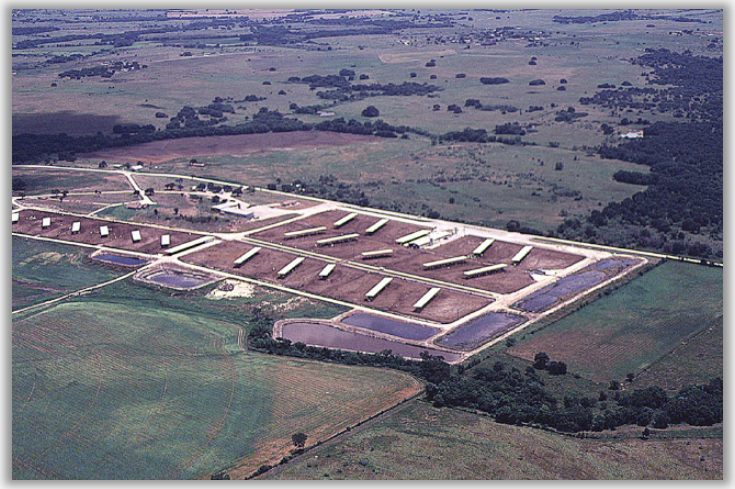
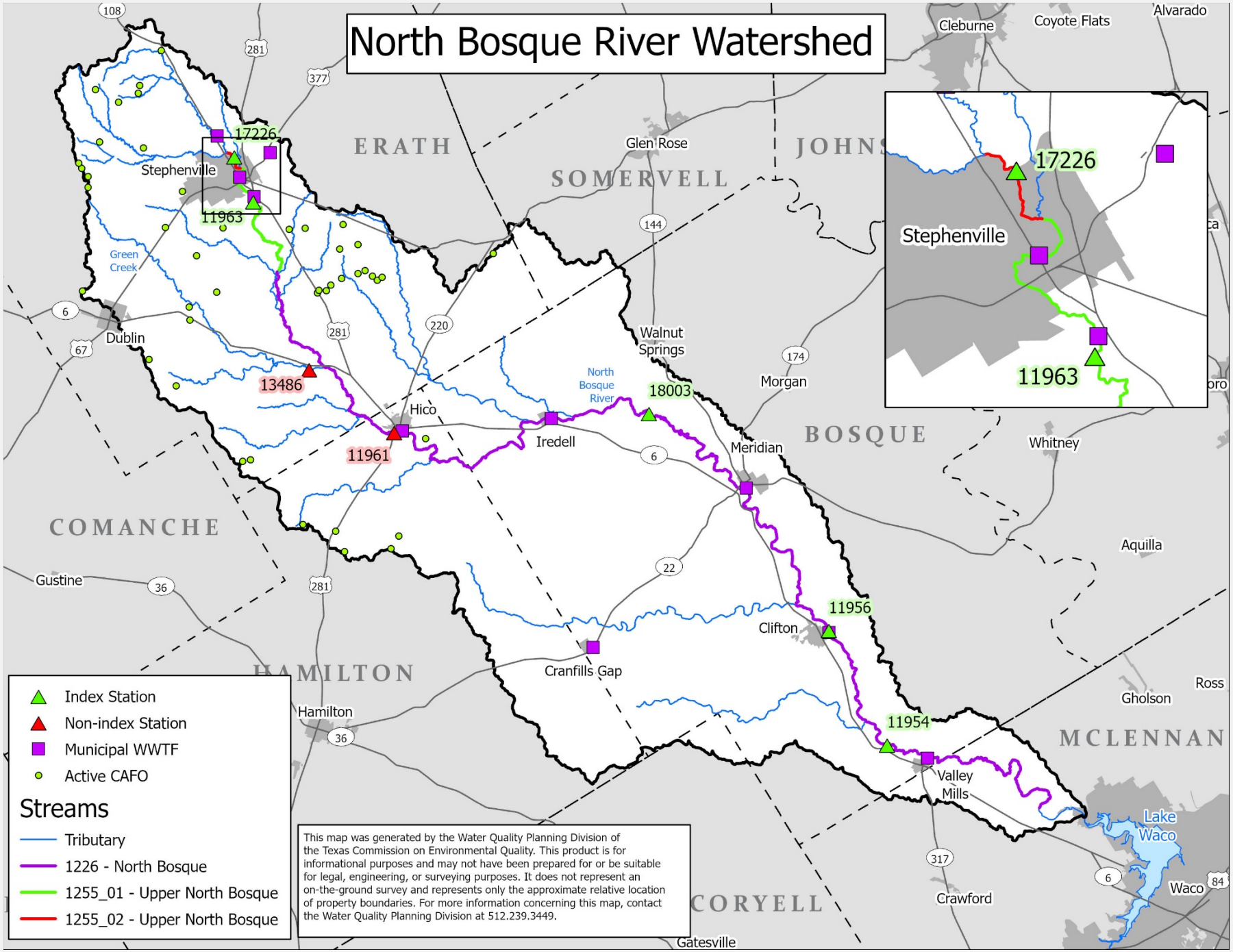
Recommendations of the North Bosque River Work Group

