TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 15, 2024

Laurie Gharis, Chief Clerk
Office of the Chief Clerk
Texas Commission on Environmental Quality
P.O. Box 13087, MC-105
Austin, Texas 78711-3087

RE: **TCEQ Docket No. 2023-0617-WR;** Regarding Application No. 5921 by the City of Lubbock to Obtain a Water Use Permit in Lubbock and Lynn Counties, Texas

Dear Ms. Gharis:

Enclosed you will find the Executive Director's portion of the Administrative Record consisting of those documents specified at 30 TAC § 80.118(a)(1)-(4) and (6).

Please do not hesitate to contact me at Harrison.Malley@tceq.texas.gov if you have any questions. Thank you for your attention to this matter.

Sincerely,

Cole Malley, Staff Attorney – Environmental Law Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

WATER USE PERMIT

PERMIT NO. 5921		TYPE: §§ 11.121, 11.042	
Permittee:	City of Lubbock	Address:	P.O. Box 2000 Lubbock, Texas 79457
Filed:	April 17, 2006	Granted:	
Purposes:	Municipal, Industrial, Agricultural	Counties:	Lubbock and Lynn
Watercourse:	North Fork Double Mountain Fork Brazos River	Watershed:	Brazos River Basin

WHEREAS, the City of Lubbock (City) seeks a Water Use Permit to construct and maintain a 20,708 acre-foot capacity reservoir (Jim Bertram Lake 7) on the North Fork Double Mountain Fork Brazos River, Brazos River Basin with the centerline of the dam being at Latitude 33.534012° N, Longitude 101.730515° W in Lubbock County; and

WHEREAS, the City also seeks to divert and use not to exceed 50,000 acre-feet of water per year from anywhere along the perimeter of the aforementioned reservoir, at a maximum diversion rate of 138.12 cfs (62,016 gpm), for municipal, industrial, and agricultural purposes within the City's service area in Lubbock and Lynn counties, Brazos River Basin; and

WHEREAS, the City further seeks to authorize the use of the bed and banks of the North Fork Double Mountain Fork Brazos River, Brazos River Basin to convey up to 14,856 acre-feet of water per year discharged from the South Central Lubbock Drainage System, up to 8,934 acre-feet of water per year discharged from the South Lubbock Drainage System, and up to 16,240 acre-feet of surface water- and groundwater-based return flows per year from the Southeast Water Reclamation Plant, authorized under TPDES Permit No. WQ00010353002, to Jim Bertram Lake 7 to support storage in and diversions from the reservoir; and

WHEREAS, water from the South Central Lubbock Drainage System and the South Lubbock Drainage System originates from stormwater collected in playa lakes and subsequently discharged to the North Fork Double Mountain Fork Brazos River; and

WHEREAS, the City will also use other water sources available to it in the North Fork Double Mountain Fork Brazos River, that are authorized under Water Permit Nos. 3985, as amended, and 3705, as amended, to support storage in and diversions from the reservoir; and

WHEREAS, water and return flows will be discharged at the following three points located on the North Fork Double Mountain Fork Brazos River, Brazos River Basin, Lubbock County.

a. Discharge Point No. 1 (South Central Lubbock Drainage System) being at Latitude 33.55965° N, Longitude 101.79652° W at a maximum rate of 185 cfs;

b. Discharge Point No. 2 (South Lubbock Drainage System) being at Latitude 33.53363° N, Longitude 101.77879° W at a maximum rate of 75 cfs;

c. Discharge Point No. 3 (Southeast Water Reclamation Plant, TPDES Permit No. WQ00010353002) being at Latitude 33.56273° N, Longitude 101.79935° W at a maximum rate of 22.47 cfs; and

WHEREAS, the City maintains an agreement with the Brazos River Authority (BRA) in which the City will pass inflows of state water through Jim Bertram Lake 7 when the water surface elevation of Possum Kingdom Lake is below 1,000 feet msl and inflows exceed 5 cfs; and

WHEREAS, the Texas Commission on Environmental Quality finds that jurisdiction over the application is established; and

WHEREAS, the City has provided, and the Executive Director has approved, the *City of Lubbock Accounting Plan for Permit 12-5921 Lake 7*; and

WHEREAS, the Executive Director recommends special conditions be included in the permit; and

WHEREAS, the Commission has complied with the requirements of the Texas Water Code and Rules of the Texas Commission on Environmental Quality in issuing this permit;

NOW, THEREFORE, this permit, designated as Water Use Permit No. 5921, is issued to the City of Lubbock subject to the following terms and conditions:

1. IMPOUNDMENT

Permittee is authorized to construct and maintain a 20,708 acre-foot capacity reservoir (Jim Bertram Lake 7) on the North Fork Double Mountain Fork Brazos River, Brazos River Basin with the centerline of the dam being at Latitude 33.534012° N, Longitude 101.730515° W in Lubbock County.

2. USE

A. Permittee is authorized to divert and use not to exceed 50,000 acre-feet of water per year from Jim Bertram Lake 7 for municipal, industrial, and agricultural purposes within the City's service area in Lubbock and Lynn counties.

B. Permittee is authorized to use the bed and banks of the North Fork Double Mountain Fork Brazos River to convey up to 14,856 acre-feet of water per year discharged from the South Central Lubbock Drainage System, up to 8,934 acre-feet of water per year discharged from the South Lubbock Drainage System, and up to 16,240 acre-feet of surface water- and groundwater-based return flows per year from the Southeast Water Reclamation Plant, authorized under TPDES Permit No. WQ00010353002, to Jim Bertram Lake 7 to support storage in and diversions from the reservoir.

C. Permittee is authorized to use water authorized under Water Permit Nos. 3985, as amended and 3705, as amended to support storage in and diversions from the reservoir.

3. DISCHARGE

Water will be discharged to the North Fork Double Mountain Fork Brazos River, in Lubbock County as follows:

A. Discharge Point No. 1 (South Central Lubbock Drainage System) - being at Latitude 33.55965° N, Longitude 101.79652° W at a maximum rate of 185 cfs.

B. Discharge Point No. 2 (South Lubbock Drainage System) - being at Latitude 33.53363° N, Longitude 101.77879° W at a maximum rate of 75 cfs.

C. Discharge Point No. 3 (Southeast Water Reclamation Plant, TPDES Permit No. WQ00010353002) being at Latitude 33.56273° N, Longitude 101.79935° W at a maximum rate of 22.47 cfs.

4. DIVERSION

Permittee is authorized to divert:

A. 50,000 acre-feet of water per year from anywhere along the perimeter of Jim Bertram Lake 7.

B. at a maximum diversion rate of 138.12 cfs (62,016 gpm).

5. TIME PRIORITY

A. The time priority for this right is April 17, 2006.

B. Water discharged from the South Central Lubbock Drainage System, the South Lubbock Drainage System, and return flows discharged from the Southeast Water Reclamation Plant and authorized to be conveyed via the bed and banks of a State watercourse in this permit does not have a priority date and is not subject to priority calls from senior water rights.

6. CONSERVATION

Permittee shall implement water conservation plans that provide for the utilization of those practices, techniques, and technologies that reduce or maintain the consumption of water, prevent or reduce the loss or waste of water, maintain or improve the efficiency in the use of water, increase the recycling and reuse of water, and prevent the pollution of water, so that a water supply is made available for future or alternative uses. Such plans shall include a requirement that in every water supply contract entered into on or after the effective date of this permit, including any contract extension or renewal, that each successive wholesale customer develop and implement conservation measures. If the customer intends to resell the water, then the contract for resale of the water shall have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures.

7. SPECIAL CONDITIONS

A. Permittee shall implement reasonable measures in order to reduce impacts to aquatic resources due to entrainment or impingement. Such measures shall include, but shall not be limited to, the installation of screens at any new diversion structures.

B. For purposes of applying the environmental flow requirements in Paragraphs 7.D. – 7.J. of this permit, the measurement point shall be the dam at Jim Bertram Lake 7 and streamflows shall be measured and determined by the *City of Lubbock Accounting Plan for Permit 12-5921 Lake 7*.

C. Notwithstanding the requirements set out in Paragraphs 7.D. – 7.J. of this permit, if Permittee has stored water in accordance with the terms and conditions of this permit at the time the water was stored, Permittee may divert and use that stored water, even if any environmental flow requirements are not met at the time of the subsequent diversion and use of that stored water.

D. Impoundment and diversion of state water under this permit shall be restricted based on the following streamflows at Permittee's measurement point, as set forth in Paragraphs 7.E. – 7.J. below.

