CITY OF BLOOMINGTON UTILITIES

WATERWORKS

WATER WORKS

$138M VALUED ASSETS
25,311 CONNECTIONS

- Monroe Water Treatment Plant
- 7 booster stations
- 7 storage tanks
- 430 miles of water pipes
- 3,064 fire hydrants

Prior to our current water treatment plant, Bloomington had a long history of water shortages due to drought-like weather conditions, lack of natural water supplies, and improper water storage.

As Don Herold saw the water famine of 1908–9.

- 1818 Monroe County founded. Early settlers relied on existing streams for water.
- 1860 Cisterns built on Courthouse Square; quickly contaminated by human and animal wastes.
- 1885 Courthouse well drilled down 2,670 ft but was completely dry.
- 1891 Private water franchise established.
- 1892 Upper Twin Lake built on porous limestone.
- 1893 First water plant began operation.
- 1885-1890 Monroe County experienced typhoid epidemic due in part to contaminated water.
- 1898 Plant sold to city and “City Water Works” was established.
- Early 1900’s Plant often shut down due to lack of water; Bloomington frequently without water for a month at a time.

Bloomington’s first waterworks plant (Twin Lakes)

- 1905 Lower Twin Lake built on porous limestone.
- 1909 Weimer (Wapehani) Lake built on porous limestone.
- 1911 University Lake built by IU for campus only.
- 1915 Bloomington Chamber of Commerce formed in part to advocate for reliable water supply.
- 1916 Leonard Springs Lake built.
- 1922 Plant shut down by lack of water three days per week.
- 1923 First use of scientific study to determine site for water storage. Debate ensued about best location for new water plant.

Leonard Springs is now a nature preserve and looks very similar to its pre-reservoir days, although remnants of the dam are still visible.

- 1925 Griffy Lake built and plant begins operation in public-private partnership.
- 1930's Lengthy drought results in water rationing.
- 1939 City bought back water company.
- 1940's Griffy capacity insufficient; water trucked in to meet daily needs.
- 1943 Leonard Lake retired as drinking water source and allowed to drain.
- 1946 IU delayed start of Fall semester due to low water supply.
- 1953 Bean Blossom reservoir built; renamed Lake Lemon.
- 1954 Griffy plant expanded to utilize both Lemon & Griffy water.
- 1960's Droughts caused return of water use restrictions.
- 1965 Lake Monroe built.
- 1967 Monroe Plant began operation.
- 1996 Griffy Plant retired.
- 2020 Griffy plant demolished.

On Bean Blossom Lake, water skiers now frolic where cows used to graze. Bloomington now has all the water it needs to drink and wash with, with plenty left over to play in.

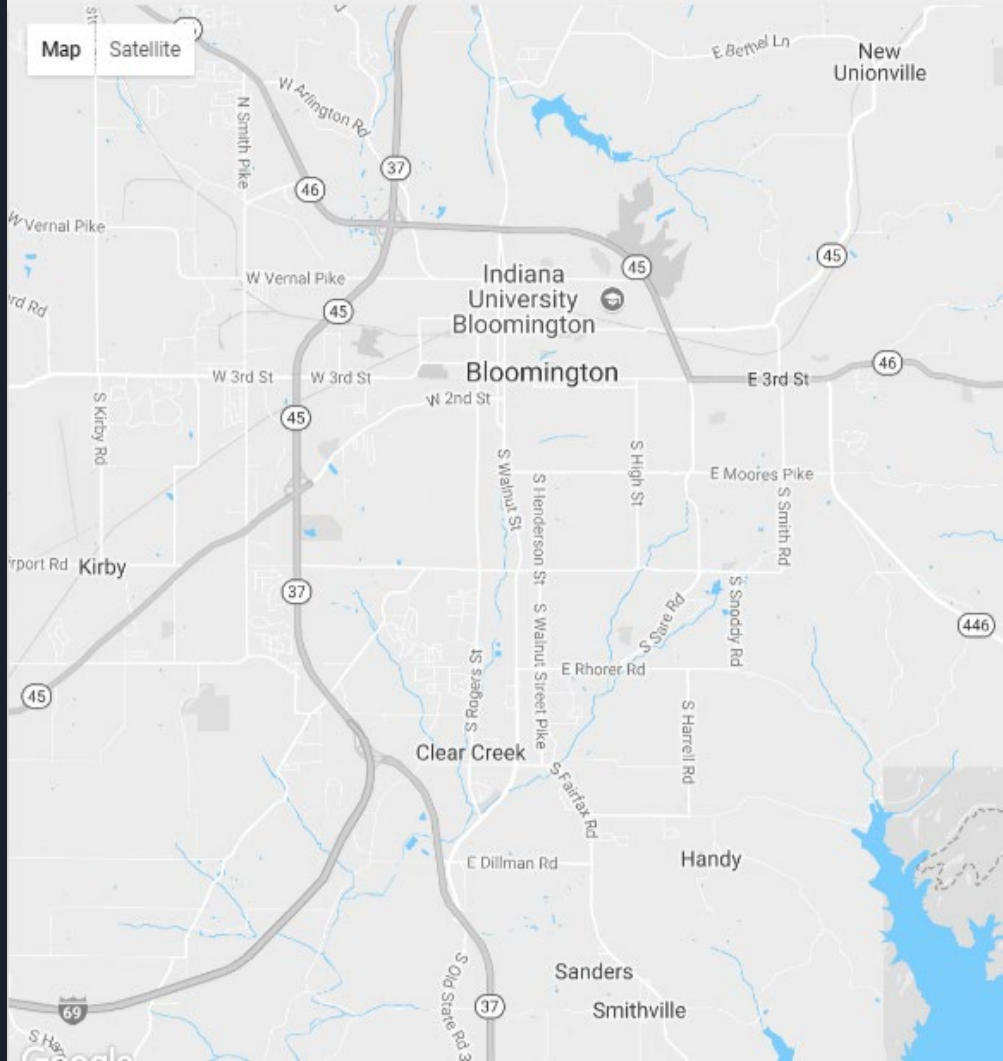
Lake Lemon did not leak like previous water storage reservoirs, but before it was even completed, CBU realized it would not hold enough water for Monroe County's projected growth.

