

WATER PERMIT NO. 347A-3

Name of Applicant: City of Watertown

Address: PO Box 910, Watertown SD 57201

Phone: 605 882-6200

Amount of Water Claimed: no add'l

Total Acres: NA

Source of Water Supply: Lake Kampeska

Water to be used for: municipal

County: Codington

Type of Waste Disposal System:

Location:

PRIORITY

Date Received: 5-23-2012

Application/License Fee: \$

Corrected Application Received:

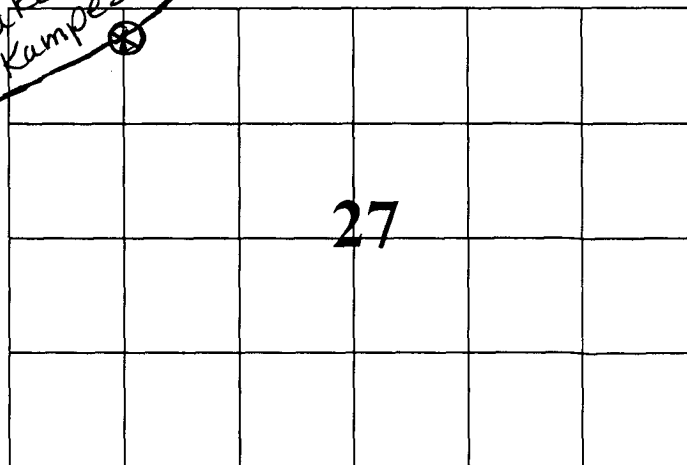
Period of Annual Use: Jan 1- Dec 31

Remarks:

Diversion Point: 4,670 feet north of SW corner

Section 27-T117N-R53W

Lake Kampeska



Land to be Irrigated: NA

Depth of Well: NA

Well Driller:

Remarks:

Type of Map: plat

Prepared by: Sarah M Chron, PE

Reviewed and the Number Assigned on: 5-29-2012

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

FORM 2: Application for uses other than irrigation
(type or print)

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No.	347A-3 (office use only)	Hydrologic Unit	10170202
	Basin	Sioux River		
	Newspaper	Public Opinion PO Box 10		
		605-886-6901 Watertown 57201		

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MAY 23 2012

WATER RIGHTS
PROGRAM

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

☒ Municipal	☐ Suburban Housing	☐ Recreational	☐ Institutional
☐ Rural Water System	☐ Commercial	☐ Fish & Wildlife	☐ Geothermal Heat
☐ Domestic (over 18 gpm)	☐ Industrial	☒ Other Phosphorus Removal Facility	

Type of Application:
(check one)

☐ New	☐ Vested Right (Use predates Mar 2, 1955)	☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____		
☒ Amendment/Correction to Permit No. 347-3		

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

Amend use of permit Number 347-3 to include diversion for phosphorus removal facility and maintain municipal use component for backup purposes

1. Name of Applicant City of Watertown, c/o Tom Drake, City Engineer Phone (605) 882-6200
 (check one) ☒ Owner ☐ Tenant/lessee
 Mailing Address PO Box 910 Watertown SD 57201
 (Address) (City) (State) (Zip Code)

2. Amount of water claimed 2.67 *CFS or 1200 **GPM ***AF
 (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Lake Kampeska

4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Codington
4,670 Feet North of SW Corner Sec 27 T117N R53W

5. County or counties where water will be used Codington6. Annual period during which water is to be used January 1 - December 31

7. Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

Treatment regime at water treatment plant will be modified to remove phosphorus from lake water and return treated water to the lake.

STATE OF SOUTH DAKOTA)

County of Codington)

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Also, attach map and any other technical information. (see instructions)

I, Tom Drake

the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true to the best of my knowledge and belief, and am able to complete the necessary construction.

Applicant's signature Tom DrakeSubscribed and sworn to before me this 21st day of May 20 12Notary Public signature Sarah Caron

**SOUTH DAKOTA
WATER PERMIT NO. 347A-3**

Date of first receipt of application May 23, 2012.

