

25
YEARS



Harry Mathos/City of Beloit

Bill Marten/Donohue













220-90
**Nine violations recorded
at city sewage plant in '90**



City nears end to state sewer ban





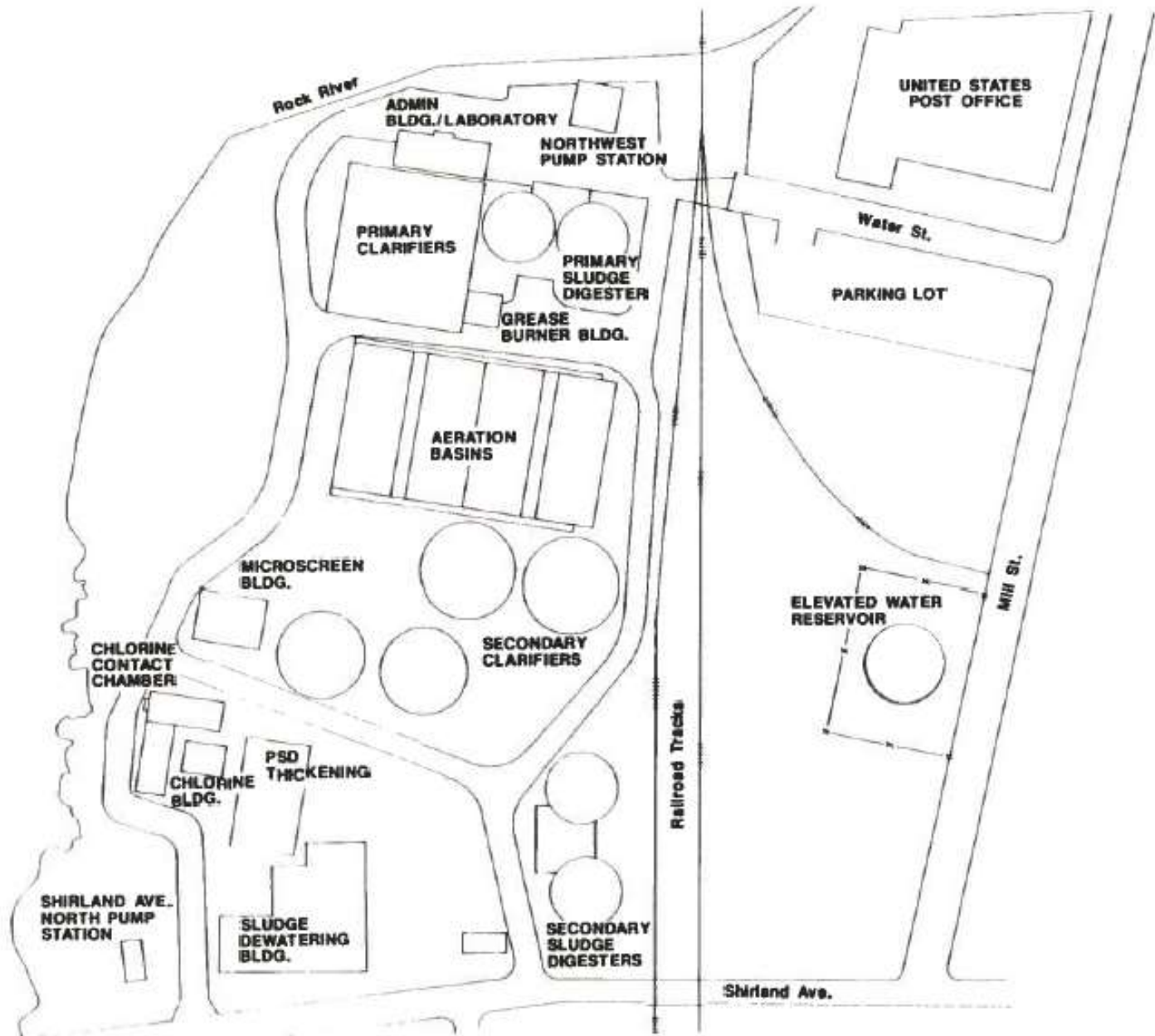
Under Resourced

Under Funded

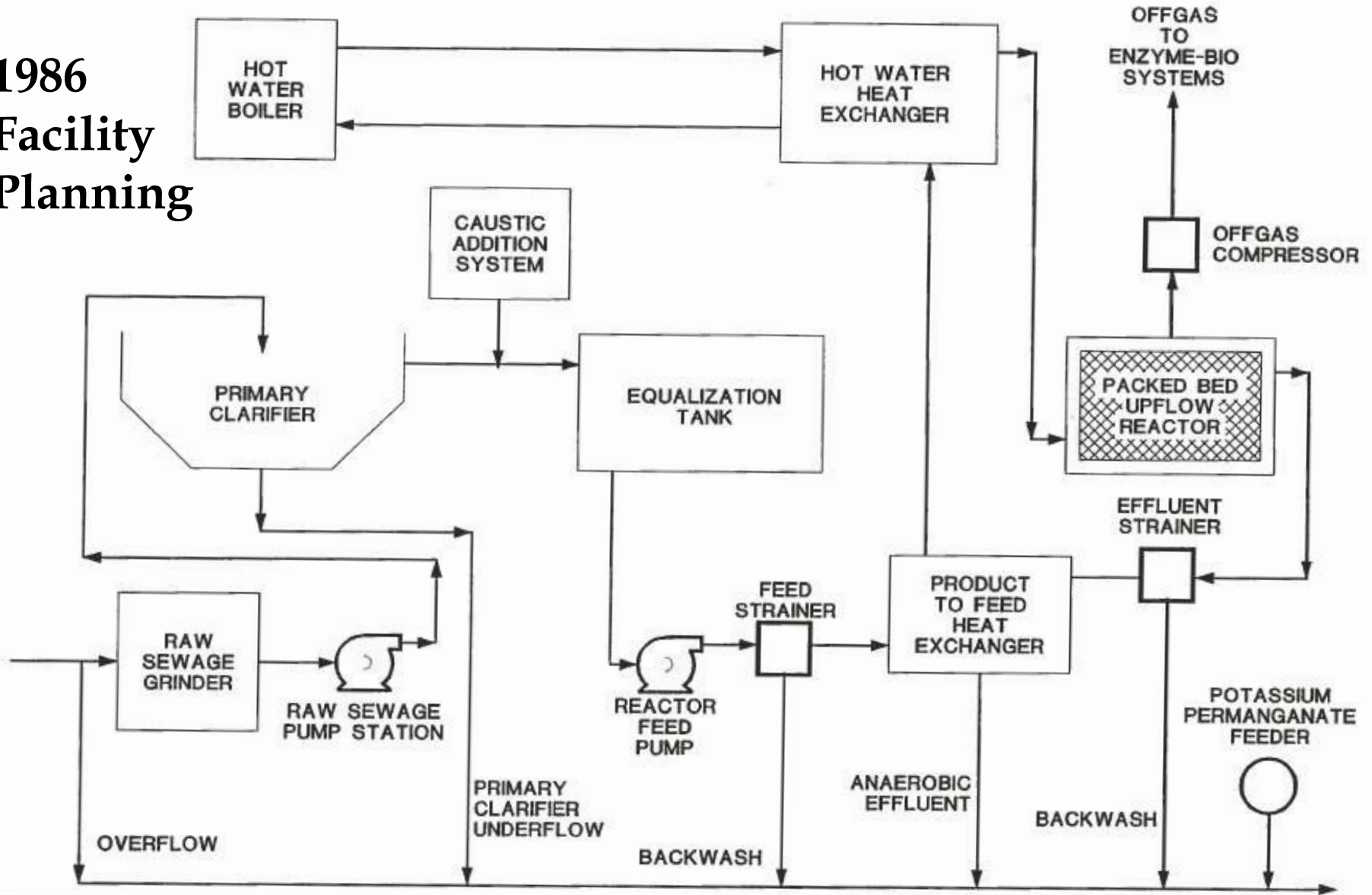
Under Valued



