

COAL CITY VILLAGE BOARD MEETING

**WEDNESDAY
FEBRUARY 23, 2022
7:00 P.M.**

AGENDA

1. Call meeting to order
2. Pledge of Allegiance
3. Approval of Minutes February 9, 2022
4. Approval of Warrant List
5. Public Comment
6. Ordinance 22-03 Conditional Use Permit 695 S. Broadway
7. Approval of Engineering for the 1st and 2nd Phase of Carbon Hill Road
Resurfacing Project

8. Presentation-Don Bixby of Chamlin Engineering
Water Solutions Water Quality Report
9. Report of Mayor
10. Report of Trustees
 - S. Beach
 - T. Bradley
 - D. Spesia
 - D. Greggain
 - R. Bradley
 - D. Togliatti
11. Report of Village Clerk
12. Report of Village Engineer
13. Report of Village Engineer
 - A. Sanitary Treatment Licensing Increase Submitted to IEPA
14. Report of Chief of Police
15. Report of Village Administrator
16. Adjourn

COAL CITY VILLAGE HALL
515 S. BROADWAY, COAL CITY, ILLINOIS

MEMO

TO: Mayor Halliday and the Board of Trustees

FROM: Matthew T. Fritz
Village Administrator

MEETING

DATE: February 23, 2022

RE: CONDITIONAL USE AT 695 S. BROADWAY FOR TESTING CLINIC

Jack Guldenbecker of Suburban Testing Centers would like to rent the building at 695 S. Broadway at the northeast corner of S. Broadway and Chestnut in order to provide a COVID testing facility for Coal City. This will not be a few weeks or months, but likely over a year in duration. Due to the permanency of the land use for the property, it was recommended that he attain a conditional use to utilize the property, which is required for the utilization of a C-4 zoned building.

This facility which formerly housed the pregnancy resource center and Weber-Micetich Chiropractic Offices was used for a similar land use in the past. Although parking can be limited at times within this neighborhood, there is currently underutilized public parking available across from the facility in addition to offstreet parking provided by the building owner.

This matter is subject to a public hearing Monday evening, but is expected to be recommended to the Village Board based upon the presentation provided at the previous Planning & Zoning Board Meeting. Dependent upon its final recommendation, please consider this request for adoption at the Regular meeting on Wednesday evening.

COAL CITY ZONING APPLICATION

Owners name or beneficiary of land trust: Robert & Debra Davis

Address: 910 S Illinois Phone number: 815-685-6300

owner represented by: self _____ attorney X Tenant

contract purchaser _____ other agent Lease Tenant

agents name Josh Gildenbecker phone number: 815 666 6426

address: 702 buffalo Dr Minooka IL 60447

existing zoning: C4 use of surrounding properties: north C4 south C4

east C4 west C4

what zoning change or variance: (specify) conditional use

to allow what use a clinic for COVID-19 testing.

tax number of subject property: 09-02-503-018

common address of property: 695 S. Broadway

parcel dimensions: 45' x 125' lot area (sq.ft.) 5,6250

street frontage 45'

legal description a portion of lot 18 and all of
lot 19 within block 1, Section 2-32-8
of the original town of Coal City

In addition, the applicant must comply with the ZONING ORDINANCE OF THE VILLAGE OF COAL CITY, adopted June 1, 1989, Chapter II, sections A through F available for review at the Village Clerks office. Also attached to the application are tables 1, 2 and 3 for the applicants reference.

I, (we) certify that all of the above statements and the statements contained in any papers or plans submitted herewith are true to the best of my (our) knowledge and belief.

Jack Guldenbecker, being first duly sworn, on oath
Applicants name

deposes and says, that all of the above statements and the statements contained in the documents submitted herewith are true.

Subscribed and sworn before me on the day of February, 19 2022

Beverly F. Reeves
Notary Public (Seal)

OFFICIAL SEAL
Beverly F Reeves
Notary Public, State of Illinois
My Commission Expires 03-12-2022

Signature of owner
we can purchase this if you can't find one

You may attach additional pages, if needed, to support the documentation of application.

Please note the number of pages attached. _____

FOR OFFICE USE ONLY

Case number	<u>ZA-344</u>	Location of hearing
Filing date	<u>2-4-22</u>	Village Hall
Hearing date	<u>2-31-22</u>	515 South Broadway
Filing fee	<u>\$ 100.00</u>	Coal City, Illinois
Hearing time	<u>7pm</u>	

THE VILLAGE OF COAL CITY
GRUNDY & WILL COUNTIES, ILLINOIS

ORDINANCE
NUMBER _____

**AN ORDINANCE GRANTING A CONDITIONAL USE TO PROVIDE A TESTING
CLINIC AT 695 S. BROADWAY IN THE VILLAGE OF COAL CITY**

TERRY HALLIDAY, President
PAMELA M. NOFFSINGER, Village Clerk

SARAH BEACH
ROSS BRADLEY
TIMOTHY BRADLEY
DAN GREGGAIN
DAVID SPESIA
DAVID TOGLIATTI
Village Trustees

Published in pamphlet form by authority of the President and Board of Trustees of the Village of Coal City
on _____, 2022

ORDINANCE NO. _____

AN ORDINANCE GRANTING A CONDITIONAL USE TO PROVIDE A TESTING CLINIC AT 695 S. BROADWAY IN THE VILLAGE OF COAL CITY

WHEREAS, an application for a conditional use according to Section 156.93 of the Village of Coal City Zoning Code (“Zoning Code”) was filed by an agent for the owner, Jack Guldenbecker (“applicant”) on February 4, 2022 for the operation of a clinic within a C-4 zoned property; and

WHEREAS, a public hearing regarding the conditional use consideration was held on February 21, 2022; and

WHEREAS, the Village of Coal City Planning and Zoning Board met on February 21, 2022 to consider passage of the conditional use request to the Board of Trustees; and

WHEREAS, Section 156.230 permits the Village Board to approve certain uses on a conditional basis from the Zoning Code; and

WHEREAS, the Village Board of Trustees and the President of the Village of Coal City believe it is in the best interests of the Village to grant conditional uses.

