

KANSAS GEOLOGICAL SURVEY

1930 Constant Ave., Campus West
The University of Kansas
Lawrence, Kansas 66047-3726
phone 785-864-3965
fax 785-864-5317

Proposed Project for Application to the Kansas Department of Health and Environment for a Loan from the Kansas Water Supply Loan Fund

Applicant: City of Manchester
Water-Supply System Improvements

Contact Person: Lori Thielen
Address: North Central Regional Planning Commission
109 N. Mill, P.O. Box 565
Beloit, KS 67420

Sent to the Kansas Geological Survey for environmental review.

Agency Review Comments:

The long-term benefits of the improvements to the water-supply storage system and the replacement of the fire hydrants should offset any short-term adverse environmental impacts during construction.

Recommended Action:

- ☒ Clearance of project should be granted
- ☐ Clearance of project should not be granted
- ☐ Clearance of project should be delayed until the issues or questions have been clarified
- ☐ Clearance of project should not be delayed, but the applicant (in the application) should address or clarify the questions or concerns indicated above

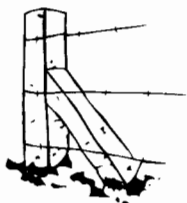
Donald Whittemore
Reviewer's Name

Geohydrology Section, Kansas Geological Survey
Division/Agency

8/8/06
Date

Reviewer's Signature

The above discussion represents our best assessment based on the information that the Kansas Geological Survey has about this locality and/or proposed project at the time of this writing. Other geologic conditions, not discussed herein, or for which the Kansas Geological Survey has no knowledge, may affect the viability or safe operation of this facility or property. The information provided in this letter is from regional or county-wide studies and should not be used as a substitute for detailed site characterization by a licensed geologist or engineer. It is the responsibility of the applicant to provide any required site characterizations.



North Central Regional Planning Commission

109 N. Mill St., P.O. Box 565 • Beloit, Kansas 67420 • (785) 738-2218

July 13, 2006

Kansas Geological Survey
University of Kansas
1930 Constant Ave., Campus West
Lawrence, Kansas 66047

RE: City of Manchester Kansas Public Water Supply Loan Fund

Dear Kansas Geological Survey:

The City of Manchester is preparing an application to the Kansas Department of Health and Environment for a loan from the Kansas Public Water Supply Loan Fund for the referenced project. Proposed are improvements to the city's water storage system installed 72 years ago. This will involve repairing the city's elevated water tower located at the intersection of Lina Ave. and Coats St. in Manchester. Proposed repairs include sandblasting and recoating interior and exterior, replacing inoperable access opening, installing safety equipment, replacing inadequate roof vent and replacing 12 inoperable fire hydrants. The city also anticipates applying for matching grant funds through the Kansas Department of Kansas Small Cities Community Development Block Grant program.

We would appreciate your review of the project description and location, and any comments you may have, within 30 days (on or before *August 14, 2006*). A project summary, estimated budget, topographic map, USGS aerial photograph and a response form are enclosed.

Please contact me at 785-738-2218 if you have questions about this matter.

Sincerely,

Lori Thielen
NCRPC, Project Planners/Administrators

Enc

Copy to: Margaret Jamison, City Clerk

**PRELIMINARY ENGINEERING REPORT
ELEVATED WATER STORAGE IMPROVEMENTS
MANCHESTER, KANSAS
August 2003**

1. **Applicant:** City of Manchester, Kansas
2. **Map of Area:** See attached
3. **Engineering Firm:** Schwab-Eaton, P.A., 1125 Garden Way, Manhattan, Kansas 66502, 785/539-4687.
4. **Date of Review:** June 2005
5. **Description of System Problem:** The City of Manchester is located in north central Kansas and is located approximately 30 miles west / northwest of Junction City, Kansas. Unfortunately like many small Kansas communities the population of Manchester is on the decline. Regardless of the declining population the elected officials in the community are committed to providing reliable and efficient City services to the residents of Manchester.