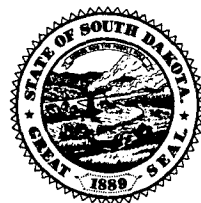
The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 347A-3 to the City of Watertown, PO Box 910, Watertown SD authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 347A-3 authorizes an additional use. Water Right No. 347-3 authorizes 2.67 cubic feet of water per second (cfs) from Lake Kampeska located 4,670 feet north of the southwest corner of Section 27-T117N-R53W for municipal use. This permit authorizes the additional use of this 2.67 cfs diversion from the lake for the additional use of phosphorus removal and returning the treated water to the lake.
2. The water appropriated shall be maintained as a backup supply for municipal use purposes and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 347A-3 is July 16, 2012.
5. The date from which applicant may claim right is January 1, 1888.
6. One-fifth of the construction is to be completed on or before January 16, 2015.
7. All construction is to be completed on or before July 16, 2017.
8. Water is to be put to beneficial use on or before July 16, 2021.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

WATER MANAGEMENT BOARD

By: Garland Erbele
Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

SEP 14 2012
date



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MAY 23 2012

WATER RIGHTS
PROGRAM

Application to Amend Water Permit No. 347-3
For Nonirrigation Uses



RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 7/13, 20 12

RECEIVED OF City of Watertown PO Box 910 Watertown SD 57201

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>347A-3</u> to Appropriate Water, to construct and to put water to beneficial use	100	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>347A-3</u>	200	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	300 00

No. 05486

By Garland Erbe
Chief Engineer

**CITY OF
WATERTOWN**

23 Second St. NE
P.O. Box 910
Watertown, SD 57201-0910
www.watertownsd.us

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MAY 23 2012

**WATER RIGHTS
PROGRAM**

May 21, 2012

Eric Gronlund
PMB 2020 Department of Environment and Natural Resources
Water Rights Program
523 E. Capitol Avenue
Pierre, SD 57501-3182

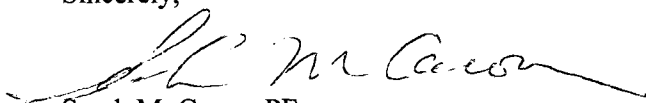
Re: Application For Permit to Appropriate Water
(Amendment to Permit No. 347-3, Watertown, SD)

Dear Mr. Gronlund:

Please accept the enclosed Application For Permit to Appropriate Water. The City of Watertown hereby requests an amendment to Water Right Permit No. 347-3 in order to modify the decommissioned Lake Kampeska water treatment plant process and return treated water to the lake. A Water Quality Grant has been awarded to the City to complete this project, and we are excited to move forward with it.

If you have any questions or need further information, please feel free to contact me at (605) 882-6202 extension 40.

Sincerely,


Sarah M. Caron, PE
Assistant City Engineer

Enclosures: Two completed application forms with maps

Mayor
605-882-6200
Fax: 605-882-5214

Regional Airport
605-882-6209
Fax: 605-882-5285

Building Services
605-882-6201
Fax: 605-882-5264

Mt. Hope Cemetery
605-882-6208

City Attorney
605-882-6200
Fax: 605-882-5214

Engineering
& Planning
605-882-6202
Fax: 605-882-5264

Finance Office
605-882-6203
FAX 605-882-6218

Fire Department
605-882-5030
FAX 605-882-5041

Library
605-882-6220
FAX 605-882-6221

Park, Rec &
Forestry Dept.
605-882-6260
FAX 605-882-5204

Police Dept.
605-882-6210
FAX 605-882-6216

Solid Waste Dept.
605-882-6219
Fax: 605-882-6375

Street Dept.
605-882-6207

Watertown
Community
Recreation Center
605-882-6250
FAX 605-882-6254

Wastewater
Treatment Facility
605-882-6243
FAX 605-882-6242



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 347A-3, City of Watertown**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 347A-3, City of Watertown, c/o Tom Drake, City Engineer, PO Box 910, Watertown SD 57201.

The Chief Engineer is recommending APPROVAL of Application No. 347A-3 because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) it is in the public interest.