Season	**Subsistence**	**Dry Condition Seasonal Pulse**	**Average Condition Seasonal Pulse**	**Wet Condition Seasonal Pulse**
Winter	1 cfs	N/A	N/A	N/A
Spring	1 cfs	1 per season Trigger: 43 cfs Volume: 157 af Duration: 8 days	2 per season Trigger: 43 cfs Volume: 157 af Duration: 8 days	1 per season Trigger: 88 cfs Volume: 335 af Duration: 10 days
Summer	1 cfs	1 per season Trigger: 36 cfs Volume: 119 af Duration: 7 days	2 per season Trigger: 36 cfs Volume: 119 af Duration: 7 days	1 per season Trigger: 74 cfs Volume: 278 af Duration: 10 days

cfs = cubic feet per second
af = acre-feet
N/A = not applicable

E. Seasons are defined as follows: Winter (November through February), Spring (March through June), and Summer (July through October).

F. Permittee shall determine the hydrologic condition once per season. The Palmer Hydrologic Drought Index (PHDI) value present on the last day of the month of the preceding season, as reported by the National Weather Service, shall be used to

determine the hydrologic condition for the following season as set out in Paragraphs F.i. – F.iii. below:

i Permittee shall determine the PHDI Index for a season based on the following formula:

(0.027 × High Plains PHDI) + (0.647 × Low Rolling Plains PHDI) + (0.326 × North Central PHDI)

ii. The PHDI Index and corresponding hydrologic conditions that govern diversions under this permit are:

Dry	Average	Wet
Less than -1.78	-1.78 – 2.18	Greater than 2.18

iii. Permittee may utilize an interim PHDI value to determine the hydrologic condition until the value preceding the start of the season is published in accordance with the procedure described in *City of Lubbock Accounting Plan for Permit 12-5921 Lake 7*.

Subsistence Flow

G. Permittee shall not impound or divert water if the average streamflow at Permittee's measurement point is less than or equal to the applicable subsistence flow in Paragraph 7.D. The "average streamflow" at the measurement point is the average of measured streamflows for the previous 24 hours.

High Flow Pulse

H. If a pulse flow event required under Paragraph 7.D. is determined to have been triggered based on average streamflows at Permittee's measurement point then, until either the applicable volume amount has passed or the applicable duration time has passed since the high flow pulse was triggered, Permittee shall not impound or divert state water except during times that average streamflow exceeds the applicable pulse flow trigger level. Diversions during such times shall not exceed the rate that would reduce average streamflow to the applicable pulse flow trigger level; provided, however, Permittee is not required to adjust its diversion rate during the pulse event more frequently than once every 24 hours.

I. Each season is independent of the preceding and subsequent seasons with respect to high flow pulse frequency and the applicable high flow pulse is dependent on the applicable hydrologic condition.

J. If a qualifying pulse flow event occurs at Permittee's measurement point within a given season, the pulse event shall satisfy a pulse requirement for that season. A qualifying event occurs if the event is determined to have been triggered based on average streamflow and either the pulse flow volume or duration requirement is met.

K. Impoundment and diversion of return flows and other discharged water as authorized by this permit is dependent upon potentially interruptible return flows and discharges and is conditioned on the availability of those discharges. The right to divert return flows discharged from the Southeast Water Reclamation Plant and the water discharged from the South Central Lubbock Drainage System and the South Lubbock Drainage System is subject to revocation if all discharges become

permanently unavailable for impoundment and diversion and may be subject to reduction if the return flows discharged from the Southeast Water Reclamation Plant and the water discharged from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System are not available in quantities and qualities sufficient to fully support the permit authorizations. Should any of the discharges become permanently unavailable for impoundment and diversion, Permittee shall immediately cease impoundment and diversion of return flows and other discharged water under this permit and either apply to amend the permit, or voluntarily forfeit the authorization to impound and divert return flows and other discharged water. If Permittee does not amend or forfeit the authorization, the Commission may begin proceedings to cancel these authorizations in the permit.

L. Permittee shall only impound or divert daily return flows and any water discharged from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System that is actually discharged.

M. Prior to diversion and impoundment of return flows in excess of the amount currently authorized by TPDES Permit No. WQ00010353002, described in Paragraph 2. USE and Paragraph 3. DISCHARGE, Permittee shall apply for and be granted the right to reuse those return flows. Permittee shall amend the accounting plan to include future discharges of return flows prior to diverting said return flows.

N. Prior to diversion of any additional water discharged from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System in excess of the maximum annual discharge volume described in Paragraph 2. USE and Paragraph 3. DISCHARGE, Permittee shall apply for and be granted the right to use the discharged water. Permittee shall amend the accounting plan to include additional discharges from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System prior to diverting said additional discharges.

O. Permittee shall only impound or divert water authorized under this permit pursuant to Paragraph 2. USE and Paragraph 4. DIVERSION in accordance with the most recently approved *City of Lubbock Accounting Plan for Permit 12-5921 Lake 7.* Permittee shall maintain the plan in electronic format and make it available upon request. Any modifications to the accounting plan shall be approved by the Executive Director. Any modification to the accounting plan that changes the permit terms must be in the form of an amendment to the permit. Should Permittee fail to maintain the accounting plan or notify the Executive Director of any modifications to the plan, Permittee shall immediately cease diversion and impoundment of water authorized in this permit, and either apply to amend the permit, or voluntarily forfeit the permit. If Permittee fails to amend the accounting plan or forfeit the permit, the Commission may begin proceedings to cancel the permit. Permittee shall immediately notify the Executive Director upon modification of the accounting plan and provide copies of the appropriate documents effectuating such changes.

P. Any required mitigation plan for Jim Bertram Lake 7 shall comply with requirements set forth in 33 United States Code §1341, commonly known as the federal Clean Water Act (CWA), §401 and 30 Texas Administrative Code Chapter 279. The mitigation plan shall also comply with the requirements in §404 of the CWA as implemented through any approved U.S. Army Corps of Engineers permit for Jim Bertram Lake 7. Impoundment and diversions of water under this permit are contingent upon the initiation and completion of implementation of any U.S. Army Corps of Engineers approved mitigation plan.

Q. Permittee shall install and maintain a measuring device which accounts for, within 5% accuracy, the quantity of water diverted from the point(s) authorized above in Paragraph 4. DIVERSION.

R. Permittee shall allow representatives of the Texas Commission on Environmental Quality reasonable access to the property to inspect the measuring device and records.

S. Consistent with and subject to the conditions stated in Texas Water Code §11.147(e-1), the commission may adjust the environmental flow conditions in this permit to provide for the protection of instream flows or freshwater inflows to the bay and estuary, if the commission determines, through an expedited public review process, that such adjustment is appropriate to achieve compliance with applicable environmental flow standards adopted pursuant to Texas Water Code §11.1471. Any adjustment shall be made in accordance with the provisions of Texas Water Code §11.147(e-1).

8. TIME LIMITATIONS

A. Construction of the proposed dam for Jim Bertram Lake 7 shall be in accordance with plans approved by the Executive Director. Construction of the dam without final approval of the construction plans is a violation of this authorization.

B. Construction shall begin within two years of issuance of this permit and be completed within five years of issuance of the permit unless Permittee applies for and is subsequently granted an extension of time before the expiration of these time limitations.

The diversion and impoundment of unappropriated state water authorized in this permit is subject to all superior and senior water rights in the Brazos River Basin.

Permittee agrees to be bound by the terms, conditions, and provisions contained herein and such agreement is a condition precedent to the granting of this permit.

All other matters requested in the application which are not specifically granted by this permit are denied.

This permit is issued subject to the Rules of the Texas Commission on Environmental Quality and to the right of continuing supervision of State water resources exercised by the Commission.

_____
For the Commission

ISSUED:

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Iliana Delgado, Project Manager
Water Rights Permitting Team
Water Supply Division

Date: October 26, 2005

Thru: Bill Billingsley, Team Leader
Resource Protection Team
Water Supply Division

BB 10/26/05

From: Kristin Wang, Senior Water Conservation Specialist
Resource Protection Team
Water Supply Division

KW 10/26/05

Subject: City of Lubbock
WRPERM5921
CN600130736
Review of Water Conservation and Drought Contingency Plan for Administrative Sufficiency

The City of Lubbock, applicant, seeks a water use permit for authorization to construct two dams and reservoirs on the North Fork Double Mountain Fork Brazos River, tributary of the Brazos River, Brazos River Basin, one with a capacity of 20,708 acre-feet and surface area of 801 acres and the other with a capacity of 49,930 acre-feet and surface area of 1,680 acres in Lubbock County.

The applicant also seeks to divert and use not to exceed 50,000 acre-feet of water per year from the perimeter of either reservoir at a maximum diversion rate of 51.76 cfs (23,230 gpm) for municipal, industrial, and agricultural purposes in Lubbock and Lynn Counties.