NOW THEREFORE, BE IT ORDAINED by the President and Board of Trustees of the Village of Coal City, Grundy and Will Counties, Illinois, as follows:

Section 1. Recitals. The foregoing recitals shall be and are hereby incorporated into and made a part of this Ordinance as if fully set forth in this Section 1.

Section 2. Findings of Fact. The Zoning Board of Trustees find as follows concerning the Conditional Use for 695 S. Broadway:

- A. **Traffic.** Expected traffic flow from the testing center is expected to be accommodated within the existing public improvements for business within this Core Area location.
- B. **Environmental Nuisance.** There shall not be any environmental nuisances that emanate from the conditional use. The utilization of the property for the proposed use shall not cause glare, noise, or odor that affects the neighboring properties.
- C. **Neighborhood Character.** The utilization of the property with this conditional use will not result in undue deleterious effect upon the neighborhood. The use of the property in this manner will likely result in additional utilization of surrounding onstreet parking adjacent to the business.
- D. **Public Services and Facilities.** The property shall not require any additional installation or greater utilization of public services to serve the proposed conditional use.

- E. **Public Safety and Health.** Granting this conditional use shall positively impact public health and safety due to the provision of additional access to health services for the community due to this conditional use.
- F. **Other Factors.** Granting this conditional use shall allow the building owner to accommodate and additional business in space that has been underutilized.

Section 3. Description of the Property. The property is located at 695 South Broadway in the Village of Coal City within a C-4 District.

Section 4. Public Hearings. A public hearing concerning the consideration of a conditional use was advertised on February 3, 2022 in the Morris Herald and held by the Planning and Zoning Board on February 21, 2022 at which time a majority of the Planning and Zoning Board members recommended passage of the Conditional Use to the Board of Trustees.

Section 5. Conditional Use. The conditional use requested in the February 4, 2022 Conditional Use Application is granted as follows:

- A. A conditional use in conjunction with Section 156.93 is hereby granted to allow the operation of a health services testing clinic within a C-4 commercially-zoned district.

Section 6. Conditions. The conditional use granted herein is contingent and subject to the standards and design as presented within the Applicant's petition and consistent with the Public Hearing of February 21, 2022.

Section 7. Severability. In the event a court of competent jurisdiction finds this ordinance or any provision hereof to be invalid or unenforceable as applied, such finding shall not affect the validity of the remaining provisions of this ordinance and the application thereof to the greatest extent permitted by law.

**AN ORDINANCE GRANTING A CONDITIONAL USE TO PROVIDE A TESTING CLINIC AT 695 S.
BROADWAY IN THE VILLAGE OF COAL CITY**

Section 8. Repeal and Savings Clause. All ordinances or parts of ordinances in conflict herewith are hereby repealed; provided, however, that nothing herein contained shall affect any rights, actions, or causes of action which shall have accrued to the Village of Coal City prior to the effective date of this ordinance.

Section 9. Effectiveness. This ordinance shall be in full force and effect from and after passage, approval and publication in pamphlet form as provided by law.

SO ORDAINED this _____ day of _____, 2022, at Coal City, Grundy & Will Counties, Illinois.

AYES:

NAYS:

ABSENT:

ABSTAIN:

VILLAGE OF COAL CITY

Terry Halliday, President

Attest:

Pamela M. Noffsinger, Clerk

MEMO

TO: Mayor Halliday and the Board of Trustees

FROM: Matthew T. Fritz
Village Administrator

MEETING

DATE: February 23, 2022

RE: APPROVAL OF ENGINEERING FOR SECTION OF CARBON HILL ROAD

The Village of Coal City participates within Will County Governmental League (WCGL) for access to federal transportation funding. WCGL is making a call for projects that ends in March. Prior to filing for the project, it is necessary to complete a Phase One engineering report that can be submitted along with the project request. In order to gain more points and gain project approval even more quickly, a completed second phase will assist. Due to this portion of roadway being a simple resurfacing project with minimal work to the curb line and approaches, this cost will be minimal compared to the entire project.

The current call for projects will set projects for 2023 – 2028, which means approval may not result in construction very soon; this depends on availability to construct and funding in comparison to all other project submitted. Ryan is preparing these approvals for engineering, which would be included within the FY23 funding and will be provided as soon as they are available.

MEMO

TO: Mayor Halliday and the Board of Trustees

FROM: Matthew T. Fritz

MEETING

DATE: February 23, 2022

**RE: REVIEW OF WATER SOLUTION LEAD SERVICE LINE TESTING
REPORT**

Water Solutions, a subcontractor that was recommended for this specialty of analyzing water quality, was hired to manage a study regarding water quality regarding different water nutrients and their effect upon the treated water supply prior to changing any solutions according to the requirements of the IEPA's accepted water treatment plan. Three different mixtures were sampled utilizing a section of lead line similar to others that can be found throughout the system in a bench test providing differing rates of success.

The good news is the approved treatment methodology proved effective at reducing the occurrence of lead within the test results. This verified the Village's current method is effective, which was one of the purposes of the study.

Don Bixby of Chamlin will be present to review this draft report and possible options due to the data that has been received at this point.