See report on application for additional information.

Garland Erbele, Chief Engineer
June 19, 2012

REPORT ON WATER PERMIT APPLICATION NO. 347A-3

City of Watertown

June 11, 2012

Application No. 347A-3, the City of Watertown has filed an application to amend Water Right No. 347-3 for an additional use. Water Right No. 347-3 authorizes 2.67 cubic feet of water per second (cfs) from Lake Kampeska located 4,670 feet north of the southwest corner of Section 27-T117N-R53W for municipal use. This application requests to divert the 2.67 cfs from the lake for the additional use of phosphorus removal and returning the treated water to the lake. The water right will be maintained as a backup supply for municipal use by the City. The proposed project is located in the City of Watertown in Codington County.

Review of the Proposed Project

The applicant proposes to divert water from Lake Kampeska for surface water remediation to treat and remove phosphorus from the lake water and discharge directly back into Lake Kampeska. The City intends to utilize the existing municipal water intake, but need to modify their treatment in order to remove the phosphorus.

Review of Existing Water Rights

There are 2 existing water rights/permits for appropriating 6.68 cfs from Lake Kampeska, both held by the City of Watertown and a vested water right held by the South Dakota Department of Game Fish and Park for 15,850 acre-feet in the lake. This amendment would not adversely affect these existing rights.

Conclusions

1. This application proposes to amend Water Right No. 347-3 to divert 2.67 cfs from the lake for an additional use of phosphorus removal and returning the treated water to the lake.
2. The water right will be maintained as a backup supply for municipal use by the City.
3. The City intends to utilize the existing municipal water intake, but need to modify their treatment in order to remove the phosphorus.
4. This amendment would not adversely affect existing rights.



Mark D. Rath

Natural Resources Engineer III

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JUL 17 2012

Form 8

WATER RIGHTS
PROGRAM

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
County of Codington)

I, Monica K. Saathoff

certify that the attached printed Notice was
taken

from the Watertown Public Opinion

printed and published in Watertown

County of Codington and

state of South Dakota. The notice was
published

in the newspaper on the following two dates:

June 28th, 2012

July 5th, 2012

Cost of Printing \$101.74

Monica K. Saathoff
(Signature)

Bookkeeper

(Title)

July 5th, 2012

(Date Signed)

DENR

NOTICE OF APPLICATION
NO. 347A-3

Notice is given that the City of Watertown, c/o Tom Drake, City Engineer, PO Box 910, Watertown SD 57201 has filed an application to amend Water Right No. 347-3 for an additional use. Water Right No. 347-3 authorizes 2.67 cubic feet of water per second (cfs) from Lake Kampeska located 4,670 feet north of the southwest corner of Section 27-T117N-R53W for municipal use. This application requests to divert the 2.67 cfs from the lake for the additional use of phosphorus removal and returning the treated water to the lake. The water right will be maintained as a backup supply for municipal use by the City.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 347A-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by July 16, 2012.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

Published twice at the total approximate cost of \$113.50.
(June 28, 2012 & July 5,

101.74 2012)



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

June 20, 2012

Public Opinion
PO Box 10
Watertown SD 57201

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 347A-3 to Appropriate Water to be published twice. Please publish the first notice on June 28, 2012 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is City of Watertown, c/o Tom Drake, PO Box 910, Watertown SD 57201 (Ph # 605-882-6200).

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

No. 347A-3

TO: Eric Gronlund
Water Rights Program
Joe Foss Building
Pierre SD 57501-3181

Date _____

We are in receipt of your letter of June 20, 2012 enclosing Notice to Appropriate Water by Application No. 347A-3 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.