In 1973 the City Abandoned their water supply source and connected to Dickinson County RWD #2. Since that time the City has obtained its entire water supply from the RWD. The City's overall water system consists of a master meter/solenoid control valve vault at the RWD connection, a distribution system consisting of 4" PVC pipe, numerous antiquated non functional fire hydrants and a 50,000 gallon elevated water tower that was constructed in the 1930's.

The City has worked diligently to maintain the overall system and in 1987 they completed the full replacement of the old cast iron pipe distribution system and installed new 4" PVC mains and new valves. This project was completed in its entirety with City funds. Originally the City had planned to replace the old fire hydrants while completing the distribution system replacement project. However, the overall cost of the project grew to a point where they could not afford to replace the hydrants and ultimately only one new hydrant was installed. Currently this is the only hydrant in town that is functional. In addition to replacing the entire water distribution system the City installed a sewer collection and treatment system in 1990 and has subsequently retired all of the debt from this project.

As previously indicated the City's water distribution system is in excellent condition with the exception of the non-functional fire hydrants. Only one hydrant in town works and it is located at the base of the tower so it can be utilized for tank flushing. Approximately 12 fire hydrants around town are non functional and should be replaced as soon as

possible. The connection the RWD has provided a long-term reliable water supply source and thus no supply improvements are needed at this time.

The City's existing elevated tower is a 50,000 gallon teapot style riveted steel tank that was constructed in 1933. The overall condition of the tower would be rated poor however the tower is repairable. In recent years the City has invested resources as available to upgrade/repair the tower. In 1985 the wet riser pipe which carries water into and out of the tower split and was subsequently repaired and repainted. In 1990 the roof of the tower required repair work which was completed. In addition a portion of the tank was sandblasted and the entire exterior was recoated. In 1993 the City had the interior of the tank repainted and in 1997 the tank had its last formal inspection, which identified numerous problems including the following:

- No safety climb device on the tower – one should be installed.
- Existing ladders are non compliant with OSHA requirements and should be replaced.
- The existing tank vent does not meet current state standards and does not adequately prevent birds from entering the tank. The vent should be replaced.
- The wet riser access/drainage opening is non compliant with KDHE standards and should be replaced.
- The existing tank roof manway does not provide a watertight seal and should be replaced ASAP.
- Some of the existing rivets on the roof overhang are gone and birds appear to be entering the tank in this area. Repairs should be completed as soon as possible.
- The exterior coating is in very poor condition and in need of a complete recoating.
- The interior of the tank was not inspected due to safety issues associated with accessing the top of the tower. Realizing that the interior coating is 12 years old it is anticipated that the interior is in need of complete recoating.

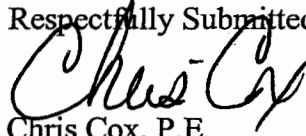
6. **Solution/Alternatives:** While it is evident that the existing tank is in a somewhat deteriorated condition it is repairable. Determining the exact extent of the interior condition difficult without removing the tower from service and sandblasting the rust from the interior steel so a thorough evaluation can be completed. In addition due to the lack of safety equipment, inspecting the tank is risky at best.

Alternatives to repairing the existing tower include constructing a new elevated tower or possibly utilizing a new welded steel standpipe. Both of these options are significantly more expensive than implementing the necessary repairs to the existing tower. The estimated project cost for a new 50,000 gallon elevated tower is \$400,000.00. A new standpipe would be significantly cheaper however the estimated project cost for a 108' x 125' standpipe is \$175,000.00, which is still significantly more than repair costs.