Previous Water Sources

1892 Upper Twin Lake
1905 Lower Twin Lake
1909 Weimer (Wapehani) Lake
1911 University Lake (for IU campus use only)
1916 Leonard Springs Lake
1925 Griffy Lake
1953 Lake Lemon

Current Water Source

1965 Lake Monroe



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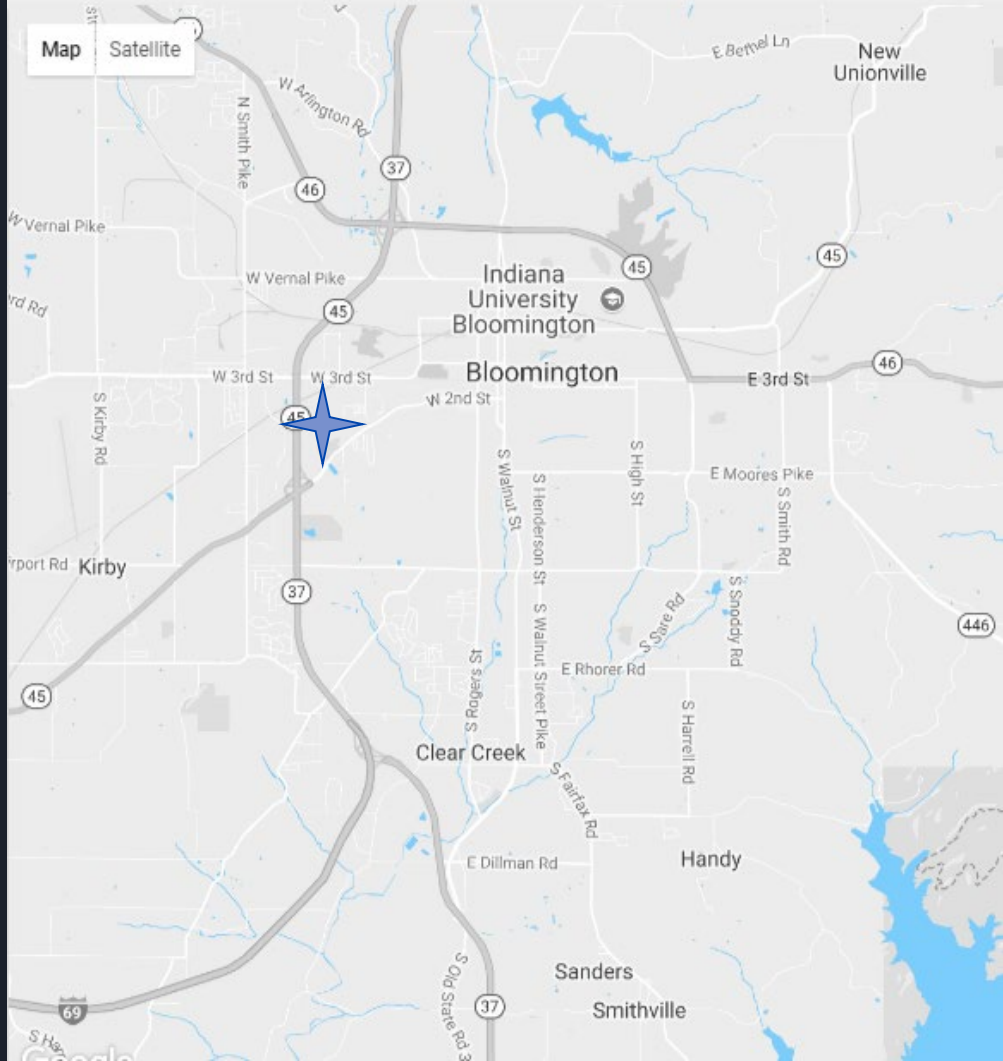

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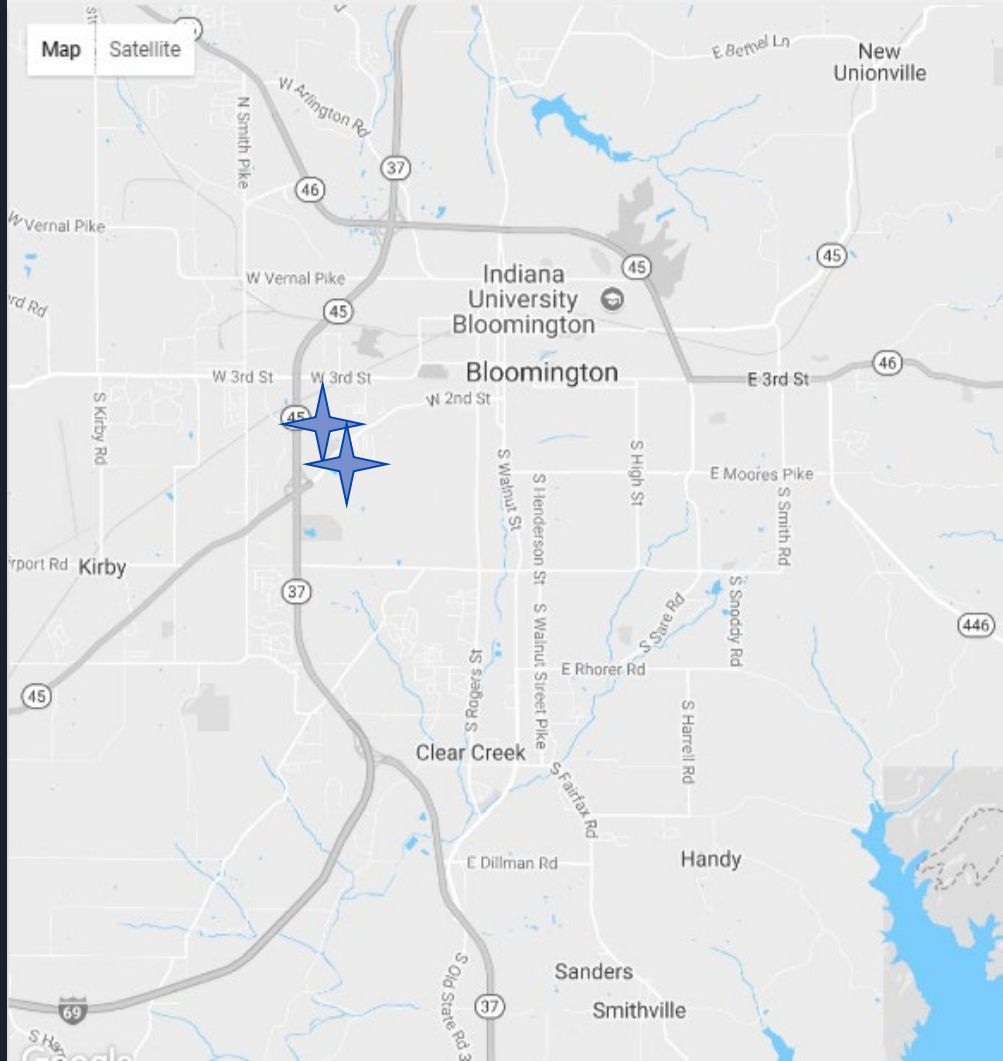