Coal City Pipe Rack Study for Lead Remediation

DRAFT

The Coal City Water Department has collected data from a pipe rack study to discern the best corrosion inhibitor to use to lower lead levels in the “first draw” samples that are taken for the Lead and Copper program.

The Process

A lead service line was harvested and installed in the pipe rack. There are three positions that hold pipe segments that are between 18 and 24 inches in length. A bleach feed point was installed to dose the same amount of disinfectant that is normally used at the treatment plant. The lead line was allowed to be aged using the system water until the particulates of matter disturbed while removing the line were minimized. After the “aging” was done, baseline lead levels were established by lab tests. All lead tests were performed by PDC (Pace) Labs. When it was determined that the loose materials were out of the pipe and the surface was stabilized, the rack was made ready for product trials.

All lines were adjusted to have water run through at 2 gallons per minute. An “in Line” static mixer was installed in each line after the phosphate injection point to ensure that the phosphate blends and disinfectant were mixed properly before running through the lead pipe. A timer was installed to activate all pumps to come on three times per day for 20 minutes. This would be closer to an actual home use than water running 24/7 through the pipe. Three products were chosen for trials. WSU 110 which is a liquid 90/10 blended phosphate was injected into the top line (line 1). This is the same blend that is currently being used by the utility in the dry version named WSU 310. WSU 405 Zinc/ortho phosphate was injected into the center line (line 2) and WSU 118 which is a 30/70 blend was injected into the bottom line (line 3). These products were chosen to give a look at products that range from 90% ortho to 30% ortho. The zinc product was chosen because of the softening process. When the carbonate hardness is depleted in a treated water, zinc is beneficial because it helps attach the ortho phosphate to the pipe walls to create the protective film. Each effluent from the lines of the rack had sample ports for grab samples to test ortho levels, water quality and lead. The average for the water qualities are in the chart named “Water Quality Averages.”

The results for the lead “first” draw samples are on the chart labeled “Lead Results from Pipe Rack” and in the table labeled “First Draw Results.”

The chart shows:

- | | Date |
|--|----------------------------|
| 1. Baseline with disinfectant but no phosphate | 5/13/21 |
| 2. Results of first draw lead samples | 6/28/21, 9/17/21, 11/15/21 |

Blue Line= WSU 118
Green Line= WSU 405 Zinc/Ortho
Yellow Line= WSU 110

Coal City Pipe Rack Study for Lead Remediation

First Draw Results

	Sample Position On Rack		Top	Middle	Bottom
			WSU 110	WSU 405 Zinc/O	WSU 118
Date	Result				
5/13/21	ppb		54	30	130
6/28/21	ppb		20	11	3.7
9/17/21	ppb		1.2	3.4	54
11/15/21	ppb		4.9	8.4	270
1/20/22	ppb		1	8.9	90

Water Quality Averages

	pH	Temperature	Calcium Hardness	TDS	Alkalinity	Sulfate	Chloride
Line 1	7.8	17.4	34 ppm	1200	270 ppm	450 ppm	638
Line 2	7.8	17.1	34 ppm	1200	254 ppm	440 ppm	624
Line 3	7.8	17.1	34 ppm	1200	264 ppm	450 ppm	668

