	9.7
10/3/01	7.45	13.22	9.75
10/17/01	7.5	13.2	9.8
10/31/01	7.54	13.15	9.85
11/14/01	7.53	13.14	9.85
11/28/01	7.55	13.1	9.8
2/7/02	NA	NA	9.6
3/6/02	7.49	12.45	9.65
3/26/02	7.46	12.38	9.63
4/12/02	7.36	12.38	9.51
6/24/08	7.27	12.83	NA*
6/30/08	7.37	13.12	NA
7/10/08	7.50	13.43	NA
7/18/08	7.66	13.42	NA
7/23/08	7.67	13.66	NA
7/30/08	7.81	13.71	NA
8/7/08	7.91	13.77	NA
8/11/08	7.92	13.92	NA
8/18/08	7.38	13.87	NA
8/27/08	7.68	13.73	NA
9/2/08	7.73	13.87	NA
9/15/08	7.68	13.88	NA
9/22/08	7.71	13.62	NA
9/29/08	7.68	13.87	NA
10/7/08	7.84	13.84	NA
10/13/08	7.81	13.79	NA
10/20/08	7.81	13.78	NA
11/3/08	7.83	13.78	NA
11/10/08	7.81	13.76	NA
11/17/08	7.82	13.79	NA
11/24/08	7.86	13.78	NA

Note: 2001-2002 data collected Ayers Associates (Ayers Associates 2002)
2008 data collected by POS

* Well 3 could not be located after 2002, likely covered by spoils.

Well 1 – Located at northeast corner of Cottonwood Marsh (northwest corner of Wally Toevs Pond) along north property boundary.

Well 2 – Located along levee (trail) between Bass Pond and Cottonwood Marsh approximately 450 feet south of north property boundary line.

Well 3 – Located south of Ricky Weiser Wetland along property boundary with Sawhill Ponds approximately 700 feet east of west property boundary line.

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Appendix E

Plant List
Walden Ponds Wildlife Habitat

Genus	Species	Common Name	Life Form	Native / Introduced	Wetland Indicator	State Noxious Weed List
Acosta	diffusa	tumble knapweed	Forb	Introduced		B list
Adenolinum	lewisii	flax	Forb	Native		
Ambrosia	psilostachya	ragweed	Forb	Native	FAC	
Apocynum	cannabinum	indian hemp	Forb	Introduced	FAC	
Arctium	minus	bur-dock	Forb	Introduced		C list
Argemone	polyanthemos	prickly poppy	Forb	Native		
Artemisia	ludoviciana	white sage	Forb	Native		
Asclepias	speciosa	showy milkweed	Forb	Native	FAC	
Asclepias	incarnata	milkweed sp.	Forb	Native	OBL	
Asparagus	officinalis	wild asparagus	Forb	Introduced	FACU-	
Aster	laevis	smooth aster	Forb		NI	
Bassia	sieversiana	kochia	Forb	Introduced		
Breca	arvensis	Canada thistle	Forb	Introduced	FACU	B list
Cardaria	draba	Whitetop	Forb	Introduced	NL	0
Carduus	nutans	musk thistle	Forb		NL	B list
Carum	carvi	Caraway	Forb	Introduced		
Chamaesyce	serpyllifolia	thyme-leaf sandmat	Forb	Introduced		
Chenopodium	berlandieri	Goosefoot	Forb	Native		
Chenopodium	album	lamb's quarters	Forb	Introduced	FAC	
Cichorium	intybus	wild chicory	Forb	Introduced		C list
Cirsium	vulgare	bull thistle	Forb	Introduced		B list
Convolvulus	arvensis	bindweed	Forb	Introduced	NL	C list
Conyza	canadensis	horseweed	Forb	Introduced	FACU-	
Cynoglossum	officinale	hound's tongue	Forb	Introduced		B list
Descurainia	sophia	tansy mustard	Forb	Introduced		
Dipsacus	fullonum	teasel	Forb	Introduced		B list
Dyssodia	papposa	fetid marigold	Forb	Native		
Epilobium	ciliatum	hairy willow-herb	Forb	Native	OBL	
Erodium	cicutarium	crane's bill/redstem filaree	Forb	Introduced		B list
Gaura	mollis	velvetweed	Forb	Native		
Geum	aleppicum	Yellow avens	Forb	Native		
Glycyrrhiza	lepidota	wild licorice	Forb	Native	FACU	
Grindelia	squarrosa	gumweed	Forb	Native	FACU-	
Helianthus	annuus	common sunflower	Forb	Native		
Helianthus	nuttallii	Nuttall's sunflower	Forb	Native		
Lactuca	serriola	prickly lettuce	Forb	Introduced	FAC	
Liatris	punctata	gayfeather	Forb	Native		
Linaria	vulgaris	yellow toadflax	Forb	Introduced		B list
Lysimachia	ciliata	Loosestrife	Forb	Native		
Malva	neglecta	cheeseweed	Forb	Introduced		
Marrubium	vulgare	horehound	Forb	Introduced		
Medicago	sativa	alfalfa	Forb	Introduced		
Medicago	lupulina	black medic	Forb	Introduced		
Melilotus	albus	sweet clover	Forb	Introduced		
Melilotus	officinale	sweet pea	Forb	Introduced		
Mentha	piperita	peppermint	Forb	Introduced	OBL	
Neolepia	campestris	fieldcress	Forb	Introduced		
Nepeta	cataria	catnip	Forb	Introduced	FACU	
Nuttallia	nuda	blazingstar	Forb	Native		
Oligosporus	dracunculus	wild tarragon	Forb			
Oxalis	stricta	common yellow oxalis	Forb			
Persicaria	maculata	spotted ladysthumb	Forb	Introduced	OBL	

Plant List
Walden Ponds Wildlife Habitat

Genus	Species	Common Name	Life Form	Native / Introduced	Wetland Indicator	State Noxious Weed List
Physalis	virginiana	groundcherry	Forb	Native		
Plantago	patagonica	woolly plantain	Forb	Native		
Plantago	major	common plantain	Forb	Introduced	FAC	
Plantago	lanceolata	narrowleaf plantain	Forb	Introduced	FAC	
Polanisia	dodecandra	clammyweed	Forb	Native		
Polygonum	arenastrum	oval-leaf knotweed	Forb	Introduced	FACW	
Potentilla	recta	sulfur cinquefoil	Forb	Introduced	NL	B list
Ratibida	columnifera	prairie coneflower	Forb	Native		
Rumex	crispus	curly dock	Forb	Introduced	FACW	
Salsola	australis	Russian-thistle	Forb	Introduced		
Saponaria	officinalis	soapwort/Bouncingbet	Forb	Introduced		B list
Senecio	spartioides	butterweed	Forb	Native		
Sisymbrium	altissimum	tumble mustard	Forb	Introduced		
Sisymbrium	officinale	Jim Hill mustard	Forb			
Solanum	rostratum	buffalo-burr	Forb	Introduced		
Solanum	triflorum	cutleaf nightshade	Forb	Introduced		
Solidago	canadensis	Canada goldenrod	Forb	Native	FACU	
Solidago	sp.	goldenrod	Forb			
Taraxacum	officinale	dandelion	Forb	Introduced		
Thlaspi	arvense	pennycress	Forb	Introduced		
Tragopogon	dubius	salsify	Forb			
Trifolium	pratense	red clover	Forb	Introduced	FACU	
Trifolium	repens	white Dutch clover	Forb	Introduced	FACU	
Typha	latifolia	broad-leaved cattail	Forb	Native	OBL	
Typha	angustifolia	cattail	Forb	Introduced	OBL	
Verbascum	blattaria	moth mullein	Forb	Introduced		B list
Verbascum	thapsus	woolly mullein	Forb	Introduced		
Verbena	bracteata	vervain	Forb	Introduced		
Veronica	americana	American speedwell	Forb	Native	OBL	
Virgulus	ericoides	white woody aster	Forb	Native		
Agropyron	desertorum	crested wheatgrass	Graminoid	Introduced		
Agrostis	gigantea	redtop	Graminoid	Introduced	FACW	
Andropogon	gerardii	big bluestem	Graminoid	Native		
Anisantha	tectorum	cheat grass	Graminoid	Introduced		C list
Aristida	purpurea	three-awn	Graminoid	Native		
Bolboschoenus	maritimus	river bulrush	Graminoid	Native		
Bouteloua	curtipendula	sideoats grama	Graminoid	Native		
Bromopsis	inermis	smooth brome	Graminoid	Introduced	FACU	
Bromus	japonicus	Japanese brome	Graminoid	Introduced		
Buchloe	dactyloides	buffalograss	Graminoid	Native		
Carex	lanuginosa	American woollyfruit sedge	Graminoid	Native	OBL	
Carex	emoryi	Emory's sedge	Graminoid	Native	OBL	
Carex	praegracilis	clustered field sedge	Graminoid		FACW	
Chondrosum	gracile	blue grama	Graminoid	Native		
Critesion	jubatatum	foxtail barley	Graminoid	Native	FACW	
Dactylis	glomerata	orchardgrass	Graminoid	Introduced	FACU	
Eleocharis	palustris	Spikerush	Graminoid	Native		
Elymus	canadensis	Canada wildrye	Graminoid	Native		
Elytrigia	repens	quackgrass	Graminoid	Introduced	FAC	B list
Hesperostipa	comata	needle and thread	Graminoid	Native		
Juncus	arcticus	baltic rush	Graminoid	Native	FACW	
Juncus	torreyi	Torrey's rush	Graminoid	Native	FACW	