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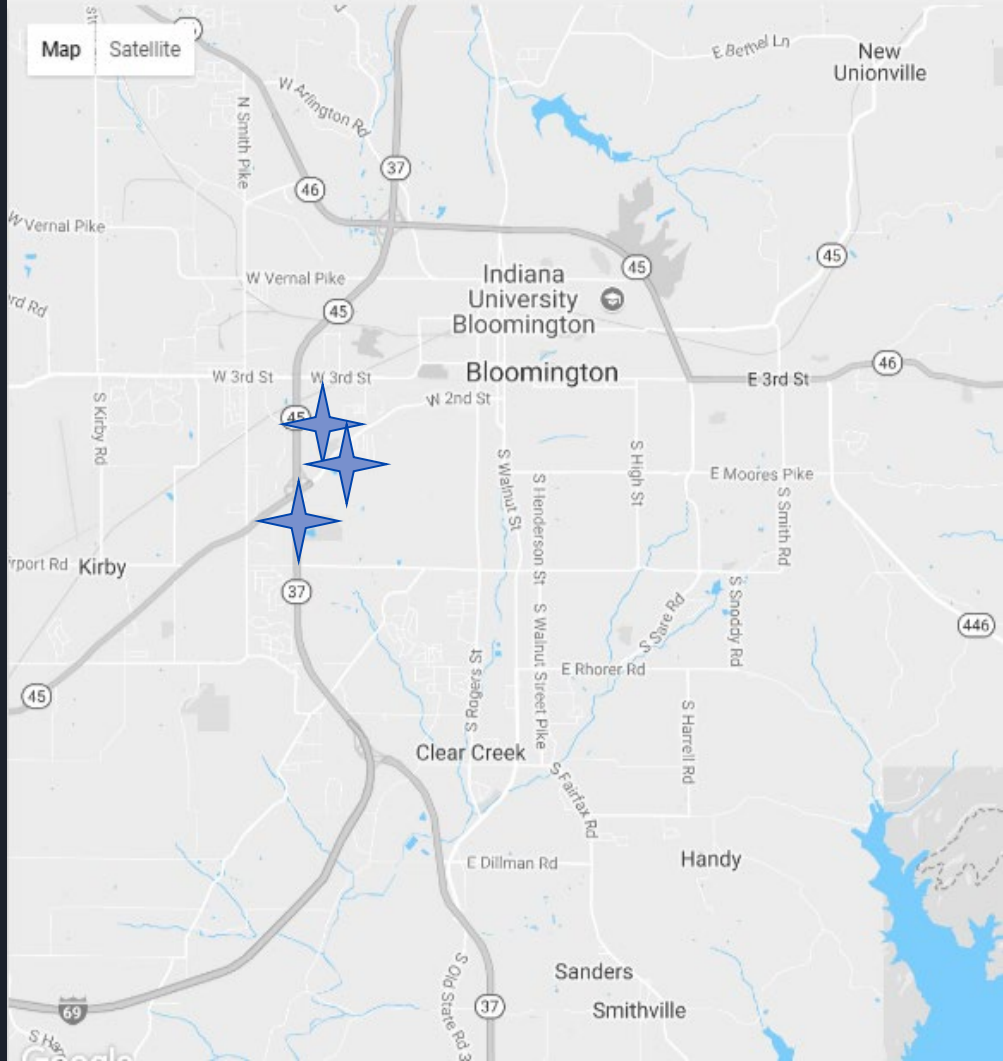