Sulfate Test Method 10248

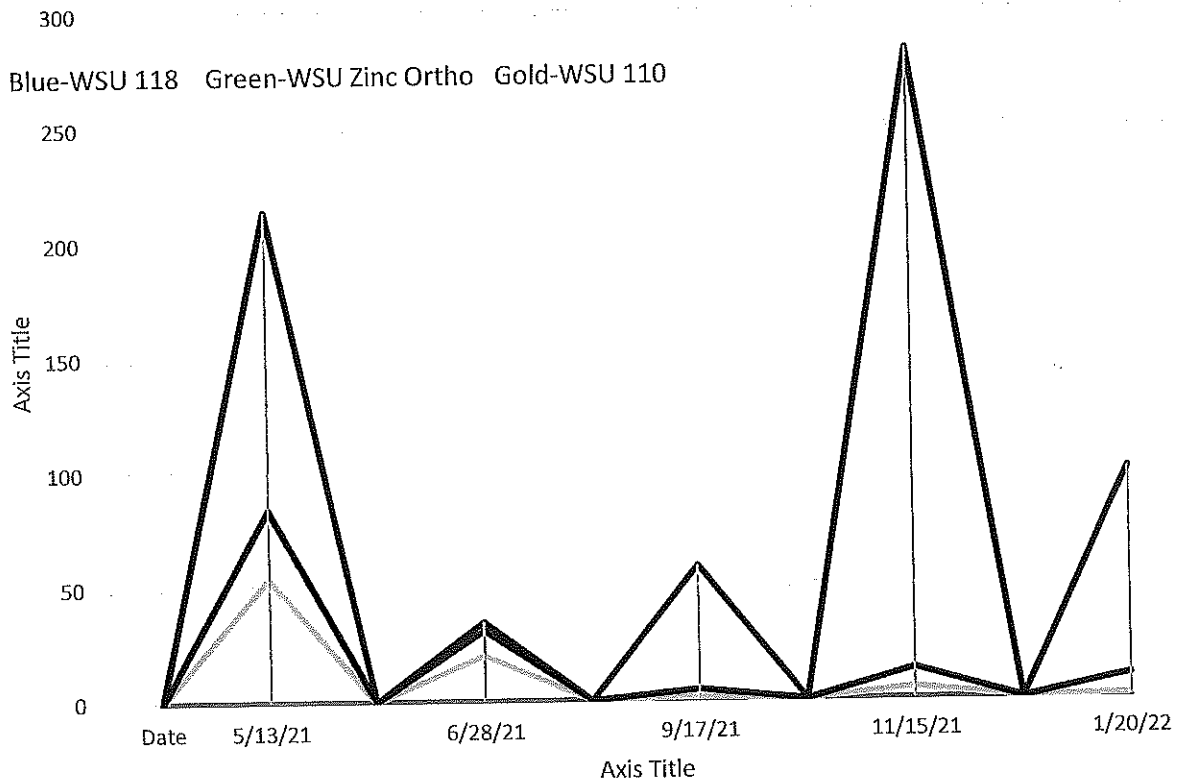
Alkalinity Method 8203

Orthophosphate TNT 843

Calcium Hardness 8204 Titration Method

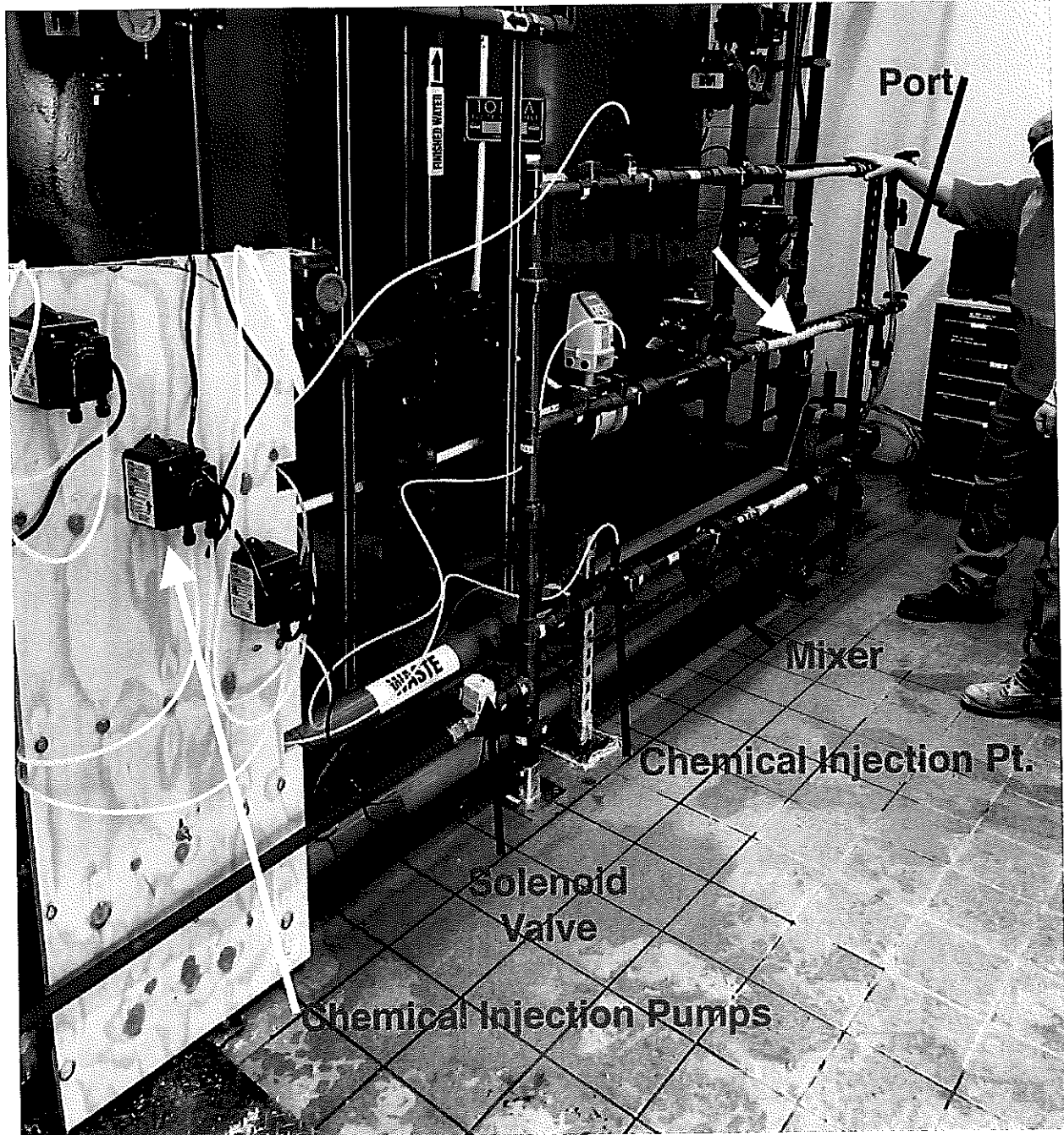
Coal City Pipe Rack Study for Lead Remediation

Coal City Lead Pipe Rack Lead Sample Results



Coal City Pipe Rack Study for Lead Remediation

Pipe Rack Construction Picture



Coal City Pipe Rack Study for Lead Remediation

The results show clearly that for "lead" control, the WSU 110 product which is 90% ortho phosphate performed the best of the three products that were tested. The Zinc-ortho product also performed well but had slightly higher numbers over all. The WSU 118 product started out looking to be very beneficial for the lead control, but, over time the numbers began increasing. This product contains 70% polyphosphate which does extremely well for steel corrosion, but can be a "cleaner" on lead pipe. The poly was most likely cleaning the surface of the pipe a little more than needed. The other thing that could happen in this situation could be that there was some scale that loosened up on that section of pipe. Even with a poly product, it is unusual to see a spike like we show in the graph.

