

"FROGTOWN" AND THE "GROTTELOCH"

From Bull Frogs and Baseball to the Bee Branch

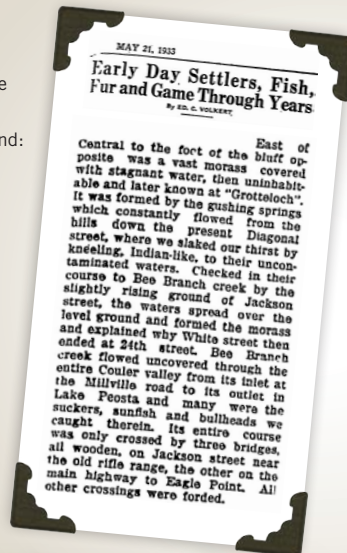


The area where you stand now was referred to as "Frogtown"

by the early German immigrants who were the primary settlers of this northern part of Dubuque. A major impediment to development of this area was the "Grotteloch," a locally coined term that referred to a marshy swamp that was fed from springs along Diagonal Street.

An excerpt from the May 21, 1933, Telegraph-Herald and Times-Journal article entitled, "Early Day Settlers, Fish, Fur and Game Through Years" written by Ed C. Volkert describes the area as "a vast morass covered with stagnant water." Merriam-Webster Dictionary defines morass as "an area of soft, wet ground: a marsh or swamp." One can assume that the "Grotteloch" was home to an abundance of bull frogs, hence the name Frogtown.

This bird's eye view of the city in 1872, engraved by Augustus Koch, shows the undeveloped empty blocks (shaded in green) which document the effect of this swampy area.



A portion of the Grotteloch bounded by Jackson Street to the west, 25th Street to the north, Washington Street to the east, and 24th Street to the south never fully developed into housing but was instead developed into a park.

Originally, the area was named the Twenty-Fourth Street Park when it opened in 1885. This was the year Dubuque joined the Eastern Iowa Baseball League. From 1895 until 1927, the field served as the home field for the city's team, affiliated with the Eastern Iowa League (1895), as an independent (1895-99), the Western Association (1899-1901), the Triple-I League (1901-14), and the Mississippi Valley League (1922-32).



Charles Albert Comiskey (1859-1931) who played with the Dubuque Rabbits from 1879-82 became the namesake for the field on June 20, 1929. This is the same individual that eventually would become the founding owner of the Chicago White Sox and the major league stadium. Previously, the block was called "Olinger Park" and was privately owned by the Olinger family. The city purchased the park and dedicated it to the noted player.