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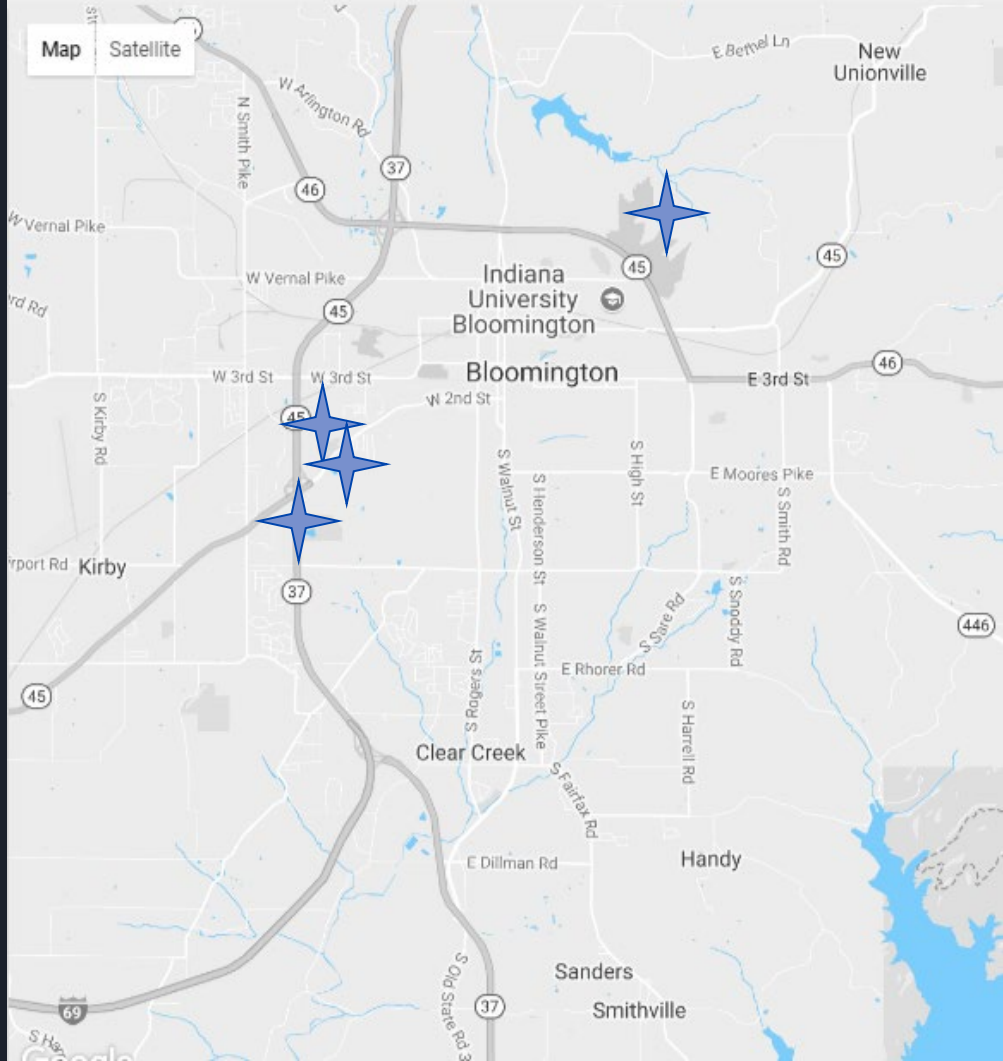

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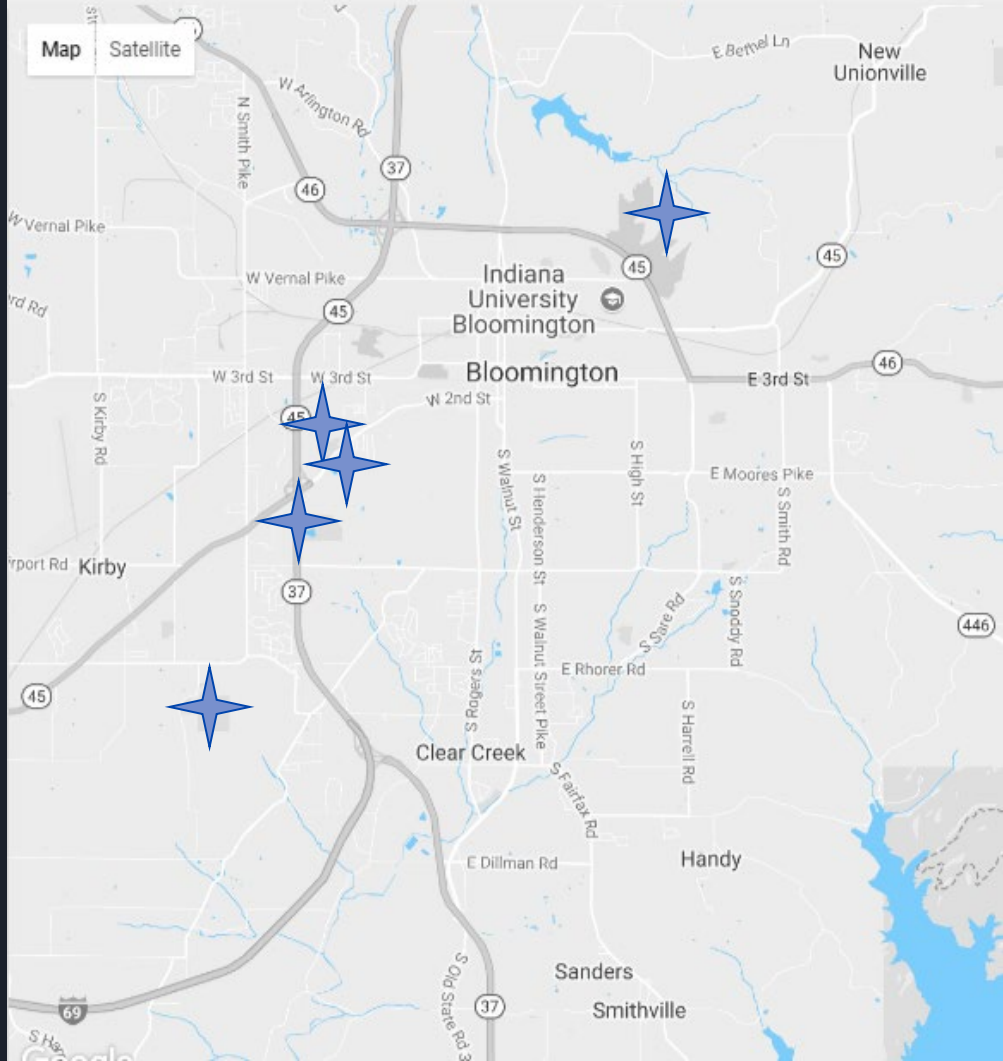

