



## Questions from Zink Lake Public Meeting, August 6, 2024

Thank you for attending and asking questions at City of Tulsa's recent public meeting about Zink Lake. Questions are grouped by topic below and have not been modified in any way. Inclusion of a question does not necessarily mean that the City agrees with the premise or accusations therein. For additional questions or to schedule meetings on this topic, please contact [studio@cityoftulsa.org](mailto:studio@cityoftulsa.org).

### Recreation:

1. What assurance would water sports organizations have that would be safe to have racing events in Zink Lake?
  - a. Water sports organizations will have access to the same public data as everyone else on the water quality dashboard. They will be able to monitor the data and make decisions about how to use the lake and flume. Organizations should work with River Parks to organize events.
2. Are there any areas for fishing from the shore or from pedestrian access? Is fishing available without a watercraft in the lake?
  - a. There are several shore access points for fishing. The only places you won't be able to fish are from the bridge, from the dam, in the flume, and where buoys or signs prohibit it.
3. What type of fishing license will I need to fish on Zink Lake?
  - a. All fishing in Oklahoma is regulated by the Oklahoma Department of Wildlife Conservation. You can find information on fishing licenses here:  
<https://www.wildlifedepartment.com/licensing/regs/license-requirements>
4. Since this body of water is managed by the Corps of Engineers, will tribal fishing licenses issued by the 5 tribes be recognized as valid like they are on other Corps managed sites on the Rez?
  - a. All fishing in Oklahoma is regulated by the Oklahoma Department of Wildlife Conservation. You can find information on fishing licenses here:  
<https://www.wildlifedepartment.com/licensing/regs/license-requirements>
5. So no swimming in the lake ... but you encourage full body contact in the flume?
  - a. The flume will be used for on-water recreational activities like kayaking, surfing, and tubing (dependent on the current, wave level, and individual experience). This is different from swimming.
6. Why are you prohibiting swimming but allowing whitewater sports? Both are Primary Body Contact Recreation.
  - a. The flume may be used for these whitewater sports by users who feel comfortable doing so. The Primary Body Contact Recreation standards are *E. coli* geometric mean criterion of 126/100ml. *E. coli* levels that meet that standard are represented on the dashboard with green. Thus, users can use the dashboard to determine how they will use the amenity based on conditions.



## Operations:

1. Will there be a vendor supplying canoes, paddle boards, kayaks, pedal boats, etc.?
  - a. Yes. In the 2024 season, there will be a vendor supplying kayaks and paddleboards at West Fest Cove. In future seasons there may be expanded rental options.
2. Who will be monitoring the water flume?
  - a. River Parks will operate the flume. There will not be lifeguards on site. When the waves are turned up to high whitewater levels, there will be River Parks staff on site to monitor.
3. Will there be a medical station on site at River parks or the flume?
  - a. There will not be a medical station onsite. The Fire Department will be the responding entity to emergencies in the area, and they are working closely with River Parks to understand needs and challenges.
4. What are the minimum and maximum depths you intend to keep the lake at?
  - a. The lake depth will vary based on several factors, including releases from Keystone Dam, rainfall, and the topography of the river. When the dam gates are up, the depth near the dam is 10 feet, but there may be other areas of the river that are much deeper or shallower because of the topography.
5. Can you discuss water levels? Specifically what role the Corps of Engineers play?.....and also what ability is there to adjust the dam/gates to increase the length of the lake?
  - a. The lake will be maintained at normal levels and lengths. Any changes to this would be posted on [tulsazinklake.com](http://tulsazinklake.com). The Corps of Engineers is not involved in daily oversight of Zink Dam or Zink Lake.
6. Is there a guarantee for downstream flow during drought? What would be the minimum CFS headed through Jenks and Bixby?
  - a. There will be downstream flow during droughts, because anytime keystone opens the gate, there will be water to pass.
7. I have heard multitudes about how open the city is to having an "adaptive" management plan. Will you make clear the path for adaptation to ensure this speech is not simply to skirt responsibility?
  - a. We believe that this question is referring to the City of Tulsa's and River Parks' commitment to making changes to operations and management if they become necessary. Since the lake and flume are opening toward the end of the 2024 summer season, we will have the opportunity to identify challenges and make changes in the off months. We will continue taking this iterative approach in future years.
8. Talk about how the flume/lake will be operated during a worst case scenario incident at one, two, or all refineries on the West Bank
  - a. If it is determined that the lake and/or flume is too dangerous to operate, it will be closed until the danger has passed. In this case, signage would be posted, and all official access points would be closed.