Plant List
Walden Ponds Wildlife Habitat

Genus	Species	Common Name	Life Form	Native / Introduced	Wetland Indicator	State Noxious Weed List
Juncus	dudleyi	Dudley's rush	Graminoid	Native	NI	
Juncus	tracyi	Tracy's rush	Graminoid	Native		
Panicum	virgatum	switchgrass	Graminoid	Native	FAC	
Panicum	capillare	witchgrass	Graminoid	Introduced	FAC	
Pascopyrum	smithii	western wheatgrass	Graminoid	Native	FACU	
Phalaroides	arundinacea	reed canary grass	Graminoid	Introduced	FACW+	
Poa	compressa	Canada bluegrass - alien	Graminoid	Introduced	FACU	
Poa	pratensis	Kentucky bluegrass - alien	Graminoid	Introduced	FACU	
Polypogon	monspeliensis	rabbitfootgrass	Graminoid	Introduced	OBL	
Schoenoplectus	pungens	threesquare bulrush	Graminoid	Native	OBL	
Sorghastrum	avenaceum	yellow indian-grass	Graminoid			
Sporobolus	cryptandrus	sand dropseed	Graminoid	Native		
Thinopyrum	ponticum	tall wheatgrass	Graminoid	Introduced	NL	
Thinopyrum	intermedium	intermediate wheatgrass	Graminoid	Introduced		
Chrysothamnus	nauseosus	Rabbitbrush	Shrub			
Juniperus	communis	common juniper	Shrub	Introduced		
Prunus	americana	plum	Shrub	Native	UPL	
Prunus	sp.	plum	Shrub			
Ribes	aureum	golden currant	Shrub	Native		
Salix	exigua	sandbar willow	Shrub	Native	OBL	
Symphoricarpos	occidentalis	snowberry	Shrub	Native	FACU	
Heterotheca	villosa	hairy false golden aster	Subshrub	Native		
Opuntia	macrorhiza	twistspine prickly pear	Subshrub	Native		
Rosa	arkansana	prairie rose	Subshrub	Native		
Elaeagnus	angustifolia	Russian olive	Tree	Introduced	FAC	B list
Fraxinus	pensylvanica	ash	Tree	Introduced		
Malus	domestica	Cultivated apple	Tree	Introduced		
Populus	x acuminata	lanceleaf cottonwood	Tree	Native	FAC	
Populus	deltoides	plains cottonwood	Tree	Native	FAC	
Robinia	pseudoacacia	black locust	Tree	Introduced		
Sabina	monosperma	Oneseed juniper	Tree	Native		
Sabina	scopulorum	Rocky Mtn. juniper	Tree	Native		
Salix	amygdaloides	peachleaf willow	Tree	Native	FACW	
Salix	fragilis	crackwillow	Tree	Introduced	FAC	
Ulmus	pumila	Chinese elm	Tree	Introduced	UPL	
Clematis	ligusticifolia	virgin's bower	Vine	Native	FACU	
Amaranthus	retroflexus					
Caragana	arborescens					
Cardaria	latifolia					
Carex	leptalia					
Cuscuta	epithymum					
Euthamia	occidentalis					
Lepidium	virginicum					
Mentha	Spicata					
Mirabilis	oxybaphoides					
Opuntia	fragilis					
Schoenoplectus	lacustris					
Sonchus	oleraceus					
Syringa	vulgaris					
Tamarix	ramosissima					
Tribulus	terrestris					

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Appendix F

Walden Ponds Wildlife Habitat
2010 Bird List

Group	Common Name	Scientific Name	Season	Occurrence	Federal	State	USFS / BLM	CNHP	BCNA	Partners in Flight
Loons, Grebes and Pelicans										
	Common Loon	<i>Gavia immer</i>	W	R						
	Pacific Loon	<i>Gavia pacifica</i>	W	R						
	Pied-billed Grebe	<i>Podilymbus podiceps</i>	Y	F						
	Horned Grebe	<i>Podiceps auritus</i>	M	U						
	Eared Grebe	<i>Podiceps nigricollis</i>	M	U					1	
	Western Grebe	<i>Aechmophorus occidentalis</i>	Y	U						
	Clark's Grebe	<i>Aechmophorus clarkii</i>	M	R						
	American White Pelican	<i>Pelecanus erythrorhynchos</i>	S	C			BLM	S1B		
Cormorants, Herons & Ibis										
	Double-crested Cormorant	<i>Phalacrocorax auritus</i>	S	F					4	
	American Bittern	<i>Botaurus lentiginosus</i>	S	U			USFS		1,4	
	Least Bittern	<i>Ixobrychus exilis</i>	S	R					3,4	
	Great Egret	<i>Ardea alba</i>	S	U					3,4	
	Snowy Egret	<i>Egretta thula</i>	M	R				S2B		
	Black Crowned Night-Heron	<i>Nycticorax nycticorax</i>	S	C					4	
	White-faced Ibis	<i>Plegadis chibi</i>	M	U			BLM	S2B		
	Great Blue Heron	<i>Ardea herodias</i>	Y	C					4	
	Little Blue Heron	<i>Egretta caerulea</i>	M	R						
	Green Heron	<i>Butorides virescens</i>	S	R						
	Cattle Egret	<i>Bubulcus ibis</i>	W	R						
Swans and Geese										
	Tundra Swan	<i>Cygnus columbianus</i>	M	R						
	Trumpeter Swan	<i>Cygnus buccinator</i>	M	R			USFS			
	Canada Goose	<i>Branta canadensis</i>	Y	C						
	Snow Goose	<i>Chen caerulescens</i>	M	R						
	Greater White-fronted Goose	<i>Anser albifrons</i>	M	R						
Surface Ducks										
	Mallard	<i>Anas platyrhynchos</i>	Y	C						
	Green-winged Teal	<i>Anas crecca</i>	Y	C						
	Wood Duck	<i>Aix sponsa</i>	S	U					4	
	Blue-Winged Teal	<i>Anas discors</i>	S	F						
	Cinnamon Teal	<i>Anas cyanoptera</i>	S	F						
	Northern Pintail	<i>Anas acuta</i>	Y	F						
	Northern Shoveler	<i>Anas clypeata</i>	Y	F						
	Gadwall	<i>Anas strepera</i>	W	F						
	American Wigeon	<i>Anas americana</i>	Y	C						
Diving Ducks										
	Canvasback	<i>Aythya valisineria</i>	W	U						
	Redhead	<i>Aythya americana</i>	M	F						
	Ring-necked Duck	<i>Aythya collaris</i>	M	C					4	
	Lesser Scaup	<i>Aythya affinis</i>	M	F						

Walden Ponds Wildlife Habitat
2010 Bird List

Group	Common Name	Scientific Name	Season	Occurrence	Federal	State	USFS / BLM	CNHP	BCNA	Partners in Flight
	Greater Scaup	<i>Aythya marila</i>	M	R						
	Common Goldeneye	<i>Bucephala clangula</i>	W	F						
	Barrow's Goldeneye	<i>Bucephala islandica</i>	W	R			BLM	S2B	6	
	Bufflehead	<i>Bucephala albeola</i>	W	F						
	Common Merganser	<i>Mergus merganser</i>	W	F						
	Hooded Merganser	<i>Lophodytes cucullatus</i>	W	F						
	Red-breasted Merganser	<i>Mergus serrator</i>	W	R						
	Ruddy Duck	<i>Oxyura jamaicensis</i>	M	U						
Diurnal Raptors										
	Turkey Vulture	<i>Cathartes aura</i>	S	F						
	Osprey	<i>Pandion haliaetus</i>	S	F					3,5	
	Northern Harrier	<i>Circus cyaneus</i>	Y	U			USFS		1,4	II
	Bald Eagle	<i>Haliaeetus leucocephalus</i>	Y	U		ST	USFS	S1B, S3N		
	Golden Eagle	<i>Aquila chrysaetos</i>	Y	U					4	
	Sharp-shinned Hawk	<i>Accipiter striatus</i>	Y	U						
	Cooper's Hawk	<i>Accipiter cooperii</i>	Y	U						
	Red-tailed Hawk	<i>Buteo jamaicensis</i>	Y	F						
	Swainson's Hawk	<i>Buteo swainsoni</i>	S	U					4	I
	Rough-legged Hawk	<i>Buteo lagopus</i>	W	R						
	Ferruginous Hawk	<i>Buteo regalis</i>	W	U		SC	USFS/BLM	S3B, S4N	4,W	I
	Merlin	<i>Falco columbarius</i>	W	U						
	American Kestrel	<i>Falco sparverius</i>	Y	C						
	Prairie Falcon	<i>Falco mexicanus</i>	W	U				S4B, S4N	4	VII
	Peregrine Falcon	<i>Falco peregrinus</i>	Y	U		SC	USFS	S2B	3,4	
Pheasants and Relatives										
	Ring-necked Pheasant (I)	<i>Phasianus colchicus</i>	Y	U						
Rails, Coots and Cranes										
	Virginia Rail	<i>Rallus limicola</i>	Y	U						
	Sora	<i>Porzana carolina</i>	S	U						
	American Coot	<i>Fulica americana</i>	Y	C						
	Sandhill Crane	<i>Grus canadensis</i>	M	R		SC		S2B, S4N		
Shorebirds										
	Semipalmated Sandpiper	<i>Calidris pusilla</i>	M	U						
	Killdeer	<i>Charadrius vociferus</i>	Y	C						
	American Avocet	<i>Recurvirostra americana</i>	S	F						
	Black-necked Stilt	<i>Himantopus mexicanus</i>	S	U				S3B		
	Greater Yellowlegs	<i>Tringa melanolenca</i>	M	F						
	Lesser Yellowlegs	<i>Tringa flavipes</i>	M	F						
	Willet	<i>Tringa semipalmata</i>	M	U				S1B		
	Spotted Sandpiper	<i>Actitis macularius</i>	S	F						
	Semipalmated Plover	<i>Charadrius semipalmatus</i>	M	R						
	Solitary Sandpiper	<i>Tringa solitaria</i>	M	R						

