

WINTER  
HAVEN

THE CHAIN OF LAKES CITY

IN BRIEF

# Winter Haven ANNUAL LAKES REPORT

PUBLISHED JULY 2025

20  
24



**DUSTIN EVERITT**  
Natural Resources  
Division Manager

## *Manager's Note:*

As someone who has spent a career working on freshwater ecosystems, few things are more meaningful to me than the opportunity to care for the Winter Haven Chain of Lakes. These waters aren't just part of our landscape—they're central to our identity as a community.

Our team in the Natural Resources Division works every day to protect, restore, and understand this unique system. Whether it's removing invasive vegetation, restoring City-owned shorelines, improving water quality, or helping residents better connect with the lakes they love, our work is grounded in a simple goal: to leave these lakes better than we found them.

This report reflects just a small piece of what we do, but I hope it gives you a sense of the passion and purpose behind our efforts. The progress we've made is the result of countless hours in the field, strong community partnerships, and a belief that science and stewardship go hand in hand.

Thank you for taking the time to learn more about the Chain of Lakes and the work we're doing to protect it. We're proud to serve this community and grateful for the trust you've placed in us. Please do not hesitate to reach out to me or the rest of the Natural Resources team for more information or questions about our lakes.

*Dustin W. Everitt*

Office: 863-291-5881

Email: [deveritt@mywinterhaven.com](mailto:deveritt@mywinterhaven.com)

# CONTENTS:

pg. 1

## REPORT AT A GLANCE

Gives high-level notable stats from this year's report

pg. 2

## ABOUT OUR LAKES

Summary of water quality metrics and background on our lakes' watershed

pg. 5

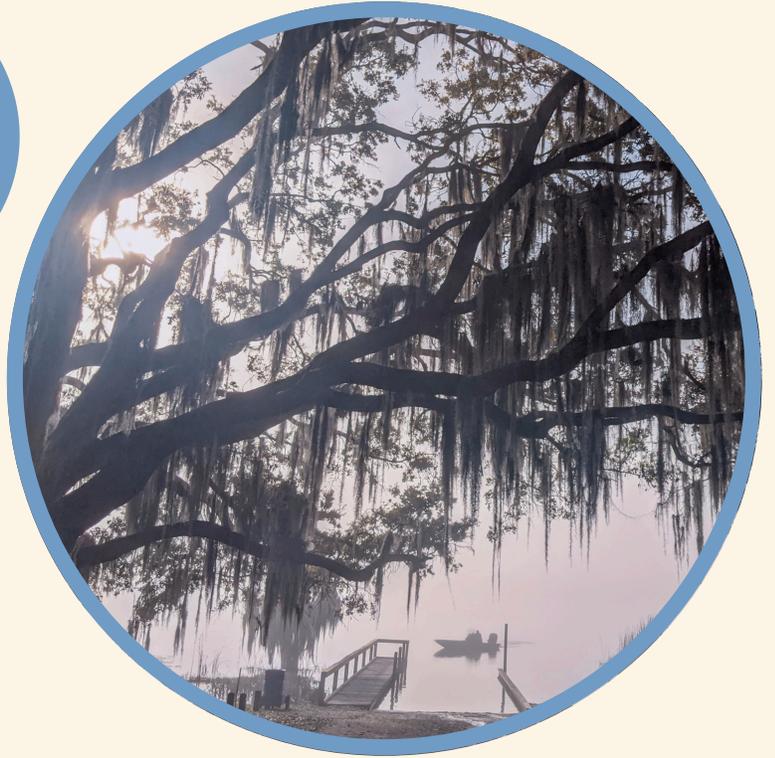
## 2024 LAKE HEALTH

Presentation of 2024 Lake Health Index and highlights from the data

pg. 7

## 2024 PROJECT UPDATES

Brief updates on ongoing projects and project spotlight for 2024



# NOTE ON THE REPORT:

The **Annual Lakes Report** is an effort of the City of Winter Haven's **Natural Resources Division** to provide a comprehensive yet accessible overview of the **status of our lakes' health** and provide transparency on **management updates**. This effort is guided and supported by the citizen-led **Lakes Advisory Committee** and connects to the **Goal 4.3** of the City's Strategic Plan FY 25 - FY 29

This "**Report in Brief**" is intended to give a high level overview of the Annual Lakes Report - a comprehensive document as well as an online presentation is available at the QR codes to the left.