October 2021

North Bosque River Work Group

- As suggested at the August 2020 stakeholder meeting, TCEQ invited all Bosque River stakeholders to volunteer to take part in a work group to evaluate progress and recommend next steps.
- The work group had 16 members who met three times in late 2020 and early 2021.




North Bosque River Watershed
17226
11963
Stephenville
Green Creek
Dublin
13486
11961
Hico
Iredell
North Bosque River
18003
Walnut Springs
Glen Rose
Morgan
Meridian
11956
Clifton
Cranfills Gap
11954
Valley Mills
Hamilton
Gustine
Aquilla
Whitney
Gholson
Crawford
Waco
Lake Waco
Cleburne
Coyote Flats
Alvarado
ERATH
SOMERVELL
JOHNSON
BOSQUE
COMANCHE
HAMILTON
MCLENNAN
CORYELL
Gatesville
Index Station
Non-index Station
Municipal WWTF
Active CAFO
Streams
Tributary
1226 - North Bosque
1255_01 - Upper North Bosque
1255_02 - Upper North Bosque
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Work Group Goals

- Consider options for the path forward with North Bosque River TMDL implementation.
- Discuss options for completion or partial completion of North Bosque River TMDL implementation.
- Discuss ongoing monitoring requirements to maintain and improve water quality in the North Bosque River.
- Develop recommendations for the next steps to be taken regarding North Bosque River TMDL implementation.