Side Study

During the last two years, an MPY meter has been on line to monitor the steel corrosion in real time. This meter gives a reading every few minutes reflecting the corrosion of the tips that are installed on the probe. Steel corrosion can be high in softened water. When a 50/50 phosphate blend was on line, the average reading on the MPY meter was over 12 mils per year. When a 70/30 blend was on line, the readings ranged from 5-7 mils per year. Since the WSU 310 (dry version of the WSU 110 product) has been on line, the reading has dipped to 2-3 mils per year.

Recommendations

Based on all of the information gathered from the Pipe Rack Study, we recommend that the WSU 310 product which contains 90% ortho phosphate is the correct choice for treatment of the Coal City water to control the lead levels in the first draw samples. The product should be administered at an average dosage of 2 ppm of ortho.

Support Documents

Coal City Pipe Rack Study for Lead Remediation



PDC Laboratories, Inc.

ANALYTICAL RESULTS

Sample: EE03238-01	Sampled: 05/13/21 08:35
Name: Line 1	Received: 05/15/21 09:00
Reg ID: Not for compliance	Matrix: Drinking Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	54	ug/L		05/24/21 07:23	1	1.0	05/24/21 11:30	KMC	EPA 200.8 REV 5.4

Sample: EE03238-02	Sampled: 05/13/21 08:36
Name: Line 2	Received: 05/15/21 09:00
Reg ID: Not for compliance	Matrix: Drinking Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	30	ug/L		05/24/21 07:23	1	1.0	05/24/21 11:31	KMC	EPA 200.8 REV 5.4

Sample: EE03238-03	Sampled: 05/13/21 08:37
Name: Line 3	Received: 05/15/21 09:00
Reg ID: Not for compliance	Matrix: Drinking Water - Grab

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	130	ug/L	Q3	05/24/21 07:23	1	1.0	05/24/21 11:33	KMC	EPA 200.8 REV 5.4

Coal City Pipe Rack Study for Lead Remediation

PDC Laboratories, Inc.



ANALYTICAL RESULTS

Sample: EG01572-01 Name: Line 1 Matrix: Drinking Water - Regular Sample	Sampled: 06/28/21 08:30 Received: 07/07/21 14:02
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Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	20	ug/L		07/16/21 09:21	5	1.0	07/16/21 14:18	TJJ	EPA 200.8 REV 5.4

Sample: EG01572-02 Name: Line 2 Matrix: Drinking Water - Regular Sample	Sampled: 06/28/21 08:30 Received: 07/07/21 14:02
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Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	11	ug/L		07/16/21 09:21	5	1.0	07/16/21 14:20	TJJ	EPA 200.8 REV 5.4

Sample: EG01572-03 Name: Line 3 Matrix: Drinking Water - Regular Sample	Sampled: 06/28/21 08:30 Received: 07/07/21 14:02
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Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	3.7	ug/L		07/16/21 09:21	5	1.0	07/16/21 14:21	TJJ	EPA 200.8 REV 5.4

Coal City Pipe Rack Study for Lead Remediation



PDC Laboratories, Inc.

ANALYTICAL RESULTS

Sample: EI03693-01	Sampled: 09/17/21 13:29
Name: Line 1	Received: 09/20/21 13:26
Matrix: Drinking Water - Grab	

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u>Total Metals - PIA</u>									
Lead	1.2	ug/L		09/27/21 08:54	1	1.0	09/27/21 14:06	KMC	EPA 200.8 REV 5.4

Sample: EI03693-02	Sampled: 09/17/21 13:30
Name: Line 2	Received: 09/20/21 13:26
Matrix: Drinking Water - Grab	

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u>Total Metals - PIA</u>									
Lead	3.4	ug/L		09/27/21 08:54	1	1.0	09/27/21 14:08	KMC	EPA 200.8 REV 5.4

Sample: EI03693-03	Sampled: 09/17/21 13:31
Name: Line 3	Received: 09/20/21 13:26
Matrix: Drinking Water - Grab	

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u>Total Metals - PIA</u>									
Lead	54	ug/L		09/27/21 08:54	1	1.0	09/27/21 14:09	KMC	EPA 200.8 REV 5.4

Coal City Pipe Rack Study for Lead Remediation

PDC Laboratories



ANALYTICAL RESULTS

Sample: EK03264-01	Sampled: 11/15/21 13:35
Name: Line 1	Received: 11/16/21 11:56
Matrix: Drinking Water - Grab	

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u>Total Metals - PIA</u>									
Lead	4.9	ug/L		12/01/21 11:43	1	1.0	12/01/21 12:18	KMC	EPA 200.8 REV 5.4

Sample: EK03264-02	Sampled: 11/15/21 13:35
Name: Line 2	Received: 11/16/21 11:56
Matrix: Drinking Water - Grab	

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u>Total Metals - PIA</u>									
Lead	8.4	ug/L		12/01/21 11:43	1	1.0	12/01/21 12:19	KMC	EPA 200.8 REV 5.4

Sample: EK03264-03	Sampled: 11/15/21 13:36
Name: Line 3	Received: 11/16/21 11:56
Matrix: Drinking Water - Grab	

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
<u>Total Metals - PIA</u>									
Lead	270	ug/L		12/01/21 11:43	1	1.0	12/01/21 12:21	KMC	EPA 200.8 REV 5.4

Coal City Pipe Rack Study for Lead Remediation



Pace Analytical Services, LLC
 2231 W. Altorfer Drive
 Peoria, IL 61615
 (800)752-6651

ANALYTICAL RESULTS

Sample: FA03930-01 Name: Line 1 Matrix: Drinking Water - Grab	Sampled: 01/20/22 08:45 Received: 01/21/22 12:40
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Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	< 1.0	ug/L		01/31/22 06:06	1	1.0	01/31/22 11:23	JMW	EPA 200.8 REV 5.4