## Using the Amenity:

1. What is the guidance should the level of E. coli be unacceptable the day before somebody wants to take the kayak into the white water area?
  - a. Recreators will be able to see bacteria levels before they enter the water by looking at the water quality dashboard (available at [tulsazinklake.com](http://tulsazinklake.com) and [cityoftulsa.org/zink](http://cityoftulsa.org/zink)). This will allow users to assess the risk and their own risk tolerance before using the flume or the lake.
2. What happens if someone is acting irrationally and harms someone else. Who do you call?
  - a. In an emergency, call 911. The non-emergency number is 918-596-9222.
3. What is the city's plan to communicate about Zink Lake and flume to people who speak languages other than English?
  - a. Thank you for this question. On-site signage will be available in both English and Spanish.
4. If you do not have a phone with you, can you use the facilities?
  - a. Yes. You do not have to look at the dashboard to recreate. Additionally, on-site signage will include relevant information about usage and recommendations.

## Environmental Considerations:

1. Describe the carbon offsetting efforts that are in play as a "solution" for the destruction of critical habitat at phase 1 through each subsequent phase.
  - a. The City Design Studio has partnered with the Sustainability Alliance to engage a range of experts on things like natural infrastructure, sustainable placemaking, and conservation. Through this partnership, we will develop a sustainability framework for the lake and surrounding area. This effort is not focused on carbon offsetting; in fact, the framework is still in the research and drafting phase, and we will be hosting a public workshop during the Big Dam Party to gather public input into the project.
2. When was the most recent dredging of the river prior to completion of the dam?
  - a. The river was dredged a few months ago, in conjunction with Gathering Place construction and the Zink Lake coffer dams.
3. With the lake being held as an enhancement of our natural resource, the River, can you discuss the ways the city will ensure no degradation of natural cycles in the lake. Please comment on fish spawns
  - a. We will allow releases for fish spawning below the dam to reduce degradation of natural cycles.
4. Talk about fish passage. Talk about which agency is going to honor other species who depend on the river. Talk about your efforts to facilitate fish passage. And if you have no plans - explain.
  - a. River Parks will work with the Oklahoma Department of Wildlife Conservation and their staff biologist to monitor natural cycles.
5. Crow Creek has been on the 303d impaired watershed list for many years, what is the current status and are there mitigation plans to address this like requiring Low Impact Development?
  - a. We're aware that Crow Creek is on the 303(d) list, and in our current permit we will implement a TMDL to work toward getting that stream removed from the list. This will include monitoring and implementing best management practices to locate, identify, and eliminate pollutant sources. This work will begin in 2025.



## Dam Design:

1. The old dam had a dangerous "roller" effect. Will the new dam have the same roller?
  - a. The original Zink Dam was designed in the ogee shape, which is the most efficient cross section from a materials and cost perspective, but can create the hydraulic "roller". The old dam was demolished and replaced by either crest gates and concrete steps or full height gates. The gates and steps create a much lower hazard than the previous roller created by the ogee.
2. Has there been testing regarding the roller and safety?
  - a. During design, the hydraulic performance of the dam was modeled in 1-D (dimension), 2-D, 3-D (CFD, Computational Fluid Dynamics) and with a physical model. Models approximate natural conditions, so the Team has proceeded with testing the installed dam to update the results. The tests, consisting of sending a floating buoy through the dam, to date has not been retained hydraulically by the dam.
3. Will the dam make flooding worse?
  - a. No. The dam was modeled and designed to meet the FEMA "no-rise" criteria. At flows above 40,000 cfs, all Zink dam gates will be in the down position, which provides no more blockage in the river than the previous dam. Considering the 100-year event is over 200,000 cfs, the Zink dam gates will be fully down well before the river reaches a 100-year event.