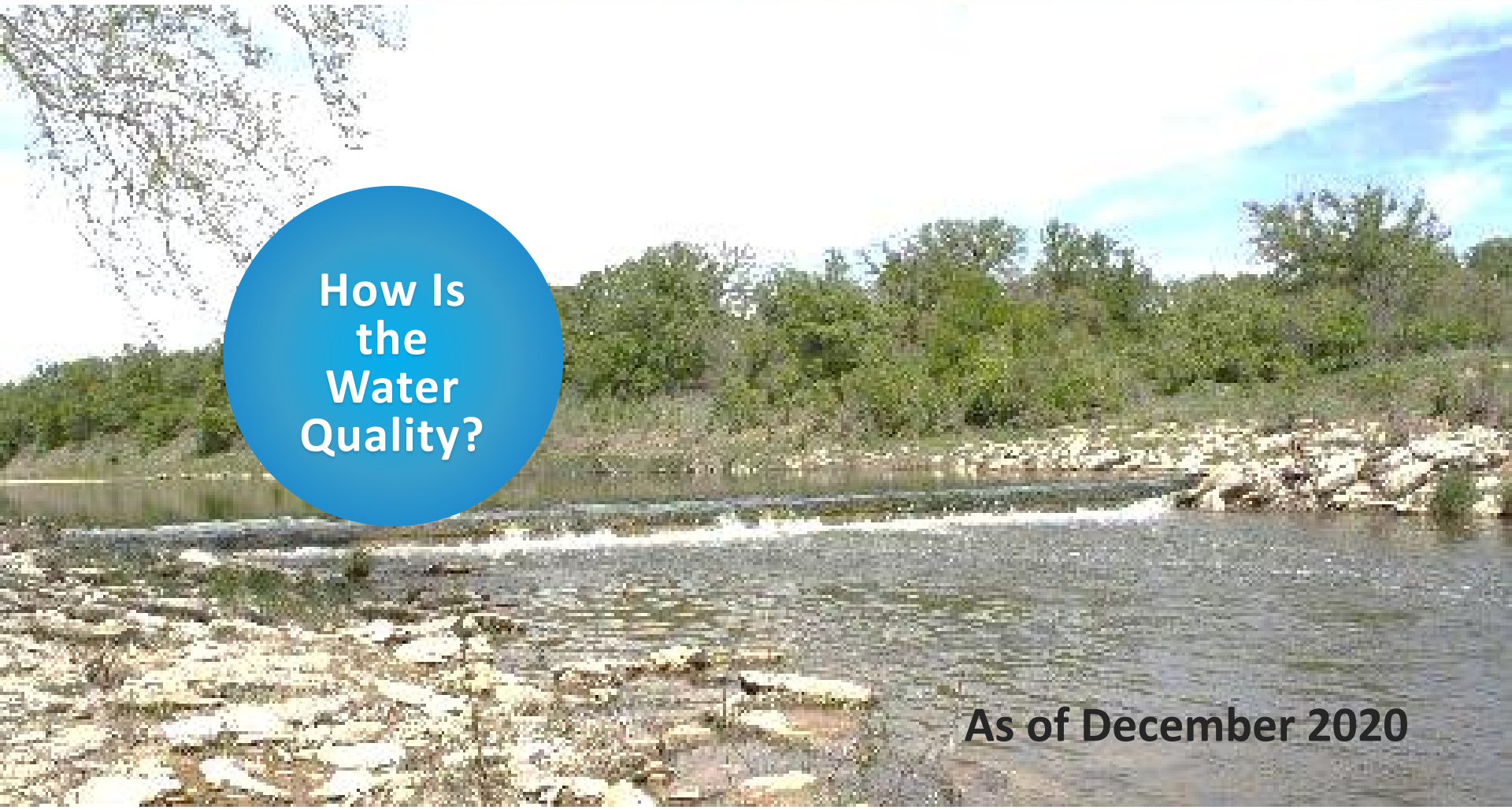
What's Been Done?

- Stakeholders have successfully completed a great deal of work in the watershed.
  - All permits for wastewater treatment facilities have low phosphorus limits; some facilities have been upgraded.
  - CAFOs have implemented comprehensive nutrient management and apply manure to waste fields at levels that prevent runoff. They operate under stringent individual permits.
  - Through August 2006, CAFOs and AFOs hauled more than 650,000 tons of manure to composting facilities, which exported about 329,000 cubic yards of compost from the watershed.

Estimated Costs of Implementation

All costs shown are estimates only, based on budgeted amounts.
Staff time to manage the programs and projects is not included.

