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**VILLAGE OF SUGAR GROVE  
BOARD REPORT**

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**TO:** VILLAGE PRESIDENT & BOARD OF TRUSTEES  
**FROM:** ANTHONY SPECIALE, DIRECTOR OF PUBLIC WORKS  
BRAD MERKEL, PUBLIC UTILITIES SUPERVISOR  
**SUBJECT:** RESOLUTION: PHASE II OF THE WELL #10 REHAB PROJECT  
**AGENDA:** MARCH 3, 2020 REGULAR BOARD MEETING  
**DATE:** FEBRUARY 20, 2020

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**ISSUE**

Should the Village Board approve Phase II of the Well #10 Rehab Project.

**DISCUSSION**

At the January 7, 2020 Regular Board Meeting, the Village Board approved an agreement with Layne Christensen Company, Inc for Well #10 Pump Removal and Inspection. The Pump Maintenance Proposal included equipment inspection, downhole video survey of the well and inspection reports. Attached for your review are the Well 10 Pump Inspection Report and Repair Recommendations, the Phase II Equipment Repair Proposal and Task Order detailing the description of work and associated costs. Phase II of the project includes pump replacement and motor installation, various pipe repairs, sand bail of the well, pump installation and performance testing for an estimated cost of \$129,592.00

Staff recommends that the Village authorize Layne Christensen Company to complete Phase II of the Well #10 Rehab Project.

Phase III of this project will include the Electrical repairs to the Motor Control Center that caused the fire, that portion of the project is estimated at \$275,000. The Phase III portion of the project has a March 19<sup>th</sup> bid opening with a bid award at the April 7<sup>th</sup> Board Meeting.

The total cost of the Well 10 Rehab project including all 3 Phases is estimated at \$452,592.00.

**COST**

The estimated cost of the Well #10 Rehab Project Phase II is \$129,592.00. The Fiscal Year 20-21 Water Capital Budget, account number 50-71-7011: Water System Improvements includes \$405,000.00 for the Well 10 Rehab Project. There has been \$48,000 spent for this project in the Fiscal Year 19-20 budget already.

**RECOMMENDATION**

The Village Board approves Resolution **20200303PW1** authorizing an agreement for Phase II of the Well #10 Rehab Project with Layne Christensen Company.



**RESOLUTION NO. 20200303PW1**

**VILLAGE OF SUGAR GROVE, KANE COUNTY, ILLINOIS**

**RESOLUTION AUTHORIZING EXECUTION OF AN AGREEMENT WITH LAYNE CHRISTENSEN COMPANY, INC. FOR PHASE 2 OF THE WELL #10 REHABILITATION**

**WHEREAS**, the Village of Sugar Grove Board of Trustees find that it is in the best interest of the Village to engage the services of Layne Christensen Company, Inc. to provide professional services to the Village of Sugar Grove for Phase 2 of the Well #10 Rehabilitation, and to execute an agreement;

**NOW, THEREFORE, BE IT RESOLVED** by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois, as follows:

The President and Clerk are hereby authorized to execute said agreement on behalf of the Village and to take such further actions as are necessary to fulfill the terms of said agreement.

Passed by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois, at a regular meeting thereof held on the 3rd day of March, 2020.

\_\_\_\_\_  
 P Sean Michels, President of the Board  
 of Trustees of the Village of Sugar Grove,  
 Kane County, Illinois

ATTEST: \_\_\_\_\_  
 Alison Murphy, Clerk  
 Village of Sugar Grove

	Aye	Nay	Absent	Abstain
Trustee Sean Herron	_____	_____	_____	_____
Trustee Jennifer Konen	_____	_____	_____	_____
Trustee Ted Koch	_____	_____	_____	_____
Trustee Heidi Lendi	_____	_____	_____	_____
Trustee Rick Montalto	_____	_____	_____	_____
Trustee Ryan Walter	_____	_____	_____	_____
President P. Sean Michels	_____	_____	_____	_____



Layne Christensen Company  
721 W. Illinois Avenue  
Aurora, IL 60506

630/897-6941  
graniteconstruction.com

February 14, 2020

Mr. Brad Merkel, Public Utilities Supervisor  
Village of Sugar Grove  
601 Heartland Drive  
Sugar Grove, IL 60554

Re: Well #10

Mr. Merkel:

The Sugar Grove Well 10 Byron Jackson submersible pump has been removed from the well for a maintenance inspection. The pump components have been disassembled, cleaned, and inspected. As always, the Village is welcome, and encouraged, to visit Layne's yard and look over the components with us. Please find the Sugar Grove Well 10 Pump Inspection Report (PIR) attached.