Walden Ponds Wildlife Habitat
2010 Bird List

Group	Common Name	Scientific Name	Season	Occurrence	Federal	State	USFS / BLM	CNHP	BCNA	Partners in Flight
	Marbled Godwit	<i>Limosa fedoa</i>	M	R						
	Whimbrel	<i>Numenius phaeopus</i>	M	R						
	Least Sandpiper	<i>Calidris minutilla</i>	M	U						
	White-rumped Sandpiper	<i>Calidris fuscicollis</i>	M	R						
	Baird's Sandpiper	<i>Calidris bairdii</i>	M	F						
	Pectoral Sandpiper	<i>Calidris melanotos</i>	M	R						
	Stilt Sandpiper	<i>Calidris himantopus</i>	M	U						
	Western Sandpiper	<i>Calidris mauri</i>	M	R						
	Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	M	F						
	Short-billed Dowitcher	<i>Limnodromus griseus</i>	M	U						
	Wilson's Snipe	<i>Gallinago delicata</i>	Y	F						
	Wilson's Phalarope	<i>Phalaropus tricolor</i>	S	F				S4B, S4N		
	Red-necked Phalarope	<i>Phalaropus lobatus</i>	M	R						
Gulls & Terns										
	Franklin's Gull	<i>Leucophaeus pipixcan</i>	M	F						
	Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>	M	R						
	Ring-Billed Gull	<i>Larus delawarensis</i>	Y	C						
	Herring Gull	<i>Larus argentatus</i>	W	F						
	California Gull	<i>Larus californicus</i>	S	F						
	Mew Gull	<i>Larus canus</i>	M	R						
	Thayer's Gull	<i>Larus thayeri</i>	M	R						
	Glaucous Gull	<i>Larus hyperboreus</i>	M	R						
	Lesser Black-backed Gull	<i>Larus fuscus</i>	M	R						
	Forster's Tern	<i>Sterna forsteri</i>	S	U				S2B, S4N		
	Black Tern	<i>Chlidonias niger</i>	M	U			USFS / BLM			
	Least Tern	<i>Sternula antillarum</i>	S	R	FE	SE		S1B		VI
	Caspian Tern	<i>Hydroprogne caspia</i>	M	R						
Doves & Cuckoos										
	Rock Pigeon (I)	<i>Columba livia</i>	Y	C						
	Mourning Dove	<i>Zenaida macroura</i>	S	C						
	Eurasian Collared Dove (I)	<i>Streptopelia decaocto</i>	S	R						
	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	S	R						
Owls										
	Barn Owl	<i>Tyto alba</i>	Y	R					3	
	Eastern Screech Owl	<i>Megascops asio</i>	Y	F						
	Great Horned Owl	<i>Bubo virginianus</i>	Y	F						
	Long-eared Owl	<i>Asio otus</i>	Y	R					1	
	Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Y	R						
Goatsuckers										
	Common Nighthawk	<i>Chordeiles minor</i>	S	U						
Hummingbirds & Kingfishers										
	Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	M	U						

Walden Ponds Wildlife Habitat
2010 Bird List

Group	Common Name	Scientific Name	Season	Occurrence	Federal	State	USFS / BLM	CNHP	BCNA	Partners in Flight
	Belted Kingfisher	<i>Megasceryle alcyon</i>	Y	C						
Woodpeckers										
	Lewis' Woodpecker	<i>Melanerpes lewis</i>	S	R			USFS	S4	1,4	I
	Downy Woodpecker	<i>Picoides pubescens</i>	Y	C						
	Hairy Woodpecker	<i>Picoides villosus</i>	Y	U						
	Northern Flicker	<i>Colaptes auratus</i>	Y	C						
Flycatchers										
	Western Wood-Pewee	<i>Contopus sordidulus</i>	S	F						
	Eastern Wood-Pewee	<i>Contopus virens</i>	S	R						
	Willow Flycatcher	<i>Empidonax traillii</i>	M	R				S4	2,4	
	Olive-sided Flycatcher	<i>Contopus cooperi</i>	M	R			USFS		4	
	Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	M	R						
	Say's Phoebe	<i>Sayornis saya</i>	S	U						
	Western Kingbird	<i>Tyrannus verticalis</i>	S	F						
	Eastern Kingbird	<i>Tyrannus tyrannus</i>	S	C						
Vireos										
	Warbling Vireo	<i>Vireo gilvus</i>	M	U						
	Plumbeous Vireo	<i>Vireo plumbeus</i>	M	R						
Larks and Swallows										
	Horned Lark	<i>Eremophila alpestris</i>	W	U						
	Tree Swallow	<i>Tachycineta bicolor</i>	S	C						
	Violet-green Swallow	<i>Tachycineta thalassina</i>	S	F						
	Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	S	C						
	Bank Swallow	<i>Riparia riparia</i>	S	F					3,4	
	Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	S	F						
	Barn Swallow	<i>Hirundo rustica</i>	S	C						
Jays, Crows & Magpies										
	Steller's Jay	<i>Cyanocitta stelleri</i>	Y	U						
	Western Scrub-Jay	<i>Abelocoma californica</i>	Y	R					4	
	Black-billed Magpie	<i>Pica hudsonia</i>	Y	C						
	American Crow	<i>Corvus brachyrhynchos</i>	Y	F						
	Common Raven	<i>Corvus corax</i>	Y	U						
Titmice and Relatives										
	Black-capped Chickadee	<i>Poecile atricapillus</i>	Y	C						
	Mountain Chickadee	<i>Poecile gambeli</i>	W	U						
	White-breasted Nuthatch	<i>Sitta carolinensis</i>	Y	U						
	Red-breasted Nuthatch	<i>Sitta canadensis</i>	W	U						
	Bushtit	<i>Psaltriparus minimus</i>	W	U					4	
	Brown Creeper	<i>Certhia americana</i>	W	U						
Wrens										
	House Wren	<i>Troglodytes aedon</i>	S	C						
	Winter Wren	<i>Troglodytes troglodytes</i>	W	R						

Walden Ponds Wildlife Habitat
2010 Bird List

Group	Common Name	Scientific Name	Season	Occurrence	Federal	State	USFS / BLM	CNHP	BCNA	Partners in Flight
	Marsh Wren	<i>Cistothorus palustris</i>	M	R						
	Rock Wren	<i>Salpinctes obsoletus</i>	S	U						
Dippers, Kinglets & Gnatcatchers										
	American Dipper	<i>Cinclus mexicanus</i>	W	U					4,W	
	Golden-crowned Kinglet	<i>Regulus satrapa</i>	W	R					4	
	Ruby-crowned Kinglet	<i>Regulus calendula</i>	W	U						
	Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	S	R						
Thrushes										
	Mountain Bluebird	<i>Sialia currucoides</i>	M	C						
	Western Bluebird	<i>Sialia mexicana</i>	M	U						
	Eastern Bluebird	<i>Sialia sialis</i>	S	R						
	Townsend's Solitaire	<i>Myadestes townsendi</i>	Y	U						
	Veery	<i>Catbarus fuscescens</i>	M	R				S3B	3	
	Swainson's Thrush	<i>Catbarus ustulatus</i>	M	U						
	Hermit Thrush	<i>Catbarus guttatus</i>	M	R						
	American Robin	<i>Turdus migratorius</i>	Y	C						
Mockingbirds										
	Northern Mockingbird	<i>Mimus polyglottos</i>	M	R					3,4	
	Gray Catbird	<i>Dumetella carolinensis</i>	S	R						
	Sage Thrasher	<i>Oreoscoptes montanus</i>	S	R					3,4	
Pipits and Waxwings & Shrikes										
	American Pipit	<i>Anthus rubescens</i>	S	U						
	Bohemian Waxwing	<i>Bombycilla garrulus</i>	W	U						
	Cedar Waxwing	<i>Bombycilla cedrorum</i>	W	U					4	
	Loggerhead Shrike	<i>Lanius ludovicianus</i>	S	R			USFS		1,4	
	Northern Shrike	<i>Lanius excubitor</i>	W	U						
Starlings										
	European Starling (I)	<i>Sturnus vulgaris</i>	Y	C						
Warblers										
	Bay-breasted Warbler	<i>Dendroica castanea</i>	M	R						
	Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	M	R						
	Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	M	R						
	Black and White Warbler	<i>Mniotilta varia</i>	M	U						
	Blackpoll Warbler	<i>Dendroica striata</i>	M	R						
	Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	M	R						
	MacGillivray's Warbler	<i>Oporornis tolmiei</i>	M	U						
	Nashville Warbler	<i>Vermivora ruficapilla</i>	M	U						
	Orange-crowned Warbler	<i>Vermivora celata</i>	M	F						
	Palm Warbler	<i>Dendroica palmarum</i>	M	R						
	Tennessee Warbler	<i>Vermivora peregrina</i>	M	U						
	Townsend's Warbler	<i>Dendroica townsendi</i>	M	U						
	Virginia's Warbler	<i>Vermivora virginiae</i>	M	F						