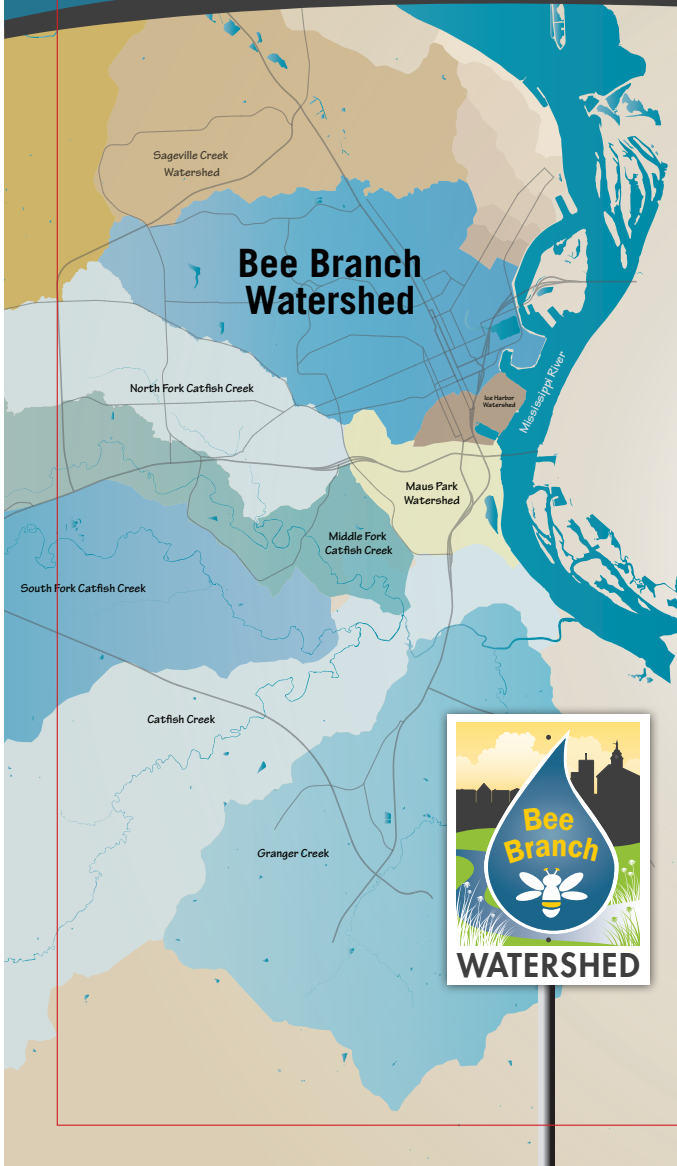


BEE BRANCH WATERSHED

Understanding Water in Our Landscape



Bee Branch Watershed



What is a Watershed?

A watershed is an area of land that drains to a particular body of water such as a river, lake, or ocean. The term is used to describe how water flows in our landscape. This includes creeks and streams; stormwater and melting snow; water used on lawns, gardens, and crops; and water that filters through the soil.

Watersheds vary in size and fit together like puzzle pieces to form our land masses.

The Bee Branch Watershed

Watersheds are determined by topography, as it shapes the course and speed of water moving through the area. The Bee Branch Watershed is approximately 6.5 square miles of land located in the northeast part of the city. It stretches from the Mississippi River west past John F. Kennedy Road, north to the Northwest Arterial, and south to West Fifth Street.

The Bee Branch Watershed is characterized by steep slopes and bluffs that shed water quickly from the west to the east. It drains to the Bee Branch Creek and ultimately to the Mississippi River at the 16th St. Detention Basin. Although it accounts for only 25 percent of Dubuque, over 50 percent of residents either live or work within the watershed.

Look for the Bee Branch Watershed sign posted throughout the watershed. When you see the sign, you know all of the water that falls in that area of Dubuque will flow to the Bee Branch Creek. Have you seen the Bee Branch Watershed sign? Is there one in your neighborhood?



Keep storm drains clear of debris.



Trash found in the Lower Bee Branch.

Help Protect Our Waters

All communities—from small towns to major cities—depend on lakes, reservoirs, rivers, and ground water for clean drinking water. Every community, including Dubuque, has a responsibility to protect it. Any pollutant you put on the land will end up in our creeks and ultimately in the Mississippi River. You have a direct impact on Dubuque's water quality and the health of your watershed. There are a lot of little things we can do to pollute less.

- ✓ **Use fertilizers and lawn chemicals sparingly.** Sweep up extra fertilizer that falls on your driveway or sidewalk.
- ✓ **Pick up after pets.** Pet waste contains bacteria that pollutes water.
- ✓ **Take your car to the car wash or wash it on the lawn to prevent soapy water from leaving your property.**
- ✓ **Fix oil and antifreeze leaks from your car.** Promptly clean up spills to prevent them from washing into the street and storm drain.
- ✓ **Clean paint brushes in a sink, not outdoors, and properly dispose of excess paints through a hazardous waste collection program.**
- ✓ **Throw all your trash in a garbage can, and not on the street, sidewalk, grass, or in a storm drain.** If you see litter, pick it up and dispose of it properly.



NATURAL SYSTEMS

Capturing and Infiltrating Our Water



Low Impact Development (LID)

Traditionally, stormwater is often sent into storm sewers where it is flushed into our streams and rivers along with pollution from roads, parking lots, or yards. As we add more roofs, pavement, and compacted turf to our communities, it is more important than ever to help rainwater infiltrate — to minimize flooding and protect water quality.