The applicant further seeks to return flows to the tributaries of the North Fork Double Mountain Fork Brazos River, use the bed and banks of those tributaries for subsequent diversion and use of those flows (as well as: i. the City's developed water-based storm water discharges; ii. future surface water-based return flows and developed waters based return flows resulting from the City's use of groundwater and its use of other developed waters; iii. third party's wastewater return flows that are discharged upstream of the proposed reservoirs) for the uses stated above.

The applicant indicates land will be purchased in the event that permits authorizing the construction of the proposed works are issued.

The City of Lubbock's 2004 Water Conservation and Drought Contingency Plan has been reviewed for administrative sufficiency for municipal purposes. The submitted plan meets the minimum requirements as defined in the TCEQ Rules, Title 30 TAC Chapter 288.2, 288.5, 288.20 and 288.22.

With the requested new appropriation and seeking return flows with the use of the bed and banks in this application, a further technical review will be conducted by the conservation staff of the Resource Protection Team.

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Iliana Delagdo, Project Manager
Water Rights Permitting Team

Date: November 3, 2005

Thru: Bill Billingsley, Team Leader
Resource Protection Team

Wendy Gordon, Ph.D., Aquatic Scientist
Resource Protection Team

From: John Botros, Aquatic Scientist
Resource Protection Team

Subject: City of Lubbock, Initial Review of Application 5921
North Fork Double Mountain Fork Brazos River, Brazos River Basin
Lubbock and Lynn Counties

The City of Lubbock's application 5921 proposes to construct two dams and reservoirs on the North Fork Double Mountain Fork Brazos River (North Fork) with a combined storage of more than 70,000 acre-feet and a diversion of up to 50,000 acre-feet/year at a max diversion rate of 23,320 gallons per minute. Furthermore, applicant requests to use the bed and banks of unidentified tributaries of the North Fork as well as indirect reuse from vaguely described sources in unspecified amounts.

Resource Protection, Instream Uses staff will not be able to conduct the required reviews in accordance with §11.046, §11.147, §11.150, and §11.152 of the Texas Water Code and under Texas Administrative Code sections §297.49, §297.53, §297.54 and §297.56 with the information provided. These statutes and rules require the TCEQ to consider the possible impacts of the granting of a water right permit on fish and wildlife habitat, water quality, and the instream uses associated with the affected body of water. The application does not include adequate information to consider the appropriate environmental aspects and potential impacts associated with the proposed project.

The following additional information is required in order to proceed with the processing of this application:

1. A quantitative or qualitative evaluation of existing aquatic, riparian, wetland and terrestrial habitats that will be subject to impact by the proposed reservoir projects needs to be performed preferably by a qualified third party. Acceptable evaluation procedures to be used may be but are not limited to USFWS's Habitat Evaluation Procedures (HEP) or TPWD's Wildlife Habitat Appraisal Procedure (WHAP). Any habitat evaluation should include an assessment of the effects of the project on habitats in the river segment downstream as well.

2. An analysis is required that characterizes and quantifies of stream flow patterns needed to protect the instream uses of the North Fork Double Mountain Fork Brazos River. This analysis should include the frequency, magnitude, duration and timing of various components of the hydrograph for the North Fork needed to maintain annual/seasonal variability in flows, bankfull flows that generally occur every 1-2 years needed to maintain sediment transport of silt and sands, as well as higher flood flows which typically occur on the order of every 5-10 years needed for channel scour and maintenance of habitat features. Each component of the stream's hydrograph has specific ecological functions which collectively provide for processes that sustain the river ecosystem.

3. Description of the alternatives that were examined to meet the water needs that the proposed project is intended to fulfill. Were other site locations examined that may have resulted in less environmental impact? How were the size the proposed reservoirs determined? Would smaller reservoirs be adequate to meet the projected water needs? Habitat mitigation shall be considered only after the complete sequencing (avoidance, minimization or modification, and compensation/replacement) process has been performed.

4. Should habitat losses be found to be unavoidable, a mitigation plan needs to be developed that will compensate for lost or altered ecosystem functions and values imposed by the proposed project. This plan should address both the direct and indirect impacts to aquatic, riparian, and terrestrial habitats, as well as long and short-term effects that may result from the proposed project. Habitat mitigation plans need to be ensured through binding legal contracts or conservation easement and need to include goals and schedules for completion of those goals. Mitigation areas need to be managed in perpetuity by a party approved by the Commission to maintain the habitat functions and values that were effected due to the proposed project.

5. Reservoir operations plan describing how and when flows will be passed through the dams in order to provide for the instream needs determined from item #2 above.

6. Have the U.S. Army Corps of Engineers (USACE) been notified of the proposed project in order to determine whether Federal authorization will be required under Section 404/401 of Clean Water Act?

7. On-ground color photographs of the stream at each dam site and downstream as well as several photographs of the stream and riparian areas within, upstream, and downstream of the reservoir inundation areas. Each photographs should include a description of what is depicted as well as referenced to a map indicating the location and direction of the shot.

8. Identify all the tributaries of the North Fork requested under the bed and banks portion of the application.

9. Identify all the wastewater treatment plants and the future amounts of water requested in this application.

For questions concerning the above requested information, please contact John Botros by telephone at 512-239-4445 or by e-mail at jbotros@tceq.state.tx.us.

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

TO: Iliana Delgado
Water Rights Permitting Team

DATE: February 17, 2006

FROM: Warren D. Samuelson, P. E.
Dam Safety Program, MC-174

SUBJECT: City of Lubbock, Application to construct and maintain two dams and reservoirs, North Fork Double Mountain Fork Brazos River, Brazos River Basin, Lubbock County.

The applicant seeks authorization to construct and maintain two reservoirs (Lake No. 7 and Lake No. 8) on North Fork Double Mountain Fork Brazos River in Lubbock County. The proposed Lake No. 7 will have a capacity of 20,708 acre-feet and a surface area of 801 acres. The proposed Lake No. 8 will have a capacity of 49,930 acre-feet and a surface area of 1,680 acres. The reservoirs will be used for municipal, industrial, and agricultural purposes.

The engineer, HDR Engineering, Inc., has indicated that the proposed dams and spillways will be designed to pass 100% of the probable maximum flood (PMF) as required in Chapter 299.

It is recommended that the permit include the following language:

TIME LIMITATIONS

(a) Construction of the dams for Lakes 7 and 8 must be in accordance with plans and specifications approved by the Executive Director and must begin within two years of issuance of this permit and be completed within five years of issuance of the permit.

(b) Failure to commence and/or complete construction of the proposed dam within the period stated above shall cause the authorization for use of the reservoirs to expire and become null and void without further Commission consideration unless the Owner applies for an extension of time to commence and/or complete construction prior to the deadline for commence and completion, and the application is subsequently granted.

Warren D. Samuelson, P. E.
Dam Safety Program

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Chief Clerk **Date:** April 17, 2006

Thru: Kellye Rila KR
Team Leader
Water Rights Permitting Team

From: Iliana Delgado
Water Rights Permitting Team

Subject: City of Lubbock
WRPERM 5921
CN 600130736, RN – see attached list
Application No. 5921 for a Water Use Permit
TWC §11.121, Requiring Mailed and Published Notice
North Fork Double Mountain Fork Brazos River, Brazos River Basin
Lubbock and Lynn Counties

The application and partial fees were received on October 17, 2005. Additional information and fees were received on January 31, March 24, and April 13, 2006. The application was declared administratively complete and accepted for filing on April 17, 2006. Mailed and published notice of the application is required pursuant to 30 TAC §295.151.

The City of Lubbock has applied for a Water Use Permit to construct two dams and reservoirs on the North Fork Double Mountain Fork Brazos River, Brazos River Basin, for in-place recreational purposes. The Applicant further seeks to divert and use water from those reservoirs and use the bed and banks of tributaries of the North Fork Double Mountain Fork Brazos River for subsequent diversion and use of water for municipal, industrial, and agricultural purposes in Lubbock and Lynn Counties.

All fees have been paid, and the application is sufficient for filing.

Iliana Delgado
Water Rights Permitting Team
Water Supply Division

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Ron Ellis
Water Rights Permitting Team

Date: March 27, 2008

Thru:

From: Warren D. Samuelson, P. E.
Dam Safety Program, MC-174

Subject: City of Lubbock, Supplemental Application to construct and maintain a dam and reservoir, North Fork Double Mountain Fork Brazos River, Brazos River Basin, Lubbock County.

The applicant has indicated through the applicant's attorney that the applicant is not pursuing the permitting of one of the proposed dams and reservoirs (Lake No. 8). Therefore, this is a supplemental memorandum. To the original memorandum of February 17, 2006.

