City of Grand Forks
Staff Report

Committee of the Whole – December 12, 2016

Agenda Item: Residual Pump Failure

Submitted by: Melanie Parvey, Water Works Division Director

Staff Recommended Action: Information Only.

Committee Recommended Action:

Council Action:

BACKGROUND:

In May the Water Treatment Plant staff had a failure of two residual pumps, these pumps pump residual water from the water treatment process to the residual ponds. It was determined that water entered the motor's electrical housing.

With the failure of both the pumps, the staff had to implement the emergency contingency plan and discharge the residual water to the storm water pond near Kannowski Park, former Central Park.

The staff notified the North Dakota Department of Health and monitored the amount of residual water entering the pond, sampling and analyzing the water quality. One of the two pumps were repaired the same day that the staff had to implement the emergency contingency plan and was able to continue pumping the residual water to the residual ponds. The estimate is that 90,000 gallons of residual water entered the stormwater pond.

ANALYSIS AND FINDINGS OF FACT:

The costs to repair the one residual pump was over the authorized staff approval amount per purchase policy therefore this report is to update the City Council on the situation that lead to this expense.

SUPPORT MATERIALS:

Invoice for the Pump Repair- Quality Flow Systems, Inc.
Report submitted to the North Dakota Department of Health- Dated 5-13-16 FG, Fred Goetz, Supervisor at Water Treatment Plant

Quality Flow Systems, Inc.
Quality Control & Integration, Inc.
800 - 6th Street NW
New Prague, MN 56071
Phone: (952) 758-9445

Invoice 32381

Invoice Date	Due Date
8/11/2016	9/10/2016

Bill To	Ship To
Grand Forks, City of PO Box 5200 Grand forks, ND 58206	City of Grand Forks Water Treatment Plant 503 South 4th Street Grand Forks, ND 58201

P.O. Number	Terms	Rep	Via	F.O.B.	Project
Verbal John Goetz	Net 30	PGM	QFS Service	Origin	21768 - Pump Repairs

Ordered	Invoiced	B/O	Item Number	Description	Unit Price	Ext. Price
1	1		910	Quoted repair of K150-401/784XG, 460/3, 110hp pump s/n 5M07738641/1	23,357.00	23,357.00
10	10		940	Shop labor	0.00	0.00
1	1	0	KSB-00310061	"KSB" Roller bearing (NU2209)	0.00	0.00
2	2	0	KSB-00290916	"KSB" Lip seal	0.00	0.00
2	2	0	KSB-00302417	"KSB" Ball bearing	0.00	0.00
1	1	0	KSB-00290327	"KSB" Lip seal	0.00	0.00
1	1	0	KSB-19557147	"KSB" Mechanical seal kit - "HJ" Slurry	0.00	0.00
1	1	0	MACHINING	Rewind stator	0.00	0.00
1	1	0	KSB-19527281	"KSB" O-ring/gasket kit; motor only (250-370)	0.00	0.00
1	1		CHANGE ORDER	Add new impeller, wear rings and intermediate casing to above repair	10,277.00	10,277.00
1	1	0	KSB-01135321	"KSB" Impeller w/ rotating wear ring; trimmed to 363MM	0.00	0.00
1	1	0	KSB-01135288	"KSB" Case wear ring; stationary	0.00	0.00
1	1	0	KSB-11303316	"KSB" Intermediate casing; CI	0.00	0.00
1	1		910	Power cables for 2nd pump at City	8,761.00	8,761.00
4	4	0	PUMP PARTS	"KSB" Power cable assy x 50' long (p/n 18079485-15M)	0.00	0.00
2	2	0	PUMP PARTS	"KSB" Control cable assy x 50' long (p/n 18079480-15M)	0.00	0.00
1	1	0	PUMP PARTS	Lip seal; 90x110x12TC	0.00	0.00
1	1	0	MACHINING	Bottom plate	1,600.00	1,600.00

VENDOR NO. 6951
BUDGET CODE 5300 100 5355 450 0020

Thank you for your business.

Finance charges at a rate of 1.5% per month or 18% annually, will be added to any account that is past due. In addition, the customer is responsible for all costs associated with collections including resonable attorney fees.