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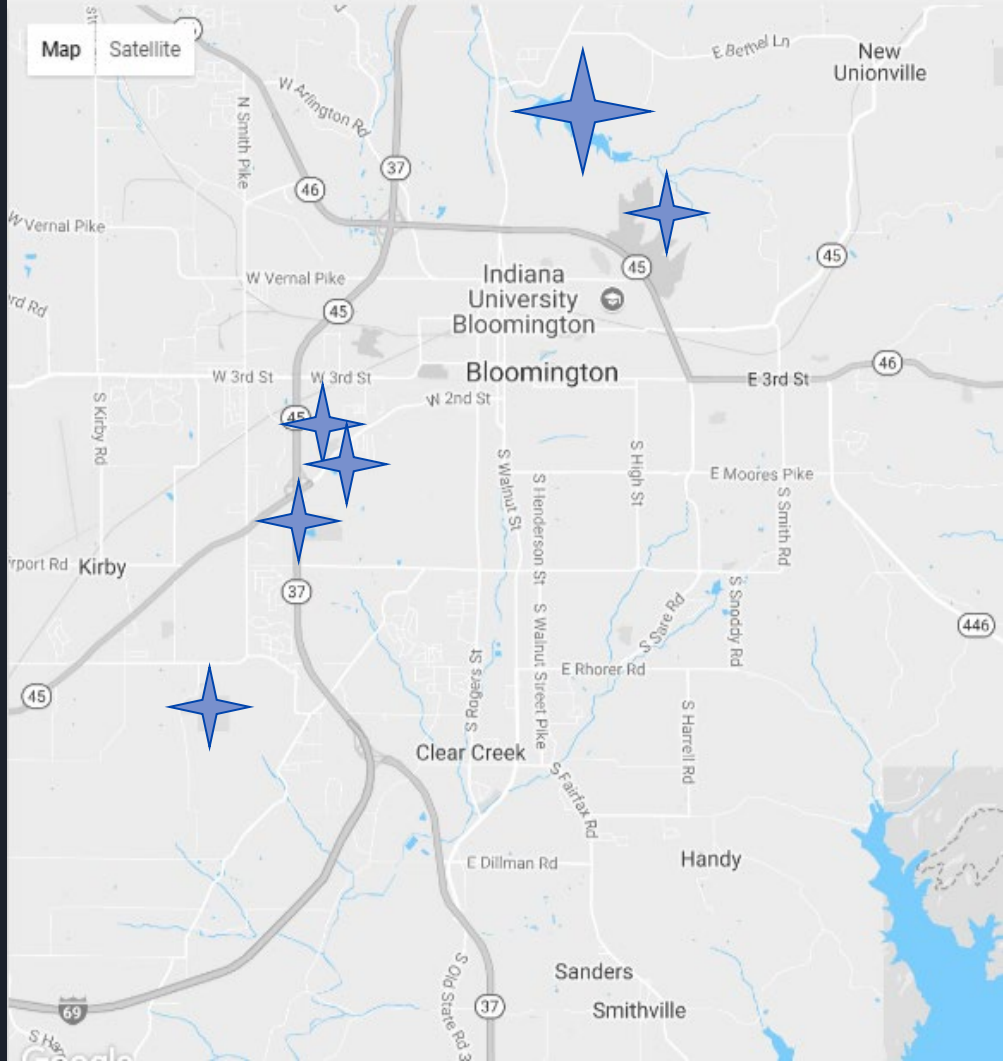

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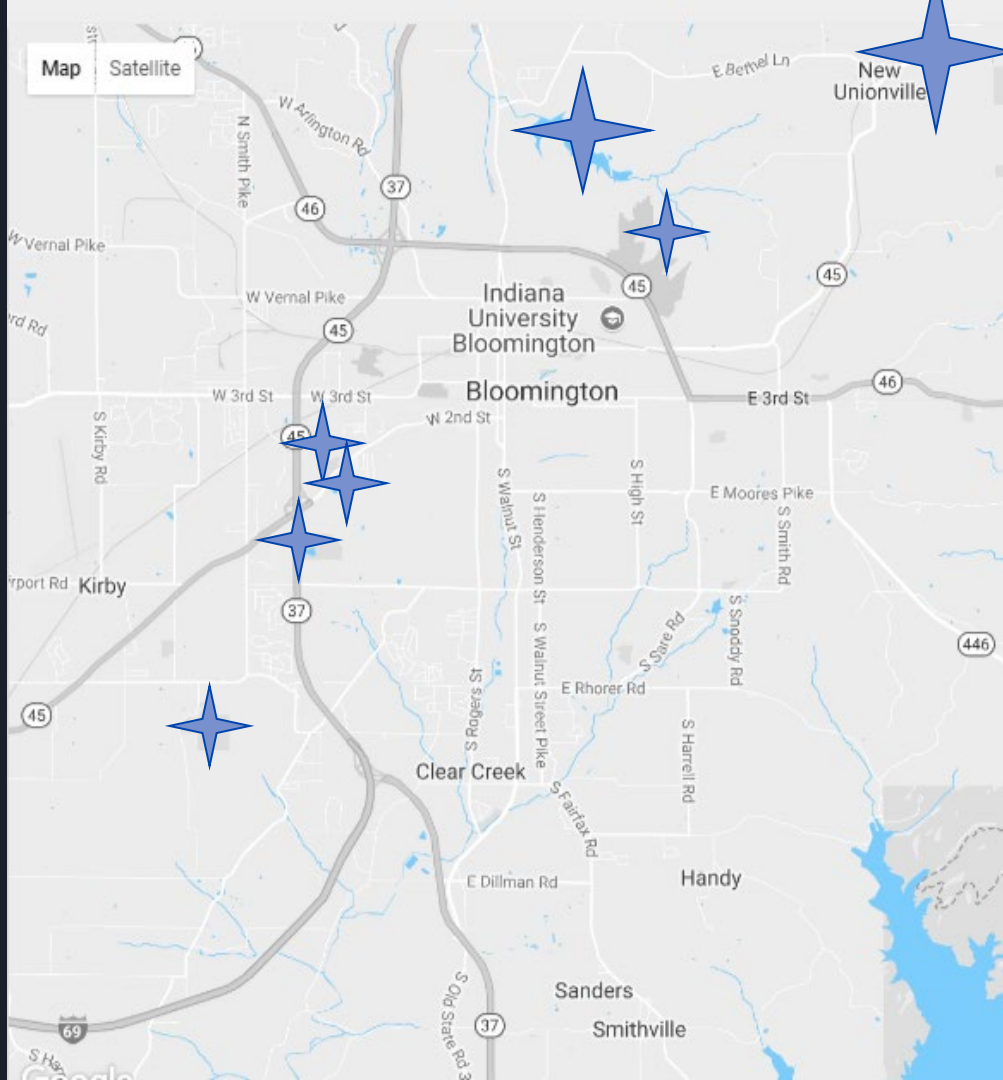