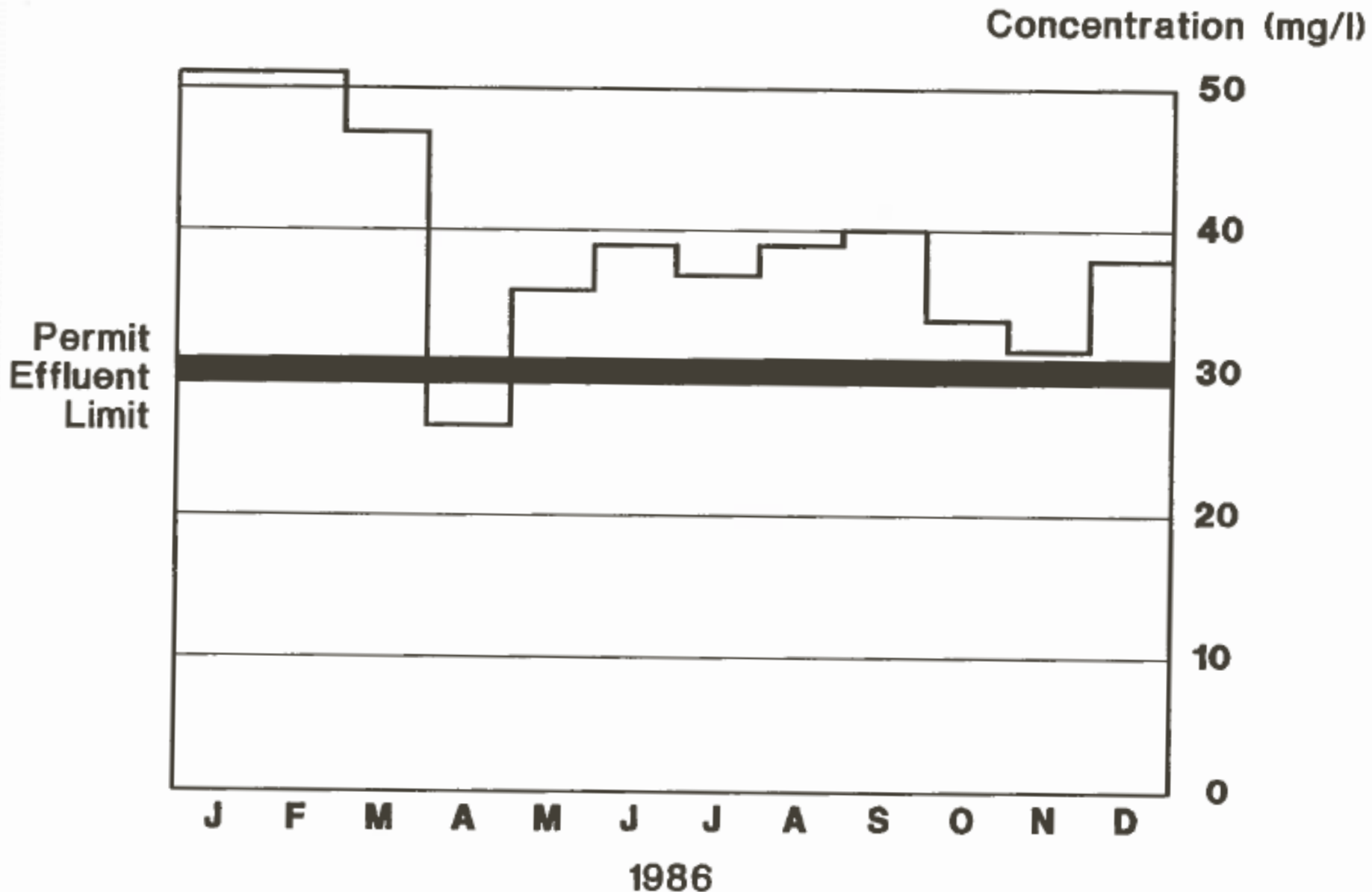
1986 Facility Planning



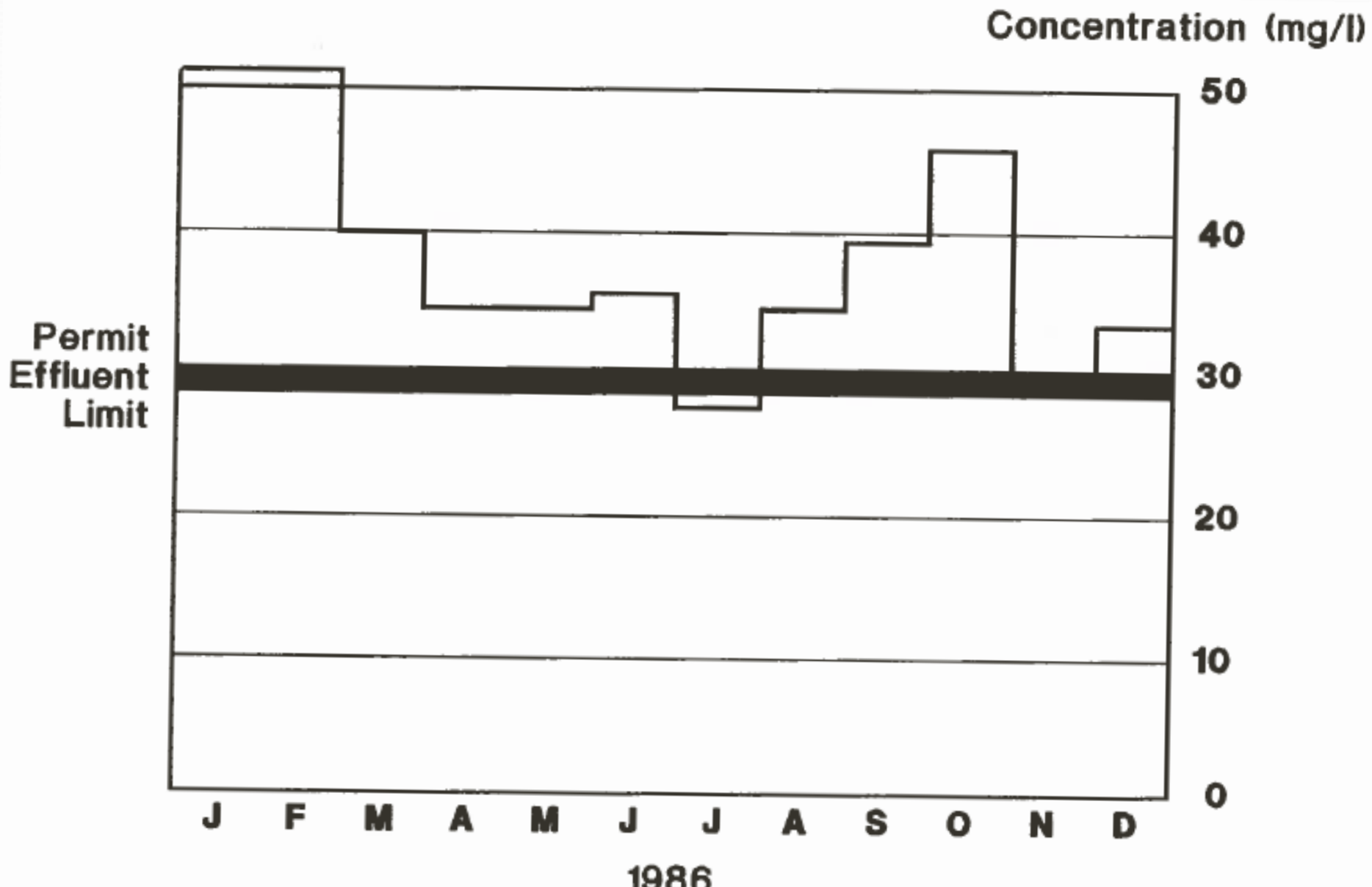
1986 Facility Planning



1986 Effluent BOD5



1986 Effluent TSS



**Contract Documents
City of Beloit, Wisconsin**

**Wastewater System Improvements
Contract No. 4
Wastewater Treatment Plant**

Volume VI of VI Plans

For information regarding this project, call: Tom Sigmund
(414) 272-1052
Extension 235



December 1988

**Contract Documents
City of Beloit, Wisconsin**

**Wastewater System Improvements
Contract No. 4
Wastewater Treatment Plant**

Volume VI of VI Plans

For information regarding this project, call: Ted Glawtschew
(414) 272-1052
Extension 233