Walden Ponds Wildlife Habitat
2010 Bird List

Group	Common Name	Scientific Name	Season	Occurrence	Federal	State	USFS / BLM	CNHP	BCNA	Partners in Flight
	Yellow Warbler	<i>Dendroica petechia</i>	S	F						
	Yellow-rumped Warbler	<i>Dendroica coronata</i>	M	C						
	Wilson's Warbler	<i>Wilsonia pusilla</i>	M	F						
	Northern Parula	<i>Parula americana</i>	M	R						
	American Redstart	<i>Setophaga ruticilla</i>	M	U					3	
	Common Yellowthroat	<i>Geothlypis trichas</i>	S	C						
	Yellow-breasted Chat	<i>Icteria virens</i>	M	U						
Tanagers, Grosbeaks and Buntings										
	Western Tanager	<i>Piranga ludoviciana</i>	M	F						
	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	M	R						
	Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	M	U						
	Indigo Bunting	<i>Passerina cyanea</i>	M	R						
	Lazuli Bunting	<i>Passerina amoena</i>	M	U						
Towhees										
	Spotted Towhee	<i>Pipilo maculatus</i>	Y	U						
	Green-tailed Towhee	<i>Pipilo chlorurus</i>	M	U						
Sparrows										
	American Tree Sparrow	<i>Spizella arborea</i>	W	C						
	Chipping Sparrow	<i>Spizella passerina</i>	S	C						
	Brewer's Sparrow	<i>Spizella breweri</i>	S	U			USFS			
	Lark Sparrow	<i>Chondestes grammacus</i>	S	F						
	Lincoln's Sparrow	<i>Melospiza lincolni</i>	M	R						
	Lark Bunting	<i>Calamospiza melanocorys</i>	S	R					1	I
	Savannah Sparrow	<i>Passerculus sandwichensis</i>	S	R					4	
	Swamp Sparrow	<i>Melospiza georgiana</i>	M	R						
	Fox Sparrow	<i>Passerella iliaca</i>	M	R					4	
	Song Sparrow	<i>Melospiza melodia</i>	Y	C						
	Vesper Sparrow	<i>Pooecetes gramineus</i>	M	U						
	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	W	F						
	White-throated Sparrow	<i>Zonotrichia albicollis</i>	W	U						
	Harris's Sparrow	<i>Zonotrichia querula</i>	W	U						
	Dark-eyed Junco	<i>Junco hyemalis</i>	W	F						
Blackbirds & Orioles										
	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Y	C						
	Western Meadowlark	<i>Sturnella neglecta</i>	Y	C						
	Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	S	C					4	
	Rusty Blackbird	<i>Euphagus carolinus</i>	W	R						
	Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	S	F						
	Common Grackle	<i>Quiscalus quiscula</i>	S	C						
	Great-tailed Grackle	<i>Quiscalus mexicanus</i>	Y	U						
	Brown-headed Cowbird	<i>Molothrus ater</i>	S	F						
	Bullock's Oriole	<i>Icterus bullockii</i>	S	F						

Walden Ponds Wildlife Habitat
2010 Bird List

Group	Common Name	Scientific Name	Season	Occurrence	Federal	State	USFS / BLM	CNHP	BCNA	Partners in Flight
	Baltimore Oriole	<i>Icterus galbula</i>	S	F						
	Orchard Oriole	<i>Icterus spurius</i>	S	R						
Finches										
	House Finch	<i>Carpodacus mexicanus</i>	Y	C						
	Pine Siskin	<i>Spinus pinus</i>	W	U						
	Lesser Goldfinch	<i>Spinus psaltria</i>	M	U						
	American Goldfinch	<i>Spinus tristis</i>	Y	F						
	Evening Grosbeak	<i>Coccothraustes vespertinus</i>	W	U						
Weaver Finches										
	House Sparrow (I)	<i>Passer domesticus</i>	Y	U						
Incidentals										
	Tufted Duck	<i>Aythya fuligula</i>								
	Eastern Wood-Pewee	<i>Contopus virens</i>								
	Sanderling	<i>Calidris alba</i>								
	Vermillion Flycatcher	<i>Pyrocephalus rubinus</i>								
	Brown Thrasher	<i>Toxostoma rufum</i>								
	Black-throated Sparrow	<i>Amphispiza bilineata</i>								
	Sage Sparrow	<i>Amphispiza belli</i>								

LEGEND

W = Winter	M = Migrant	U = Uncommon
G = Spring	Y = All Year Resident	R = Rare
S = Summer	C = Common	I = Introduced
F = Fall	F = Fairly Common	

Common Names in Bold = BCNA Species of Primary Concern

	Common Name	Scientific Name
Sunfish	Largemouth Bass	<i>Micropterus salmoides</i>
	Smallmouth Bass	<i>Micropterus dolomieu</i>
	Bluegill	<i>Lepomis macrochirus</i>
	Green Sunfish	<i>Lepomis cyanellus</i>
Catfish	Channel Catfish	<i>Ictalurus punctatus</i>
	Northern Black Bullhead	<i>Ameiurus melas</i>
Trout	Rainbow Trout	<i>Oncorhynchus mykiss</i>
Suckers	Western White Sucker	<i>Catostomus commersoni</i>
Killifish	Central Plains Killifish	<i>Fundulus zebrinus</i>
Livebearers	Western Gambusia	<i>Gambusia affinis</i>

	Common Name	Scientific Name	Status
Turtles	Common Snapping Turtle	<i>Chelydra serpentina</i>	
	Western Painted Turtle	<i>Chrysemys picta</i>	S5
Toads	Woodhouse Toad	<i>Bufo woodhousii</i>	
	Plains Spadefoot Toad	<i>Spea bombifrons</i>	
Lizards	Shorthorned Lizard	<i>Phrynosoma hernandesi</i>	S5
	Prairie Lizard	<i>Sceloporus undulatus</i>	
Snakes	Racer	<i>Coluber constrictor</i>	
	Plains Garter Snake	<i>Thamnophis radix</i>	
	Western Terrestrial Garter Snake	<i>Thamnophis elegans</i>	
	Common Garter Snake	<i>Thamnophis sirtalis</i>	SC
	Bullsnake	<i>Pituophis catenifer</i>	
	Smooth Green Snake	<i>Liochlorophis vernalis</i>	
	Western Rattlesnake	<i>Crotalus viridis</i>	
	Northern Water Snake	<i>Nerodia sipedon</i>	
	Plains Black-headed Snake	<i>Tantilla nigriceps</i>	
Frogs	Western Chorus Frog	<i>Pseudacris triseriata</i>	
	Bullfrog	<i>Rana catesbeiana</i>	
	Northern Leopard Frog	<i>Rana pipiens</i>	SC, USFS, BLM, S3
Salamanders	Tiger Salamander	<i>Ambystoma tigrinum</i>	

Mammals	Common Name	Scientific Name	Status
Carnivores	Mountain Lion	<i>Felis concolor</i>	
	Black Bear	<i>Ursus americanus</i>	
	Coyote	<i>Canis latrans</i>	
	Red Fox	<i>Vulpes vulpes</i>	
	Bobcat	<i>Lynx rufus</i>	
	Striped Skunk	<i>Mephitis mephitis</i>	
	Raccoon	<i>Procyon lotor</i>	
Rodents	Muskrat	<i>Ondatra zibethicus</i>	
	American Beaver	<i>Castor canadensis</i>	
	Long-tailed Weasel	<i>Mustela frenata</i>	
	Mink	<i>Mustela vison</i>	
	Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	SC, USFS, S4
	Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>	
	Rock Squirrel	<i>Spermophilus variegatus</i>	
	Fox Squirrel	<i>Sciurus niger</i>	
	Meadow Vole	<i>Microtus pennsylvanicus</i>	
	Prairie Vole	<i>Microtus ochrogaster</i>	
	Deer Mouse	<i>Peromyscus leucopus</i>	
	Hispid Pocket Mouse	<i>Perognathus hispidus</i>	
	Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	
House Mouse	<i>Mus musculus</i>		
Northern Pocket Gopher	<i>Thomomys talpoides</i>		
Bats	Little Brown Bat	<i>Myotis lucifugus</i>	
	Long-legged Myotis	<i>Myotis volans</i>	
	Small-footed Myotis	<i>Myotis ciliolabrum</i>	
	Silver-haired Bat	<i>Lasionycteris noctivagans</i>	
	Big Brown Bat	<i>Eptesicus fuscus</i>	
	Hoary Bat	<i>Lasiurus cinereus</i>	
	Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	
Deer	White-Tailed Deer	<i>Odocoileus virginianus</i>	
	Mule Deer	<i>Odocoileus hemionus</i>	
Rabbits	Eastern Cottontail	<i>Sylvilagus floridanus</i>	
	Desert Cottontail	<i>Sylvilagus audubonii</i>	
	White-tailed Jack Rabbit	<i>Lepus townsendii</i>	