## Have specific questions on your lake?

Check out the Full Report or Online presentation to get updated information on vegetation, water quality, and management strategies?

SCAN FOR  
ONLINE  
PRESENTATION



SCAN FOR  
FULL REPORT  
DOC.





# REPORT AT A GLANCE

## BY THE NUMBERS:

**37 Lakes** included in this report. Criteria for inclusion were: has public access via ramp or canal, are within or adjacent to City limits, lie in the Peace River Watershed, and have at least 20 years of water quality and hydrologic data.

**54%** of our lakes meet or exceed State water quality standards (NNC). This is up 17% from 2018, when the Report was first published.

**73%** of lakes show improving trends in at least 2 water quality parameters.

**46.5 in.** of rainfall received in 2024. This is below our annual average of **52 inches**. However, lake levels remain high overall. Higher lake levels can help improve water quality.

**25** lakes had either no invasive plants present or had invasive populations managed at **low levels (< 2.5%)** in 2024.

**1,800** people reached through educational programs.

**& 37** individual outreach **programs** hosted in 2024 (a new record).

### LAKE TRIVIA ?

#### Are there manatees in Winter Haven's lakes?

While the Fish and Wildlife Commission has **not** put manatees in the Chain, grass carp have been stocked in a few lakes to eat invasive aquatic weeds and help reduce the need for herbicides.



# ABOUT OUR LAKES

Winter Haven’s lakes are its most emblematic natural resources - being known as the “**Chain of Lakes City**” due to the chain of 18 lakes connected by navigable canals - made up of the South & North Chain.

Outside of the Chain - there are also several other lakes across the City that are not navigably connected - but which have smaller hydrologic connections through ditches, pipes, and in some cases wetlands that make them a part of our watershed. A full list of the lakes included in this report is provided below.

While the South Chain of Lakes share a common water level - **each of our lakes has a unique character determined by a variety of factors** - namely by their morphology - or shape and depth, stormwater inputs, and biological community (flora and fauna).



**Above:** Hand digging of canals began in 1915. Later they were mechanically dredged with the same dredge used for the Panama Canal.

### Southern Chain:

- Cannon
- Hartridge
- Howard
- Eloise
- Idylwild
- Jessie
- Lulu
- May
- Mirror
- Roy
- Shipp
- Spring
- Summit
- Winterset

### Northern Chain:

- Conine
- Fannie
- Haines
- Hamilton
- Little Hamilton
- Middle Hamilton
- Rochelle
- Smart

### Other Lakes:

- Blue
- Buckeye
- Daisy
- Deer
- Elbert
- Idyl
- Link
- Mariam
- Mariana
- Martha
- Maude
- Ned
- Otis
- Pansy
- Silver



### **True or False: The City alters lake levels?**

**False** - The City doesn’t control lake levels. The Water Management District sets guide levels for most of our lakes, however, most structures are gravity-based overflows - slowly releasing water at high levels - with limited ability to adjust.

## SIGNIFICANCE OF OUR LAKES

Winter Haven is home to one of the highest concentrations of natural lakes in Florida. These waterbodies are central to our lifestyle, economy, and ecology – from **fishing, boating and seaplane training to wildlife habitat and water supply.**

In addition, **Winter Haven sits at the headwaters for the Peace River Watershed** - carrying water supply and water quality implications all the way through the watershed into Charlotte Harbor.