There is a changing trend in land development and stormwater management. Low impact development (LID) is an alternative approach that retains and infiltrates rainfall on-site. It mimics the natural hydrology of our historic landscape. There are a variety of conservation practices that work together to mitigate flooding and reduce stormwater pollution, such as rain gardens, bioswales, native landscaping, and permeable paving.

Rain Gardens

Rain gardens are depressional areas landscaped with perennial flowers and native vegetation that soak up rainwater. They are strategically located to capture runoff from impervious surfaces such as at the end of a roof gutter or drain spout. Rain gardens are typically seven to 20 percent the size of the impervious surface generating runoff entering the garden, and between six and nine inches deep. They must be level from side to side and end to end so stormwater runoff spreads evenly. A two-inch layer of shredded wood mulch is an important part of a rain garden. Mulch helps retain moisture and discourages weed seeds from germinating.



A rain garden landscaped with perennial flowers and native vegetation will allow for infiltration of rainwater.

Permeable Paving Systems

Permeable pavement has pores or openings that allow water to pass through the surface and filter gradually into the soil below. It comes in the form of permeable asphalt, permeable concrete, and permeable pavers. For example, specially designed interlocking concrete pavers are utilized in Dubuque's green alley projects. By infiltrating stormwater on-site, the amount of water and pollution flowing into storm sewers is greatly reduced. Approximately 240 alleys in the Bee Branch Watershed will be converted to green alleys. This conversion is expected to reduce stormwater runoff within the watershed by up to 80 percent.



A permeable green alley in Dubuque.

Bioswales

Bioswales achieve the same goals as rain gardens by slowing and filtering stormwater, but are designed to manage a specific amount of runoff from a large impervious area, such as a parking lot or roadway. Because they need to accommodate greater quantities of stormwater, they are deeper than rain gardens. They are also linear systems that are greater in length than width. Like rain gardens, they are vegetated with native plants and grasses. The longer root systems of native grasses increase infiltration of rainwater into the ground.

STREAM HABITAT ENHANCEMENTS

Promoting a Healthy Ecosystem for Aquatic Life



Creating a Healthy Fish Environment

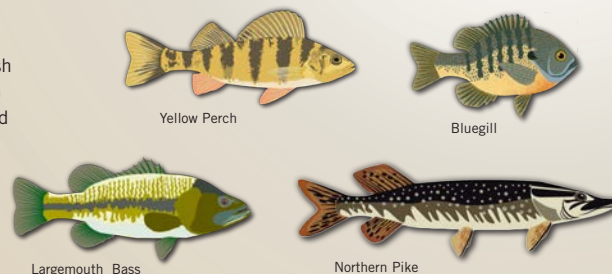
The single most important aspect of promoting a healthy fish environment in the Bee Branch Creek was removing it from the buried storm sewer and re-introducing it to sunlight, daylighting the creek. While fish can live in the dark, most fish food, such as phytoplankton, zooplankton, annelids, worms, insects, mollusks, etc., require daylight to persist.

The temperature of the water is also an important factor that affects the viability of fish. The steady, constant discharge of groundwater into the creek at multiple locations will help ensure a temperature no warmer than 68 degrees, promoting a healthy fish population.

Just like people, fish need oxygen to live. But instead of extracting oxygen from the air, fish “breathe” oxygen dissolved in the water using their gills. Fish gills allow water containing dissolved oxygen to diffuse into the fish’s bloodstream. Cascading water features have been constructed at multiple locations along the creek. In addition to providing pleasing scenery and sounds, these mini-waterfalls serve as aeration systems, introducing fresh oxygen into the ecosystem that fish and plants need to thrive.

Fish Found in the Creek

In June 2014, the Iowa Department of Natural Resources conducted a fish assessment in the Lower Bee Branch Creek. The stream segment contained 14 native species including bluegill, largemouth bass, northern pike, pumpkinseed, and yellow perch.