June 20, 2012

City of Watertown
Tom Drake
PO Box 910
Watertown SD 57201

Dear Mr. Drake:

Water Permit Application No. 347A-3 for municipal use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Public Opinion printed at Watertown SD (Ph # 605-886-6901). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the applications.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

Instruction to Newspaper - Publish first Notice on June 28, 2012 with the second publication 7 days later. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 347A-3

Notice is given that the City of Watertown, c/o Tom Drake, City Engineer, PO Box 910, Watertown SD 57201 has filed an application to amend Water Right No. 347-3 for an additional use. Water Right No. 347-3 authorizes 2.67 cubic feet of water per second (cfs) from Lake Kampeska located 4,670 feet north of the southwest corner of Section 27-T117N-R53W for municipal use. This application requests to divert the 2.67 cfs from the lake for the additional use of phosphorus removal and returning the treated water to the lake. The water right will be maintained as a backup supply for municipal use by the City.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 347A-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

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Published twice at the total approximate cost of _____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

SEP 14 2012

City of Watertown
c/o Tom Drake – City Engineer
PO Box 910
Watertown SD 57201

Dear Mr. Drake:

Enclosed is Water Permit No. 347A-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit. Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

City of Watertown
Phosphorus Removal Facility

At

Lake Kampeska

HDR Project No. 187908

Basis of Design Report

September 2012

Prepared for:



By:

HDR

1.0 General Requirements

1.1 Introduction and Background

This Basis of Design Report establishes the design requirements for the design of the biological processes of a phosphorus removal facility using the decommissioned Lake Kampeska Filtration Plant. The original design of the Lake Kampeska Filtration Plant was to provide chemical/physical treatment to produce potable water. The facility includes aeration, rapid mix, flocculation, sedimentation and filtration. Conversely, Lake Kampeska has been defined as hypereutrophic. This means that the nutrients, specifically nitrogen and phosphorus are the primary reasons for algal blooms. Eliminating one of the nutrients from the balance will reduce the potential for future blooms. This project is an attempt to reduce the phosphorus concentrations within the lake below the hypereutrophic level through algal uptake and removal. Since the Watertown Municipal Utilities declared the existing Lake Kampeska Filtration Plant as a surplus facility, it is available for use and potential algae production and ultimately phosphorus removal from the lake water. The objective is to convert the existing clearwell to biological reaction tank using algae to uptake phosphorus from the water. The algae will then be removed from the system and disposed. The treated water, with significantly lower phosphorus concentrations, is then returned to the lake.

1.2 Improvements Proposed

As part of this project, HDR will design the improvements and/or modifications to the existing Lake Kampeska Filtration Facility, which will incorporate the following features (preliminary; actual may vary in detailed design):

- Raw water pumps
 - Type – submersible centrifugal pumps
 - 2 pumps (one operating and one standby)
 - Propeller meter to measure influent flow rate
- Clearwell Modifications (Convert to algae growing reaction tank)
 - Baffles – Type 2 Impermeable Silt Curtains
 - Coarse bubble diffused aeration system for mixing
 - LED Lighting to promote algae growth
- Carbon dioxide feed system
 - Carbon dioxide cylinder (s) – 200 lbs
 - Booster pump
 - Ejector
 - Injector
- Transfer Pump
 - Transfers water from the algae growing reaction tank to mixing chamber
 - Type - Submersible centrifugal pump
 - Installed at the effluent end of the reaction tank
 - One pump
- Solids Separation
 - Use one of the existing clarifiers
 - Gravity settling
 - Skimmer (pool type) for removal of floating solids/algae
 - Bag Filter for solids dewatering and disposal

- Solids Pumping
 - Type – Peristaltic Hose Pump
 - One pump
 - Return solids to algae growing reaction tank
 - Pump to back filter

1.3 Basis of Design Parameters

The following Basis of Design parameters have been established.