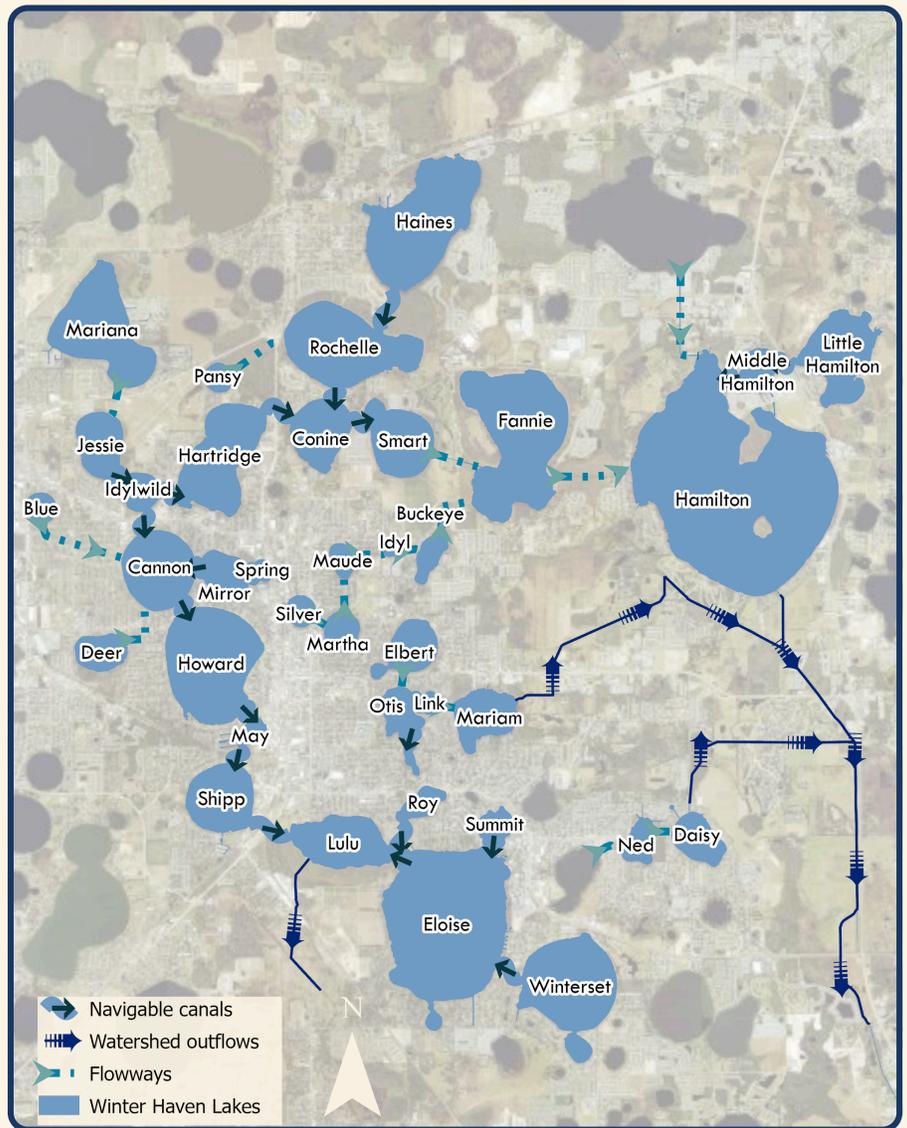


## WHAT MAKES A HEALTHY LAKE?

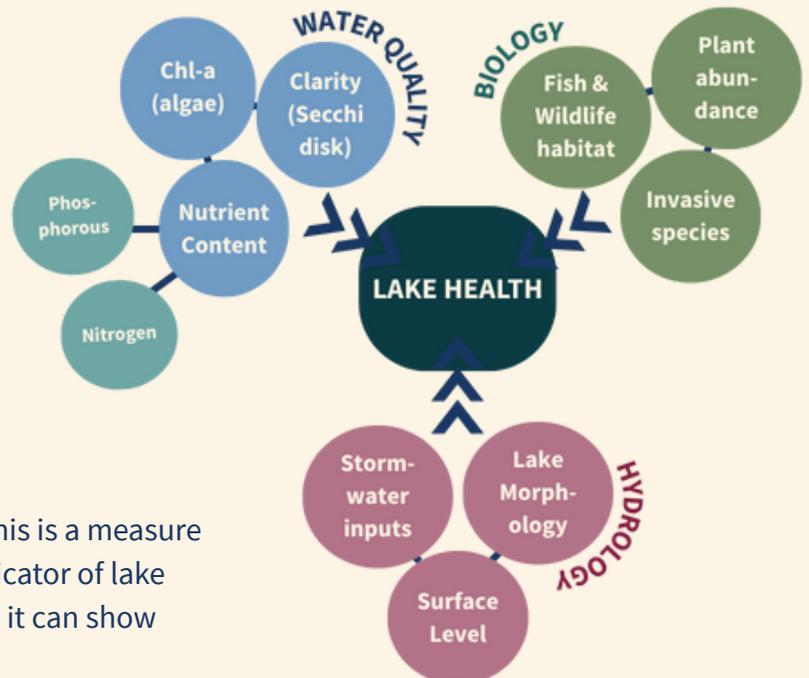
This report looks at Lake Health through three major lenses - water quality, biology (vegetation and fish and wildlife abundance), and hydrologic factors.