**December 1988
Updated July 1989**

1992 Stateline Road WWTP





Beloit



**WATER POLLUTION
CONTROL FACILITY**

555 Willowbrook Rd.





















8063



Power
Generation

CITY OF BELOIT
PUBLIC WORKS
Water Resources

Rental Power





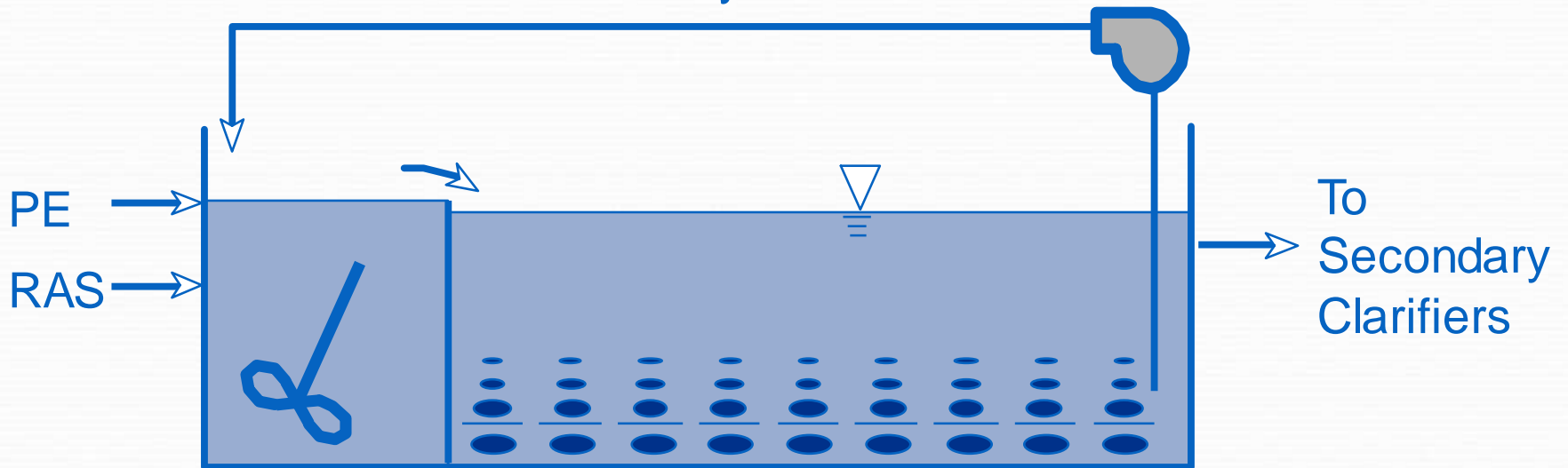


AERATION
BASIN NO. 5

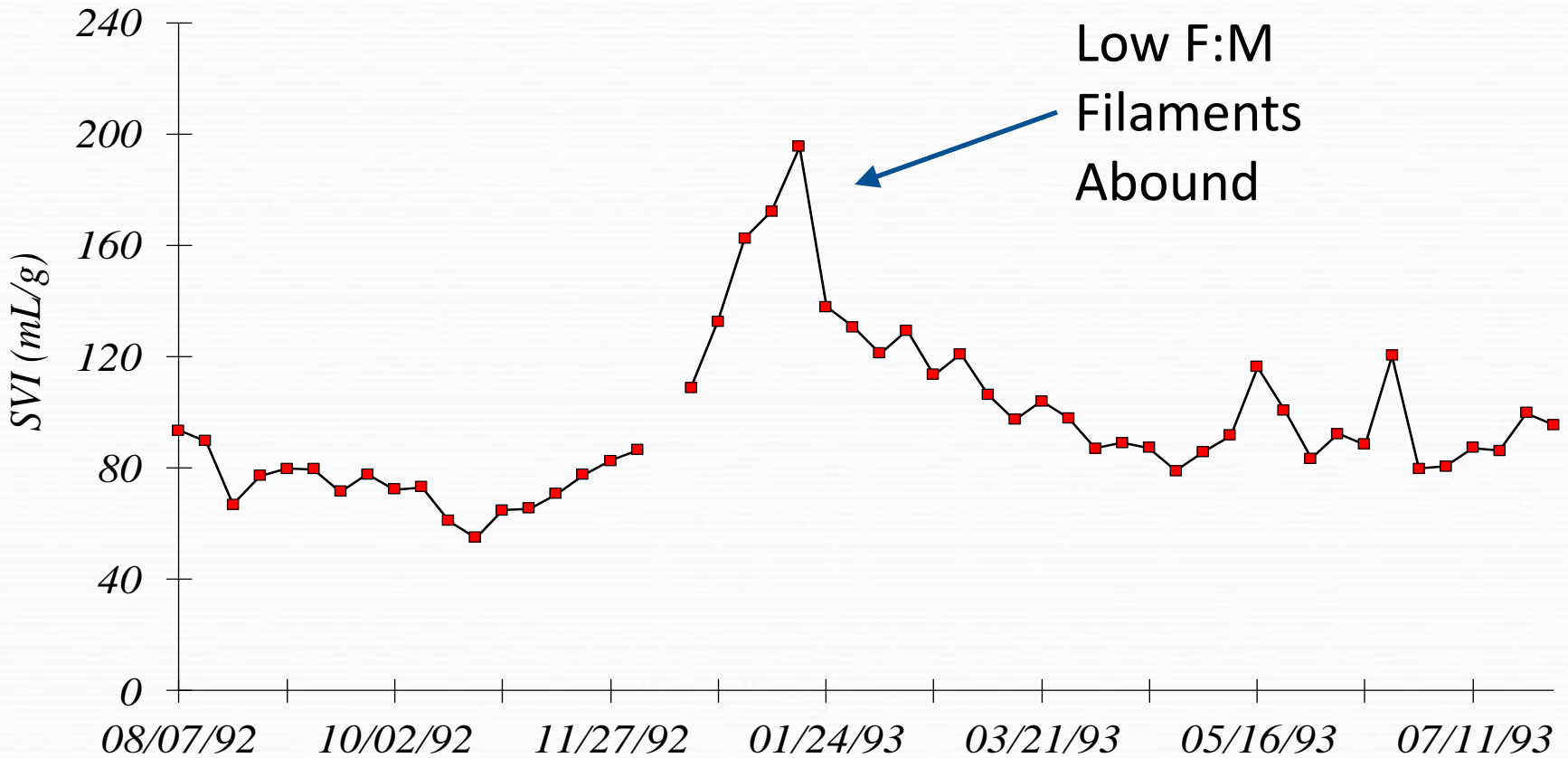
Beloit's Anoxic Selectors MLE Process



ML Recycle



Initial Selector Performance



Aerobic SRT	11 - 13	6 - 9	10 - 13	10
Selector F:M	1.0 - 1.2		0.7 - 1.0	0.8 - 1.2

Response: • RAS Chlorination

- Rapid Recovery
- Friday Lesson!
- SRT Control via Wasting Calculator

TODAY'S OPERATING DATA

PARAMETER	UNITS	VALUE	ACT. SLUDGE CALCS		
TARGET SRT	days	8	TOTAL INF. FLOW RATE	2932065	gal
ABASIN #2 30 MIN. SSV	ml/l	0	SOLIDS UNDER AERATION	61239	lbs
ABASIN #3 30 MIN. SSV	ml/l	0	TOTAL SOLIDS INVENTORY	63878	lbs
ABASIN #4 30 MIN. SSV	ml/l	110	SOLIDS LOST IN EFFLUENT	337	lbs
ABASIN #5 30 MIN. SSV	ml/l	110	SOLIDS WASTED TO GBT	0	lbs
			ONE DAY SRT	#DIV/0!	days
PRI. CLARIFIER #1 DOB	feet	0	ABASIN #2 SVI	#DIV/0!	ml/g
PRI. CLARIFIER #2 DOB	feet	3.0	ABASIN #3 SVI	#DIV/0!	ml/g
			ABASIN #4 SVI	52	ml/g
SEC. CLARIFIER #1 DOB	feet	0.5	ABASIN #5 SVI	52	ml/g
SEC. CLARIFIER #2 DOB	feet	0.00	ABASIN #2 AIR FLOW RATE	0	#/day
SEC. CLARIFIER #3 DOB	feet	0.00	ABASIN #3 AIR FLOW RATE	0	#/day
			ABASIN #4 AIR FLOW RATE	74221	#/day
EFFLUENT TURBIDITY	mg/l	0.92	ABASIN #5 AIR FLOW RATE	65925	#/day
EFF. CL2 RESIDUAL	ug/l	0			
ABASIN #2 MLSS	mg/l		POUNDS TO WASTE		
ABASIN #3 MLSS	mg/l		7985 lbs		
ABASIN #4 MLSS	mg/l	2110			
ABASIN #5 MLSS	mg/l	2110			
RMLSS	mg/l	6020			