Sample: FA03930-02 Name: Line 2 Matrix: Drinking Water - Grab	Sampled: 01/20/22 08:45 Received: 01/21/22 12:40
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Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	6.9	ug/L		01/31/22 06:06	1	1.0	01/31/22 11:26	JMW	EPA 200.8 REV 5.4

Sample: FA03930-03 Name: Line 3 Matrix: Drinking Water - Grab	Sampled: 01/20/22 08:45 Received: 01/21/22 12:40
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Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Total Metals - PIA									
Lead	90	ug/L		01/31/22 06:06	1	1.0	01/31/22 11:29	JMW	EPA 200.8 REV 5.4

Coal City Pipe Rack Study for Lead Remediation

In 2016 a "White Paper" was issued by EPA with guidelines for arriving at an appropriate Treatment for Lead. Using the DIC (dissolved inorganic carbon content) table and decision trees that are correct for a given system's water qualities direction for treatment was shown.

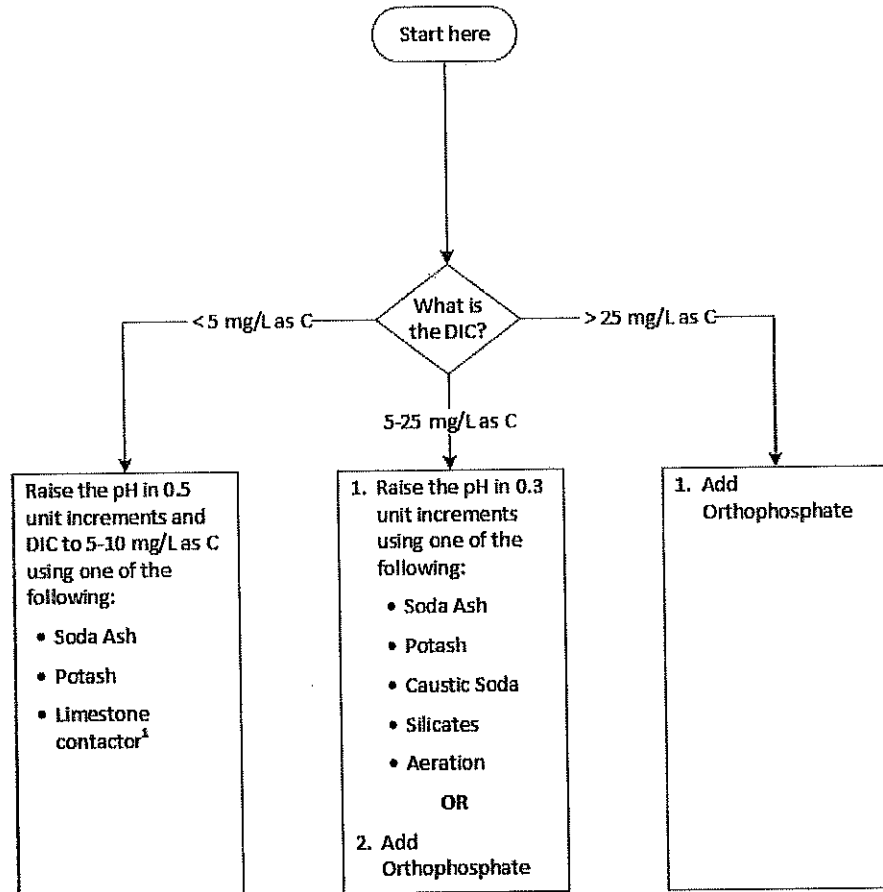
For Coal City, the DIC number is between 62 and 68. This leads to the decision tree for pH of 7.8 and DIC of 65. This chart shows that Orthophosphate is an appropriate choice for the Coal City System.

Total Alkalinity	pH																				
	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0	9.2	9.4	9.6	9.8	10.0	10.2	10.4
70	31	26	22	20	19	18	18	17	17	17	17	16	16	16	15	15	14	13	11	10	8
75	33	27	24	22	20	19	19	19	18	18	18	18	17	17	16	16	15	14	12	11	9
80	35	29	26	23	22	21	20	20	19	19	19	19	19	18	18	17	16	14	13	12	10
85	37	31	27	25	23	22	21	21	21	20	20	20	20	19	19	18	17	15	14	12	11
90	40	33	29	26	24	23	23	22	22	22	21	21	21	20	20	19	18	16	15	13	11
95	42	35	30	28	26	25	24	23	23	23	23	22	22	22	21	20	19	17	16	14	12
100	44	37	32	29	27	26	25	25	24	24	24	24	23	23	22	21	20	18	17	15	13
125	55	46	40	36	34	32	31	31	30	30	30	29	29	28	27	26	25	23	21	19	17
150	66	55	48	43	41	39	38	37	37	36	36	35	35	34	33	32	30	28	25	23	20
175	77	64	56	51	47	45	44	43	43	42	42	41	41	40	39	37	35	32	30	27	24
200	88	73	64	58	54	52	50	49	49	48	48	47	46	45	44	42	40	37	34	31	28
225	99	82	72	65	61	58	57	56	55	54	54	53	52	51	50	48	45	42	38	35	32
250	110	91	80	72	68	65	63	62	61	60	60	59	58	57	55	53	50	47	43	39	36
275	121	100	88	80	75	71	69	68	67	66	66	65	64	63	61	58	55	51	47	43	39
300	132	110	96	87	81	78	76	74	73	72	72	71	70	68	66	64	60	56	52	47	43
325	143	119	104	94	88	84	82	80	79	78	77	77	75	74	72	69	65	61	56	51	47
350	154	128	112	101	95	91	88	86	85	84	83	82	81	80	77	74	70	65	60	55	51
375	165	137	120	109	102	97	94	93	91	90	89	88	87	85	83	79	75	70	65	59	54
400	176	146	128	116	108	104	101	99	97	96	95	94	93	91	88	85	80	75	69	63	58