The applicant seeks authorization to construct and maintain one reservoir (Lake No. 8) on North Fork Double Mountain Fork Brazos River in Lubbock County. The proposed Lake No. 7 will have a capacity of 20,708 acre-feet and a surface area of 801 acres. The reservoir will be used for municipal, industrial, and agricultural purposes.

The engineer, HDR Engineering, Inc., has indicated that the proposed dam and spillways will be designed to pass 100% of the probable maximum flood (PMF) as required in Chapter 299.

It is recommended that the permit include the following language:

TIME LIMITATIONS

(a) Construction of the proposed dam for Lake No. 7 shall be in accordance with plans approved by the Executive Director. Construction of the dam without final approval of the construction plans is a violation of this authorization.

(b) Construction shall begin within two years of issuance of this permit and be completed within five years of issuance of the permit, unless Permittee applies for and is subsequently granted an extension of time before the expiration of these time limitations.

(b) Failure to commence the proposed dam and reservoir within the period stated above shall subject all rights to this permit to forfeiture, subject to

notice and hearing. After beginning construction, failure to timely construct the proposed dam and reservoir stated above shall subject this permit to cancellation in whole or in part, subject to notice and hearing.

Warren D. Samuelson, P. E.
Dam Safety Program

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Sarah Henderson, Project Manager
Water Rights Permitting Team

Date: April 22, 2021

Through: Jason Godeaux, Team Leader
Resource Protection Team

From: Kenneth Coonrod, Aquatic Scientist
Resource Protection Team

Subject: City of Lubbock
WRPERM 5921
CN600130736
North Fork Double Mountain Fork Brazos River, Brazos River Basin
Lubbock and Lynn counties

Environmental reviews of water right applications are conducted in accordance with applicable provisions of the Texas Water Code (TWC) and the administrative rules of the Texas Commission on Environmental Quality (TCEQ). The provisions applicable to environmental reviews can vary according to the type and the location of the authorization requested.

APPLICATION SUMMARY

The City of Lubbock (City) requests authorization to construct and maintain a reservoir (Lake 7) impounding 20,708 acre-feet of water on the North Fork Double Mountain Fork Brazos River, Brazos River Basin, for subsequent diversion of 50,000 acre-feet of water per year from the perimeter of the reservoir at a maximum diversion rate of 138.12 cfs (62,016 gpm) for municipal, industrial, and agricultural purposes in Lubbock and Lynn counties. The City also requests authorization to use the bed and banks of the North Fork Double Mountain Fork Brazos River to convey up to 14,856 acre-feet of water per year discharged from the South Central Lubbock Drainage System, up to 8,934 acre-feet of water per year from the South Lubbock Drainage System, and up to 16,420 acre-feet of surface water- and groundwater-based return flows per year, to Lake 7 to support storage in and diversions from the reservoir, from the Southeast Water Recycling Plant, authorized under Texas Pollutant Discharge Elimination System Permit No. WQ00010353002. The City will use other water sources available to it in the North Fork Double Mountain Fork Brazos River, that are authorized under Water Use Permit Nos. 3985, as amended, and 3705, as amended.

The City maintains an agreement with the Brazos River Authority in which the City will pass water through Lake 7 when streamflows exceed 5 cfs and when the water surface elevation of Possum Kingdom Lake is below 1,000 feet msl.

ENVIRONMENTAL ANALYSIS

New Appropriation Request

On February 12, 2014, the TCEQ adopted environmental flow standards for the Brazos River and its associated bay and estuary system (Title 30 Texas Administrative Code (TAC) Chapter 298 Subchapter G). These environmental flow standards are considered adequate to support a sound ecological environment (Title 30 TAC § 298.460).

The City is requesting a new appropriation of water and therefore is subject to the adopted standards. This review is conducted in accordance with §11.147(e-3) of the TWC and Title 30 TAC Chapter 298 Subchapter G (Brazos River and its associated bay and estuary system). In Title 30 TAC § 298.480(1), environmental flow standards were established at United States Geological Survey (USGS) Gage No. 08080500 – Double Mountain Fork Brazos River near Aspermont, and the applicable environmental flow standards are shown in Table 1.

Table 1. Environmental Flow Standards at USGS Gage No. 08080500 – Double Mountain Fork Brazos River near Aspermont.

Season	Subsistence	Hydrologic Condition	Base	Dry Condition Seasonal Pulse	Average Condition Seasonal Pulse	Wet Condition Seasonal Pulse
Winter	1 cfs	Dry	1 cfs	N/A	N/A	N/A
		Average	4 cfs			
		Wet	15 cfs			
Spring	1 cfs	Dry	1 cfs	1 per season Trigger: 280 cfs Volume: 1,270 af Duration: 10 days	2 per season Trigger: 280 cfs Volume: 1,270 af Duration: 10 days	1 per season Trigger: 570 cfs Volume: 2,600 af Duration: 12 days
		Average	3 cfs			
		Wet	8 cfs			
Summer	1 cfs	Dry	1 cfs	1 per season Trigger: 230 cfs Volume: 990 af Duration: 9 days	2 per season Trigger: 230 cfs Volume: 990 af Duration: 9 days	1 per season Trigger: 480 cfs Volume: 2,160 af Duration: 12 days
		Average	2 cfs			
		Wet	7 cfs			

cfs = cubic feet per second
af = acre-feet
N/A = not applicable

The City has requested that compliance with the adopted environmental flow standards be calculated at their measurement point. The City further requested that compliance with the adopted environmental flow standards for subsistence and base flows utilize a drainage area ratio to determine the flows that must pass the gage. The City translated the adopted subsistence and base flow standards using a drainage area ratio from the contributing drainage area of USGS Gage No. 08080500 – Double Mountain Fork Brazos River near Aspermont, TX to the contributing drainage area of the Lake 7 dam. Computation of state water inflows between USGS Gage No. 08079510 – North Fork Double Mountain Fork Brazos River at Loop 289 near Lubbock, TX and the Lake 7 dam location, translation of the pulse flow standards, and hydrologic conditions are discussed in the Water Availability Analysis. Resource Protection staff reviewed the information submitted by the City, and the translated values, and agrees that using the translated values for subsistence and base flows and applying those values at their measurement point would protect the adopted standards. Resource Protection staff recommendations are shown in Table 2.

Table 2. Environmental Flow Values at City of Lubbock's Measurement Point.

Season	Subsistence	Hydrologic Condition	Base	Dry Condition Seasonal Pulse	Average Condition Seasonal Pulse	Wet Condition Seasonal Pulse
Winter	1 cfs	Dry	1 cfs	N/A	N/A	N/A
		Average	1 cfs			
		Wet	1 cfs			
Spring	1 cfs	Dry	1 cfs	1 per season Trigger: 43 cfs Volume: 157 af Duration: 8 days	2 per season Trigger: 43 cfs Volume: 157 af Duration: 8 days	1 per season Trigger: 88 cfs Volume: 335 af Duration: 10 days
		Average	1 cfs			
		Wet	1 cfs			
Summer	1 cfs	Dry	1 cfs	1 per season Trigger: 36 cfs Volume: 119 af Duration: 7 days	2 per season Trigger: 36 cfs Volume: 119 af Duration: 7 days	1 per season Trigger: 88 cfs Volume: 278 af Duration: 10 days
		Average	1 cfs			
		Wet	1 cfs			

cfs = cubic feet per second
af = acre-feet
N/A = not applicable

Seasons are defined in Title 30 TAC § 298.455 as follows: Winter (November through February), Spring (March through June), and Summer (July through October). Hydrologic conditions will be discussed in the water availability analysis for this application.

Given the applicable values for subsistence and base are equal, as shown in Table 2 above, Resource Protection staff's opinion is that the subsistence flow values alone are sufficient to provide adequate protection for the environment.

Special conditions to protect high flow pulses are required, because the City's diversion rate, 138.12 cfs, is greater than 20% of the applicable high flow pulse trigger level requirements of an applicable high flow pulse at the measurement point, as described in Title 30 TAC § 298.485.

Resource Protection staff recommend that impoundment and diversion of water under this proposed permit should be limited to comply with the applicable environmental flow values.

Bed and Banks Request

Aquatic and Riparian Habitats: The City provided an *Environmental Information Document in Support of Water Use Permit Application No. 5921* (EID), prepared by HDR, Inc. (HDR) and dated June 2011, as supplemental documentation for their application. The EID describes the area of the City's project as being located on the North Fork Double Mountain Fork Brazos River, a perennial stream in Lubbock County, which is situated in the High Plains Ecoregion in what was once characterized as shortgrass prairie but is now dominated by agriculture (HDR, Inc. 2011). The river runs in a southeasterly direction and has cut a deep canyon into the escarpment, which has caused turbidity in the stream, and riparian vegetation cited in the EID includes black willow, salt cedar, and American elm found in varying densities throughout the project area (HDR, Inc. 2011). Within the footprint of the proposed reservoir's conservation pool, playa lakes, perennial river habitat, and intermittent stream tributaries were the predominate aquatic habitats (HDR, Inc. 2011).