Belt Start Times

1993 Stress Testing Confirms Results, Beloit Experience Contributes to Industry Selector Design Paradigm Shift

**Water
Environment
Research**

November/December 1997

A research publication of the
Water Environment Federation,
formerly the Water Pollution
Control Federation

**Full-scale evaluation of factors affecting
the performance of anoxic selectors**

William L. Merten, Glen T. Daigger



**Manual on the
Causes and Control
of Activated Sludge
Bulking and Foaming**

Michael G. Richard and Glen T. Daigger

3rd Edition

MANUAL
on the
**CAUSES and
CONTROL of
ACTIVATED SLUDGE
BULKING, FOAMING,
and OTHER SOLIDS
SEPARATION
PROBLEMS**

David Jenkins
Michael G. Richard
Glen T. Daigger

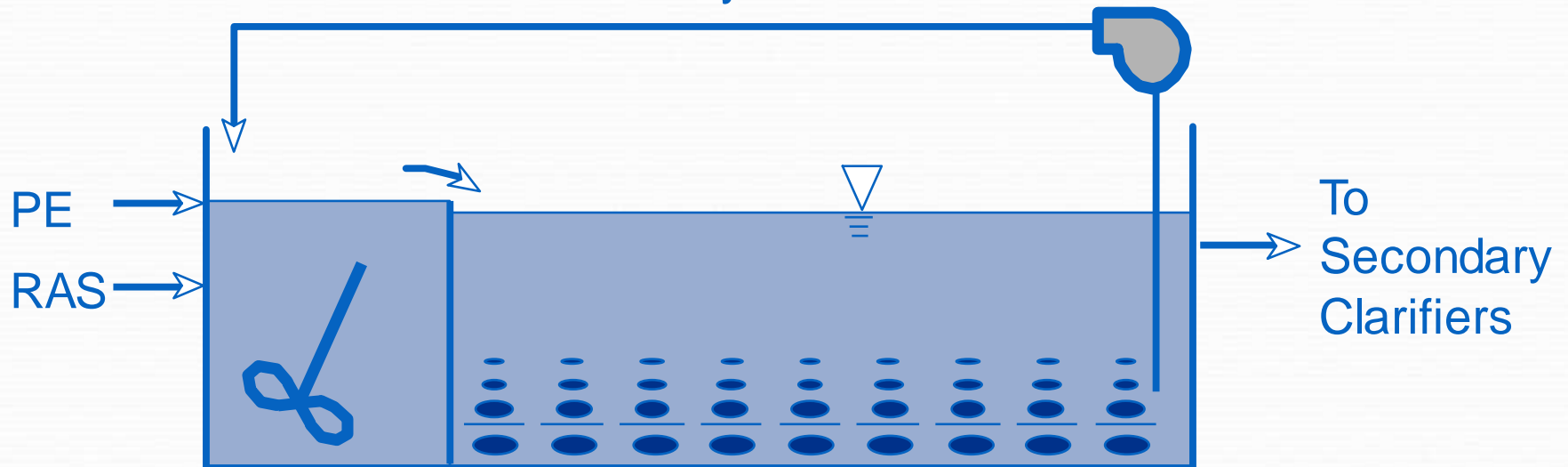


Beloit's Anoxic Selectors Go Anaerobic, Bio-P From the Get Go

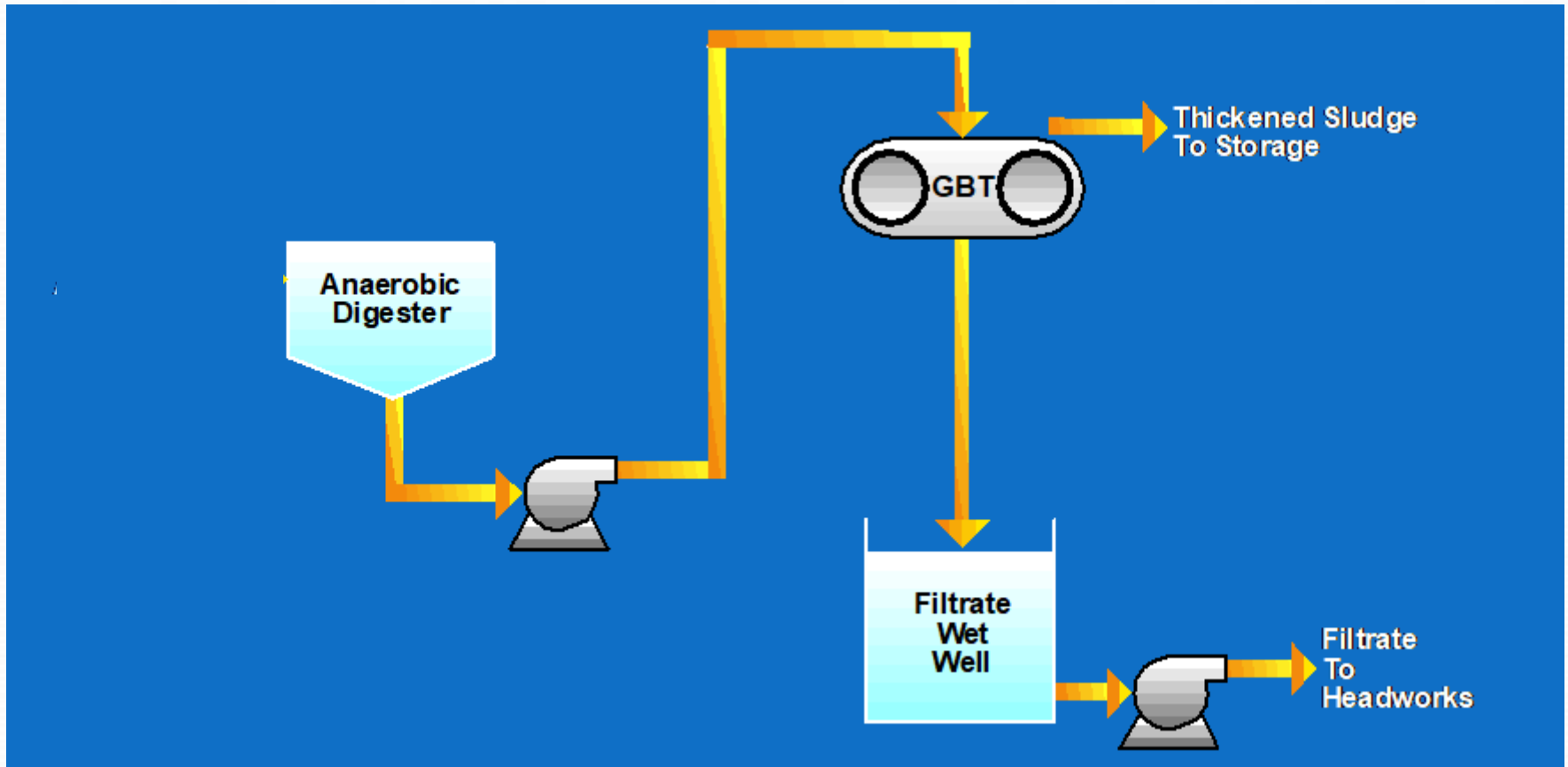
- Great For NR 217 Phase 1 Compliance



ML Recycle

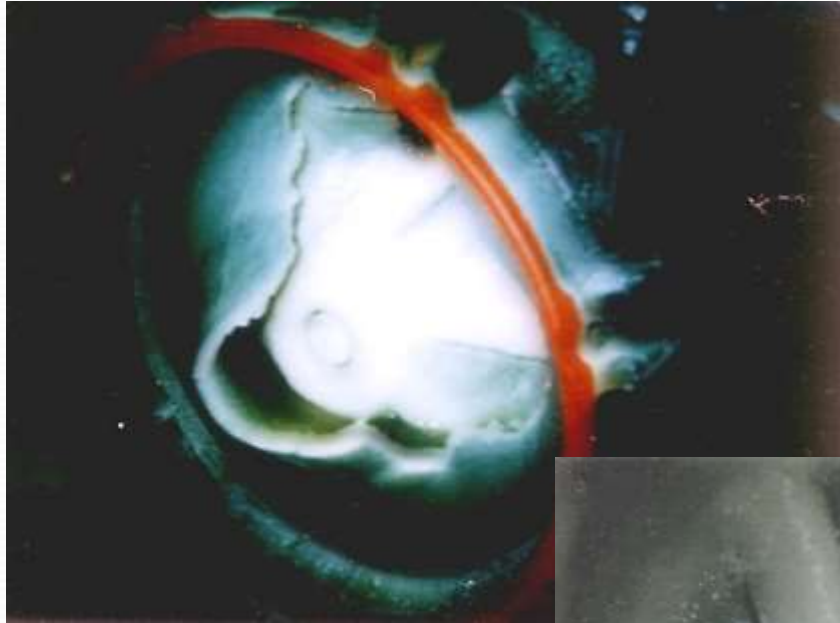


Bio-P & Anaerobic Digestion: Early Struvite Experiences

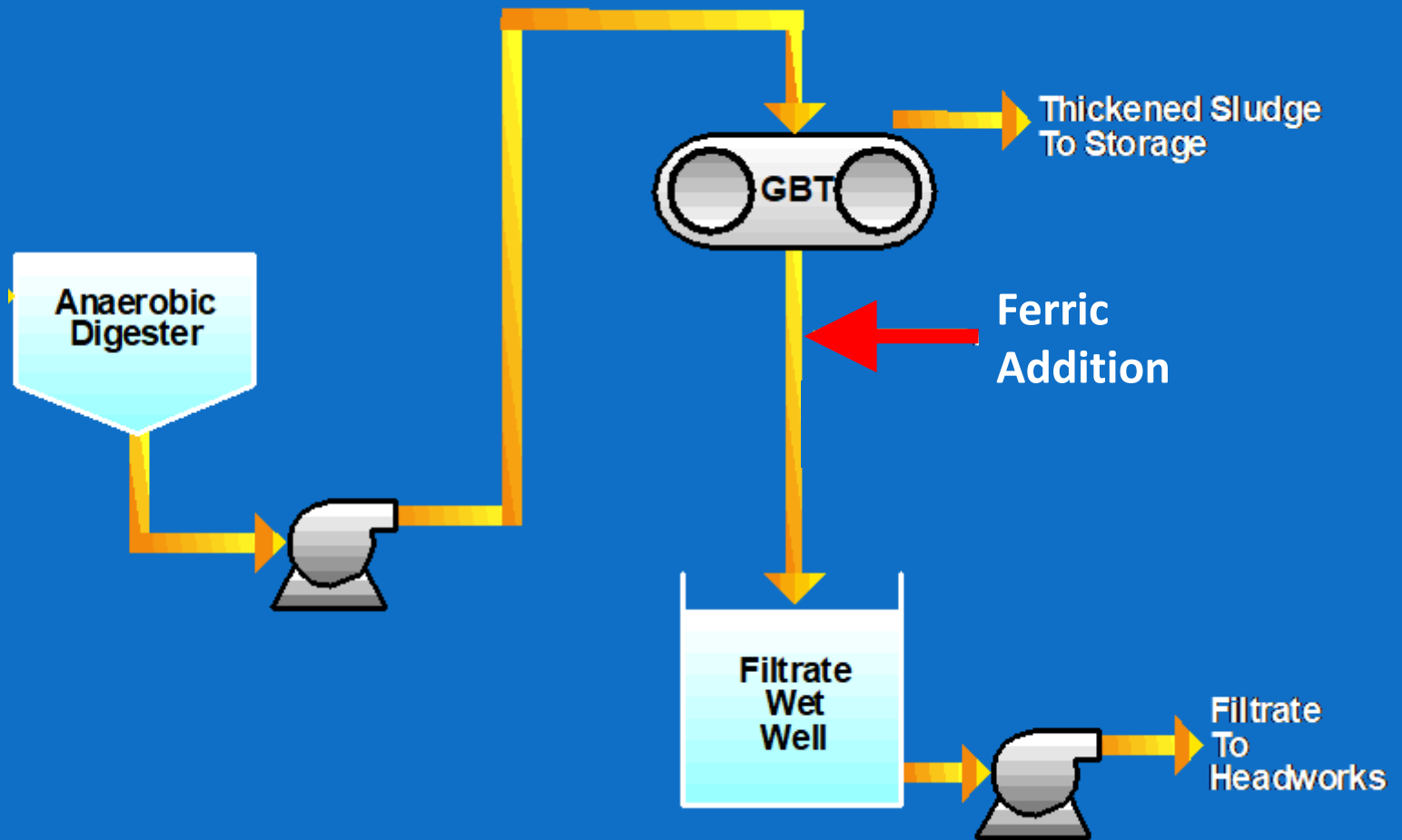


Struvite (MgNH_4PO_4) Shows
Up in Filtrate System

...Yes Sir...Struvite!!!



