

Keg Creek Watershed Improvement Project

(Mineola Wastewater Collection & Treatment System)



FINAL REPORT

KEG CREEK WATERSHED IMPROVEMENT PROJECT

FINAL REPORT

PROJECT NO. 7011-003
PROJECT SPONSOR: REGIONAL WATER ASSOCIATION
PROJECT TERM – 3 YEARS

This project consisted of construction of a municipal wastewater collection and treatment system to serve citizens in Mineola, Iowa. Mineola is an unincorporated community located in Mills County and has enlisted Regional Water to own and operate the system to meet State and Federal requirements.

We would also like to give special thanks to the WIRB Board for making this specific system design possible and note for the record that, without this WIRB Grant, it would not have been financially possible to build the gravity collection system. It would have been necessary instead to build a low-pressure pump collection system in its place. Not only will the gravity collection system greatly increase system reliability by ensuring that waste continues to enter the collection system during power outages and prevent the individual service back-up of wastes that can be caused by grinder pump failures, but it will also greatly reduce the lifetime operation and maintenance costs associated with this system (I.E.: It will assist Regional Water in maintaining a much lower rate for service to the citizens of Mineola throughout the life of the system.)

The project has now been completed and this report represents the final report describing the project. Areas covered in this report include:

- FINANCIAL ACCOUNTABILITY
- ENVIRONMENTAL ACCOUNTABILITY

TABLE 1 – POLLUTANT REMOVAL

TABLE 2 – PRACTICES AND ACTIVITIES

- PROGRAM ACCOUNTABILITY
- PROJECT SUMMARY

KEG CREEK WATERSHED IMPROVEMENT PROJECT FINAL REPORT

Financial Accountability:

Because construction costs must always be based upon engineering estimates (prior to the actual bidding of this work), more WIRB dollars were ultimately expended on the collection system line item and less on the lagoon treatment system than was originally anticipated. Had WIRB funds been available in time for land acquisition for the lagoon (treatment) site, RDA funds could have been directed towards the collection system and WIRB funds towards the land acquisition costs of \$98,800. This would have resulted in much closer ending results for these line item categories of expenditure.

However, the project's overall contractor bid costs remained near enough to original estimates that RDA managed to close this funding gap with an adjustment to their obligated funding. This adjustment resulted in a change from the \$790,400 total contractor construction costs estimate at the time of the WIRB application to the \$839,758.30 shown in this report and on the WIRB Financial Worksheets, to cover the revised estimated total project costs. After the system was fully constructed and operational, there were unanticipated landscaping and other "clean-up & repair" costs beyond the budgeted project dollars in a total amount of \$15,378.52. These costs have been covered by this wastewater system's operating revenues as a "local-match" funding component and make the final total cost of this project the \$1,521,721.21 that is reflected in this report and on the WIRB Financial Worksheets.

Watershed Improvement Fund Project Contribution:

Approved Application Budget: 33%
Actual: 33%

WATERSHED IMPROVEMENT FUNDS

<u>Grant Agreement Budget Line Item</u>	<u>Total Funds Approved</u>	<u>Total Funds Expended</u>	<u>Available Funds</u>
Septic Collection System	\$152,000	\$264,377.59	(\$112,377.59)
Wastewater Treatment System	\$348,000	\$235,622.41	\$112,377.59
TOTALS	\$500,000.00	\$500,000.00	\$0.00

TOTAL PROJECT FUNDING

<u>Funding Source</u>	CASH		IN-KIND CONTRIBUTIONS		TOTAL	
	<u>Approved Application Budget</u>	<u>Actual (\$)</u>	<u>Approved Application Budget</u>	<u>Actual (\$)</u>	<u>Approved Application Budget (\$)</u>	<u>Actual (\$)</u>
WIRB	\$500,000.00	\$500,000.00	\$0.00	\$0.00	\$500,000.00	\$500,000.00
USDA – RURAL DEVELOPMENT	\$790,400.00	\$839,758.30	\$0.00	\$0.00	\$790,400.00	\$839,758.30
OTHER LOCAL FUNDS	\$0.00	\$15,378.520	\$0.00	\$0.00	\$0.00	\$15,378.520
IDED – CDBG PROGRAM	\$173,000.00	\$166,584.39	\$0.00	\$0.00	\$173,000.00	\$166,584.39
TOTALS	\$1,463,400.00	\$1,521,721.21	\$0.00	\$0.00	\$1,463,400.00	\$1,521,721.21