¹ Shaded cells indicate chemically impossible condition. May indicate analytical quality or total dissolved solids (TDS) assumption error.
² References: Butler, J. N. Cogley, D. R. 1998. *Ionic Equilibrium Solubility and pH Calculations*. John Wiley and Sons, New York, NY; Schock, M. R. 1981. "Response of Lead Solubility to Dissolved Carbonate in Drinking Water." *Jour. AWWA*, 73:3:36.
³ The equilibrium constants are from: Plummer, L. N. and Busenberg, E. 1982. "Solubilities of Calcite Aragonite and Vaterite in CO₂-H₂O Solutions Between 0 and 90°C, and an Evaluation of the Aqueous Model for the System CaCO₃-CO₂-H₂O". *Geochimica et Cosmochimica Acta (The Journal of The Geochemical Society and The Meteoritical Society)*, 46: 1011.

Coal City Pipe Rack Study for Lead Remediation

Flowchart 1b: Selecting Treatment for Lead only or Lead and Copper with pH from 7.2 to 7.8



KEY:
 AL = Action Level
 Caustic soda = sodium hydroxide (NaOH)
 DIC = Dissolved Inorganic Carbon
 mg/L as C = milligrams per liter as carbon
 Potash = potassium carbonate (K₂CO₃)
 Soda ash = sodium carbonate (Na₂CO₃)

Footnotes:

1. Carbon dioxide feed before the limestone contactor may be necessary.

MEMO

TO: Mayor Halliday and the Board of Trustees

FROM: Matthew T. Fritz
Village Administrator

MEETING

DATE: February 23, 2022

RE: NPDES RE-RATING REQUEST SUBMITTED

At the time all of the sanitary treatment plant upgrade capabilities were analyzed, each of the steps were broken down in order to begin achieving portions of the overall plan. One of the steps included within this year's budget was re-rating the agency upwards from .725 million gallons per day to 0.95 million gallons per day. This re-rating maintains the same plant operation requirements, but creates additional space to accommodate the collection of more sanitary flow. The information required to file this upgrade was already gathered in order to get the IEPA permit for the sanitary treatment plant modernization project and when determining the priorities of what projects should be completed in which order. This 1/3 capacity increase provides another potential capability for accommodating additional industrial growth within the Village as well as any additional homes.

The paperwork has been filed with the IEPA and awaits their approval. This has been provided to document that portion of the 2019 Wastewater Treatment Plant Expansion Study has been completed.



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February 14, 2022

Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section #15
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794

ATTENTION: PERMITS SECTION

RE: Village of Coal City NPDES Re-Rating Request

Dear Sir or Madam,

The Village of Coal City officially wishes to request that their existing Wastewater Treatment Plant be re-rated for a Design Average Flow (DAF) of 0.95 MGD. No increase in the Design Maximum Flow is requested.

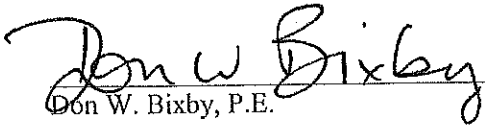
The attached report demonstrates that the facilities in fact can operate at the requested DAF of 0.95 MGD without any modifications or upgrades.

Also included in the report is the required Anti-Degradation Analysis, a current EcoCAT consultation report and two copies of NPDES form 2A and Schedule D.

If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,

CHAMLIN & ASSOCIATES, INC.


Don W. Bixby, P.E.

DWB:amd

Cc: File No. 05824.01
Matt Fritz, Village Administrator

Enclosure

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**VILLAGE OF COAL CITY, ILLINOIS
WASTEWATER TREATMENT NPDES RE-RATING REQUEST
FEBRUARY 2022**

INTRODUCTION

The Village of Coal City, Illinois is located in southeastern Grundy County, just 1.5 miles off the I-55 corridor and, as such, is in position to see significant development in the very near future.

In 2019, the Village conducted an evaluation of their existing wastewater treatment facility to gain a better understanding of its current condition and capacity. That study indicated the plant, as currently designed, was easily capable of handling a Design Average Flow of 0.95 MGD.

This re-rating study is intended to demonstrate the plant's capacity and to substantiate the Village's request for modification of their NPDES permit.

EXISTING FACILITIES

NPDES LIMITS

The Village of Coal City is currently served by a wastewater treatment plant (WWTP) regulated by NPDES Permit No. IL0028151 (included as Appendix A). This permit allows for a Design Average Flow (DAF) of 0.725 MGD and a Design Maximum Flow (DMF) of 1.750 MGD. Along with CBOD₅, TSS, and pH, the plant also must comply with seasonal ammonia-nitrogen (NH₃-N) and dissolved oxygen (DO) limits. The permit currently does not require disinfection, nor does it include limits for total phosphorus (TP) or total nitrogen (TN).

REVIEW OF EXISTING FACILITIES

The WWTP was built in 2001 and designed to operate in an extended aeration mode of the activated sludge process (see Figures 1 and 2 for an aerial view of the plant and a flow diagram). Waste sludge is processed in one of two aerobic digesters and from there stored in a sludge storage lagoon for what has usually been land-application disposal. High radium content in the sludge has recently required the Village to resort to contract dewatering and landfill disposal.

Influent and effluent data for the last five years is presented in Table 1. The plant maintains a perfect record meeting BOD and TSS limits but does see occasional NH₃-N excursions.