The EID cites the Texas Parks and Wildlife Department (TPWD), the Llano Estacado Regional Water Planning Group, and the Texas Legislature as having identified no river or stream segments of unique ecological value in the affected area (HDR, Inc. 2011).

As part of the EID, a study was conducted to assess the project area and the natural and cultural resources that would be affected by construction of a large reservoir. The EID guided the preparation of the mitigation plan that the City

submitted to the United States Army Corps of Engineers (USACE) in its application for a permit to comply with Section 404 of the Clean Water Act.

In the EID, a vegetation evaluation using aerial photography was conducted simultaneously with a habitat characterization employing the Wildlife Habitat Appraisal Procedure (WHAP) developed by TPWD. The WHAP evaluates wildlife habitat with the presumption that quantity and quality of plant density and plant community is sufficient to make a determination of suitability (TPWD and USFWS 1990). The vegetation study, in conjunction with the WHAP survey, identified multiple vegetation types across approximately 795 acres of vegetated habitat, or 247 Habitat Units, within the proposed Lake 7 conservation pool (HDR, Inc. 2011).

The City also submitted a soil survey based on a United States Department of Agriculture study for Lubbock County which identified Berda loam, Berda-Potter Association soils, and Bippus clay loam as the predominate soil types found within the reservoir's proposed conservation pool (HDR, Inc. 2011).

A wetland delineation using the National Wetland Inventory identified Palustrine shrubland, intermittent emergent wetlands, and sparse areas of Riverine and Lacustrine wetlands within the proposed conservation pool (HDR, Inc. 2011). Additionally, the delineation determined that up to 45.3 acres of waters of the U.S. were found within the proposed project area (HDR, Inc. 2011).
HDR chose four locations based on site-specific water quality, habitat quality, and biological integrity, and conducted sampling of physio-chemical parameters, stream habitat, streamflow, and fish and benthic macroinvertebrate communities utilizing the Aquatic Life Monitoring protocol developed by the TCEQ in the *Surface Water Quality Monitoring Procedure Manual* and the *Biological Monitoring Fact Sheet*, and each were sampled once in June and again in September of 2009 (HDR, Inc. 2011).

The EID's benthic macroinvertebrate survey produced 1,773 individuals representing 27 taxa, and fewer intolerant species than tolerant species were found during the study, which would indicate conditions in the river reflect degraded water quality, poor habitat, and an overall Intermediate aquatic life use score (HDR, Inc. 2011).

The North Fork Double Mountain Fork Brazos River at the survey sites is a relatively saline stream, and as such, fish sampling was conducted using seines rather than a combination of seining and electrofishing (HDR, Inc. 2011). The results of HDR's study found 4,417 individuals representing seven families, 15 species, and one hybrid sunfish, and of the 15 species, four represented nearly 95% of the catch, and of those, one species represented 59% of the total catch (HDR, Inc. 2011). As with the macroinvertebrate study, most of the fish caught were highly tolerant of adverse conditions, reflecting poor water quality and habitat structure, but species diversity varied between the four sample sites, which therefore earned aquatic life use ratings ranging from Intermediate to Exceptional (HDR, Inc. 2011).

An evaluation of Lubbock County protected species by HDR found one extant, federally-listed endangered species, the whooping crane (*Grus americana*); three state-listed threatened species, the American peregrine falcon (*Falco peregrinus anatum),* the bald eagle (*Haliaeetus leucocephalus*), and the Texas horned lizard (*Phrynosoma cornutum*); and two species of fish whose historical geographic range once extended into the project area, the smalleye shiner (*Notropis buccula*) and the sharpnose shiner (*Notropis oxyrhynchus*) (HDR, Inc. 2011). The EID reports no net negative effect is expected for any of the bird species because any potential habitat would only be used temporarily during migration, and no habitat was found to be preferred by any of the three species (HDR, Inc. 2011).

The EID reports that the smalleye and sharpnose shiners, whose range once extended into the project area, have not been recorded in Lubbock County, but both species have been accounted for downstream in Garza County (HDR, Inc. 2011). Additionally, neither of the two species were caught during the surveys for this portion of the report (HDR, Inc. 2011). Two reservoirs, Buffalo Springs Lake and Lake Ransom Canyon, are found between the City's proposed reservoir and Garza County, and these reservoirs act as physical barriers between the known population and the proposed Lake 7, which led HDR to conclude that this project is not expected to impact these two species (HDR, Inc. 2011).

Because the Texas horned lizard prefers habitat that is known to occur within the proposed conservation pool of Lake 7, a rapid baseline survey was conducted to evaluate available habitat and presence of the species. The habitat assessment used aerial photography to identify approximately 619 acres of potentially suitable habitat and field surveys which guided the inspection of the roughly 240 acres of habitat sampled within the project area (HDR, Inc. 2011). Eight lizards were caught in June and July of 2009, including five hatchlings and three sub-adults/adults, and the occurrence of hatchlings in the project area suggests a healthy breeding population (HDR, Inc. 2011).

Based on the results of the Texas horned lizard survey conducted for this report, the EID recommends the following:

- Further assessments of Texas horned lizard occurrence and suitability of potential habitat within the proposed conservation pool footprint should be conducted;
- Potential off-site relocation areas should be identified;
- Development of a preliminary management plan for the Texas horned lizard addressing potential mitigation strategies for relocation to adjacent or near-site suitable habitat;
- Coordination with TCEQ/TPWD to address these concerns.

The results of the above studies were used to assign habitat values that would be impacted by construction of the proposed reservoir, and wetlands and wooded riparian areas were identified as high-priority targets for mitigation (HDR, Inc. 2011).

The request to use the bed and banks of the North Fork Double Mountain Fork Brazos River is not expected to have an effect on any federally-listed or high-interest aquatic species, because staff are recommending environmental flow requirements.

On February 12, 2014, the TCEQ adopted environmental flow standards for the Brazos River and its associated bay and estuary system (Title 30 Texas Administrative Code (TAC) Chapter 298 Subchapter G). These environmental flow standards are considered adequate to support a sound ecological environment (Title 30 TAC § 298.460). The City's request to use the bed and banks of the North Fork Double Mountain Fork Brazos River is not a new appropriation of water or an amendment that increases the amount of water stored, taken, or diverted; therefore, the environmental flow standards do not apply. The City proposes to use the bed and banks of the North Fork Double Mountain Fork Brazos River to support storage in and diversions from Lake 7. The City's request is not expected to adversely impact aquatic and riparian habitats in the area.

Recreational Uses: The North Fork Double Mountain Fork Brazos River has a presumed primary contact recreation 1 use (TCEQ 2018). The City's request should not adversely impact recreational uses.

Water Quality: The North Fork Double Mountain Fork Brazos River has a presumed limited aquatic life use for its intermittent with pools portion and a presumed high aquatic life use for its perennial portion (TCEQ 2018). Assessment Unit 1241A_02 was identified in the *Texas Integrated Report* as non-supporting for bacteria in water and with a concern for screening levels for chlorophyll-*a* in water and nitrate in water (TCEQ 2020). The City's request should not adversely impact water quality.

Freshwater Inflows: Freshwater inflows are critical for maintaining the historical productivity of bays and estuaries along the Gulf Coast. The proposed project is located more than 200 river miles from the Gulf of Mexico. The request for the use of the bed and banks is not a new appropriation of water; therefore, the City's request should not have any impact to the Brazos River Estuary.

RECOMMENDATIONS

Resource Protection staff recommend the following Special Conditions be included in the proposed permit, if granted:

1. Permittee shall implement reasonable measures in order to reduce impacts to aquatic resources due to entrainment or impingement. Such measures shall

include, but shall not be limited to, the installation of screens at the diversion structure.

2. Impoundment and diversion shall be restricted based on the following streamflows at the City's measurement point, as set forth in Special Conditions 3-7 below.

Season	Subsistence	Dry Condition Seasonal Pulse	Average Condition Seasonal Pulse	Wet Condition Seasonal Pulse
Winter	1 cfs	N/A	N/A	N/A
Spring	1 cfs	1 per season Trigger: 43 cfs Volume: 157 af Duration: 8 days	2 per season Trigger: 43 cfs Volume: 157 af Duration: 8 days	1 per season Trigger: 88 cfs Volume: 335 af Duration: 10 days
Summer	1 cfs	1 per season Trigger: 36 cfs Volume: 119 af Duration: 7 days	2 per season Trigger: 36 cfs Volume: 119 af Duration: 7 days	1 per season Trigger: 88 cfs Volume: 278 af Duration: 10 days

cfs = cubic feet per second
af = acre-feet
N/A = not applicable

3. Seasons are defined as follows: Winter (November through February), Spring (March through June), and Summer (July through October).