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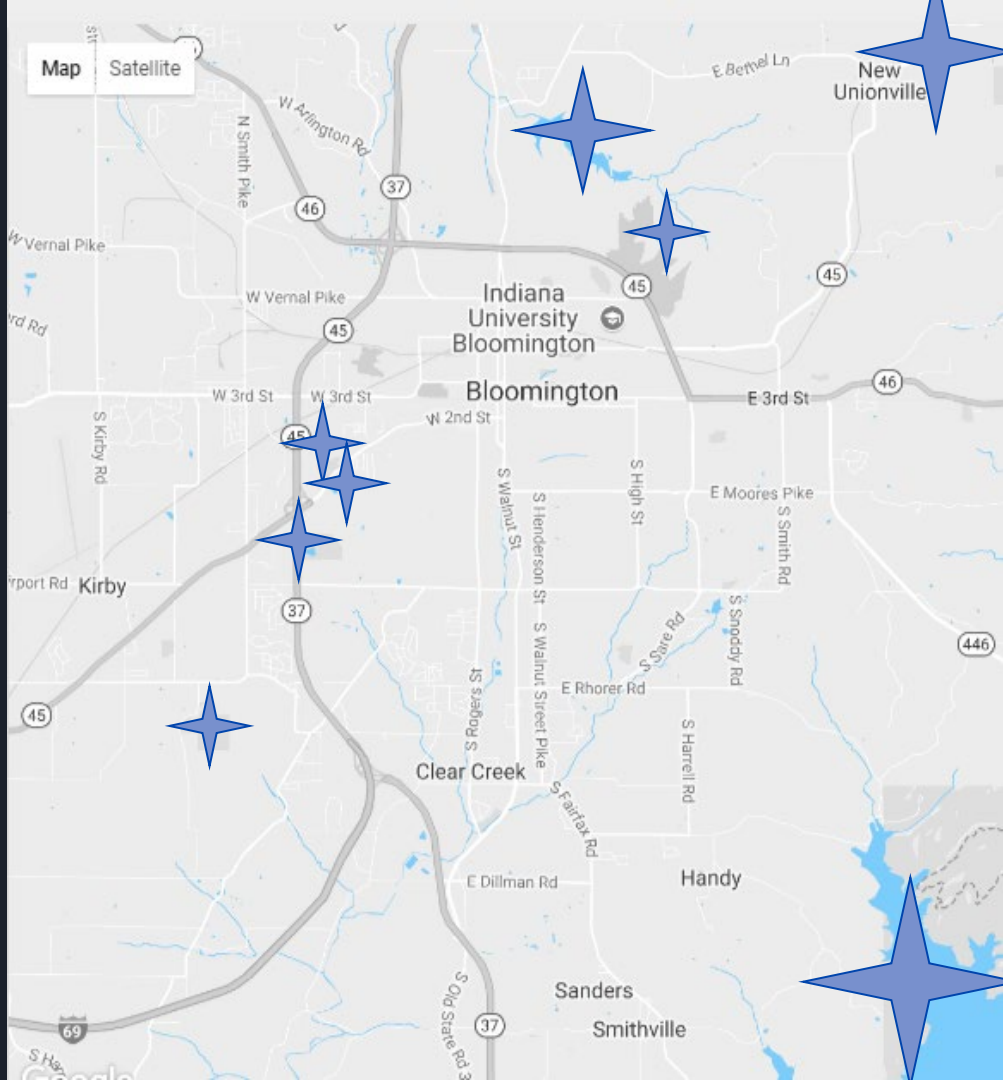


Lake Monroe before...