7. **Proposed Work:** Determining the exact extent of damage to the existing interior of the tank is difficult without removing the tower from service and sandblasting the interior to thoroughly evaluate the overall condition of the steel along with the improvements needed. At a minimum, the overall repairs should include:

- Full sandblasting of tank interior so further steel evaluation can be completed
 - Repairs to steel members that are found to be deficient
 - Recoating both interior and exterior with an epoxy coating system
 - Removal and replacement of the antiquated and inoperable access opening on the riser pipe housing
 - The installation of appropriate safety equipment so that the tank can be safely maintained.
 - Replacement of the inadequate roof vent.
 - Replacement of the tank manway located on the roof of the tower.
 - Repairs to the roof overhang where rivets are missing.
8. **Maintenance and Operation:** Cost to operate and maintain the elevated tank is estimated at \$2000 annually, which is approximately \$1500 more than that of a standpipe. The City's operation and maintenance budget would be adjusted to handle those additional costs.
9. **Land and Easements:** The City owns the existing tower site therefore no land or easements will be needed.
10. **Cost Estimate:** See attached

Respectfully Submitted,



Chris Cox, P.E.

Schwab-Eaton, P.A.



**ELEVATED WATER STORAGE IMPROVEMENTS
MANCHESTER, KANSAS**

**PROJECT COST ESTIMATE
JULY 2005**

A. CONSTRUCTION COST ESTIMATE

1.	Mobilization	L.S.	\$ 2,000.00
2.	Complete Sand Blast and Recoat Interior	L.S.	25,000.00
3.	Power Wash and Recoat Exterior	L.S.	20,000.00
4.	Remove and Replace antiquated Riser Drain	L.S.	4,000.00
5.	Install New Roof Vent	L.S.	3,500.00
6.	Install Safety Climb Device	L.S.	4,500.00
7.	Install New Tower Ladder	L.S.	8,000.00
8.	Install New Roof Access Opening	L.S.	3,000.00
9.	Repair Roof Overhang	L.S.	2,000.00
10.	Install New 2-Way Fire Hydrants 12 EA. @ 2,500.00		<u>30,000.00</u>

CONSTRUCTION SUB-TOTAL **\$102,000.00**

B. OVERHEAD COST ESTIMATE

1.	Engineering	11,400.00
2.	Inspection	4,500.00
3.	Legal	500.00
4.	Administration	<u>10,000.00</u>

OVERHEAD SUB-TOTAL **\$26,400.00**

C. PROJECT COST ESTIMATE

1.	Construction Cost	102,000.00
2.	Overhead Cost	<u>26,400.00</u>

TOTAL ESTIMATED PROJECT COST **\$128,400.00**

MANCHESTER QUADRANGLE
KANSAS
7.5 MINUTE SERIES (TOPOGRAPHIC)