Subtotal	$43,995.00
Sales Tax (0.0%)	$0.00
Total	$43,995.00

Repair of Residual Pump

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Describe in detail the circumstances/conditions that lead to of caused the bypass

On May 12th 2016 at 0630 Residual Sludge Pump number one failed, upon inspection it was determined water had entered the motor electrical housing. We immediately hauled pump to local contractor (Acme Electric) for repair work. At 1130 I was notified by water plant maintenance operators Residual Sludge Pump number two had failed, upon inspection of pump it was determined that water again had entered motor electrical housing. With further inspection it was determined this pump was a total loss and would need to be shipped to Minneapolis, MN for a complete rehab. As a result of failure of two sludge pumps we began to slow the production of potable water to alleviate the amount of residual water from the treatment process.

I was notified by Acme electric at 3pm May 12th 2016 that the sludge pump wouldn't be repaired until the next business day. I contacted NDDH of our need to implement our emergency contingency plan of discharging residual water to the storm ponds and then to the Red River of the North.

We held the residual water in the treatment plant until it started to become a problem for the production of potable water. On May 13th 2016 at 0800 hours we started to discharge our residual water to the storm pond. We discharged for approximately 6 hours at 600 gallons per minute with about 90,000 gallons being sent to the storm pond. May 13th 2016 at 1400 hours we suspended discharge and installed repaired sludge pump.

As of today May 26th 2016 none of the residual water has entered the Red River of the North. All waters have been contained to the storm pond for discharge at a later date. Water quality test have been completed and have been submitted for review.

Describe in detail what the facility plans to do to lesson the impacts or eliminate this type of bypass in the future.

To lesson the impact of this discharge the Water Treatment Plant is holding all residual water in the storm pond until water quality test are complete to show this discharge isn't going to cause any major environmental issues.

Steps taken we have taken to eliminate a bypass in the future are as follow

1. Complete rehab of existing pumps
2. Replace all connections that insert into motor housing
3. Currently in the process of designing a new treatment plant with more redundancy to handle residual treatment water.

5-13-16
FG

Grand Forks Environmental Lab

503 South Fourth Street - P.O. Box 5200 - Grand Forks, ND 58206-5200
(701)746-2595, Fax: (701)746-2597

Wednesday, May 25, 2016

To: CITY OF GRAND FORKS

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1800410

Lab# Collected By	SampleID Sample Type	Collect Date and Time	TestID Method	Reported Result and Units	Analysis Date and Time	Cost Analyst
0524201642 JF	Inlet Grab	5/24/2016 13:00	PH 4500H+B	7.41 S.U.	5/24/2016 14:20	$7.50 KW
0524201642 JF	Inlet Grab	5/24/2016 13:00	TSS EPA 160.2	48.0 mg/L	5/24/2016 14:00	$15.00 KW
0524201642 JF	Inlet Grab	5/24/2016 13:00	Al Lamotte	0	5/24/2016 14:30	$0.00 KW
0524201643 KW	Outlet Grab	5/24/2016 13:00	PH 4500H+B	7.26 S.U.	5/24/2016 14:20	$7.50 KW
0524201643 KW	Outlet Grab	5/24/2016 13:00	TSS EPA 160.2	74.0 mg/L	5/24/2016 14:00	$15.00 KW
0524201643 KW	Outlet Grab	5/24/2016 13:00	Al Lamotte	0	5/24/2016 14:30	$0.00 KW

Total Due = $45.00

The Lab Methods are from the 20th Ed. Std. Methods. Lab Certification: ND00015

Sample(s) collected in: North Dakota

The result(s) listed within the report relate only to the sample(s) collected on the date(s) indicated. The report must not be reproduced, except in full, without the written approval from the Grand Forks Environmental Lab. No samples were subcontracted.

If you have any questions, please call me at (701) 746-2595.