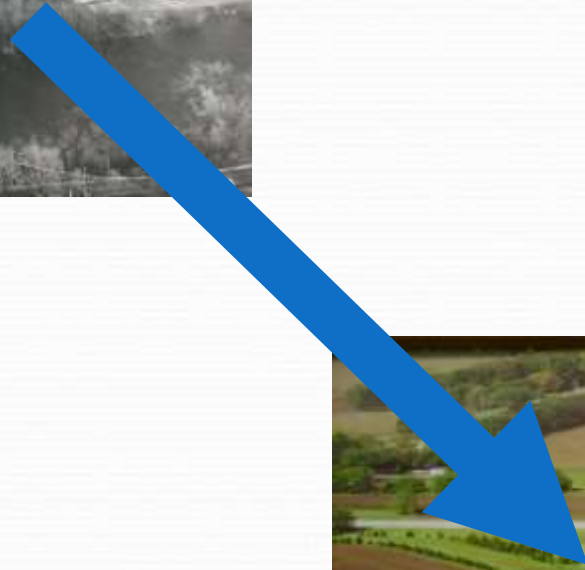
Struvite Mitigation



Also Helps Control Sidestream P Loads



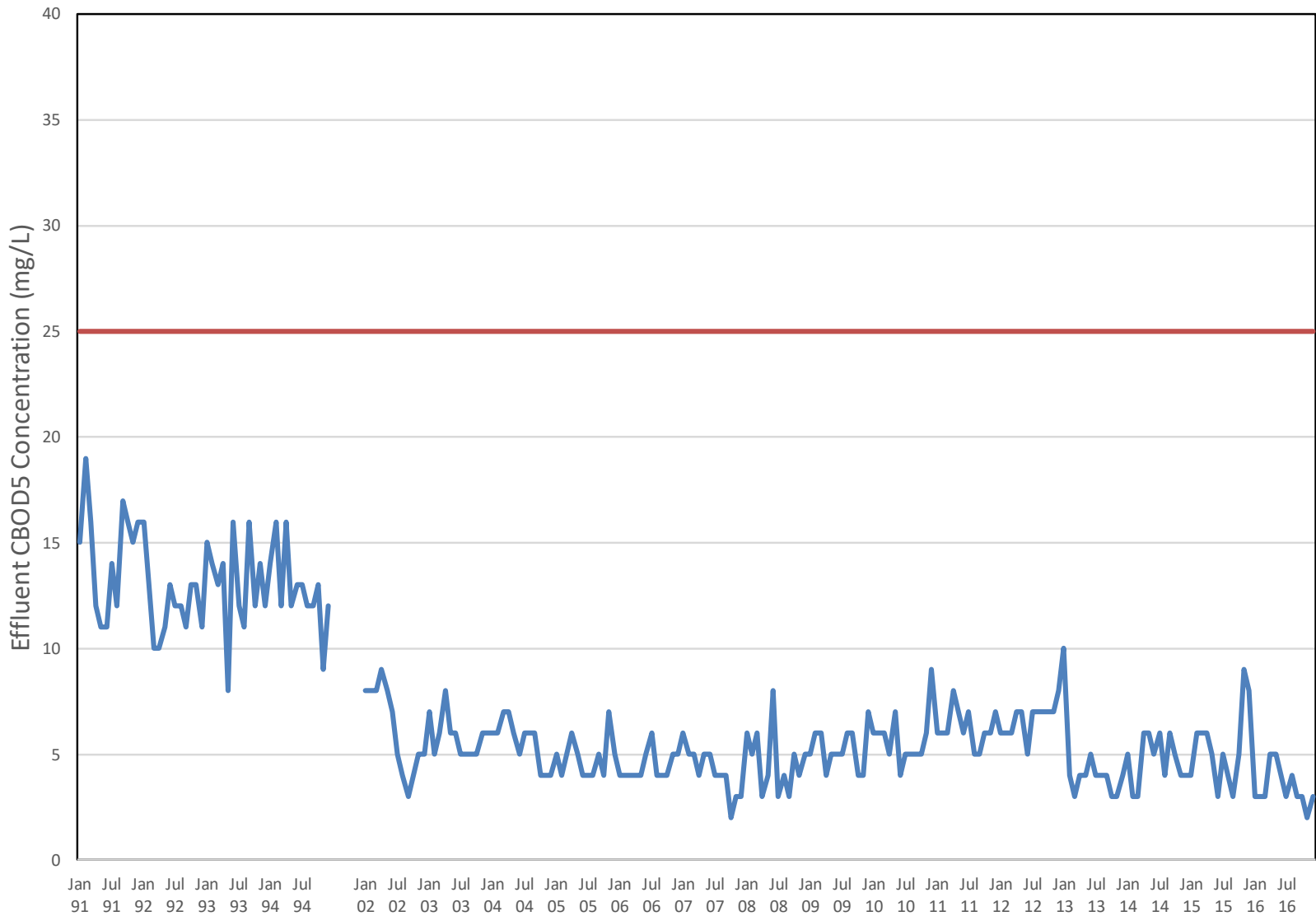
**It's Been a Rewarding
25 Year Journey...**