Riffles, Runs, and Pools

The Bee Branch Creek includes riffles, runs, and pools which are common features of a healthy creek. Riffles are shallow with faster, turbulent water typically running over or between rocks. Runs are deeper areas that flow faster with little or no turbulence. Pools are deeper areas with slow moving water. The varying flow characteristics provide a variety of habitats that support both fish and invertebrates. The cobble creek bed provides space for invertebrates, small insects and worms, otherwise known as fish food. Many fish also require gravel and cobble to shelter their eggs during reproduction.

Fish Shelter

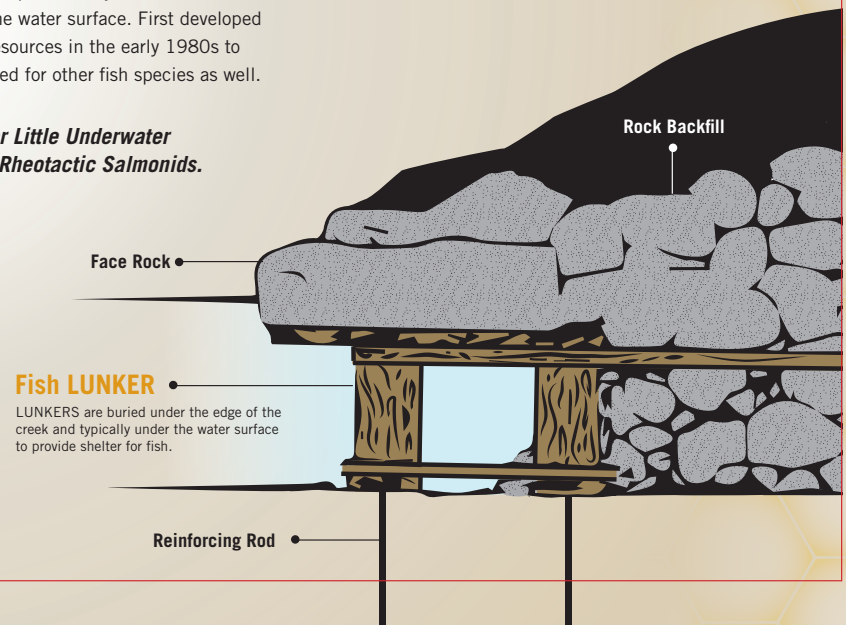
At multiple locations along the creek, there are buried logs, fish LUNKERS, and boulders to provide aquatic habitat. Buried logs provide refuge and overhead cover for fish. It also provides habitat for aquatic invertebrates. Logs help to dissipate the energy associated with flowing water, allowing for easier fish migration and channel stability.

Fish LUNKERS provide both stream bank stability and covered aquatic habitat. The LUNKERS are similar to a wood pallet. They are buried under the edge of the creek and typically under the water surface. First developed by the Wisconsin Department of Natural Resources in the early 1980s to create trout habitat, they are now widely used for other fish species as well.

FUN FACT: LUNKERS is an acronym for Little Underwater Neighborhood Keepers Encompassing Rheotactic Salmonids.



Fish LUNKERS were installed along the edge of the creek in multiple locations.





ENGAGING THE SPILLWAY

Artfully Treating and Conveying Our Stormwater



Stormwater Inundated Streets

Flash flooding can cause stormwater to run like a river down Kaufmann Avenue and 22nd Street toward Elm Street. While streets are designed to carry stormwater, the depth and speed of water is enough to unsteady pedestrians and stall vehicles stranding their passengers.

Prior to the Bee Branch Creek Restoration Project, the floodwaters would be joined by waters from the north and from the east, and collect at the 22nd and Elm Street intersection. Because of the limitations of the storm sewer, it would rise to unsafe depths. With the re-creation of the Bee Branch Creek and the adjacent greenspace, stormwater now drains more efficiently; the restored creek and floodplain area can handle five times more flow than the storm sewer it replaced.