The plant was designed to receive a BOD of 180 mg/l in the 0.725 MGD DAF, which is equivalent to 1,088 lbs./day BOD. In reality, over the last eight years, the average loadings have been less than half that amount. Table 2 presents the influent BOD data for the last eight years, showing a long-term arithmetic average of only 81 mg/l, with a standard deviation of only 22.8 mg/l and a geometric mean of 77.9 mg/l, all indicating significant consistency. Combined with an average influent flow of about 0.700 MGD, the plant only sees a loading of 473 lbs./day BOD compared to the original design of 1,088. Given the standard deviation of 22.8 mg/l, a reasonable design

concentration would be $81 \text{ mg/l} + 22.6 \text{ mg/l} = 104 \text{ mg/l}$ BOD, or 100 mg/l as a good design standard.

Although the 0.700 MGD seems perilously close to the NPDES DAF of 0.725 MGD , it is actually not a concern for two reasons: Based on the low flow months, the plant's current average would be just under 0.5 MGD ; in addition, the actual hydraulic capacity of the plant is considerably greater than the $0.725/1.75 \text{ NPDES}$ rating.

Hydraulically, a plant is primarily limited by the capacity of its influent screening, its raw sewage pumps, and the size of the final clarifiers. In fact, the installed screen has a capacity of 4.2 MGD , the raw sewage pumps can move 4.1 MGD , and the existing clarifiers could handle slightly over 1.5 MGD . The other hydraulic limitation is that the State requires an average detention time of at least 8 hours in the aeration tanks. Given the existing size of the plant's aeration tanks, they could handle an average flow of 2.0 MGD .

The plant's BOD capacity is also limited by State standards regarding the size of the aeration tanks. Based on a designation of conventional complete mix, the plant would be restricted to a BOD loading of not more than $35 \text{ lbs./day BOD per } 1,000 \text{ ft}^3$ of tankage. In this case, the limit would be nearly $3,494 \text{ lbs./day}$.

The BOD capacity is also limited by the maximum amount of air which can be provided through the available diffuser heads in the bottoms of the aeration tanks. To the BOD load must be added the oxygen demand incurred by nitrification, the conversion of $\text{NH}_3\text{-N}$ to nitrate-nitrogen ($\text{NO}_3\text{-N}$). Based on an assumed influent total nitrogen concentration of 20 mg/l , the existing diffusers can handle their design average of $1,088 \text{ lbs./day BOD}$. At the 8-year average of around 80 mg/l BOD , this equates to about 1.5 MGD , although using a reasonable design BOD of 100 mg/l , the DAF would be only 1.25 MGD .

This aeration is also dependent on the capacity of the plant's blowers. The existing blowers are used not only for aeration but also for mixing and aerating of the aerobic digesters. Including demands for both aeration and the digesters, the existing blower units are only acceptable up to 0.95 MGD at 137 mg/l BOD .

The two aerobic digesters each have a volume of $24,714 \text{ ft}^3$ for a total volume of $49,428 \text{ ft}^3$. For an extended aeration plant, State standards required a digester tank volume of 3.0 ft^3 per 0.17 lb. BOD , which is then reduced by 25% to allow for decanting of supernatant. As the plant moves into a regular complete mix activated sludge mode, the State standard increases to 4.5 ft^3 per 0.17 lb. BOD . Even at the higher standard and using an influent BOD of 100 mg/l , the existing digesters are good up to nearly 1.8 MGD .

As for the return sludge pumps, typical design provides the return sludge flow rate at a 1:1 ratio with the influent. The existing pumps can provide that ratio up to a 0.950 MGD .

CONCLUSIONS REGARDING EXISTING FACILITIES

To summarize the capacities of the existing facilities:

CAPACITIES OF EXISTING FACILITIES

	Influent BOD		Daily Avg. Flow	Daily Max. Flow
	mg/l	lbs./day	MGD	MGD
Current NPDES Design	180	1,088	0.725	1.75
Current Loadings	81	479	0.700	2.89
Influent Screening	--	--	--	4.2
Raw Sewage Pumps	--	--	--	4.1
Clarifiers	--	--	~1.6	--
Aeration Tanks Hydraulic Capacity	--	--	2.0	--
Aeration Tanks BOD Capacity	--	3,500	--	--
Blowers	137	1,085	0.950	--
Aeration Diffusers	100	1,088	1.3	--
Aerobic Digestion	100	1,494	1.79	--
Return Sludge Pumps at 1:1	--	--	0.95	--

RE-RATING

To further support the Village's request for re-rating to 0.95 MGD DAF, a computer model was built, and its printout is included as Appendix B.

The model shows the original NPDES design, the current loadings, and a presentation with inputs as requested with this re-rating. No increase in the Plant Design Maximum Flow is being requested. As can be seen in the model inputs, a BOD of 137 mg/l is indicated as this equates to the original design loading of 1088 lbs./day BOD. In Table 2, it can be seen that the 8-year average BOD has run around 81 mg/l and the last three years are nearly identical. Allowing for a one standard deviation elevation, the BOD still runs at only about 104 mg/l. This demonstrates that allowing for the 137 mg/l BOD provides for a conservative design.

A perusal down through the Design Summary indicates that all WWTP processes and equipment will operate within State standards.

ANTI-DEGRADATION ANALYSIS

Included as Appendix C is a letter documenting the required features of an anti-degradation analysis and the support stream study for the Claypool Ditch.

CONCLUSION

The Village of Coal City believes this document demonstrates conclusively that the existing WWTP without modification can adequately be assigned a DAF of 0.95 MGD. This flowrate is still associated with the original 1,088 lbs./day BOD loading and no change is requested in the DMF of 1.750 MGD.