Maximum Flow Rate (gpd) assuming 4 day HRT	25,000
Maximum Flow Rate (gpd) assuming 1 day HRT (If native species can maintain its population with shorter HRT, the flow rate may be increased)	103,000
Raw Water Feed	Flow range – 17 to 71 gallons per minute
Carbon Dioxide Feed	To keep the pH in the clearwell close to 7.0 where the algae growth is supported. One booster pump for mixing carbon dioxide and water. One 200 lb carbon dioxide cylinder.
Existing Clearwell Dimensions	60 feet X 42 feet X 9 feet (Depth) with water depth of 5 feet
Clearwell Baffles	7 baffles (Type 2 Silt Curtains) with a spacing of 5 feet in between
LED Lighting	
Diffused aeration system	40 to 45 cfm (3 to 3.5 cfm/1000 ft ³)
pH Analyzers	
Transfer Pump	Flow range – 17 to 71 gallons per minute
Sludge Return Pump	Flow range – 8 to 25 gallons per minute
Skimmer	
Bag Filter	

2.0 Process Design Criteria

2.1 Proposed System and Equipment

The proposed modifications to the existing Lake Kampeska Filtration Facility to achieve phosphorous removal in the lake water are summarized below:

- Existing raw water will be disconnected from the system. New submersible raw water pumps will be installed in the wet well intake of the pump room. Pumps will have a pumping capacity ranging from 17 to 71 gallons per minute. The discharge tubing of the new pumps (1.5 Inch PEX Tubing) will be installed inside the existing raw water pumps discharge lines and be routed to the clearwell.
- As mentioned previously, the clearwell is converted an algae growing reaction tank. In order to create a serpentine flow pattern in the reaction tank, minimize short circuiting, and promote mixing, Type 2 impermeable silt curtains will be used as for baffles. Baffles will have a spacing of 5 feet yielding seven baffle walls (50' X 5' deep each).

- Carbon dioxide (CO₂) will be fed at the clearwell influent to promote algae growth. Algae require CO₂ to grow with the pH of water being an indication of whether or not there is sufficient CO₂ in the water. CO₂ will be fed to maintain the pH in a range of 7-8. Historically, the lake water pH has been in a range of 8.5-9.0. In order to keep the water in a pH range suitable for algae growth, carbon dioxide will be fed from a 200 lb carbon dioxide storage cylinder. will be installed. A booster pump will pump water from the algae reaction tank to an educator that will draw CO₂ from the cylinder, similar to a gas chlorine feed system. The CO₂ and water solution (carbonic acid) will be injected into the raw water influent line prior to discharge to the algae grow reaction tank.
- A coarse bubble diffused aeration system consisting of ½" Ø laterals with 1/8" Ø orifice openings will provide air for mixing the reaction tank. A small 3 HP blower will supply air to the diffusers.
- LED lighting will be installed in the ceiling of the reaction tank to promote algae growth. A total of 400 luminaries will be installed. A total of nine (9) 120 VAC, single phase circuits will be required for the luminaries. A new lighting panel will be installed in the existing electrical room. The control panel will have nine relays to facilitate reactor tank lighting to be turned on and off by a time clock. LED lights are preferred over fluorescent luminaries for the following reasons:
 - 1) Lamp life (LED lights will last 25,000 to 50,000 hours verses 8,760 hours for fluorescent lights)
 - 2) Targeted spectral output (blue and green regions of the spectrum with LED lights verses fluorescent light with portions of the spectrum not useful to algae.
 - 3) Energy efficiency (LED luminaries are more efficient than fluorescent luminaries)
 - 4) Operate cooler (Energy not wasted with LED so they run cooler than fluorescent).
- A submersible pump will be installed at the algae growing reactor tank effluent to pump out the biologically treated water to the existing mixing chamber for use in conveying the flow to one of the clarifiers.
- One of the clarifiers will be used for solids separation.
- A peristaltic solids return pump will be installed to either waste the solids from the clarifier or recycle solids (algae) back to the clearwell. Recycling of solids will help maintain the algae concentration in the reaction tank. The recycle rates will vary depending on the season.
- Waste solids from the clarifier will be filtered using the bag filter. Liquid from the bag filter will be directed back to the clarifier.
- Clarifier supernatant will flow into the detention basin and then through the existing filters before it flowing back to Lake Kampeska.