Sincerely,

Kate Watts for

Melanie Parvey
Water Works Division Director

Grand Forks Environmental Lab

503 South Fourth Street - P.O. Box 5200 - Grand Forks, ND 58206-5200
(701)746-2595, Fax: (701)746-2597

Monday, May 23, 2016

To: *CITY OF GRAND FORKS*
503 So. 4th St.
Grand Forks, ND 58201
1800410

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Lab# *Collected By*	*SampleID* *Sample Type*	*Collect Date and Time*	*TestID* *Method*	*Reported Result and Units*	*Analysis Date and Time*	*Cost* *Analyst*
0516201616 FG	Residual Storm Pond grab	5/13/2016 18:00	Al Lamotte	.25	5/23/2016 11:00	$0.00 KW
0516201616 FG	Residual Storm Pond grab	5/13/2016 18:00	TSS EPA 160.2	28.0 mg/L	5/16/2016 16:00	$15.00 KW
0516201616 FG	Residual Storm Pond grab	5/13/2016 18:00	PH 4500H+B	9.00 S.U.	5/13/2016 18:00	$7.50 FG
0516201617 FG	Residual Pump Station grab	5/13/2016 18:00	Al Lamotte	13	5/23/2016 11:00	$0.00 KW
0516201617 FG	Residual Pump Station grab	5/13/2016 18:00	TSS EPA 160.2	24800 mg/L	5/16/2016 16:00	$15.00 KW
0516201617 FG	Residual Pump Station grab	5/13/2016 18:00	PH 4500H+B	9.26 S.U.	5/13/2016 18:00	$7.50 FG
0516201618 SB	Emergency Overflow Pond grab	5/16/2016 8:00	Al Lamotte	.01	5/23/2016 11:00	$0.00 KW
0516201618 SB	Emergency Overflow Pond grab	5/16/2016 8:00	PH 4500H+B	8.14 S.U.	5/16/2016 8:20	$7.50 KW
0516201618 SB	Emergency Overflow Pond grab	5/16/2016 8:00	TSS EPA 160.2	12.0 mg/L	5/16/2016 16:00	$15.00 KW

Total Due = $67.50

The Lab Methods are from the 20th Ed. Std. Methods. Lab Certification: ND00015

Sample(s) collected in: North Dakota

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If you have any questions, please call me at (701) 746-2595.

Sincerely,

Kate Watts for

Melanie Parvey
Water Works Division Director

North Dakota Department of Health--Division of Water Quality--NDPDES--Discharge Monitoring Report

ND0000191 Grand Forks WTP
PO Box 1518 Grand Forks ND 58206

001A
For Official Use

Reporting Period: 04/01/2016-06/30/2016
Due By: 07/31/2016

Section 1:

Did any discharges occur from this discharge point from 04/01/2016-06/30/2016?

✓ Yes — If 'Yes' then complete all blank non-gray items in sections 2,3 and 4. Mail to the address below by 07/31/2016.

___ No — If 'No' then complete section 4 and mail to the address below by 07/31/2016.

Section 2: Length of Discharge

	Cell/Site	Start Date	End Date	# of Days
#1	Residual P/S	5/13/16	5/13/16	1
#2				
#3				

Total Days

Section 3: Parameter Data

Parameter		Quantity or Loading Average	Quantity or Loading Maximum	Quantity or Loading Units	Quality or Concentration Minimum	Quality or Concentration Average	Quality or Concentration Maximum	Quality or Concentration Units	No. of Exceedances	Frequency of Analysis	Sample Type
Discharge Flow in Million Gals 50050	Result Value		.09	Mgal/d	XXXXX	XXXXX	XXXXX	XXXXX	0	6 hours	Calculation
Effluent	Permit Value	30DA AVG	DAILY MX	Mgal/d						Daily	Instantaneous
Total Suspended Solids 00530	Result Value	XXXXX	XXXXX	XXXXX			24,800	mg/L	0	Daily	Grab
Effluent	Permit Value				DAILY MN	30DA AVG	MX 7D AV	mg/L		Daily	Grab
pH 00400	Result Value	XXXXX	XXXXX	XXXXX	9.00	XXXXX	9.24	S.U.	0	Daily	Grab
Effluent	Permit Value				MINIMUM		MAXIMUM	S.U.		Daily	Grab
Drain in Million Gallons 51500	Result Value	XXXXX	.09	Mgal	XXXXX	XXXXX	XXXXX	XXXXX	0	Daily	Grab
Effluent	Permit Value		TOTAL	Mgal						Semiannually	Calculated

Section 4 Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name: (Print)	Signature:	Date:	Telephone:
John Goetz	John Goetz	6/30/2016	701-746-2595
Title: WTP Supervisor	Make a copy for your records	For Office Use: Rec'd:____ Initials:	Entered on: Initials:

Mail to: North Dakota Dept of Health, Division of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 Telephone 701.328.5210