

# Garfield Lake



## Background, Long Term Issues, and Trends

- The Agricultural Ditch is the primary source of water which supplies Garfield via the Salisbury Lateral.
- A 1998/99 renovation included: sediment removal, perimeter layout improvements, addition of islands, bank stabilization, and installation of a new bottom release outlet structure.
- The bottom release structure provides lake water quality benefits through release of generally low oxygen– high nutrient laden water that is typical in lakes near the sediment.
- The renovation provided significant improvement of habitat quality in and ‘on’ the lake (islands).

## Developing Issues

**Water Exchange:** Over the past decade, the lake has experienced conditions typical of water bodies with poor water exchange and high organic buildup. Low oxygen levels is a common symptom of these conditions (*see figure below*). The dissolved oxygen has been below the water quality standard three of the past ten years.

**Outlet Pipe:** A clogged outlet pipe (2007 to 2010) down-gradient from the park further slowed water exchange. Consequences from this included: flooding of shoreline plantings and island mud-flats, and negatively impacts to water quality typical of more stagnant water. Conditions have been improving since the pipe-issue was resolved in 2010. Dissolved oxygen levels in 2014 were the best recorded since the 1998 renovation (*see figure below*).

**Location:** 3600 W Mississippi Ave

**Surface Area:** 5.2 acres

**Max Depth:** 16 ft

**Primary Source Water:** Clear Creek via Agricultural Ditch – Salisbury Lateral

**Intended Lake Uses:**

Aesthetics, wildlife habitat, fishing

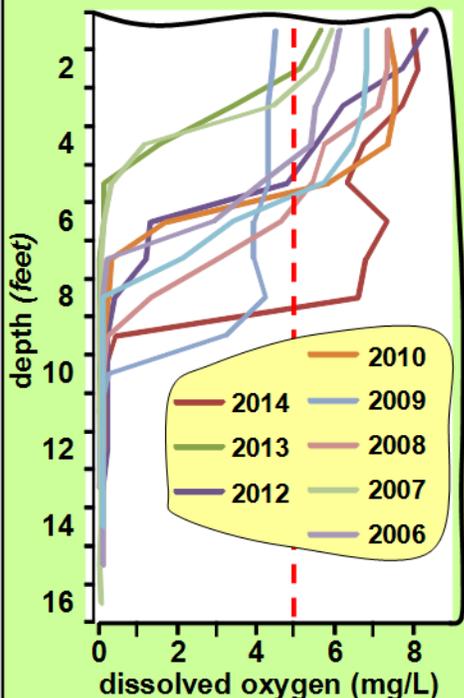
**Current Regulatory Issues<sup>1/</sup>:**

Dissolved oxygen, iron

1/ Conditions exceeding state water quality standards.

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Mid-summer D.O. profile (2006–2014) from mid-lake. The red-dashed line indicates the water quality standard\*.



\*based on average of values up to 40% of total depth (i.e., up to ~6 foot depth)

## Fish, Wildlife, and Habitat

**Fish:** Garfield was stocked with trout, crappie, and catfish in 2014. With a few relatively deep holes, the islands (mud flats), and a mix of shoreline conditions (emergent vegetation and deeper habitat along the boulder-banks), Garfield Lake provides a mix of habitats with which to meet the needs of a variety of fish and other aquatic species.

**Wildlife:** The lacking in-lake vegetative community in Garfield limits waterfowl food (aquatic insects, seeds). Since addition of the islands, shore birds (sandpipers, killdeer) are common inhabitants of the lake. The islands and mature-perimeter trees provide opportunities for other wildlife such as raptors, which are often observed at the park.

**Habitat:** The 1998 renovation greatly improved habitat in and on the lake as discussed above.

## Recommendations

- Incorporate aeration in the deeper portions of the lake (north & south of the islands; east bay) to improve water quality (dissolved oxygen);
- Increase naturalized landscape around the perimeter to reduce impacts of high maintenance turf grass (i.e., fertilizer) and increase quality of the terrestrial and riparian habitat;
- Consider algae control efforts that do not inhibit rooted vegetation such as ultrasonic waves and barley straw extract;
- If outflow pipe issues are identified, mitigate as quickly as possible so as to avoid negative consequences of perimeter flooding and poor water exchange (i.e., low oxygen levels).