Subsistence Flow

4. Permittee shall not impound or divert water if the average streamflow at the City's measurement point is less than or equal to the applicable subsistence flow in Special Condition 2. The "average streamflow" at the gage is the average of measured streamflows at the gage for the previous 24 hours.

High Flow Pulse

5. If a pulse flow event required under Special Condition 2 is determined to have been triggered based on average streamflows at the City's measurement point then, until either the applicable volume amount has passed the gage or the applicable duration time has passed since the high flow pulse was triggered, Permittee shall not impound or divert except during times that average streamflow at the gage exceeds the applicable pulse flow trigger level. Diversions during such times shall not exceed the rate that would reduce average streamflow at the gage to the applicable pulse flow trigger level; provided, however, Permittee is not required to adjust its diversion rate during the pulse event more frequently than once every 24 hours.

6. Each season is independent of the preceding and subsequent seasons with respect to high flow pulse frequency and the applicable high flow pulse is dependent on the applicable hydrologic condition.

7. If a qualifying pulse flow event occurs at the City's measurement point within a given season, the pulse event shall satisfy a pulse requirement for that season. A qualifying event occurs if the event is determined to have been triggered based on average streamflow at the gage and either the pulse flow volume or duration requirement is met.

LITERATURE CITED

HDR, Inc. 2011. Environmental Information Document in Support of Water Use Permit Application No. 5921 Prepared in Response to TCEQ RFI Dated 06/23/2008. Prepared for City of Lubbock, TX.

TCEQ. 2018. Texas Surface Water Quality Standards §§ 307.1-307.10. Austin (TX): Texas Commission on Environmental Quality.

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Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Sarah Henderson, Project Manager
Water Rights Permitting Team

Date: April 22, 2021

Through: Jason Godeaux, Team Leader
Resource Protection Team

Kristin Wang, Senior Water Conservation Specialist
Resource Protection Team

From: Jennifer Allis, Senior Water Conservation Specialist
Resource Protection Team

Subject: City of Lubbock
WRPERM 5921
CN600130736
North Fork Double Mountain Fork Brazos River, Brazos River Basin
Lubbock and Lynn counties

APPLICATION SUMMARY

City of Lubbock (City) requests authorization to construct and maintain a reservoir (Lake 7) impounding 20,708 acre-feet of water on the North Fork Double Mountain Fork Brazos River, Brazos River Basin, for subsequent diversion of 50,000 acre-feet of water per year from the perimeter of the reservoir at a maximum diversion rate of 138.12 cfs (62,016 gpm) for municipal, industrial, and agricultural purposes in Lubbock and Lynn counties. The City also requests authorization to use the bed and banks of the North Fork Double Mountain Fork Brazos River to convey up to 14,856 acre-feet of water per year discharged from the South Central Lubbock Drainage System, up to 8,934 acre-feet of water per year from the South Lubbock Drainage System, and up to 16,420 acre-feet of surface water- and groundwater-based return flows per year, to support storage in and diversions from the reservoir, from the Southeast Water Recycling Plant, authorized by Texas Pollutant Discharge Elimination System Permit No. WQ00010353002, to Lake 7 to support storage in and diversions from the reservoir. The City will use other water sources available to it in the North Fork Double Mountain Fork, that are authorized under Water Use Permit Nos. 3985, as amended, and 3705, as amended.

The City maintains an agreement with the Brazos River Authority in which the City will pass water through Lake 7 when streamflows exceed 5 cfs and when the water surface elevation of Possum Kingdom Lake is below 1,000 feet msl.

WATER CONSERVATION REVIEW

Pursuant to Title 30 Texas Administrative Code (TAC) §295.9(1), an application requesting a new appropriation of water requires the submittal of water conservation and drought contingency plans.

Resource Protection staff reviewed the water conservation and drought contingency plans and found the plans to be administratively complete per 30 TAC Chapter 288.

Additionally, the City is required to provide evidence that the amount of water appropriated will be beneficially used, i.e., effectively managed and not wasted pursuant to Texas Water Code (TWC), §11.134(b)(3)(A). Also, the City must provide evidence that reasonable diligence will be used to avoid waste and achieve water conservation pursuant to TWC §11.134(b)(4). To provide that evidence, the City must submit a water conservation plan in accordance with 30 TAC Chapter 288. In applications where a new appropriation of water is requested, the review includes an analysis of whether the requested appropriation is reasonable and necessary for the proposed uses in accordance with TWC §11.134 and 30 TAC §297.50 and §288.7.

The purpose of this review is to:

1) determine whether reasonable water conservation goals have been set;
2) determine whether the proposed strategies can achieve the stated goals;
3) determine whether there is a substantiated need for the water and whether the amount to be appropriated is reasonable for the proposed use; and
4) determine whether the water conservation plan addresses a water supply need in a manner that is consistent with the state water plan and the relevant approved regional water plan.

If these criteria are met, then Resource Protection staff considers this sufficient evidence to conclude that the City will avoid waste and achieve water conservation. This review forms a basis for permit conditions and limitations as provided by TWC §11.134.

Water Conservation Goals and Strategies

The City submitted 2019 water conservation and drought contingency plans which were reviewed by Resource Protection staff and found to meet the requirements in 30 TAC Chapter 288 for retail and wholesale water suppliers.

The City established five- and ten-year goals for water use in gallons per capita per day (gpcd). The City's annual average per capita per day usage declined by 27 percent over the past eight years. The City's water conservation goals were determined using the baseline of per capita water use of the 10-year average from

2009 to 2018 of 143 gpcd. Of note, the City met its previous goal for water use which was 150 gpcd for 2019.

The City's goals were developed utilizing a 0.5 percent per year reduction in per capita water use, resulting in a per capita goal of 139 gpcd for 2024 and of 136 gpcd for 2029.

In addition to the per capita water use goal, the City set a maximum water loss goal of 10 percent for the retail water delivery system, which corresponds to a loss rate of 13.9 gpcd in 2024 and 13.6 gpcd in 2029.

According to the City's *2018 Strategic Water Supply Plan* (SWSP), the significant reduction in per capita consumption over the past few years can be directly attributed to the effectiveness of the City's conservation block rate structure, volume rates, and two-day per week irrigation limitation on a year-round basis.

The City's water conservation program is comprised of four main strategies:

1. Maintain a rate structure that encourages conservation;
2. Reduce water loss within the City's distribution system;
3. Educate the public and provide useful information; and
4. Enforce irrigation and waste of water restrictions.

The City has implemented water conservation strategies that include public education and awareness, stringent seasonal watering restrictions, an increasing block rate structure, reducing unaccounted-for water losses, and additional measures to increase the efficiency of irrigation practices and commercial water use. Additionally, the City requires its wholesale customers to adopt and implement water conservation plans that will reduce their per capita water use.

The City also submitted an irrigation water conservation plan indicating that it uses sewage effluent from its wastewater treatment plant to irrigate two land application sites. Effluent is used to irrigate crops as wheat, jose wheat, bermuda, and rye. The City's current and future goals for this reuse system are to be able to dispose of the total wastewater volume necessary through this system. Irrigation practices are designed to prevent contamination of surface and groundwater in the area. The City monitors the delivery system for any leaks by visually inspecting the system on a regular basis, and all leaks are repaired in a timely manner.

As such, Resource Protection staff has deemed these goals and strategies to be reasonable.

Requirements for Water Right Application under 30 TAC §288.7
Under 30 TAC §288.7, a water conservation plan submitted with a water right application for a new or additional appropriation of water must include data and information which:

1) supports the applicant's proposed use of water with consideration of the water conservation goals of the water conservation plan;
2) evaluates conservation as an alternative to the proposed appropriation; and
3) evaluates any other feasible alternative to new water development including, but not limited to, waste prevention, recycling and reuse, water transfer and marketing, regionalization, and optimum water management practices and procedures.

The City developed the 2018 SWSP to actively plan for future water supplies. The 2018 SWSP includes multiple strategies to diversify the City's water supply portfolio to minimize risk associated with variable climatic conditions while emphasizing conservation efforts to delay expensive water supply projects.

Consideration of Water Conservation Goals
Based on projections, continued conservation could reduce the per capita demand for the City by 21 gpcd by 2035. This translates into a reduction in water demand of 7,564 acre-feet in 2035, or almost 14 percent when compared to the expected water demand.