Wildlife Status Categories

Federal

Species listed under the U.S. Endangered Species Act (ESA) administered by the U.S. Fish and Wildlife Service (USFWS). A federally “endangered” species is one that is at risk of extinction throughout all or a significant portion of its range. A federally “threatened” species is one that is likely to become endangered in the foreseeable future. USFWS also maintains a list of plant and animals native to the United States that are candidates for possible addition to the Federal ESA list.

<http://www.fws.gov/mountain-prairie/endspp/CountyLists/Colorado.pdf> (Updated March 2010)

Potential Categories:

FE - Federally Endangered
FT - Federally Threatened
FC – Federal Candidate for Listing

State

Endangered and threatened species and species of special concern within the state of Colorado tracked by the Colorado Division of Wildlife (CDOW). A state “endangered” species is any species or subspecies of native wildlife whose prospects for survival or recruitment within the state are in immediate jeopardy as determined by the Colorado Wildlife Commission. A state “threatened” species is any species or subspecies of native wildlife, which, as determined by the commission, is not in immediate jeopardy of extinction, but is vulnerable because it exists in such small numbers, is so extremely restricted throughout all or a significant portion of its range in Colorado, or is experiencing such low recruitment or survival, that it may become endangered. A “species of special concern” is any species or subspecies of native wildlife, which (1) has been removed from the State threatened or endangered list within the last five years, (2) is a Federal candidate or is Federally proposed for listing, and is not already state listed, (3) the best available data indicate a 5-year or more downward trend in numbers or distribution and this decline may lead to a threatened or endangered status, or (4) is otherwise determined to be vulnerable in Colorado.

<http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/ListOfThreatenedAndEndangeredSpecies.htm> (Last Updated May 21, 2010)

Potential Categories:

SE – State Endangered
ST – State Threatened
SC – State Special Concern

USFS / BLM

U.S. Forest Service Region 2 (USFS) – Sensitive Species List administered by the USFS’s Region 2 Regional Forester under the USFS’s Rocky Mountain Region’s Species Conservation Project. Sensitive species are subject to either significant current or predicted downward trends in population numbers or density or significant current or predicted downward trends in habitat capability that would reduce a species’ existing distribution.

<http://www.fs.fed.us/r2/projects/scp/sensitivespecies/index.shtml> (Last updated June 12, 2009)

U.S. Bureau of Land Management (BLM) – The BLM State Director's sensitive species were identified using criteria found in BLM Manual 6840-Special Status Species Management Sensitive Species, and from specific written review comments received and evaluated from BLM field offices,

USFS, CDOW, and the CNHP. The following criteria were applied to only those species known to occur on BLM Colorado public lands:

1. Species under status review by the USFWS; or
2. Species with numbers declining so rapidly that federal listing may become necessary; or
3. Species with typically small and widely dispersed populations; or
4. Species inhabiting ecological refugia or other specialized or unique habitats.

http://www.blm.gov/co/st/en/BLM_Programs/botany/Sensitive_Species_List_.html

Categories:

USFS – Listed as U.S. Forest Service Sensitive Species

BLM – Listed as Bureau of Land Management Sensitive Species

CNHP

Colorado Natural Heritage Program (CNHP) – As a member of the international Natural Heritage Network governed by NatureServe, CNHP employs a standardized method for evaluating the relative imperilment of both species and ecological communities. The conservation status of a species or community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment

<http://www.cnhp.colostate.edu/download/list.asp> (Last updated January 7, 2010)

Potential Categories:

G – Global

S – Subnational (State)

T - Intraspecific Taxon (subspecies)

1 – Critically Imperiled

2 – Imperiled

3 – Vulnerable to Extirpation or Extinction

4 – Apparently Secure

5 – Demonstrably Widespread, Abundant, and Secure

B – Breeding Range

N – Non-breeding Range

NR – Not Ranked

? – Inexact or Uncertain

BCNA

Boulder County Nature Association (BCNA) – BCNA Avian Species of Special Concern (1999). BCNA maintains a list of species for the county, which are rare, appear to be declining and/or are restricted in distribution to a few locations or habitats. Rarity is defined as 3 or fewer known sites. The list generally focuses on breeding status. Bolded species are of primary concern.

<http://www.bcna.org/aviansosc.html> (Last update in 1999)

Potential Categories:

1 - Rare and Declining

2 - Declining (but not yet rare)

3 - Rare

4 - Isolated or Restricted Populations (Species that are found only at certain locations and/or have narrow habitat niches)

5 - Needs Research

6 - Extirpated

W - Winter

Partners in Flight

Partners in Flight (PIF) - Colorado Partners in Flight 2000. Colorado Land Bird Conservation Plan. PIF evaluates 7 variables on a 1 (low priority) to 5 (high priority) scale using range maps, Breeding Bird Survey data and opinions of a Prioritization Technical Committee. Each species gets a score on each variable and a total score (ranging from 7 to 35). Referenced variables include AI – Area of Importance and PT – Population Trend.

<http://www.rmbo.org/pif/copif.html> (January 2000)

Potential Categories:

- I. *High overall (global) priority*—species scoring > 22 in the PIF prioritization system. Indicates high vulnerability of populations throughout the species range, irrespective of specific status in the physiographic area. Peripheral species are omitted.
- II. *High physiographic area priority*—species scoring 19–21 in the PIF system, with AI + PT > 8. Indicates a species of moderately high global vulnerability and with both relatively high abundance and a declining or uncertain population trend in the physiographic area.
- III. *Additional Watch List*—species on PIF's national Watch List that did not already meet criteria I or II. Watch List species score > 20 (global scores only), or 18–19 with PT = 5.
- IV. *Abundant yet declining*—any additional species for which the score for AI = 5 and the score for PT = 5. May identify species or a habitat type in need of monitoring.
- V. *Area responsibility*—additional species with relatively high proportion of global population in the physiographic area [>5% for areas < 200,000 km² (77,200 mi²); >10% for areas > 200,000 km²]. Signifies that the area shares in responsibility for long-term conservation of species, even if not currently threatened.
- VI. *Additional listed*—species on federal or state endangered, threatened or special concern lists that did not meet any of the above criteria. These are often rare or peripheral populations.
- VII. *Local Concern*—species of justifiable local concern or interest. May represent geographically variable populations or be representative of specific habitat conservation concern.

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Appendix G

Cultural Environment

Excerpt from *Walden Ponds Wildlife Habitat Management Plan*
Boulder County Parks & Open Space 1982, Pages 52 - 58

The specific cultural history of the Walden site back to prehistoric time is not known. However, when considered in light of information documented on a broad regional context, many parallels can be drawn. The sediments underlying Walden give evidence that this area has been in the flood plain of Boulder Creek for some time. Since major streamside areas were important gathering places for wildlife as well as early man, one can speculate what the Walden area may have been used for as a typical riparian environment thousands of years ago.

Colorado is the meeting point of three prehistoric culture areas: the Great Plains, the Great Basin and the Southwest culture areas. Focusing in along the contact zone between the Great Plains and the Rocky Mountains, there were many diversified environments that were available to pre-whiteman within a day or two of travel. Eastward, there was ready access to extensive grasslands and numerous herds of bison and antelope. On the west, the high country was inhabited more recently with elk, deer, bear, mountain sheep, beaver and marmot. The environmental extremes from east and west blended in the foothills zone. It is within this foothills-hogback strip that the greatest amount of documentation has been found of past human occupation along the Front Range.

Based on the evidence presently available, the human history of the Boulder region began with the Big Game Hunting tradition of 11,000 years B.C. Paleo-Indians lived in small bands or kinship groups and hunted the now extinct mammoths of the late Pleistocene era. They followed these migratory herd animals and camped on the ridges and hills, often overlooking streams or ponds. The mammoths were frequently ambushed and slain while they watered. No campsites of this early period have been reported in the Boulder area and the surviving artifacts from other sites consist mainly of chipped stone tools.