KEG CREEK WATERSHED IMPROVEMENT PROJECT FINAL REPORT

Environmental Accountability:

Prior to the construction of the wastewater collection and treatment systems, the community of Mineola had non-conforming, on-site septic tanks for waste treatment. The effluent from these systems drained into field tile. Only a few properties utilized drain-fields. Therefore the sewage discharge went directly into the Keg Creek watershed.

With the addition of the new treatment system the previous high levels of bacteria and nutrients have decreased, resulting in a water shed that is not only more attractive to the animal and plant life, but also provides a safe drinking water and recreational opportunities to human users. Table 1 below describes the estimated pollution removal levels since the new treatment system has been constructed.

**TABLE 1
POLLUTANT REMOVAL**

<u>POLLUTANT</u>	<u>UNIT</u>	<u>PREVIOUS</u>	<u>PRESENT</u>
BOD	LBS/YR	10,220	1,637
SUSPENDED SOLIDS (TSS)	LBS/YR	9,760	1,927
NITROGEN (TKN)	LBS/YR	811	146

During the construction of the wastewater collection system a network of 4" service lines and 6" sewer mains were installed in either the street or alley right of ways. Because the sanitary sewer is now collected into a central system, the project was able to eliminate approximately 83 existing on-site septic tanks which were the main contributor to the impairment of the watershed, Keg Creek. The flow from these sewer mains enters a Main Lift Station where the wastewater is then pumped to the Treatment Lagoons. The Treatment Lagoons are made up of a Primary Cell and a Secondary Cell. During the time (180 days) that the wastewater is in these cells, it is treated to remove BOD (biochemical oxygen demand), TSS (total suspended solids) and TKN (total kjeldahl nitrogen) as well as other bacteria, viruses and pathogenic organisms. Twice a year (spring and fall) the effluent from these cells is discharged to Keg Creek after testing to ensure effluent meets NPDES discharge limits. See Table 2 below for a comparison of Practices and Activities applied for and accomplished during the planning and construction of the Wastewater Project.

**TABLE 2
PRACTICES AND ACTIVITIES**

<u>PRACTICE / ACTIVITY</u>	<u>UNIT</u>	<u>APPROVED APPLICATION GOAL</u>	<u>ACCOMPLISHM ENTS</u>	<u>PERCENT COMPLETION</u>
REMOVAL OF ON-SITE SEPTIC TANKS	EA.	76	83	109%
CONSTRUCT SEWER MAINS / COLLECTION SYSTEM	L.F.	15,510	13,765	89%
CONSTRUCT 2-CELL LAGOON / TREATMENT SYSTEM	EA.	1	1	100%

KEG CREEK WATERSHED IMPROVEMENT PROJECT FINAL REPORT

During the planning and construction of this project there have been many partners. A list of Project partners and their responsibilities follow:

Regional Water Rural Water Association

- Project Sponsor and Owner/Operator
- Secure funding grants, loans and billing
- Fiscal responsibility of maintaining ledgers
- Operation and Maintenance
- Monitoring of Effluent
- Construction Inspection

Mills County Board of Supervisors

- Secure funding grants
- Oversee project

Mills County Sanitarian

- Technical expertise

USDA Rural Development

- Provided Funding
- Assist Regional Water through grant and loan process
- Preliminary engineering design and approval
- Monitor project funds

Watershed Improvement Review Board

- Provided Funding

Iowa Department of Economic Development

- Provided Funding

DeWild Grant Reckert and Associates Company (DGR) – Consulting Engineers

- Development of project plans, designs, and cost estimates
- Project administration, construction staking, and inspection services during the construction phases of the project
- Construction Inspection

Southwest Iowa Planning Council (SWIPCO)

- Assist in grant application and administration process

Iowa Department of Natural Resources (IDNR)

- Engineering plan evaluation and approval
- Preliminary conception evaluation
- Regulatory permitting agency

KEG CREEK WATERSHED IMPROVEMENT PROJECT FINAL REPORT

Land Surveying Services, Inc.