## Permitting:

1. Please disclose the USACE permit numbers for the riverbank parking lots.
  - a. The parking lots fall under the original Zink Dam permit (SWT-2012-123). The end date for this permit extends to 9/30/25.
2. Zoning code, ordinances, overlay districts, local permits, etc are subordinate to state and federal laws. Describe how Zink lake and parking lots comply with state and federal regulations.
  - a. All construction projects are in compliance with permitting and regulations.
3. Parking lots on the banks of the river will increase the runoff/pollution load to the impaired waterbody. How will this affect the City's MS4 permit compliance? How are these lots accounted for?
  - a. The City's MS4 permit requires that we implement two green stormwater infrastructure projects in the next five years, and one of those projects includes the bioswale on the West Bank. The bioswale helps clean the water before it reaches the river. Additionally, low-impact design practices will be applied where applicable.
4. You are already in violation of the 404 permit because you promised in your permit application there WOULD be operations for fish passage... now you aren't going to do it. Answer to that please.
  - a. The 404 permit does not require fish passage. The US Army Corps of Engineers has certified that this project is in complete compliance with the permit.



## Water Quality & Testing Protocols:

1. Who is managing the dashboard? Who to contact with suggestions?
  - a. The City of Tulsa manages the dashboard. Residents can contact the City Design Studio at [studio@cityoftulsa.org](mailto:studio@cityoftulsa.org) to share feedback and suggestions.
2. Have you noticed any patterns of E. Coli levels changing based on sampling during different flows or lake levels like have been detected after heavy rains?
  - a. *E. coli* typically increases after a heavy rainfall. At this point we are still collecting data to understand trends.
3. Are there other reasons for high readings on ECOLI besides rain?
  - a. *E. coli* concentrations may be impacted by things like urban wildlife, waterfowl, runoff, pets, and the septic system. Any septic system overflows will be monitored closely.
4. Can you address how overwhelmed storm sewers can produce sanitary sewer outflows during heavy rainfalls to create elevated E Coli levels and how that is being tracked & mitigated?
  - a. Tulsa has separate sanitary sewer and stormwater systems. Inflow into sanitary sewers during high rain events may create overflows. When this type of overflow is reported, the issue is investigated and mitigated.
5. How often will water quality be monitored? Will the lake have more or less e-coli than the Seine?
  - a. Streamflow, gage height, and temperature are monitored often and are considered real-time data. Dissolved oxygen, pH, turbidity, and specific conductance are measured on Tuesdays and Thursdays, and the results are posted later that day. Samples for *E. coli* are taken on Tuesdays and Thursdays, and results are available on the website within 48 hours because the test takes about 24 hours and raw data needs verification before publishing.
6. Is cadmium testing in the River intended to function in fulfillment of the TMDL study?
  - a. The current TMDL is bacteria-focused, and cadmium testing is not required under the current TMDL study.
7. I've had quite a few people tell me they don't understand how the response the dashboard relate to WQ and their health & safety. The city should add fact sheets on WQS and all of the parameters
  - a. Thank you for this suggestion! We are currently working on adding a fact sheet as well as descriptions of all the indicators. When this is posted we would welcome any additional feedback on how we can further improve the dashboard.
8. Will you start monitoring for nutrients? Nitrite, Nitrate, and Total Phosphorus
  - a. There are no current plans to monitor for nutrients.
9. What is the status of smoke testing sanitary sewer lines in the city? Are they current and how many leaks and nuisance abatement notices have been issued in the past year?
  - a. This is an ongoing project. The City is constantly looking for public and private leaking lines and will repair them upon discovery.
10. How do we know that there are not PFAs (carcinogenic "forever chemicals) in the water considering that oil refineries have a history of their use?
  - a. In addition to the indicators displayed on the Recreation and Quality pages on the dashboard, we are currently testing for cadmium, diesel range organics, gasoline range organics, and oil range organics. Those are tested and posted monthly. This testing plan was created by third-party consultants.
11. Why is the city no longer testing for enterococcus: the indicator bacteria that was showing far more violations of water quality standards than E. coli when the city tested for both in February 2024?