Conservation as an Alternative to the Proposed Appropriation
As part of the regional water planning process, the planning groups are required to perform a comprehensive analysis of potentially feasible water management strategies, including consideration of water conservation as a strategy for all water users with supply needs. Given the large irrigation water needs in the region, the Region O Water Planning Group gave special consideration to agricultural conservation methods. In addition to conservation, strategies that include the development of new supplies and infrastructure were developed and evaluated. However, the projected shortage for the City after Conservation is expected to be 32,370 acre-feet per year in 2070.

Feasible Alternatives to New Water Development
Most recommended water management strategies in the Region O Water Plan are new groundwater development or expansion of existing well fields. Although surface water supplies are limited in the region, expansion of surface water supply from Lake Alan Henry was evaluated. New reuse and brackish groundwater development were also evaluated. Lake 7 would impound reclaimed water, developed playa lake stormwater, and natural inflows. Because Lake 7 will utilize the City's reclaimed water as the primary portion of its yield, supply from Lake 7 will be relatively drought proof. The use of reclaimed water is considered an important water supply strategy in the 2017 State Water Plan. Since the City must import its potable water

from such long distances, reusing water makes economical and practical sense. Using reclaimed water can reduce dependency on new water supplies.

Water Need
The City is the largest demand center in the Region for municipal and manufacturing water use. According to the 2021 Region O Water Plan, Lubbock has the largest predicted water needs, with a shortage of 5,154 acre-feet per year in 2020 that increases to a shortage of 33,808 acre-feet per year in 2070. The City has wholesale water supply contracts with several customers. Total water use by the City and its customers is projected to be 49,863 acre-feet in 2020 and 71,477 acre-feet in 2070.

Consistency with State and Regional Water Plans
The project is included as a recommended water management strategy in the City's *2018 Strategic Water Supply Plan* and in the 2021 Region O Water Plan. As such, the application is consistent with the 2021 Region O Water Plan, and Resource Protection staff expects that the request will also be consistent with the 2022 State Water Plan once it is approved, because there is nothing in the water plans that conflicts with issuing the permit.

RECOMMENDATIONS

Based on the analysis, Resource Protection staff has evaluated the application and determined that it meets the review requirements.

The following water conservation language should be included in the permit, if granted:

Permittee shall implement water conservation plans that provide for the utilization of those practices, techniques, and technologies that reduce or maintain the consumption of water, prevent or reduce the loss or waste of water, maintain or improve the efficiency in the use of water, increase the recycling and reuse of water, and prevent the pollution of water, so that a water supply is made available for future or alternative uses. Such plans shall include a requirement that in every water supply contract entered into on or after the effective date of this permit, including any contract extension or renewal, that each successive wholesale customer develop and implement conservation measures. If the customer intends to resell the water, then the contract for resale of the water shall have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures.

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Sarah Henderson, Project Manager
Water Rights Permitting Team

Date: November 10, 2021

From: Kathy Alexander, Ph.D.
Policy and Technical Analyst
Water Availability Division

Subject: City of Lubbock
WRPERM 5921
CN600130736
North Fork Double Mountain Fork Brazos River, Brazos River Basin
Lubbock and Lynn counties

WATER AVAILABILITY ANALYSIS

Application Summary

The City of Lubbock (City) requests authorization to construct and maintain a reservoir (Lake 7) impounding 20,708 acre-feet of water on the North Fork Double Mountain Fork Brazos River, Brazos River Basin, for subsequent diversion of 50,000 acre-feet of water per year from the perimeter of the reservoir at a maximum diversion rate of 138.12 cfs (62,016 gpm) for municipal, industrial, and agricultural purposes in Lubbock and Lynn counties. The City also requests authorization to use the bed and banks of the North Fork Double Mountain Fork of the Brazos River to convey up to 14,856 acre-feet of water discharged from the South Central Lubbock Drainage System, up to 8,934 acre-feet of water from the South Lubbock Drainage System, and up to 16,240 acre-feet of surface water- and groundwater-based return flows from Southeast Water Recycling Plant, authorized by WQ00010353002, to Lake 7 to support storage in and diversions from the reservoir. The City will use other water sources available to it in the North Fork Double Mountain Fork Brazos River, that are authorized under Water Use Permit Nos. 3985, as amended, and 3705, as amended. The City maintains an agreement with the Brazos River Authority in which the City will pass water through Lake 7 when streamflow exceeds 5 cfs and when the water surface elevation of Possum Kingdom Lake is below 1,000 feet msl.

The application was declared administratively complete on April 17, 2006.

The City submitted an accounting plan on August 15, 2016, which was revised several times. The final accounting plan was submitted on February 2, 2021.

Water Availability Analysis

Pursuant to 30 Texas Administrative Code (TAC) §298 Subchapter G, Resource

Protection staff recommend that the application be subject to instream flow requirements. Resource Protection staff also recommended other special conditions. See Resource Protection staff's April 22, 2021 memorandum.

The Water Rights Analysis Package (WRAP) simulates management of the water resources of a river basin. TCEQ uses WRAP in the evaluation of water right permit applications using priority-based water allocations. WRAP is a generalized simulation model for application to any river basin, and input datasets must be developed for the particular river basin of concern. The TCEQ developed water availability models (WAMs) for Texas river basins that include geographical information, water right information, naturalized flows, evaporation rates, channel losses, and specific management assumptions. Hydrology staff operates WRAP to evaluate water rights applications to determine water availability and to ensure that senior water rights are protected.

An evaluation of a proposed appropriation of state water must consider effects of the proposed permit on groundwater or groundwater recharge. The naturalized flows that are the basis for the TCEQ WAM take into account both contribution to river flow caused by groundwater coming to the surface in the river (springs) and decreases in river flow caused by the river flowing over recharge features and losing surface water to groundwater recharge. Therefore, any effects on groundwater or groundwater recharge are incorporated into the modeling for this application. By considering any gains and losses due to groundwater/surface water interaction in its water availability analysis, the commission is protecting groundwater resources.

The City requested that compliance with the adopted environmental flow standards be measured at Lake 7. Staff reviewed this request and is not opposed to measuring compliance under the permit at Lake 7. The City translated the adopted subsistence and base flow standards from USGS Gage No. 08080500 – Double Mountain Fork Brazos River near Aspermont to Lake 7 based on their contributing drainage areas and provided the method used to translate the pulse flow standards. Staff reviewed the methods and found them adequate. Measurement of the applicable environmental flow requirements at Lake 7 would be an adequate indicator of whether operations under the permit are in compliance with the adopted standards.

TCEQ's environmental flow standards for the Brazos Basin in 30 TAC §298 Subchapter G (Brazos River and its Associated Bay and Estuary System) include a hydrologic condition (§298.470 Calculation of Hydrologic Conditions). The hydrologic condition is based on the Palmer Hydrologic Drought Index (PHDI) and the PHDI Index as defined in §298.455 (6) and (7). Based on §298.455(11), the application is located in the Upper Basin. The Climate Divisions included in the Upper Basin are the High Plains (Climate Division 1), Low Rolling Plains (Climate Division 2), and North Central (Climate Division 3). The values for the PHDI Index for the Upper Basin used to determine the hydrologic condition are calculated as follows (§298.470(b)):

(0.027 × High Plains PHDI) + (0.647 × Low Rolling Plains PHDI) + (0.326 × North Central PHDI).

The determination of the hydrologic condition for a particular season is determined once per season. The PHDI value present on the last day of the month of the preceding season, as reported by the National Weather Service, and calculated for the geographic area as described in subsection (b) of the section, determines the hydrologic condition for the following season. The values for the PHDI are available at https://www.ncdc.noaa.gov/temp-and-precip/drought/weekly-palmers/. Under the adopted rules, PHDI values are based on the last day of the month before the start of a new season; however, final approved PHDI values for a month are typically available from the National Climatic Data Center (NCDC) near the middle of the following month. Therefore, in order to determine the hydrologic condition for a season, the latest published monthly value can be used on an interim basis until the final value for the month preceding the season is available. When the NCDC publishes the final value for the month preceding the season, the hydrologic condition applicable for the season can be updated if required.

Staff notes that TCEQ's adopted environmental flow standards for the Brazos Basin in 30 TAC §298 Subchapter G (Brazos River and its Associated Bay and Estuary System) do not include freshwater inflow standards for the Brazos Estuary.

New Appropriation Analysis

Staff modeled the application using the Full Authorization simulation of the Brazos River Basin WAM where water rights utilize their maximum authorized amounts for storage and diversion, and return flows are not included. The period of record for the Brazos WAM is 1940 through 2018. The Brazos WAM includes the adopted standards for all measurement points required by Chapter 298, Subchapter G. Under 30 TAC §298.465, the priority date for the environmental flow standards in the Brazos WAM is March 1, 2012. For modeling purposes, this application was modeled with a priority date of March 8, 2012 so that the application would be junior to both the adopted standards and applications for new appropriations considered after the standards were adopted.

