O R E N C O

CASE STUDY

New Minden, Illinois:

State Agencies Amazed by Orenco Effluent Sewer and Recirculating Gravel Filter

The small farming community of New Minden, Illinois (population 228) is attracting nationwide attention for its Orenco effluent sewer and recirculating gravel filter. Weekly EPA tests consistently show BOD & TSS levels below 3.0 mg/L and ammonia nitrogen levels below 0.5 mg/L.

When the Village of New Minden, Illinois built an Orenco effluent sewer with a recirculating gravel filter and began sending its monthly reports to EPA, agency officials thought someone might be "cooking the books." Or didn't know how to grab a good sample. Monthly BOD and TSS levels under 3 mg/L? Impossible!

So the agency sent its own people to perform unannounced and independent tests. The results were even better! Then the agency did another inspection, as a step towards statewide approval for Orenco-type filtered collection systems.

The Village of New Minden (population 228) is an Illinois demonstration site: one of four communities selected by the state's "Rural Action Association" for installation of a cost-effective, alternative wastewater system. This small farming community had been plagued with wastewater problems — noxious odors and sewage in its ditches — and had had applications on file with various funding agencies for years.

Engineer Bill Walker, of Walker Baker & Associates, estimated the community could save money by installing an Orenco effluent sewer and recirculating gravel filter instead of a conventional sewer. The advantages of shallowly buried effluent sewer lines became immediately apparent, when testing revealed limestone bedrock 8'-12' below the surface! "Right then, we realized we'd saved a million dollars in excavation costs," said Walker.

Continued Walker, "We ran almost all our collection lines down alleys and across fields. When the state's Rural Development Director came to town for our dedication, he pulled me aside and asked 'When are you going to get this project finished?' I said 'It is finished.' He said, 'But when are you going to tear up the streets?' He couldn't believe we didn't have to!"
(*Continued on back.*)

"Between our firm and your distributor, we get calls every day about New Minden's effluent sewer and recirculating gravel filter. We put another Orenco effluent sewer in Eddyville, Illinois, and it's working great, too."

Bill Walker, P.E.
Walker Baker & Associates

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Installed in January, 1998, New Minden's wastewater system continues to astound critics. In addition to BOD and TSS levels below 3.0 mg/L, ammonia nitrogen is averaging a low, low 0.5 mg/L. One part-time maintenance person spends less than 1 hour/month on service calls, while flow meters show that power costs for effluent collection and distribution are averaging about 18 cents/home/month!

New Minden's effluent sewer project cost a total of $1,200,000 and currently serves about 135 households and three commercial properties. Residents pay a base bill of $18.80/month, with a small surcharge for usage in excess of 2,000 gallons. New installations run about $3,000, not including a connection fee of $300.

"The community is very happy with the way its new system is working," said Walker.

SUMMARY OF SPECIFICATIONS

New Minden, Illinois Effluent Sewer and Recirculating Gravel Filter
Using Orenco Systems' Equipment

Installation Date
January 1998

System Engineer
Walker Baker & Associates, Harrisburg, Illinois

Contractor
Pensoneau Construction, Belleville, Illinois

Orenco Distributor
Flo-Systems, Inc., Troy, Illinois

Total Project Cost
$1,200,000 (collection and treatment)

On-Site Facilities
138 EDU's, mostly residential
(9 STEP units, 129 STEG units)

22 duplex pump stations

Tanks
Residential
Mostly 1,000 gal concrete tanks with effluent filters (Constructed to specification)

Commercial
1,500 gal concrete tanks with grease trap (Constructed to specification)

Pumps
Collection: 1/2 Hp (10-25 gpm typical) turbine effluent pumps

Treatment: 3/4 Hp turbine effluent pumps

Collection System
Each lot has 1" service lines

Gravity flow pipe to cluster pump stations:
10,700 feet of 2" pipe, 485 feet of 3" pipe

Treatment System
50' x 100' Recirculating gravel filter:
Design flows = 25,000 gpd
Average flows = 16,500 gpd

Design recirc ratio = 5:1
Actual recirc ratio = 4:1

Design loading rate = 5 gal/sq ft/day
Actual loading rate = 3 gal/sq ft/day

Two 12,500 gal recirculation tanks

Media Depth = 2'
Media effective size = 2.41 mm
Media Cu = 1.5

Disposal
Recirculating gravel filter discharges to intermittent stream

Operation/Maintenance
Onsite Facilities
One part-time maintenance person
4 hr/wk preventative maintenance
1 hr/mo in service calls
Septic tanks monitored yearly
Expected sludge removal every 10-12 years, on average

Treatment System
One part-time maintenance person
State of Illinois, Class I Operator
4 hr/wk
Treatment electrical costs: $322/yr.

Fees
$300 initial connection fee

$3,000 initial installation costs

$18.80 month base charge

Small surcharge over 2,000 gal/mo

Data Comparing Influent to Effluent

Test	Influent	Effluent
BOD_5	140	2.1
TSS	47	2.5
NH_3N	_	0.5

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