### Water Quality:

- **Chlorophyll-a (Chl-a)** measures algae abundance in the water. While some levels are normal, there is a threshold where too much algae is problematic for a lake.
- **Nutrients:** In our lakes, the primary nutrients of concern are **phosphorous (TP) and nitrogen (TN)** - again while some levels are normal, above a certain level lakes can produce too much algae and become unhealthy.
- **Water Clarity:** Measured as “**Secchi**” depth - this is a measure of how clear the water is. While not a direct indicator of lake health, in conjunction with the other indicators it can show good water quality.



**Above:** Map of Winter Haven lakes’ flow-ways, navigable canals, and watershed outflows. While Smart, Fannie and Hamilton on the North Chain are connected by canals - they are not navigable due to Southwest Florida Water Management District control structures.



## Biology:

- **Plant abundance:** Measured by diversity, lake coverage, and plant volume. Underwater plants improve water quality and provide essential fish habitat. Shoreline plants prevent erosion and support wildlife.
- **Invasive species:** Non-native plants harm ecosystems and outcompete natives and can cause harm to fish populations and unbalance an ecosystem. Controlling invasives helps protect lake health and biodiversity.
- **Fish & wildlife habitat:** While not yet explicitly quantified in this report - thriving fish and wildlife — like river otters — signal a healthy lake. These animals rely on robust food chains and clean water to survive.

## Hydrology:

- **Lake Morphology:** A lake's size, depth, and shape affect water quality. Deeper lakes often connect to cleaner groundwater, while shallow, flat lakes can stir up more sediment, reducing clarity.
- **Stormwater Inputs:** All Winter Haven lakes rely entirely on rainfall runoff, which can carry pollutants from lawns, roads, and businesses. Both the amount and cleanliness of this runoff impact lake health.
- **Surface Level:** Higher lake levels from steady rainfall are often linked to better water quality, as deeper water dilutes pollutants and reduces sediment disturbance.

## Regulatory Status:

As Waters of the State, Winter Haven's lakes are subject to state-level water quality standards established by the Florida Department of Environmental Protection (FDEP). These standards are based on the designated use of each waterbody. Winter Haven's lakes are classified as **Class III Waterbodies**, which means they are intended for **recreation, and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife.**

To support this designated use, our lakes must meet **Numeric Nutrient Criteria** for **chlorophyll, total phosphorus, and total nitrogen.** If a lake exceeds these nutrient criteria more than once within a three-year period, it is considered **impaired.**

Once a waterbody is classified as impaired, FDEP develops pollutant reduction targets for entities contributing surface water or groundwater to that lake. These targets are called **Total Maximum Daily Loads (TMDLs)**, which represent the maximum amount of a given pollutant that can enter the waterbody each day while still supporting its intended use.



**Top left:** City staff do routine vegetation sampling to measure the quantity of plants on our lakes. **Top right:** Pickerelweed is a common shoreline plant on our lakes great at providing a buffer for erosion. **Bottom left:** Eel-grass is a common native underwater plant in our lakes. **Bottom right:** River otter populations can be a great indicator that a lake is doing well.



### Are there “spring fed” lakes in Winter Haven?

While some of deeper lakes, such as Winterset and Silver benefit from a small amount of Upper Floridan aquifer seepage - they are not technically at the magnitude to be considered “spring fed”.



# LAKE HEALTH 2024

This report summarizes the status of our lakes using a **Lake Health Index**, which provides a score from 0 to 3—with **0 indicating poor trends** and **3 reflecting exceptional improvement in biological and chemical metrics**. The index brings together all the data collected by the division, focusing on improvement trends. The score indicates if a lake is improving in water quality, biological abundance and diversity - and is a **relative metric, not an absolute marker of lake health**. How the score is calculated is shown below.