Staff first evaluated the extent to which unappropriated water was available to support the request if 50,000 acre-feet of water was diverted from the reservoir and the City's additional sources were not available to support diversion and storage. The simulation results indicate that 39,930 acre-feet is available for diversion in one year of the period of record. Staff also evaluated storage of unappropriated water assuming no diversions from the reservoir. Simulation results indicate that the reservoir was more than 50% full in 28% of the months in the period of record. Staff notes that the City has an agreement with Brazos River Authority (BRA) which states that when the elevation of BRA's Possum Kingdom Lake is below 1,000 feet msl and inflows of state water exceed 5 cfs, the City will pass inflows above 5 cfs through Lake 7. The Brazos WAM implements the prior appropriation doctrine whereby senior water rights get access to available flows first, based on their priority dates. In the simulation, BRA's senior rights in Lake

Possum Kingdom would have access to all available unappropriated water prior to the City's impoundment and diversion at Lake 7 under its junior priority date. Therefore, staff's simulation represents a very conservative estimate of the amount of unappropriated water available for storage and diversion from Lake 7.

Bed and Banks

The City also requested authorization to use the bed and banks of the North Fork Double Mountain Fork, Brazos River to convey up to 14,856 acre-feet of water discharged from the South Central Lubbock Drainage System (SCLDS) , up to 8,934 acre-feet of water from the South Lubbock Drainage System (SLDS), and up to 16,240 acre-feet of surface water and groundwater based return flows from Southeast Water Recycling Plant (SEWRP), authorized by WQ00010353002, to Lake 7. Water conveyed to Lake 7 will support storage in and diversions from the reservoir. Water from the SCLDS and SLDS originates from stormwater collected in playa lakes and subsequently discharged to the North Fork Double Mountain Fork Brazos River. This stormwater would not naturally have contributed flow to the Brazos River and its tributaries. Therefore, staff's opinion is that downstream water rights could not have relied on these flows in the river and the City's use of these flows cannot affect other water rights. The City applied for reuse of return flows from SEWRP prior to discharge of those return flows. Therefore, downstream water rights could not have been granted based on these return flows and the City's use of these flows cannot affect other water rights.

The City estimated channel losses associated with the requests to convey water and return flows from SCLDS, SLDS, and SEWRP to Lake 7 as well as revised channel losses for conveyance of return flows from NWRP and water from NDP. The proposed and revised channel losses are based on channel loss factors in TCEQ's Brazos WAM. Staff reviewed the estimates of losses and found them to be acceptable.

Consideration of other sources of water available to the City

Staff performed an additional simulation that considered use of water from SCLDS, SLDS, SEWRP and water authorized under Water Use Permit No. 3985, as amended to support diversions from and storage in Lake 7. Staff added flows from these additional sources to the Brazos WAM as follows:

- Discharges from SCLDS, SLDS, SEWRP requested in the application, and 6,725 acre-feet of return flows discharged from the Northwest Water Reclamation Plant (NWRP) and up to 7,100 acre-feet of water discharged by the Northwest Drainage Project (NDP) authorized by Water Use Permit No. 3985, as amended, were made available only for the City's use in Lake 7.
- Discharges from SEWRP and NWRP were modeled as constant monthly volumes.
- Discharges from SCLDS, SLDS and NDP are variable and dependent on rainfall. Staff used the City's estimates of the volume of water anticipated to be discharged from these facilities based on studies that are further described in a

July 15, 2015 memorandum and supplemented by an October 20, 2021 submittal of data through 2018.

- Discharges of stormwater and reuse water were adjusted for channel losses.

Simulation results indicate that the requested diversion amount, 50,000 acre-feet per year, is available in one year of the period of record. TCEQ's rules (30 TAC §297.42(d)) provide that the required water availability for projects that are not based on the continuous availability of streamflow shall be determined on a case-by-case basis based upon whether the proposed project can be viable for the intended purpose and the water will be beneficially used without waste. The determination of whether the water will be beneficially used without waste is addressed in the conservation review of the application. Regarding whether the proposed project is viable for the intended purpose, the City owns water rights in Lakes Meredith and Alan Henry as well as groundwater sources. Given the City's multiple sources of supply, staff's opinion is that the project can be viable for the intended purpose.

Accounting Plan

The City submitted an accounting plan (*City of Lubbock Accounting Plan for Permit 12-5921 Lake 7*) that calculates state water inflows to Lake 7 and accounts for the use of the City's sources of supply as well as compliance with the recommended environmental flow requirements. Staff reviewed the accounting plan and found it adequate to demonstrate compliance with the terms and conditions of the proposed permit.

Conclusion

Simulation results indicate that the amount of water requested is available during the period of record. Staff is of the opinion that if the City manages the new appropriation as part of its water supply system in accordance with the approved accounting plan, the application will not affect existing water rights and will be viable for the intended purpose. Therefore, Staff can support granting the application.

Staff recommends that the following special conditions be included in the permit:

1. If Permittee has stored water in accordance with the terms and conditions of this permit at the time the water was stored, Permittee may divert and use that stored water, even if any environmental flow requirements are not met at the time of the subsequent diversion and use of that stored water.

2. Permittee shall determine the hydrologic condition once per season. The Palmer Hydrologic Drought Index (PHDI) value present on the last day of the month of the preceding season, as reported by the National Weather Service, shall be used to determine the hydrologic condition for the following season as set out in Paragraphs 1.a. – c. below.

a. Permittee shall determine the PHDI Index for a season based on the following formula:

(0.027 × High Plains PHDI) + (0.647 × Low Rolling Plains PHDI) + (0.326 × North Central PHDI)

b. The PHDI Index and corresponding hydrologic conditions that govern diversions under this permit are:

Dry	Average	Wet
Less than -1.78	-1.78 – 2.18	Greater than 2.18

c. Permittee may utilize an interim PHDI value to determine the hydrologic condition until the value preceding the start of the season is published in accordance with the procedure described in *City of Lubbock Accounting Plan for Permit 12-5921 Lake 7*.

2. Impoundment and diversion of return flows and other discharged water as authorized by this permit is dependent upon potentially interruptible return flows and discharges and is conditioned on the availability of those discharges. The right to divert return flows discharged from the Southeast Water Recycling Plant and the water discharged from the South Central Lubbock Drainage System and the South Lubbock Drainage System is subject to revocation if all discharges become permanently unavailable for impoundment and diversion and may be subject to reduction if the return flows discharged from the Southeast Water Recycling Plant and the water discharged from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System are not available in quantities and qualities sufficient to fully support the permit authorizations. Should any of the discharges become permanently unavailable for impoundment and diversion, Permittee shall immediately cease impoundment and diversion of return flows and other discharged water under this permit and either apply to amend the permit, or voluntarily forfeit the authorization to impound and divert return flows and other discharged water. If Permittee does not amend or forfeit the authorization, the Commission may begin proceedings to cancel these authorizations in the permit.

3. Permittee shall only divert daily return flows and any water discharged from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System that is actually discharged.

4. Prior to diversion and impoundment of return flows in excess of the amount currently authorized by TPDES Permit No. WQ00010353002, described in Paragraph 2. USE and Paragraph 3. DISCHARGE, Permittee shall apply for and be granted the right to reuse those return flows. Permittee shall amend the accounting plan to include future discharges of return flows prior to diverting said return flows.

5. Prior to diversion of any additional water discharged from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System in excess of the maximum annual discharge volume described in Paragraph 2. USE and Paragraph 3. DISCHARGE, Permittee shall apply for and be granted the right to use the discharged water. Permittee shall amend the accounting plan to include additional discharges from the City's South Central Lubbock Drainage System and the South Lubbock Drainage System prior to diverting said additional discharges.

6. Permittee shall only divert water authorized under this permit pursuant to Paragraph 2. USE and Paragraph 4. DIVERSION in accordance with the most recently approved *City of Lubbock Accounting Plan for Permit 12-5921 Lake 7.* Permittee shall maintain the plan in electronic format and make it available upon request. Any modifications to the accounting plan shall be approved by the Executive Director. Any modification to the accounting plan that changes the permit terms must be in the form of an amendment to the permit. Should Permittee fail to maintain the accounting plan or notify the Executive Director of any modifications to the plan, Permittee shall immediately cease diversion and impoundment of water authorized in this permit, and either apply to amend the permit, or voluntarily forfeit the permit. If Permittee fails to amend the accounting plan or forfeit the permit, the Commission may begin proceedings to cancel the permit. Permittee shall immediately notify the Executive Director upon modification of the accounting plan and provide copies of the appropriate documents effectuating such changes.