Valleys Carved by Stormwater

Due to the steep nature of the Bee Branch Watershed, flash flooding will always be a reality. In fact, streets like Kaufmann Avenue, W. Locust Street, and W. 32nd Street were constructed in the valleys carved out by stormwater even before Dubuque was settled. Floodwaters have, and will continue to, drain down Kaufmann Avenue to 22nd Street to the Bee Branch Creek. So, even after taking steps to increase the capacity of the storm sewer system and limit the flow of stormwater in the street, one issue remains: how best to deliver potentially erosive floodwaters running down 22nd Street into the Bee Branch Creek.

The Art of the Spillway

Spillways provide a way for water to flow from a higher elevation to a lower elevation in such a way as to prevent erosion of the surrounding soils. They must be designed to be erosion-resistant to withstand the high scouring velocities created by the water flowing over the elevation drop. While a spillway can be armored using vegetation with deep root systems, the variable nature of rainstorms and flash flooding would damage such a system. For this reason, a hard-armored spillway is often utilized; however, the 22nd Street spillway goes beyond providing erosion protection to the banks of the Bee Branch Creek.

As is the case with many rural creeks, the Bee Branch Creek does not dry up in the days following a rainstorm. It is constantly fed with groundwater. In the case of the Bee Branch, much of the groundwater is carried to the creek through the storm sewer system. This groundwater discharge serves to keep a steady flow of cool, clean water into the creek. The water cascading down the spillway also introduces dissolved oxygen into the creek, helping to provide a stable, healthy environment for aquatic habitat.



The 22nd St. spillway provides a way for floodwater to flow from a higher elevation, the street, to a lower elevation, the creek, in such a way as to prevent erosion of the surrounding soils.

BEE BRANCH PRAIRIE RESTORATION

Reducing Runoff and Renewing a Habitat



The Modern Landscape and Increased Runoff

For thousands of years, the Iowa landscape was dominated by tallgrass prairie vegetation with extensive root systems that helped form deep, rich soils. Prairie soils had high organic matter content and ample pore space between soil particles. These soil characteristics helped the prairie absorb and infiltrate most rainfall, while shedding little runoff.

As the prairie was converted to agriculture and cities were established, the ability of Iowa's land to absorb and infiltrate water decreased. Urban landscapes have impervious surfaces, including streets, parking lots, and rooftops. Urban soils are compacted by grading activities. Impervious and compacted urban surfaces prevent infiltration and increase the amount of runoff. Urban runoff occurs with almost every rainfall, causing water quality problems, stream corridor erosion, and increased flood potential.



Strong Roots

Native plants have tremendous root architecture that builds soil quality and increases organic matter content. High organic matter helps soil hold water, allowing most rain to infiltrate.

Illustration by Doug Adamson,
RDG Planning & Design
Courtesy of Natural Resources
Conservation Service

The Benefits of Native Landscaping

The use of native plants in modern landscapes provides a connection to our prairie heritage. Once established, native plants are aesthetically pleasing and require little maintenance because they are adapted to Iowa temperatures and rainfall patterns. This can lead to significant cost savings when compared to labor intensive turf grass.

Native landscaping attracts songbirds, dragonflies, hummingbirds, butterflies, and other desirable species. They also resist local pests and disease. Most important, it helps restore soil quality and absorbs more rainfall, reducing the amount of runoff from urban spaces.

Bee Branch Prairie Reconstruction

Native plants were strategically used along the Bee Branch to manage rainfall and diversify the landscape. Species include black-eyed susans, purple coneflowers, brown fox sedge, prairie blazing star, cardinal flowers, and many others. These plants have tremendous root structures that add organic matter to the soil and increases infiltration.

Prairie Growth and Maintenance

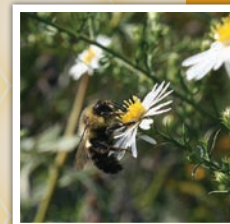
Native plants spend the first two years developing roots. It takes roughly three years for the plants to become established and showy. Prairie reconstruction reduces maintenance, but is not maintenance-free. Certain activities need to be performed on an annual basis, including prescribed burning and spot treating or mowing for weed control.