- Construction staking

Terracon Companies, Inc.

- Soil borings
- Compaction testing
- Permeability testing to certify seepage limits

Residents of Mineola

- Project participation
- Loan Repayment

Mills County Soil & Water Conservation District is currently implementing a watershed project with Keg Creek. Also, Mills County has installed a rain garden and pervious parking lot surface at its Glenwood facility to help reduce storm water flow that previously reached Keg Creek.

Various public outreach activities such as news releases, mailings, and public meetings have been used throughout the process of this project. The project has a direct impact on the citizens of the community and the importance of their participation is realized. Several public meetings were held with the residents of Mineola, IDNR, DGR, USDA, Rural Development, SWIPCO, Regional Water and Mills County Supervisors present.

Program Accountability:

The impetus behind this project stemmed from the fact that the Keg Creek watershed was impaired due in large part to non-conforming, on-site septic tanks within the community of Mineola. This project has eliminated approximately 83 of these non-conforming septic tanks and constructed a treatment facility that will treat wastewater to meet IDNR regulations for many years to come.

Quite possibly the biggest challenge from the beginning stages of this project has been funding. Because the Watershed Improvement Review Board (WIRB) was a major contributor to funding this project, it became possible to construct a facility that will play a large part in reviving an impaired watershed that is not only more attractive to animal and plant life but will also provide safe drinking water and recreational opportunities to human users.

The construction of a community wide wastewater system contributes to the health of the watershed, of the community and offers opportunities for growth of the community. Mineola can serve as an example to other unsewered communities of how partnering with many agencies and team players can bring a much needed project to a successful completion.

PROJECT SUMMARY
KEG CREEK WATERSHED
PROJECT NO. 7011-003
PROJECT SPONSOR: REGIONAL WATER ASSOCIATION
PROJECT TERM – 3 YEARS

Counties included in the project area: Mills

Total Watershed Improvement Funds awarded for this project:	<u>\$500,000</u>
Total Watershed Improvement Funds spent:	<u>\$500,000</u>
Total Watershed Improvement Funds obligated:	<u>\$500,000</u>

Project objectives:

Objective 1 – To administer the Keg Creek Watershed Improvement Project to ensure all objectives and activities planned are implemented.

- Prepared & submitted monthly progress and Final Comprehensive report
- Attended WIRB sponsored new project managers training
- Conducted citizens meeting
- Conducted monthly progress meetings

Objective 2 – Construct a community wide collection system to transport the sanitary sewage to a proposed wastewater treatment facility. Collection system will eliminate an estimated total of 74 septic systems and the associated pathogenic bacteria discharges to the watershed. During construction 10 additional septic tanks were discovered and removed.

- Project completed - November, 2009

Objective 3 – Construct a municipal wastewater treatment facility to reduce pollutants in the Keg Creek Watershed, including 10,220 lb/year of BOD, 9,760 lb/year of suspended solids, and a large amount of bacteria, viruses, and other pathogenic organisms each year.

- Gather topographical data
- Perform soils tests
- Project completed - November, 2009

Objective 4 – Conduct an information and education program to increase awareness and knowledge of Keg Creek water quality issues to the local community and County officials.

- Questionnaires received from homeowners
- Public hearings held
- Project sign installed
- Public meetings held prior to construction to discuss construction schedule

Summary:

Previously, the community of Mineola had non-conforming, on-site septic tanks for waste treatment. The effluent from these systems drained into field tile. Only a few properties utilized drain-fields. Therefore, sewage discharge went directly into the Keg Creek watershed. Many lots were too small and would not have provided proper space separation distances between private wells and septic systems. This endangered the health, safety, and welfare of the well users as well as contaminating Keg Creek. As a result, a newly constructed wastewater collection and treatment facility is in place which eliminated approximately 83 on-site septic systems to provide a safer, cleaner waterbody. With the addition of the treatment system, the current previous high levels of bacteria and nutrients will decrease, resulting in a watershed that is not only more attractive to animal and plant life, but also provided safe drinking water and recreational opportunities to human users.