spillway control tower

...and after

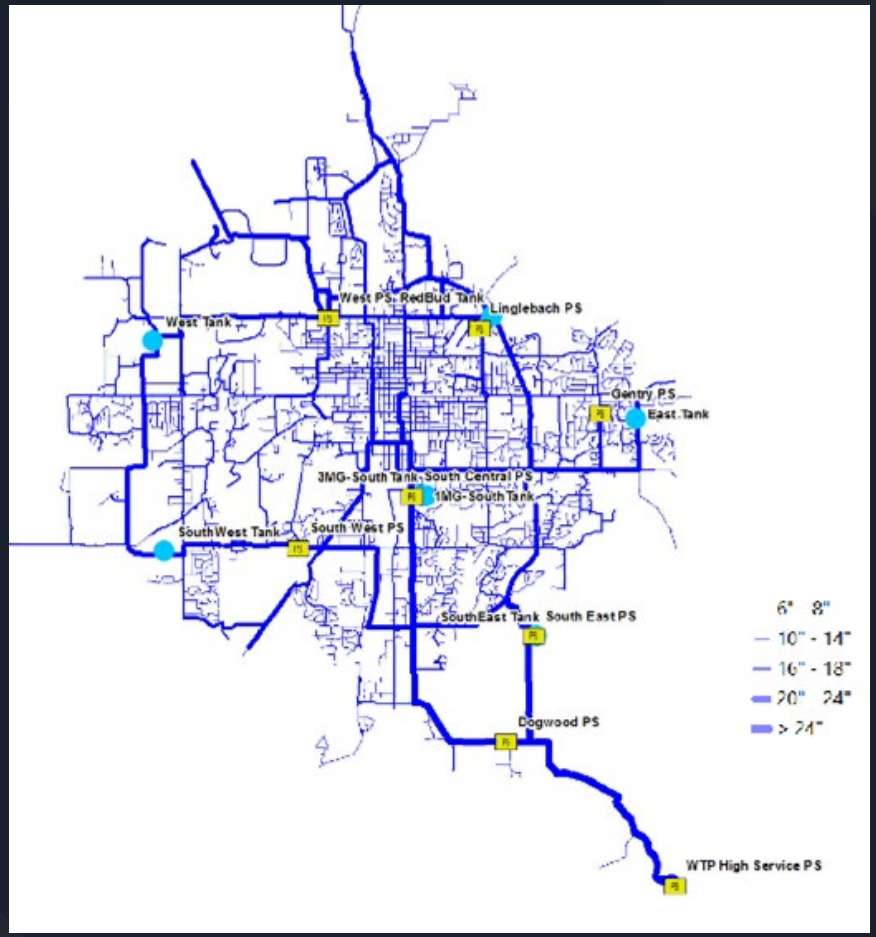
spillway control tower

WATER TREATMENT

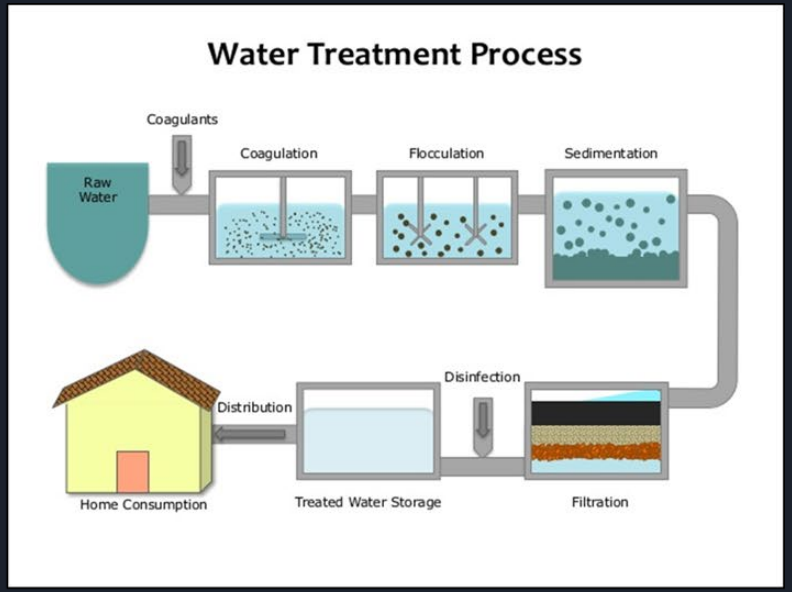
Bloomington and the surrounding area is served by one water treatment plant, Monroe Water Treatment Plant on South Shields Ridge Rd. MWTP can process 30 million gallons per day; it averages 14 mgd which is 5 billion gallons per year.

WATER DISTRIBUTION

CBU services 22,300 customers. After water leaves MWTP, there are 420 miles of pipes owned by CBU leading to thousands of service lines owned by our customers. In addition, 8 rural water companies and Indiana University buy our water wholesale.



Monroe Water Treatment Plant



A conventional treatment plant utilizing coagulation, flocculation, sedimentation, and filtration

Managing Algae: Distinctly earthy overtones

LOCAL

CBU confirms cause of recent taste and odor complaints

SEPTEMBER 17, 2021

BLOOMINGTON – Water samples collected by the City of Bloomington Utiliti returned results that confirm that naturally occurring organic chemicals Geos Methyl-Isoborneol (MIB) are causing the series of taste and odor complaints received since Friday, September 10 from across the service area.

LOCAL

Does your water taste or smell bad? Lake algae could be to blame for the issue

Rachel Smith
The Herald-Times

Sept. 15, 2021

News

WTIU wfiu npr

City Investigates Tap Water Taste And Odor Complaints, No Contaminants Found

By BENTE BOUTHIER
Posted September 15, 2021

Existing Algae management

- Copper Sulfate is added to control algae during the summer
  - Algaecide
  - Intake tower
  - Prevents algae from clogging filters
- Powdered Activated Carbon is added to remove organic compounds
  - Primary rapid mix
  - Controls BDPs (Disinfection Byproducts)

Dealing with Algae

- Taste and odor compounds
  - MIB
  - Geosmin
  - Come from algae in the lake
- Removed by powdered activated carbon
  - Started feeding in 2017 for DBPs
  - Taste and odor mitigation was positive side effect
  - Taste and odor issues were present before 2017