Following the mammoth hunters came the Folsom bison hunters. These people hunted an extinct species of giant bison using a technique whereby the animals were surrounded and driven into an arroyo or canyon and killed. Their occupancy is dated around 10,000 B.C., in a cooler, wetter climate than present. A third Big Game Hunting culture, known as Plano, existed on the Colorado Plains around 9,000 - 6,000 B.C. Although many of the large animals of the Pleistocene had become extinct, members of this group continued the Paleo-Indian lifestyle, hunting instead modern bison and other animals. A new hunting technique was the running or stampeding of animals off of banks into arroyos.

The next people of whom we now have direct evidence seem to have been oriented in another direction in their food-procuring economy. People of the Big-Game Hunting culture specialized in hunting large game, but very likely used various small game and plant foods as well. The archaic culture (around 5,000 B.C.) relied less on a single food source and more on exploitation of a variety of small animals and vegetal material. The two environmental changes, which greatly influenced these Plains inhabitants, were the extinction of the megafauna and the warming of the climate.

Archaic campsites were often seasonally occupied and were found near streams, on lakeshores and in rock shelters. As the food source expanded, so did the tool inventory to harvest it. An innovation of the time was pit roasting and stone boiling of food.

The next development on the Plains was the introduction of Woodland culture dating from A.D. 1 1000. Present evidence suggests that the Woodland people were mainly creek valley hunters and gatherers with very inconclusive evidence of domestic crops.

The Plains Village tradition appeared around A.D. 1000. Hunting remained important, but there was an introduction of horticulture from eastern influences. The Plains villages were located on bluffs and ridges. The timber and earth covered houses were the forerunners of the Plains "earth-lodges" of historic period Indians. Scrapers and knives continued to be important as were manos, metates, bone awls, needles and ornaments. The stone pipe was also introduced. Some time between A.D. 1400-1500 the small villages were abandoned. Speculation suggests either pressure from neighboring cultures or drought, both similar possibilities for abandonment of the Pueblos in southwest Colorado during the same time frame.

The Historic Period (A.D. 1500-1899) saw major movements and displacements of Indian nations throughout the Plains. The Utes have the longest continuous history in Colorado of any group known from historic times. They occupied most of Western Colorado down to the slopes of the Front Range. They lived by hunting and gathering, rarely planting crops. Moving in family groups through their hunting territory, they ranged from the high mountains to occasional trips onto the Plains for bison. They lived in temporary brush shelters called wickiups until adoption of the tipi.

By A.D. 1500, the Apaches had moved in from the north and controlled the Colorado plains, hunting bison and planting crops in the stream valleys. In the early 1700's Comanches, allied with Utes, drove the Apaches south, out of Colorado.

The initial Euro-American cultural impact (explorers, fur trappers) was felt during this same period with the introduction of the horse. Many Indian groups converged on the Plains where the economy quickly changed to bison hunting. Some of the arriving groups, Arapahoe and Kiowa, were descended from people who had always been nomads. Others, such as the Cheyenne, were descendants of Plains Village tribes who had changed their lifestyle as they moved westward. The progression of historic Indian territories in the Boulder region includes Apaches A.D. 1500-1700, Comanches A.D. 1700-1809, and Arapahoes/Cheyennes A.D. 1800-1850. It has been reported that arrowheads have been found in the White Rocks area, just downstream from Walden. "Tipi Rings" have also been reported on Table Mountain and Rabbit Mountain, but is not known to which of "these historic Indian groups any of these materials belonged.

The Boulder Creek floodplain adjacent to Valmont Dike was a natural area for hunting, camping and replenishing supplies. Early historical accounts tell of an antelope round up held in 1860, the last of its kind before the Arapahoes were moved to Oklahoma. Another account describes a burial ground with 15 to 20 mounds just south of the dike.

By the late 1850's, the Boulder region was being quite heavily inundated with Euroamericans. The diminishing prospects of easy gold in California, together with the discovery of promising new gold deposits in Colorado, led to an inevitable stampede of miners. The Native Americans living in the region were quite strongly opposed to intrusion of the white men, but Arapahoe Chief Left Hand recognized the futility of resistance and quietly permitted them to stay.

Within a year after the first settlement in Boulder on October 17, 1858, the town became an important outfitting spot for the gold mines; several hotels were constructed, saw mills and stamp mills were erected, a school house was built and churches were organized.

At the same, the rival town of Valmont was being established to serve agriculture interests. Present-day Valmont roughly paralleled Boulder Creek and was one of the pioneer travel routes from the east into Boulder City and the mines beyond. An 1865 plat map of Valmont showed 14 blocks laid out between Boulder Creek and the Valmont Buttes. Map features included the T.J. Jones Stage Stop, hotels, general stores, blacksmith shops, hardware store, drug store, doctor's office, school, Presbyterian Church (oldest of that sect), and pioneer cemetery on top of Valmont Butte. 1/4 mile

east of the town, Fort Chambers (built on the George W. Chambers farm) was established in 1864 and used by Company D of the Third Colorado Regiment of Volunteers as a training site. It was a sod-brick fortification measuring 100 x 200 feet, with walls two feet thick. By 1868, the threat of Indian uprisings against the 300 residents was gone.

The farmers near Valmont, using irrigation practices, and planting the fertile terraces and floodplain, had excellent crops for the first few years until the soil was depleted. Wheat was the main crop grown, but there were also fruits and vegetables to satisfy the needs of the miners. Another grain, barley, was grown for the brewing of beer by the Boulder Brewing Company. The first cheese factory in the county was established in Valmont in the spring of 1877.

The first newspaper of the region (Valley News) was started in Valmont but was lured away to Boulder City on the evening of April 1, 1867 by a group of Boulder men with a \$32 cash offer in hand. A rock quarry and mill at Valmont Butte was active for a time when the rock was shipped via railroad to pave between rails of the Denver Street car system. The brick plant near Valmont was also one of Boulder County's early historic industries. Other past industries in the Valmont area included a flourmill, gold and silver stamp mill and fluorspar mill.

A study done on the present Sawhill Ponds property in 1947 described the area as being undisturbed by human beings with the exception of irrigation ditches. Cattle and bulls grazed over the area most of the year. Much of the land was posted against hunting and trespassing by farmers Paul Hummel and George Sawhill. Direct access "to the Sawhill/Walden area was from the Valmont Butte dirt road north through the Sawhill farm and east through the Milne-Coulson gravel workings along Boulder Creek.

Around 1950, the Boulder region began to experience tremendous growth (52% increase between 1950 and 1960) and pressures to gravel mine nearby resources also grew. Mining of the Sawhill Ponds area took place during the 1950's. Walden Ponds mining by the County began in 1958.

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Appendix H

From: Jannatpour, Vivienne

Sent: Monday, October 19, 2009 10:54 AM

To: Halpin, Barbara; Rowland, Dan

Cc: Streng, Ernst

Subject: Media Release - Walden Public Meeting October 23

FOR IMMEDIATE RELEASE

Specialist

October 19, 2009

Vivienne Jannatpour, Open Space Program

303-678-6277; vjannatpour@bouldercounty.org

Boulder County Parks and Open Space Taking Public Comments on Update to Walden Ponds Wildlife Habitat Area Management Plan

Boulder County Parks & Open Space will be hosting a public open house on Wednesday, October 28, 2009, as part of an initial public comment period on the future management of Walden Ponds Wildlife Habitat Area. The public open house will be held at Shepherd of the Hills Lutheran Church located at 7077 Harvest Road, Boulder (Lookout Road at 71st Street, Gunbarrel) from 5:00 – 7:00 p.m. The public is encouraged to stop by anytime between 5:00 and 7:00 p.m. to learn more about Walden Ponds, ask questions of staff, and provide input about future management. Public comments on the desired future management of Walden Ponds will also be accepted between October 23 and November 21, 2009.

For more information or to submit a comment, visit the Parks & Open Space website at www.BoulderCountyOpenSpace.org or contact the project planner, Ernst Streng, at 303-678-6269 or waldenponds@bouldercounty.org

Walden Ponds Wildlife Habitat Area Management Plan Update

Initial Public Comment Period

Boulder County Parks & Open Space is in the initial planning phase for an update to the *Walden Ponds Wildlife Habitat Area Management Plan*

We need your input!

PUBLIC OPEN HOUSE

Monday, November 16, 2009

5:00 – 7:00 p.m.

Shepherd of the Hills Lutheran Church

7077 Harvest Road, Boulder

(Lookout Road at 71st Street, Gunbarrel)

Rescheduled from Oct. 28 Due to Snowstorm

Initial Public Comment Period

October 23 – November 21, 2009

PURPOSE OF INITIAL PUBLIC COMMENT PERIOD

- Identify and document the public's interests, values, needs, and concerns about management of Walden Ponds
- Identify the types of public activities and level of services desired
- Gather any additional information about Walden Ponds from the public
- Guide the planning process and subsequently help shape the future management of Walden Ponds

For more information or submit a comment, visit

www.BoulderCountyOpenSpace.org





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Management Plan Update for Walden Ponds Wildlife Habitat Area

Current News

Boulder County Parks & Open Space (BCPOS) staff continues to work on the update to the management plan for Walden Ponds Wildlife Habitat Area. The initial public comment period was conducted between October 23 and November 21, 2009.