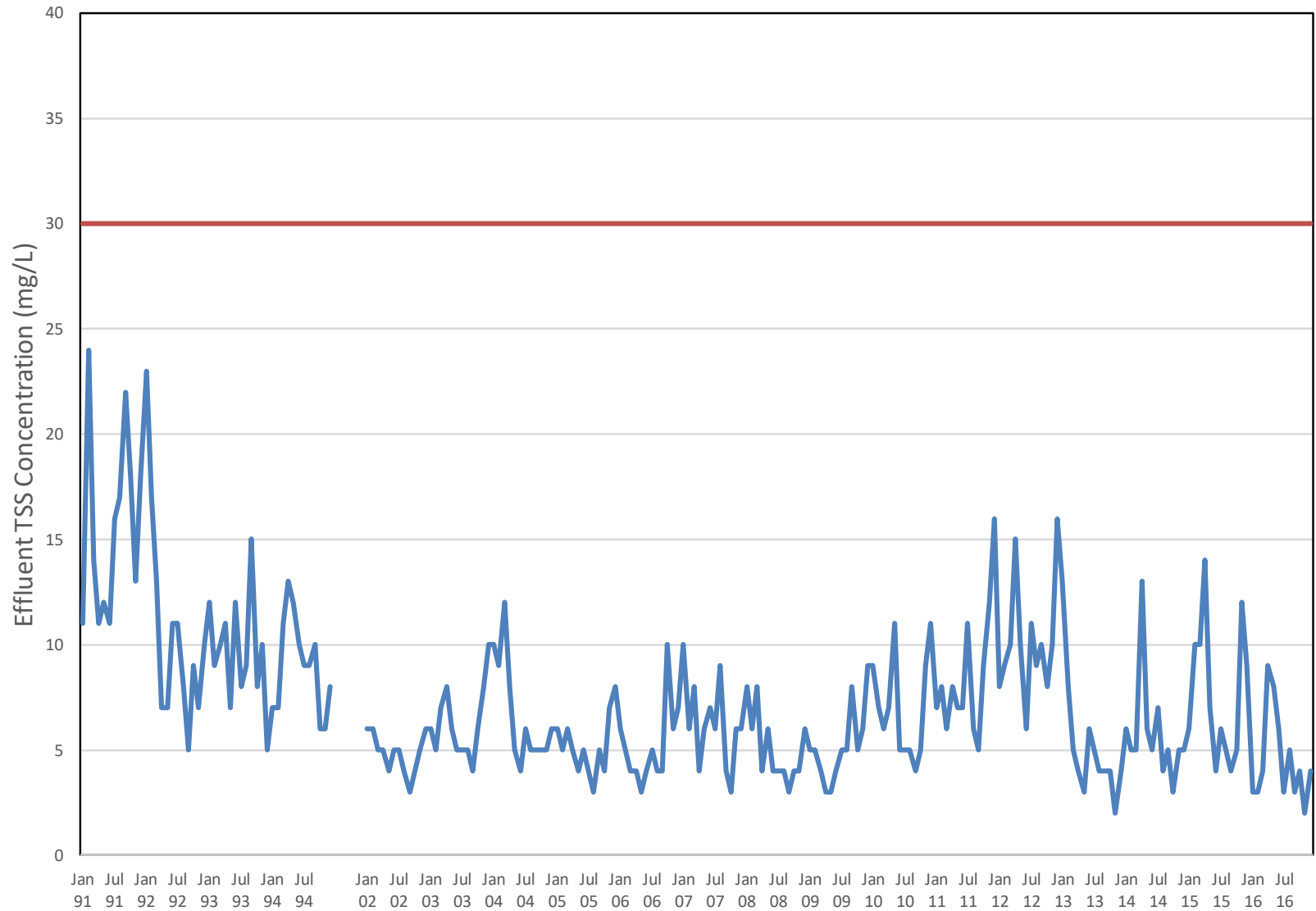
...With Its Share of Fun!



City of Beloit Effluent CBOD Compliance 1991-94/2002-2016

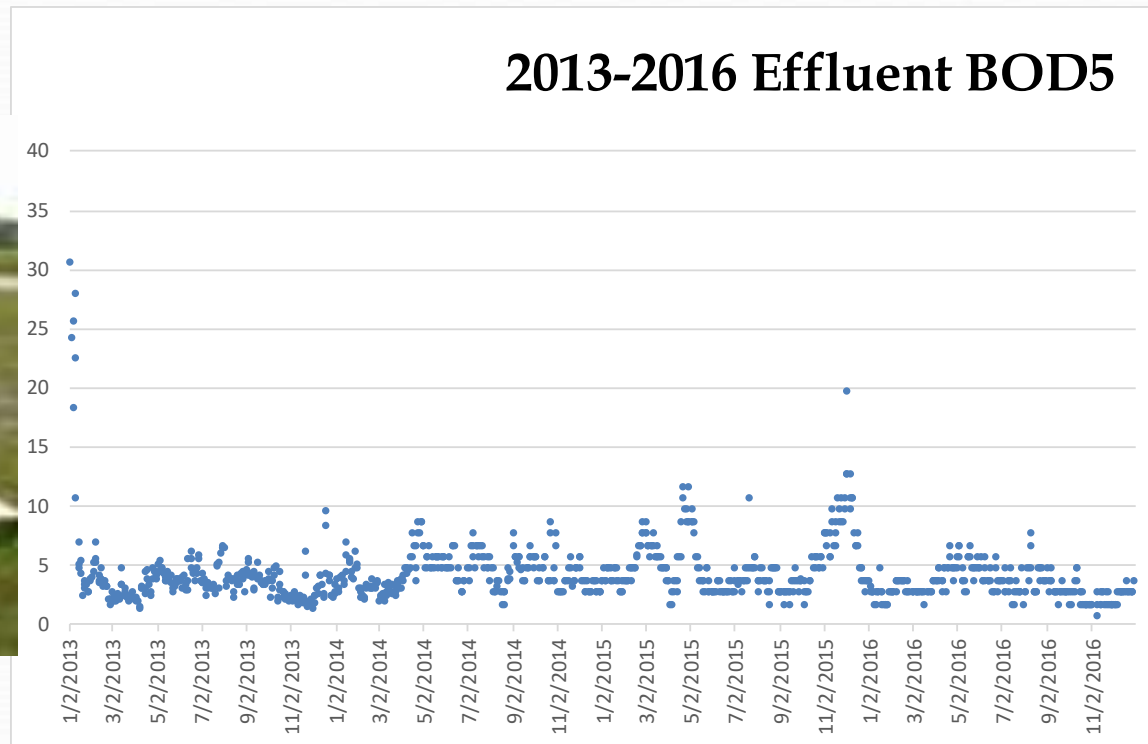


City of Beloit Effluent TSS Compliance 1991-94/2002-2016



Bottom Line...Results

- Effluent Quality
- Community Service & Return on Invested Trust
- Capacity for the Future
 - Original 8 MGD/25,000 ppd BOD
 - Mid 90s Rerate 11.3 MGD/37,000 ppd BOD



99.0277777778%