Activity	Estimated Cost Federal*	Estimated State or Matching Cost*	Funded Party	Funding Source
Develop TMDLs and I-Plan	No record at TCEQ		Texas Institute for Applied Environmental Research (TIAER)	Federal U.S. Department of Agriculture. Most of the technical work was done by TIAER under a USDA grant. TCEQ development of the final TMDL and I-Plan documents would have involved primarily staff time.
Re-Model TMDLs (Includes some instream monitoring, model refinement, and TMDL determination)	$1,189,208		TIAER	State funds (TCEQ TMDL Program). The remodeling was done at the request of stakeholders.
Dairy Waste Management Demonstration (2 grants)	$970,484		Brazos River Authority, TIAER	Federal 319 NPS Grant, passed through TCEQ
Composted Manure Incentive Project (4 grants)	$6,769,380		TCEQ NPS Program	Federal NPS 319 Grant, passed through TCEQ
Composted Manure Market Development	$22,167	$98,853	TSSWCB, Texas A&M University	Federal 319 Grant, passed through TCEQ; State funds
Dairy Manure Export Project, BMP Implementation, Soil Phophorus Index, Compost End Use	$6,213,567	$3,521,389	TSSWCB	Federal 319 Grant
Microwatershed Councils, microwatershed monitoring. and edge-of-field monitoring	$1,883,902	$1,284,276	TSSWCB	Federal 319 Grant
Effectiveness Monitoring (estimated 11/2005 through 11/2017)	$1,362,899		TIAER	Federal 319 Grant through TCEQ and State/Local matching funds
Effectiveness Monitoring (estimated 11/2017 through 08/2020)		$868,000	TIAER	State TMDL program funds
Monitoring required under Rider 19, Texas Legislature		$320,000	TCEQ and Brazos River Authority	State funds
Continuous Water Quality Monitoring (06/2001 thru 08/2020)	$1,714,000		TCEQ	Federal 106 assessment grants, State funds
Total	**$20,125,607**	**$6,092,518**		


How Is the Water Quality?
As of December 2020

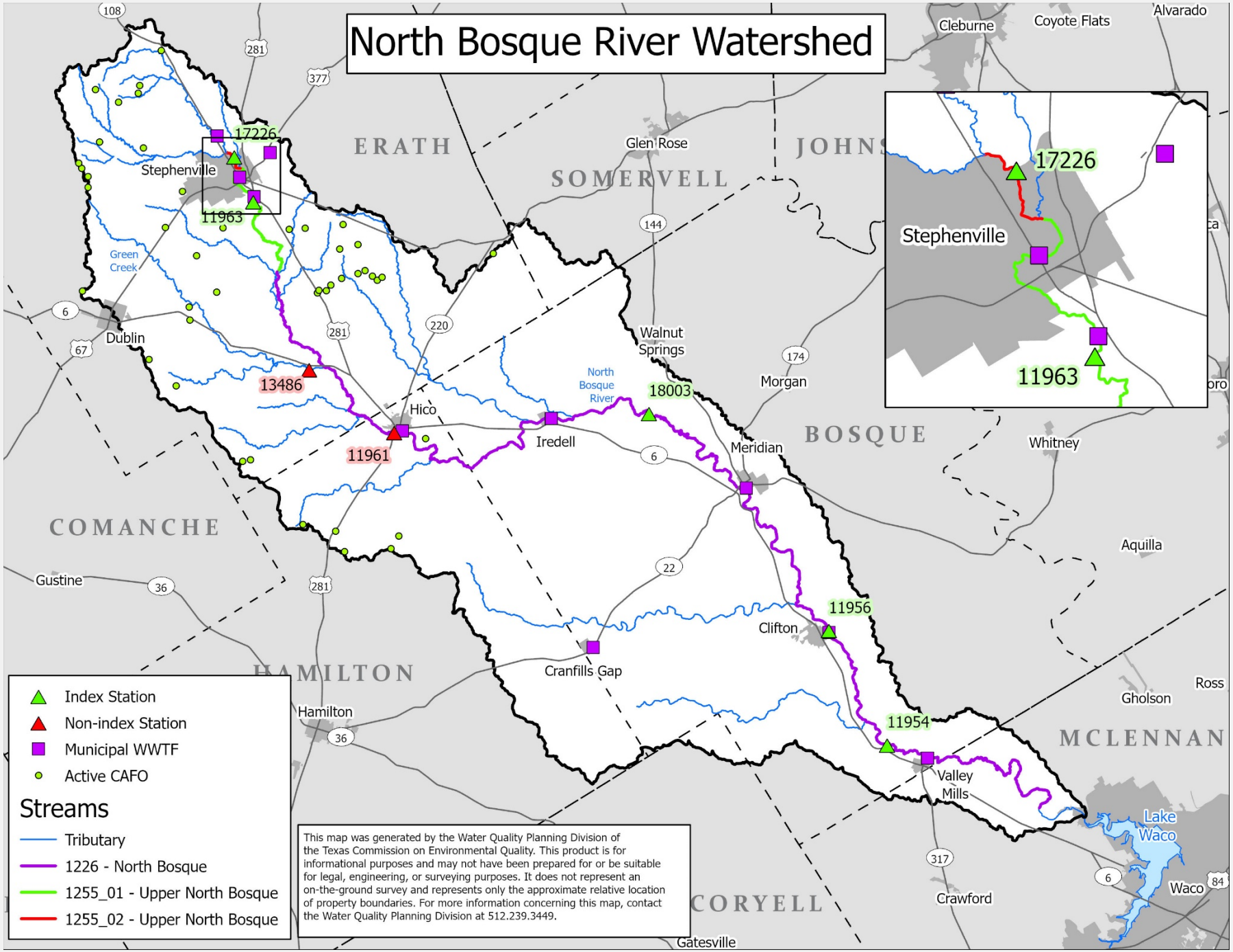
How Is Water Quality?