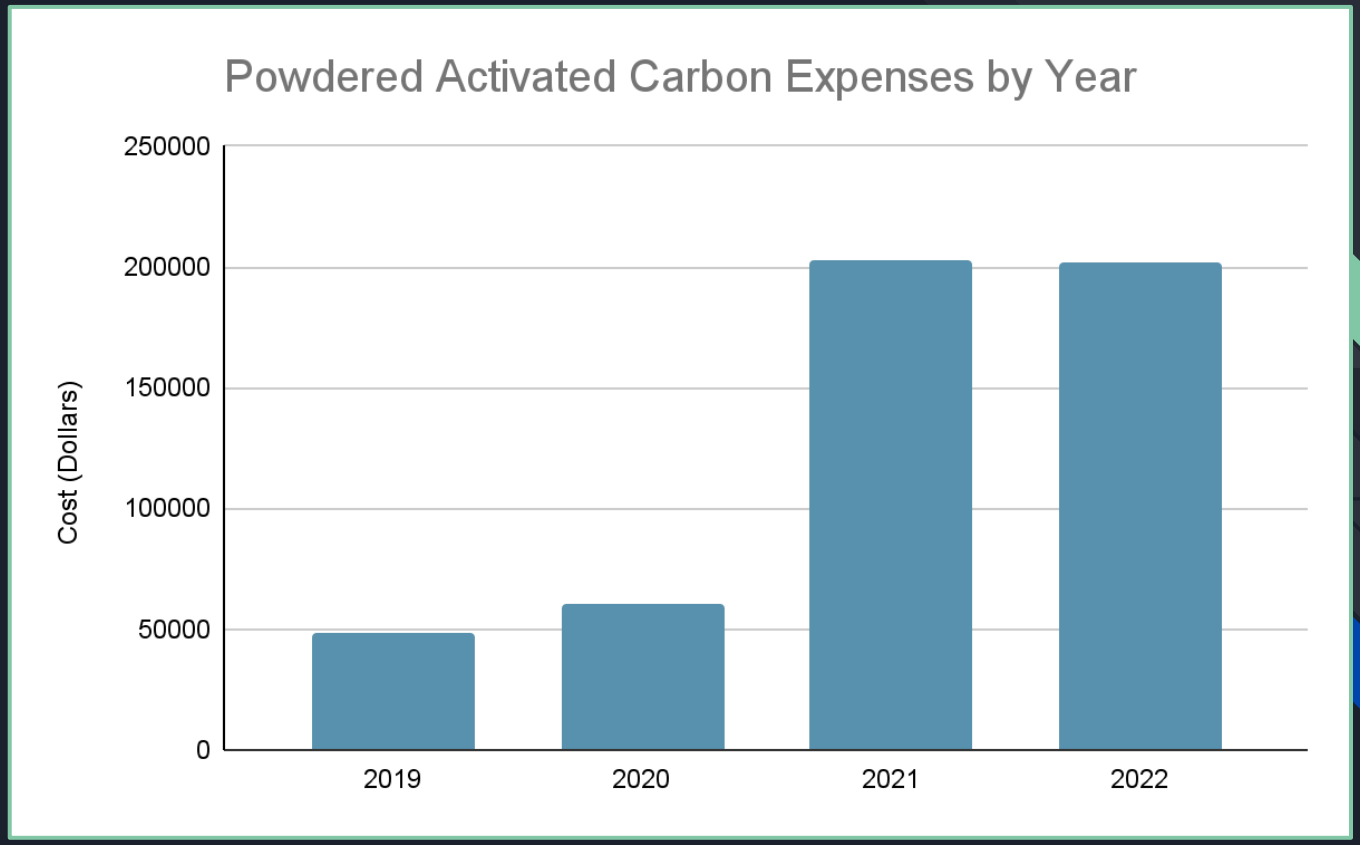
Dealing with Algae

- Then what happened?
  - Big “blast” of geosmin and MIB the last two years after long periods of drought
  - Feed rate for activated carbon was no longer fully mitigating taste and odor

Dealing with Algae

- Tried to mitigate by pumping more carbon
  - Carbon is ike a “brita filter” for the whole city
- Pumping enough carbon is not always feasible
  - Carbon is difficult to feed as it is a powder
  - Creates a “max” out situation with the pumps
  - Feeding carbon is expensive

How expensive is it?



Exploring Solutions

- Investigated treating or aerating the lake
  - Most options not feasible financially
  - We do not own the lake
  - The lake is too big for local aeration to be effective

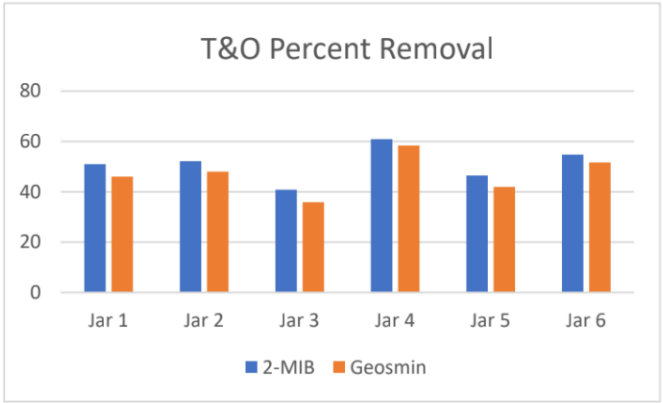
Exploring Solutions

- Algae FlowCam
  - We want to be more effective in the way we feed these things.
  - Need a surrogate measure which could potentially be a good measure for taste and odor
  - Taste and odor samples can take as long as 8-10 days to return.

Potential solutions or remedies

- Jar testing with different forms of carbon and algaecide

Geosmin & 2-MIB Percent Removal		
	2-MIB	Geosmin
Jar 1	50.98	46.036
Jar 2	52.148	48.004
Jar 3	40.8	35.856
Jar 4	60.88	58.38
Jar 5	46.488	41.924
Jar 6	54.76	51.66



Working Together

- More efficient to support watershed management plan and Friends of Lake Monroe to help reduce the conditions that promote algal growth
  - Direct financial support
  - In kind services
- Helps reduce costs at the water treatment plant and improves our ability to continue to be able to provide high quality drinking water to our community

Questions?

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Assistant Director - Environmental Programs

City of Bloomington Utilities

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