Two public open house meetings were held on October 28 and November 16. A total of 13 public comments were received (see below for details). Comments received during the initial public comment period will help the planning team determine the best future management direction for Walden Ponds and will be included in the overall analysis of potential future management alternatives.

Over the next several months, staff will continue to research, review, and analyze the available data, initial public comments, and potential management alternatives. This will lead to the preparation of a draft management plan, scheduled for completion in spring 2010.

Background

BCPOS staff recently began a planning process for an update to the [1982 Walden Ponds Wildlife Habitat Management Plan](#) (8.4mb PDF). This update will take a critical look at the past and current management and conditions at Walden Ponds, including reclamation activities, wildlife habitat and utilization, plant communities, water resources, and visitor use and services.

The analysis will include consideration of all opportunities and constraints, what potentially could be done and what are the limitations. From this analysis, BCPOS staff will develop management recommendations, which will be reviewed by the public and the Parks & Open Space Advisory Committee, and subsequently go to the Board of County Commissioners for final approval.

Current Planning to Date

The BCPOS internal interdisciplinary team has met twice over the past few months to begin planning for the Walden Ponds management plan update. The team has begun identifying available and needed data, discussing potential opportunities and constraints, and thinking through possible future management alternatives. Following the first meeting, staff developed the following draft vision for Walden Ponds. It states:

The vision for Walden Ponds Wildlife Habitat Area is...

...a wildlife haven of ponds, wetlands, and uplands on former gravel mines blanketed by native cottonwoods, willows, grasses, marsh species, mud flats, and open water for a diversity of species...

Page Contents

- [Background Planning](#)
- [Next Steps](#)
- [Walden History](#)

Site Map Help with PDFs

Boulder County
Parks & Open Space
5201 St. Vrain Road
Longmont, CO 80503
[map](#)
tel 303-678-6200
fax 303-678-6180

...an easily accessible place on the plains of Boulder County where people can witness and learn about the evolving landscape and natural cycles ...

...an open space with peaceful trails, exceptional wildlife viewing, captivating interpretation, and accessible fishing.

BCPOS has also completed the initial public comment period. The purposes of the initial public comment period were to:

- Identify and document the public's interests, values, needs, and concerns about management of Walden Ponds
- Identify the types of public activities and level of services desired
- Gather any additional information about Walden Ponds from the public
- Guide the planning process and subsequently help shape the future management of Walden Ponds

[Summary of Initial Public Comments](#) (65KB pdf)

Some of the current issues at Walden Ponds that staff has identified to date include:

- No water rights are associated with Walden Ponds that would allow BCPOS to keep the ponds filled.
- Water levels are primarily controlled by groundwater levels, which fluctuate annually and seasonally.
- Fluctuating water levels within ponds affect habitat, site aesthetics, and visitor experience.
- Fluctuating water levels have both positive and negative effects on wildlife.
- Individual ponds provide different uses and values and may need to be managed separately for specific management objectives; for example, some are managed for fishing and others for wildlife habitat.
- Water diversion and delivery system is not optimal and is in need of repair.
- Facilities and parking lots are in need of upgrades and improvements to better serve the public.
- Invasive species, including Russian olive and tamarisk, are present on-site.
- Access to ponds for fishing and educational programs could be improved and made safer.
- The trail system, including surface type and location, and the boardwalk could be modified to better serve public and ensure long-term sustainability.
- Additional clean-up and reclamation around some localized disturbed areas (e.g. around former building sites) is needed.

These issues, as well as others identified by the public and staff, will be reviewed and feasible solutions fleshed out during the management planning process.

Next Steps

Boulder County Parks and Open Space staff is currently researching, reviewing, and analyzing the available data, initial public comment, and potential management alternatives. This will lead to the preparation of a draft management plan, scheduled for completion in spring 2010. The draft plan will be made available for public review at that time. Following public review of the draft plan, BCPOS will conduct a public hearing with the Parks & Open Space Advisory Board, who will make a recommendation to the Board of County Commissioners (BOCC) for either approval or disapproval of the draft plan. The final plan will then go before the BOCC for final approval and adoption.

History of Walden Ponds

The 99-acre Walden Ponds Wildlife Habitat Area wasn't always a diverse, productive ecosystem, with trails, fishing ponds, and high quality wildlife habitat. In fact, it wasn't until the mid-1970s that the area began to take shape as a wildlife refuge and public recreation area.

At that time, then County Commissioner Walden (“Wally”) Toevs spearheaded the idea of reclaiming the former Boulder County gravel mines to wildlife habitat and as a place for the citizens of Boulder County to fish and recreate. This newly created wildlife area was to be managed by the Boulder County Road District and the fledgling Parks & Open Space Department, with BCPOS later taking over full management of the site.

The properties that comprise Walden Ponds were purchased by Boulder County between 1958 and 1967. The original intent of the purchased land was to excavate the gravel resources for use by the Road District. Mining occurred on the eastern half of the property until the mid-1970s. This area was subsequently reclaimed, thus creating the current Wally Toevs Pond, Cottonwood Marsh, and Duck Pond. The public grand opening for Walden Ponds Wildlife Habitat Area was held on October 3, 1975. The west half of the property wasn’t mined until the mid-1990s with subsequent reclamation and creation of Bass Pond and Ricky Weiser Wetland. Read the [Reclamation Project Report](#) (3.8mb PDF) that was written in 1974.

Walden Ponds has a diversity of upland and aquatic habitats that have been developing and evolving over the past 30 plus years. The mosaic of wetlands, riparian vegetation, grasslands, mud flats, and open water provides for numerous wildlife species, especially a large diversity of water birds. The water levels within the groundwater-fed ponds fluctuate seasonally and annually, thus providing an ever-changing environment that provides for a variety of species and demonstrates the natural hydrologic cycles of the Front Range of Colorado. Many of the ponds provide fishing opportunities, including Wally Toevs Pond, which is specifically designated for seniors (64 years and older) and individuals with disabilities. Others activities enjoyed by visitors to Walden Ponds include hiking, running, or biking on the approximately 2.6 miles of trails, bird watching, nature study, picnicking, or just relaxing. The Boulder County Naturalist Program is housed at Walden Ponds, and many outreach programs are conducted at Walden Ponds.

The most recent [Boulder County Parks & Open Space Five-Year Visitor Study - 2005](#) (1.3MB PDF) documented the types of visitor activities at Walden Ponds, as well as the percent of visitors involved in each activity. These included:

- Hiking (37%)
- Viewing Wildlife (36%)
- Fishing (8%)
- Running (5%)
- Relaxing / Nothing (5%)
- Dog Walking (2%)
- Mountain Biking (2%)
- Family Gathering (2%)
- Other (4%)

For more information about Walden Ponds including current trails, facilities, and visitor services, visit the current [Walden Pond web page](#).



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Boulder County shaping new plan for Walden Ponds

Staff to consider variable water levels

By Laura Snider Camera Staff Writer
Boulder Daily Camera

Posted:

If you go

What: Open house to discuss the future management of Walden Ponds

When: 5 to 7 p.m. Wednesday

Where: Shepherd of the Hills Lutheran Church, 7077 Harvest Road in Gunbarrel

How to comment on the management plan

Public comments on how Walden Ponds should be managed in the future will be accepted through Nov. 21. To submit a comment, contact Ernst Strenge at 303-678-6269 or waldenponds@bouldercounty.org. For more information on the management plan process, visit BoulderCountyOpenSpace.org.

The five shallow water bodies that make up the Walden Ponds Wildlife Habitat Area northeast of Boulder are at the whim of the weather.

With no water rights of their own, the ponds can shrink and swell with groundwater levels, sometimes turning into marshy mudflats in the drought years and affecting the diverse wildlife that call the area home.

The Boulder County Parks and Open Space department will look into the issue of water rights -- and what, if anything, can be done to secure some -- as staffers work to update the management plan for the area, which was first put into place in 1982.

John and Nancy Weiner -- who often visit Walden Ponds, binoculars slung around their necks, to walk around the trails and look for birds -- say they agree that water levels are one of the primary concerns.

"It was really low for a couple of years," John Weiner said as he began a walk along Cottonwood Marsh on Friday afternoon. "But you don't want it too high, either, because the shorebirds like to feed in the shallow water."

This year, the ponds are full. The wet spring and summer took pressure off of local water supplies and allowed the county a rare opportunity to fill the ponds from Boulder Creek without a water right.

Ernst Strenge, the county planner heading up the management plan revision, said the county will look into other issues as well, including the upkeep of the general facilities, parking areas and trails; safe access to the water's edge for fishing; and how to fight the invasive tamarisk and Russian olive trees that have taken root in the area.

The land that is now Walden Ponds was originally purchased by the county between 1958 and 1967 as a gravel pit for the road department. Under the leadership of Commissioner Walden "Wally" Toevs, the county began reclaiming the land in the early 1970s with the intent of making a wildlife refuge.

Now the manufactured wetlands attract a wide variety of birds, and some of the ponds are stocked for fishing. The Wally Toevs pond, which is stocked with trout, is limited to fishermen who are seniors or have disabilities, and the short loops of flat trail have made the quiet preserve a favorite hangout for people looking to relax in a slower-paced open space park.