Black-eyed Susans



Purple Coneflower



Wild Bergamot (Bee Balm)



FREQUENT FLASH FLOODING

Working Together to Find a Solution



The Problem

In May of 1999, many Dubuque citizens living in the Bee Branch Watershed were waiting out a tornado warning in their basement when heavy rains produced a very personal disaster that shook their lives. As Dubuque resident Mike Hillard said in the May 20, 1999 edition of the Telegraph Herald,

"It was evacuate the tornado shelter or drown. Our freezer was just bobbing."

According to the newspaper, hundreds of basements were flooded. Heavy rains came again in 2002, 2004, 2008, 2010, and 2011. Six Presidential Disaster Declarations were issued with total damage estimates of almost \$70 million.

DATE	RAINFALL DATA
May 21, 1999	3 inches of rain in 1.5 hours
June 19, 2002	4.9 inches of rain in 24 hours
June 2, 2004	3.9 inches of rain in 48 hours
May 27, 2008	15.7 inches of rain in 2 months
August 14, 2010	4.8 inches of rain in 12 hours
August 30, 2011	10.2 inches of rain in 12 hours

The Solution

Following the 1999 storm, the City expended \$275,000 for an engineering study called the Drainage Basin Master Plan.

The plan identified at-risk properties and recommended major infrastructure improvement to mitigate flood damage.

The City of Dubuque understands that many citizens throughout Dubuque must occasionally deal with flooded basements. But nowhere else in the city did flooding reach basement ceiling joists endangering the lives of our friends and neighbors. That is why the Bee Branch Watershed Flood Mitigation Project remains one of the Dubuque City Council's top priorities.

Citizen Input

In August 2003, the Dubuque City Council formed a sixteen-member citizen advisory committee to work with engineering consultants on an alignment study to determine the location and preliminary design of a means to channel water out of Dubuque's North End neighborhoods.

The committee represented the needs and views of impacted residents as the community sought a solution to the flooding problem. Their goals were to form a consensus on what the

final flood solution would look like, and to identify the homes and businesses that would be impacted.

The committee considered two potential solutions: an open waterway or an underground sewer.

To help them evaluate the solutions they established six criteria: preservation of local businesses and services, minimization of property acquisitions, affordability, preservation of neighborhood access and connectivity, minimize health and safety risks, and impacts to quality of life and the environment.

Decision to Daylight

After several committee, public, and neighborhood meetings, the committee's alignment study concluded in November of 2004. Following its presentation at a City Council work session, the City Council adopted the alignment recommended by the citizen advisory committee to create an open channel by "daylighting" the Bee Branch Creek.

Residents review potential solutions to channel water out of Dubuque's North End neighborhoods.





BEE BRANCH COMMUNITY ORCHARD

Edible Landscapes and Sustainability



What is a community orchard?

A community orchard is a collection of fruit and/or nut trees, bushes, and other edible landscapes planted in a public space as a shared resource for the community.

Why plant a community orchard?

In many neighborhoods, people don't have the space to grow their own food. Fruit and nut trees take up more land than vegetables in a garden, and trees take a lot longer to grow. Once a tree is established, it can provide a lot of fruit or nuts for many years.



A community orchard can be a fun place for community activities or picnics, a place to learn about nature, or a shady place to relax. Community orchards are great places for people to come together to plant and tend and harvest local varieties of fruit and nut trees...it's an edible landscape!

Where can I learn more?

The Dubuque Community Garden Coalition is a partnership of community organizations and gardeners who share resources and work together to expand opportunities to grow food in Dubuque. Their mission is to create greater access to affordable, inclusive, sustainable gardening opportunities in the city. To find out more, including searching available garden spaces and volunteer opportunities, visit www.dbqcommunitygardens.com.

How does this community orchard help the environment?

Trees clean the air we breathe through their leaves. They take in carbon dioxide and then give off oxygen, which people and animals need to breathe. Trees have deep roots that help hold soil in place. This prevents erosion, so the soil doesn't run off the land into our waterways, like the Bee Branch Creek. Fruit trees and bushes also create green space in the middle of an urban environment, creating habitat for wildlife and increasing the city's biodiversity.