## LAKE HEALTH INDEX SCORING BREAKDOWN:

### Water Quality



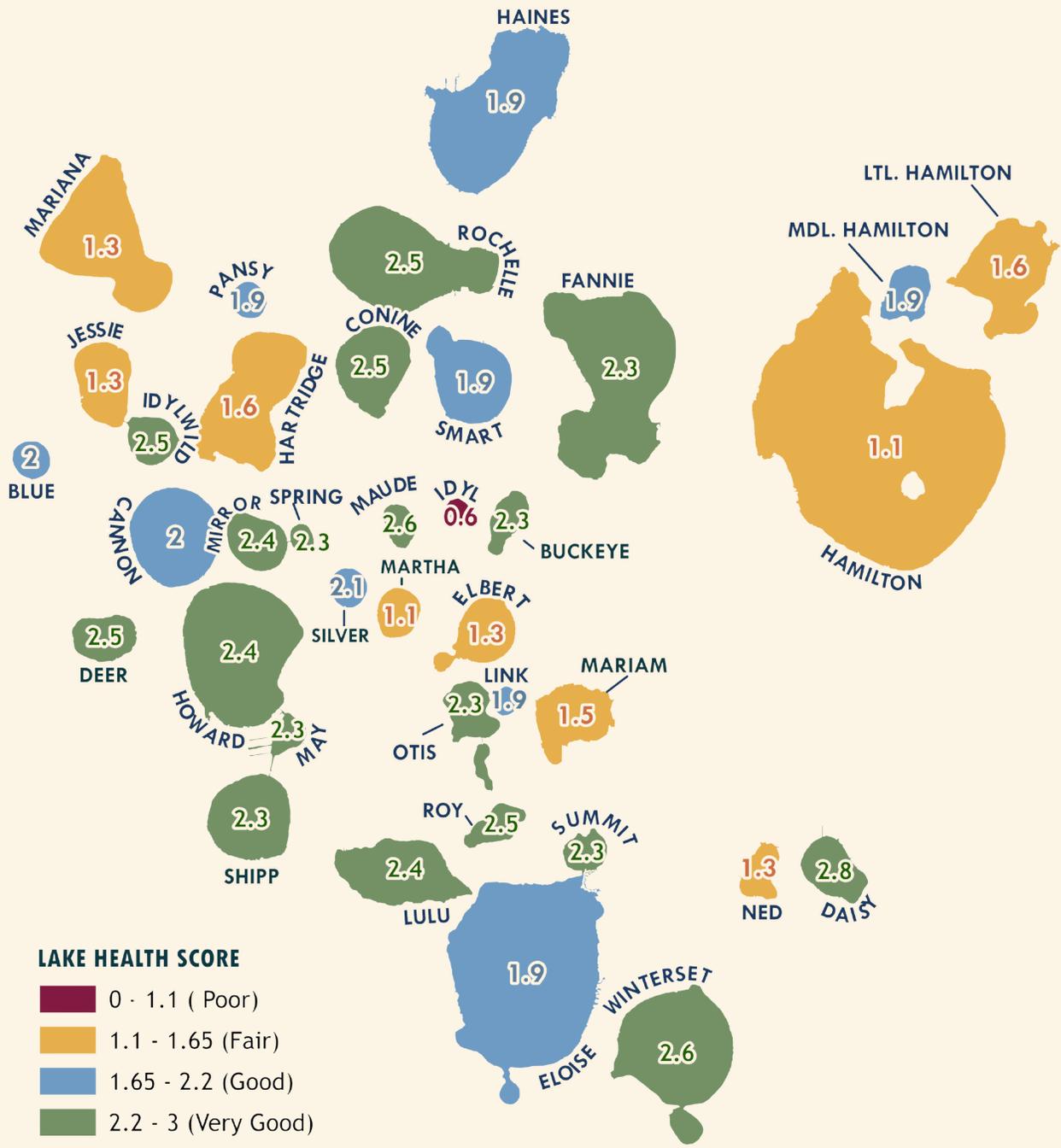
### Biology

- **NNC Impairment Score:** 0-3 points.
  - + 1 point for each **unimpaired** metric- Chlorophyll-a, Total Phosphorous (TP) & Total Nitrogen (TN)
- **Water Quality Trend Scores:** 0-3 points for each parameter (Chl-a, TP, and TN).
  - 3 pts: Significantly improving trend
  - 2 pts: Improving trend
  - 1 pt: deteriorating trend
  - 0 pt: Significantly deteriorating trend

- **Abundance Score:** 0-3 points
  - 3 pts: Percent area coverage (PAC) at or above 30%
  - 2 pts: PAC at or above 15%
  - 1 pt: PAC at or above 2.5%
  - 0 pts: PAC below 2.5%
- **Invasive Score:** 0-3 points
  - 3 pts: 0% invasive population
  - 2 pts: Invasive pop. below 2.5%
  - 1 pt: Invasive pop. at or above 2.5%
  - 0 pts: Invasive pop at or above 10%
- **Diversity Score:** 0-3 points
  - Each increasing diversity index gets plus 1 point. 0 given for decreasing index.