- Phosphorus levels at all three index stations downstream of Stephenville are meeting the goals and show either a downward trend in phosphorus or no trend.
- Phosphorus levels at the index station Below Stephenville are nearing the goal but have not yet met it.
- Phosphorus levels at the index station above Stephenville do not meet the goal; however, there is a small but statistically significant downward trend in phosphorus.
- Concentrations of chlorophyll-*a* continue to exceed TCEQ screening levels at all sites throughout the watershed. Chlorophyll-*a* is an additional indicator of the potential for excessive algal growth to happen.

Annual Reports of Status and Trends

- TCEQ and TIAER publish two reports annually on TCEQ's webpage about the North Bosque River.
  - *Status Report: Implementing TMDLs to Improve Water Quality in the North Bosque River*
    - A summary of water quality management in the watershed and resulting changes in water quality through state fiscal year 2020.
    - Usually published in May or June each year.
  - *Assessment of Water Quality Trends for the North Bosque River through 2020*
    - An update of water quality trends in the North Bosque River watershed through December 31, 2020, prepared by scientists at the Texas Institute for Applied Environmental Research under contract with TCEQ.
    - Published at the end of August every year.


What
Next?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Recommended Monitoring Plan, FY 2022

Station	Location Description	Current Number of Annual Routine Events (FY21)	Current Number of Annual Stormwater Events (FY21)	FY22 Proposed Number of Annual Routine Events	FY23 Proposed Number of Annual Routine Events	FY22 Proposed Number of Annual Stormwater Events
17226*	NBR Upstream of Stephenville WWTP	26	up to 4	12	12	up to 4
11963*	NBR Downstream of Stephenville WWTP	26	up to 4	12**	6	up to 4
11961	NBR at Hico	26	up to 4	12**	6	up to 4
18003*†	NBR Downstream of Iredell/Upstream of Meridian	26	0†	12**	6	0†
11956*	NBR at Clifton	26	up to 4	12**	6	up to 4
11954*	NBR at Valley Mills	26	up to 4	12**	6	up to 4
13486	Green Creek	26	up to 4	12	12	up to 4

* TMDL Index Sites

** Decrease to six monitoring events in FY23, provided no abnormalities are detected.

† No stormwater monitoring at Station 18003 because there is no access for placement of automated samplers.

Other Recommendations

- TIAER should maintain the number of stormwater monitoring events at up to four annually and consider decreasing the storm size requirement to allow for more capture of storm events and data.
- The most recent (FY17-19) stormwater samples demonstrate a decreasing trend in orthophosphate phosphorus at Station 17226.
- TIAER will keep GIS spatial data current, including locations of active CAFOs and AFOs, current and historical waste application fields, wastewater treatment facilities, monitoring sites, and USGS gauge stations in the watershed.
- TCEQ should explore the possibility of conducting studies that aid understanding of chlorophyll-*a* and phosphorus instream dynamics.
- TCEQ should publish a one-two page statement about progress and successes in the watershed.

Discussion?

Do stakeholders approve the Work Group recommendations?

TCEQ Project Contact

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