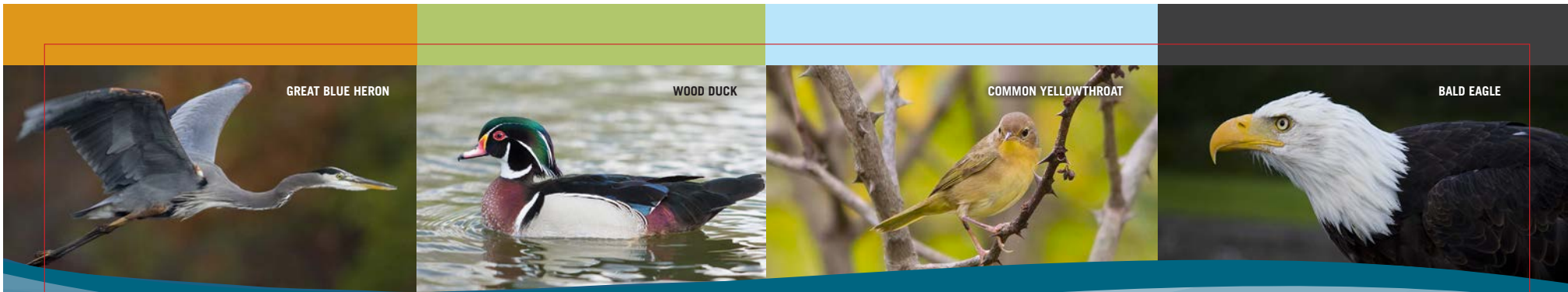


Sustainable Dubuque is a community that values the benefits of wholesome food from local producers, distributors, farms, gardens, and hunters.



Photo credit: Jessica Reilly
Telegraph Herald





GREAT BLUE HERON

WOOD DUCK

COMMON YELLOWTHROAT

BALD EAGLE

BEE BRANCH POND

The Mississippi Flyway



History of the Pond

Before emptying into the Mississippi River, the Bee Branch Creek flows into the Bee Branch Pond, also known as the 16th Street Detention Basin. The origins of the pond date back to the construction of the John C. Culver floodwall/levee system completed in 1974.

The floodwall/levee system prevents the Mississippi River from flooding Dubuque. When the river rises to flood stage, flood gates are closed, isolating the city from the river. When this occurs, all stormwater that flows from the city must be pumped over/through the floodwall/levee system. The Bee Branch Pond provides a place to temporarily store stormwater until pumped into the Mississippi River. When the river is below flood stage, the Bee Branch Pond acts as a protected waterbody for both fish and birds.



Aerial view of the Bee Branch Pond and flood gate.

Mississippi Flyway Pit Stop

The city of Dubuque is located on the Mississippi Flyway, part of a larger migration route extending from northwest Canada down the Mississippi River valley to the Gulf of Mexico. More than 250 species of birds travel this flyway each year. Over the years, millions of birds have visited the safe, comfortable confines of the Bee Branch Pond.

Birds Spotted at the Pond

American Crow	Franklin's Gull	Red-Tailed Hawk
American Egret	Gadwall	Red-Winged Blackbird
American Robin	Great Blue Heron	Ring-Billed Gull
American White Pelicans	Herring Gull	Ring-Necked Duck
Bald Eagle	House Sparrow	Rock Pigeon
Black Crown Night Heron	House Wren	Semi-Palmated Sandpiper
Black Duck	Iceland Gull	Solitary Sandpiper
Black-Capped Chickadee	Killdeer	Song Sparrow
Blue Jay	Least Sandpiper	Spotted Sandpiper
Canada Goose	Lesser Black-Backed Gull	Tree Swallow
Chimney Swift	Lesser Scaup	Warbling Vireo
Common Yellowthroat	Mallard	Wilson's Phalarope
Coot	Mourning Dove	Wood Duck
Double-Crested Cormorant	Northern Cardinal	Yellow Warbler
Downy Woodpecker	Osprey	
European Starling	Purple Grackle	