Comments from the public about how the management plan should look are being accepted through Nov. 21. The open space department will use the comments to shape the new management plan, which will likely come before the county's Parks and Open Space Committee in late spring or early summer before going to the county commissioners for a final decision.

"We just want to make sure that we hear from a diverse population of different user groups and families that go out there," Strenge said.

Contact Camera Staff Writer Laura Snider at 303-473-1327 or snider@dailycamera.com.

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From: Boulder County Information
Sent: Thursday, June 03, 2010 2:13 PM
To: 'bcpressrelease@listserv.bouldercounty.org'
Cc: Rowland, Dan; Halpin, Barbara; Jannatpour, Vivienne; Streng, Ernst
Subject: NEWS: County seeking public comment on Walden Ponds plan
FOR IMMEDIATE RELEASE
June 3, 2010
Contact: [Vivienne Jannatpour](mailto:Vivienne.Jannatpour@bouldercounty.org), 303-678-6277

County seeking public comment on Walden Ponds plan

Boulder County, Colo. – The Boulder County Parks and Open Space Department will host a public meeting on Thursday, June 10 regarding the draft Walden Ponds Wildlife Habitat Management Plan.

The meeting will be held at the Boulder County Clerk and Recorder's office, located at 1750 33rd St. in Boulder, from 5:30-7 p.m.

A formal presentation of the draft management plan will begin at 6 p.m. Open Space staff will be available throughout the meeting to discuss the plan and answer questions from the public. The Walden Ponds Wildlife Habitat is located five miles northeast of Boulder.

The public comment period for the draft management plan runs through June 26. To review the plan or to find out how to post a comment, visit www.BoulderCountyOpenSpace.org or contact the project planner, Ernst Streng, at 303-678-6269 or waldenponds@bouldercounty.org.

-BoulderCounty.org-

Boulder County to discuss plan for Walden Ponds Wildlife Habitat

New plan would address water movement, wildlife conservation and public access

By Kylee Perez For the Camera
Boulder Daily Camera

Posted:06/07/2010 10:43:44 PM MDT

10 species at Walden Ponds Wildlife Habitat

Great blue heron

Bald eagle

Fox squirrel

Golden eagle

Bufflehead

Red-winged blackbird

Western painted turtle

Great horned owl

Common loon

Tiger salamander

If you go

What: Public meeting to discuss the draft of the Walden Ponds Wildlife Habitat Management Plan

When: 5:30 to 7 p.m. Thursday

Where: Boulder County Clerk and Recorder's Office, 1750 33rd St. in Boulder

More info: bouldercounty.org

A new management plan for Walden Ponds Wildlife Habitat strives to help connect people with wildlife, including fisheries and the diverse bird population.

The new plan would help protect nesting shorebirds in the area by prohibiting visitors from walking on mudflats, said Ernst Strenge, a natural resource planner for Boulder County Parks and Open Space. The mudflats are created around Cottonwood Marsh when water levels become low.

Boulder County Parks and Open Space will discuss the plan -- which addresses everything from lighter fishing restrictions to trail surfaces -- from 5:30 to 7 p.m. Thursday at the Boulder County Clerk and Recorder's Office in Boulder.

The ponds -- near Jay Road and North 75th Street, just northeast of Boulder -- have been a popular place to view birds and other animals since the 1970s, when the former gravel mine was reclaimed and turned into a wildlife habitat.

"We studied owls and birds extensively, so we thought this would be fun," said Robin Hoover, a first-grade teacher at Boulder Country Day School who was at Walden Ponds on Monday with a summer bird camp.

The group of 11 students and four teachers saw 17 bird species including a cowbird, a white pelican and a yellow-headed blackbird, said Julia Bond, one of the teachers, and her student Ainsley Lefkoff.

One of the struggles Walden Ponds faces is the method used to move water from one of the five ponds to another. The current method is a system of culverts and pipes that rely on gravity to move water.

The new plan proposes building a "stoplog" structure -- basically, a pipe with boards under it that can be raised or lowered depending on the water level -- in between the ponds. By using the stoplog system, managers could more easily divert water downstream to Wally Toevs and other ponds used for fishing. The county would also continue pursuing water rights for the ponds, but updating the culverts would be the primary goal, Strenge said.

Adding crushed rock to the trails around Ricky Weiser Wetland, Bass Pond and Wally Toevs Pond, where fishing is only allowed by senior citizens and disabled visitors, would provide better access for people with mobility problems and keep the trails from getting muddy, Strenge said.

The plan also proposes to open fishing at the Wally Toevs Pond to children 15 or younger as long as they're with someone older than 65 or someone with a disability.

"The idea is to allow the passing on of the fishing tradition to younger kids," Strenge said.

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Appendix I



Parks and Open Space

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DRAFT
**Walden Ponds Wildlife Habitat
Management Plan**
Summary of Public Comments
May 28 – June 26, 2010

Boulder County Parks & Open Space (BCPOS) conducted a public review of the draft *Walden Ponds Wildlife Habitat Management Plan* between May 28 and June 26, 2010. A public meeting was also held on June 10, 2010. In total, four public comments and one agency comment (City of Boulder Open Space and Mountain Parks) were received. In addition, thirteen members of the public attended the public meeting.

BCPOS's overall goal with each management plan is to balance the needs and interests of the general public and particular stakeholders, while ensuring long-term sustainable uses and protection of natural and cultural resources. The intent of receiving public comments on draft management plans for County open space properties is to collect public sentiment and potential alternative management measures from members of the public who wish to comment on the draft plan. This input is then provided to staff, the Parks and Open Space Advisory Committee (POSAC), and the Board of County Commissioners (BOCC) for their review and assessment while making their final decisions regarding future management of the particular site. Other forms of input that BCPOS considers include park visitor surveys, public testimony at hearings, and input staff receives on a continuing basis on the properties.

The following are discrete, substantive statements taken from the comments received during the public review period for the draft *Walden Ponds Wildlife Habitat Management Plan*. These statements are arranged under the headings: *General Comments*, *Trails and Facilities*, *Water Management*, *Coordination*, *Dogs*, and *Other Recreation* with BCPOS's response below each comment. The City of Boulder's Open Space and Mountain Parks' comments are attached.

Summary of Public Comments

General Comments

“I support your proposed Walden Ponds Wildlife Habitat Management Plan”

Response: Comment noted.

“I'm concerned that too much employee time and county money is being spent on the Walden Ponds (over 80 pages of detail in this plan). I urge the county to finish this process and move on.”

Response: Comment noted.

“Walden & Sawhill Ponds...ought to be treasured more as a wildlife habitat than as a place where humans can fish and do anything with dogs.”

Response: Comment noted.

Trails and Features

“Please do not add gravel to trails in back. This expense is not needed.”

Response: The current trail system around Ricky Weiser Wetland and Bass Pond is a natural surface 2-track trail / road that is a remnant of the past mining. When wet, this trail becomes very muddy, and during the growing season, it is covered with numerous weeds and is, therefore, difficult to access unless it is regularly mowed. BCPOS proposes using crusher fine (crushed rock) material to help delineate and maintain the trail, as well as provide for better accessibility, including for disabled individuals. The new trail surface will also match other trail surfaces throughout the site, thus providing more consistency throughout the site.

“Also, I would not like to see any more gravel, pavement or anything else added to paths.”

Response: See previous comment.

“If you replace the boardwalk at Cottonwood, please do not use any non-wood product that has any possibility of leaching chemical into the marsh.”

Response: Comment noted.

Water Management

“I support...especially the water diverting processes.”

Response: Comment noted.

Coordination

“Walden Ponds & Sawhill Ponds are the same habitat, making it odd that they are overseen by 2 different governments. That being said, this plan should be collaborative between the City of Boulder and Boulder County, and the same decisions ought to apply equally to both places.”

Response: The City of Boulder currently and historically has managed Sawhill Ponds under a lease with the Colorado Division of Wildlife. The County does not have a current interest in taking over management of this site. However, BCPOS will continue to communicate and coordinate with the city’s Open Space and Mountain Parks Department, as well as other adjacent property owners as necessary, on management issues.

Dogs

“Since I’ve seen people training their hunting dogs in the ponds, and plenty of dogs are off-leash with inattentive owners. As you know, it takes only a moment for a dog to kill a nest of birds or an animal, so I believe dogs ought not to be allowed under any circumstances, and this ought to be rigorously enforced for a few months.”

Response: BCPOS does not see a need to ban dogs from Walden Ponds. They have been allowed at the site since its inception. All dogs are required to be on leash. BCPOS provides regular enforcement of this regulation. However, BCPOS will continue to coordinate with the City of Boulder on this issue to ensure dogs are not coming off leash from the adjacent property.

Other Recreation

“In terms of recreation I think there are much bigger problems waiting to be solved...such as boating or reopening Needles Eye Tunnel on Rollins Pass road.”

Response: This issue does not pertain to the current management plan.

Attached: Comments from City of Boulder Open Space and Mountain Parks (Dated June 25, 2010)

Response: Comments noted. BCPOS will work with the city on these items.

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