- a. *E. coli* is the preferred indicator for recreational waters in Oklahoma. Enterococcus results do not necessarily paint a clear picture of the presence of bacteria, so *E. coli* is the bacteria that is tested for and published.
12. Please make the actual test results (raw data) available to the public.
  - a. The City posts the latest test results to the water quality dashboard. All Cadmium and Hydrocarbon tests, including historical data, is on that webpage.
13. When & where can we physically come a view the reports that present the test results?
  - a. The City posts the latest test results to the water quality dashboard. All Cadmium and Hydrocarbon tests, including historical data, is on that webpage.
14. There is no indication Zink Lake water quality can support PBCR. How will the city monitor short- and long-term health impacts of exposure to bacteria & industrial contamination in the lake/flume?
  - a. Currently, this section of the Arkansas River supports primary body contact recreation (PBCR). The City will continue to monitor water quality parameters and inputs.
15. The elephant in the room are the gross refineries on the West Bank of the river. Why would anyone in their right mind get in water where ACTIVE seepages contaminate the river?
  - a. The City has been testing for hydrocarbons since January of 2024. In that time, all results have shown results that are below detectable limits. Users can use that information, alongside personal risk assessment and tolerance, to determine whether they will recreate on the water.
16. I recommend the city start an intense educational outreach on WQ and water safety
  - a. Thank you for this suggestion! We have been working all summer to help people understand the dashboard and what it tells us about the water. Additionally, water safety recommendations will be included on signage in the lake area. We hope to elevate partner and community-based organizations that provide water safety and swimming programming. Finally, we anticipate that the lake and flume will be used by local organizations to provide this type of training, as well.



## Miscellaneous:

17. Why was Zink Lake needed?
  - a. The formation of Zink Lake is a new resource for Tulsa. It is an opportunity for placemaking and for tourism. Tulsans overwhelmingly voted to fund Zink Dam in 2016.
18. How will COT make the public whole after spending tax payer funds on a lake no one can swim in, can only be warned about via smart phone, has no lifeguards, medic spaces, and only informed in phases?
  - a. The funds spent on Zink Dam and Zink Lake were approved by a majority of Tulsa voters in 2016 as part of the Improve Our Tulsa funding package. The lake was never intended to be a body of water for swimming; rather, it geared towards on-water activity. The on-site signage will include both text information and a QR code for the dashboard and other information. This will work for the 90% of Americans who use smart phones. Those who cannot use a smart phone for a QR code on site will have access to the same text on the signage and will be able to access the dashboard from any computer or internet access point. The lake will not have lifeguards on site; rather, recreators can call 911 in an emergency and the Fire Department will respond. Finally, the current phase of the project is the only funded phase; any future construction or development would be subject to a new round of funding and public input.
19. When Riverparks discussed not having enough funds for staff (lifeguards, etc), can we expect COT to come back for phase X to bleed the taxpayers of more \$\$ to compensate for poor planning?
  - a. River Parks will have a \$1 million annual budget for operations and maintenance of Zink Lake.
20. COT can't make citizens shoulder risk/liability 4 a hazard we didn't design.telling us we didn't pay enough for y'all to get it right & spend responsibly is unacceptable.Do better or don't do it @ all
  - a. Thank you for this feedback.
21. When someone does get sick from exposure to bacteria or injured from rebar or other detritus in the river, which entity bears liability - River Parks? Mayor's Office? City of Tulsa?
  - a. We are all responsible for our own safety in Zink Lake, as we have been since the original Zink Dam was built in 1983, through decades of raft races and other activities on the Lake.