6562 II NW
(INDUSTRY)

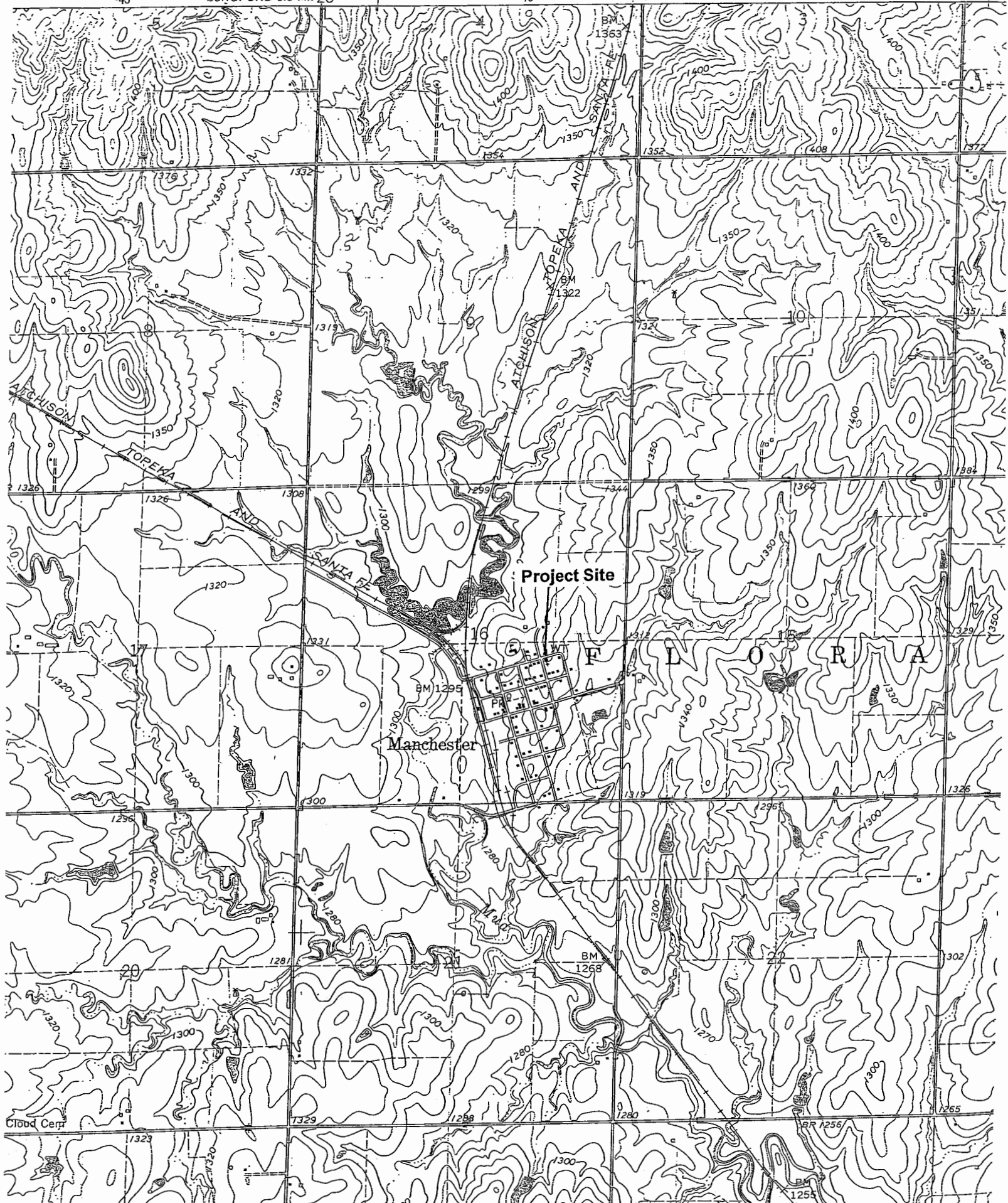
643

OAK HILL 9 MI
LONGFORD 3.5 MI. 20'

645

6562 III NE
(LONGFORD)

647





The following form may be used by the Review Agency/Commission for comments in response to the request for clearance from the proposed Public Water Supply Loan Fund Project.

☐ Army Corps of Engineers
☐ Kansas Biological Survey
☐ State Conservation Commission
☐ Kansas Corporation Commission
☐ Division of Water Resources/Kansas Department of Agriculture
☒ Kansas Geological Survey
☐ Kansas State Historical Society, State Historic Preservation Office
☐ Kansas Water Office
☐ Kansas Department of Wildlife and Parks
☐ US Dept. of Agriculture - Natural Resources Conservation Service
☐ Kansas Department of Health and Environment
☐ US Department of the Interior - Fish and Wildlife Service

Agency Review Comments: (to be completed by reviewing agency and returned to applicant contact person at name and address shown below)

Comments: _____

Recommended Action: (to be completed by the reviewing agency and returned to applicant contact person at name and address shown below.)

☐ Clearance of project should be granted
☐ Clearance of project should not be granted
☐ Clearance of project should be delayed until the issues or questions have been clarified
☐ Clearance of project should not be delayed, but the applicant (in the application) should address or clarify the questions or concerns indicated above.

Reviewer's Name	Division/Agency/Commission	Date
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Project Title: Public Water Supply Loan Fund Application

Applicant:	City of Manchester		
Contact Person:	Lori Thielen, North Central Reg. Planning Commission (Project Planners/Administrators)		
Address:	109 N. Mill, P.O. Box 565		
City, State:	Beloit, KS	Zip: 67420	Phone: 785-738-2218