Each category score is then averaged to get the overall **Lake Health Index score**

## 2024 OVERALL LAKE HEALTH INDEX SCORES



### PROGRESS SNAPSHOT

- **Conine, Shipp, Lulu, and Howard show consistent improvements** in water quality trends over the past 3 years.
- **Over 50% of impaired lakes are improving** in at least one metric (Chl-a, TP, TN)
- Aquatic plant coverage saw an overall boost in many lakes, combined with a historic low in invasive species - **showing City staff detection & response efforts are paying off.**

### NEXT STEPS

- **Lakes Martha, Hartridge, Elbert, and Idyl are showing declining water quality**, each with unique challenges. The City has targeted strategies in place to address them. (See full report for details.)
- **Untreated stormwater runoff remains a concern in downtown lakes.** Ongoing public education and green infrastructure projects are key to improving conditions.



# 2024 PROJECT UPDATES

## ONGOING PROJECTS OVERVIEW:

**Environmental Monitoring:** The City regularly tracks lake health by scanning for **plant species** and **density** with **SONAR** and **field surveys**. We also collect **water level** and **quality data** for analysis.

**Green Stormwater Infrastructure:** The City has **four “Nature Parks”** that help clean stormwater and provide wildlife habitat and recreation. Also, **60 raingardens** soak up runoff, reduce flooding, and beautify the city.

**NPDES Reporting:** Each year, the City submits a comprehensive report to the State as part of its National Pollutant Discharge Elimination System (NPDES) permit requirements under the **Clean Water Act**. This report details stormwater infrastructure inventory, maintenance activities, street sweeping efforts, and public education and outreach initiatives.

**Public Outreach & Education:** In 2024, staff hosted **37 outreach events** aimed at increasing community engagement and environmental awareness. These events included informational booths at festivals, neighborhood workshops, classroom lessons, and our free guided kayaking ecotours. For many participants, these activities provided their first meaningful experience on one of Winter Haven’s lakes. A major highlight in 2024 was the City’s inaugural **Fishing Derby**, which drew more than 200 attendees and focused on teaching children how to fish and connect with local natural resources.



**Top to bottom:** Winter Haven Water raingarden; Roseate spoonbills move in to the new Lake Conine Nature Park; 1<sup>ST</sup> Annual Kids Fishing Derby event.

**Stormwater Assessment & Improvement Program:** The City has developed a full inventory of its stormwater infrastructure and constantly monitors the condition of these assets. Priority areas have been highlighted, and proposed improvements have been developed. **Priority areas are addressed as funding becomes available - through budgetary planning and the awarding of grants geared toward stormwater improvements.**

**Street Sweeping:** The City owns and operates a street sweeper machine along most City roads. The downtown areas get swept weekly, and residential areas are swept monthly. **This not only keeps streets clean, but also keeps litter and plant debris from going into the stormwater system and into our lakes .**

**Vegetation & Habitat Management:** City staff actively maintains aquatic vegetation at our nature parks, boat ramps and City-owned shorelines. **Work focuses on the removal of exotic species that harm the ecosystem, and also the planting of native plant species that improve fisheries and wildlife habitat in our lakes.**



**Top to bottom:** Stormwater pipe inspection at Lake Conine; Street Sweeper in operation; Floating island (tussock) removal for habitat improvement on Lake Idyl.

## PROJECT SPOTLIGHT

# LAKE CONINE NATURE PARK



Like many major Natural Resources projects, Lake Conine Nature Park represents the result of nearly **20 years of planning** and collaboration among state, county, and regional partners. This shared effort has created a unique community space that also serves as a vital natural resource for the City.

The wetland treatment system within the park filters stormwater from a **350-acre watershed**, removing more than 30,800 pounds of nutrients annually before the water reaches Lake Conine. Following the initial stormwater improvements completed in 2021, native bird species—including wood storks and roseate spoonbills—were observed returning to the area and have since made the park their home. Now, with the **addition of recreational amenities in 2025**, the park is open for the public to explore and enjoy—a true blend of environmental restoration and community benefit.



*Produced By:*  
**CITY OF WINTER HAVEN  
NATURAL RESOURCES DIVISION**

# WINTER HAVEN

THE CHAIN OF LAKES CITY

**We'd Love to Hear from You!**

 [naturalresources@mywinterhaven.com](mailto:naturalresources@mywinterhaven.com)

 863-291-5881



**Check out more resources on our site!**

<https://www.mywinterhaven.com/195/Natural-Resources>