CITY OF WATERTOWN, SOUTH DAKOTA
PHOSPHOROUS REMOVAL FACILITY
OPINION OF PROBABLE TOTAL PROJECT COST (30% DESIGN)
HDR PROJECT NO. 187908

ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	MATERIAL COST	INSTALLED COST	MULTIPLIER
1.0 General Conditions						
a. Insurance, Bonds, Mobilization, Travel, Subsistence, Etc.	1	ls.		\$179,450	\$3,589	0.02
Subtotal General Conditions					\$3,589	
2.0 Site Work						
a. Demolition, Cutting and Patching	1	ls.	\$5,000	\$5,000	\$5,250	1.05
Subtotal Site Work					\$5,250	
11.0 Equipment						
a. Raw Water Pumps	2	ea.	\$1,500	\$3,000	\$3,450	1.15
b. Carbon Dioxide Feed System	1	ls.	\$7,000	\$7,000	\$8,050	1.15
c. Process Piping, Valves, Meters, & Appurtenances	1	ls.	\$5,000	\$5,000	\$5,750	1.15
d. Clearwell Baffles	1	ls.	\$8,000	\$8,000	\$9,200	1.15
e. Clearwell Effluent Pump	1	ea.	\$1,500	\$1,500	\$1,725	1.15
f. Skimmer	1	ea.	\$1,500	\$1,500	\$1,725	1.15
g. Bag Filter	1	ea.	\$1,000	\$1,000	\$1,150	1.15
h. Solids Return Pump	1	ea.	\$8,000	\$8,000	\$9,200	1.15
Subtotal Equipment					\$40,250	
15.0 Mechanical						
a. PEX Tubing (1.5 Inch)	1	ls.	\$1,000	\$1,000	\$1,150	1.15
b. Compressed Air System	1	ls.	\$10,000	\$10,000	\$11,500	1.15
Subtotal Mechanical					\$12,650	
16.0 Electrical						
a. Electrical Service, Power, & Wiring	1	ls.	\$6,500	\$6,500	\$7,800	1.20
b. Lighting	1	ls.	\$85,000	\$85,000	\$102,000	1.20
c. Process Equipment Electrical and I&C	1	ls.	\$10,000	\$10,000	\$11,500	1.15
Subtotal Electrical					\$121,300	
Summary						
1.0 General Conditions					\$3,589	
2.0 Site Work					\$5,250	
11.0 Equipment					\$40,250	
15.0 Mechanical					\$12,650	
16.0 Electrical					\$121,300	
SUBTOTAL - Construction Costs					\$183,039	
25% Engineering, Administrative, and Contingencies					\$45,760	
OPINION OF PROBABLE TOTAL PROJECT COST					\$229,000	



WATERTOWN MUNICIPAL UTILITIES

901 • 4TH AVENUE SW • WATERTOWN, SD 57201-4107

PHONE: (605) 882-6233 • FAX: (605) 882-6238

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RECEIVED

JUN 25 2021

WATER RIGHTS
PROGRAM

June 23, 2021

Eric Gronlund
Department of Agriculture and Natural Resources
Water Rights Program
523 East Capitol
Pierre, SD 57501-3182

Dear Eric,

I sadly announce to you that after thirty-three years of service with the Watertown Municipal Utilities, our dedicated and hard-working Water Superintendent, Jeff DeVille, will be retiring effective June 30, 2021. We greet Mr. DeVille's retirement with sorrow, but we are also happy Jeff can now enjoy his own time. Jeff has been a great asset to the Water Department here at the Watertown Municipal Utilities and will be greatly missed.

I would like to introduce our new Water Superintendent Wayne Lovelis. Wayne has been training under Jeff for the past two months and comes with much experience. He has over 25 years in the water/utility industry. He has spent the last six years with The City of Great Falls, Montana. He will take over the reins as Water Superintendent along with the duties of being the correspondent for the Water Rights and Diversion Structure under FC29. Feel free to contact Wayne at any time.

See below Wayne's contact information.

Watertown Municipal Utilities
Wayne Lovelis, Water Superintendent
901 4th Ave SW
Watertown, SD 57201
wlovelis@watertownmu.com
605-882-6233 phone
605-882-6239 fax

Best regards,

Steve Lehner, General Manager
Watertown Municipal Utilities