Based upon the recommendations of the PIR, estimated project cost is as follows:

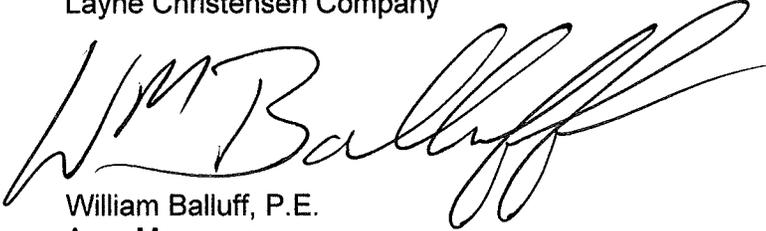
1. Labor and equipment to date to remove pump, transport/handle components, inspect components, HiPot test cable	\$ 48,000
2. Television Survey	\$ 1,350
3. Replace bowl assembly with a Byron Jackson 13 stage 12EMM, no wear rings, stainless fittings and suction screen	\$ 31,250
4. Cut & Thread (11) 8V pipe ends @ \$175 each	\$ 1,925
5. Cut & Thread (8) 8RND pipe ends @ \$250 each	\$ 2,000
6. File and face 13 threads, estimate	\$ 2,000
7. Replace estimated 21' of 10" T&C Line Pipe @ \$61 /ft	\$ 1,281
8. Replace (3) 10" 8V API couplings @ \$276 each	\$ 828
9. Replace (7) 10" 8RND API couplings @ \$258 each	\$ 1,806
10. Replace (2) 10" surge control valves @ \$1,536 each	\$ 3,072
11. Epoxy coat 880' of 10" Line Pipe @ \$28 / ft	\$ 24,640
12. Flat cable motor link	\$ 6,950
13. Miscellaneous material handling in yard, pitless rehab, set screw repair and set screw install, etc., estimate	\$ 9,000
14. 900' of 1 1/4" PVC transducer conduit @ \$1.10 / ft	\$ 990
15. Load and transport components to site, estimate	\$ 6,000
16. Miscellaneous consumables (airline, stainless banding, HTH, etc.), estimate	\$ 1,500
17. Reinstall and test pump, demobilize, estimate	<u>\$ 35,000</u>

Total Project Estimate

\$177,592

Layne will proceed with pump repairs upon the Village's written communication to proceed. If you have any questions, please do not hesitate to contact me.

Layne Christensen Company

A handwritten signature in black ink, appearing to read 'W. Balluff'. The signature is fluid and cursive, with a large initial 'W' and a long, sweeping underline.

William Balluff, P.E.  
Area Manager



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VILLAGE OF SUGAR GROVE  
 WELL #10 PUMP INSPECTION REPORT

JOB NAME	SUGAR GROVE	WELL	10	DATE	02/10/2020
JOB NO.	992598	INSPECTED BY	J. KOPP, J. POPPEN, M. POPPEN, B. BALLUFF		
		BOWL ASSEMBLY	Byron Jackson 13 stage 12EMM		
		COLUMN ASSEMBLY	10" T&C Line Pipe		
		MOTOR	Byron Jackson 300 HP, 460V, 14", Type H		

**MOTOR**

**Motor Observations**

The Byron Jackson 300 HP submersible motor that was removed from Well 10 is a Layne loaner that was installed in the well in 2006 when the well first went on line. The Village retains a duplicate motor in storage. Layne brought the Village motor to its yard to inspect. The motor's Serial Number is 14T-1002-4-1. Motor winding resistance megs overload. Shaft projection and rotation is excellent. Reference attached Motor Inspection Report.

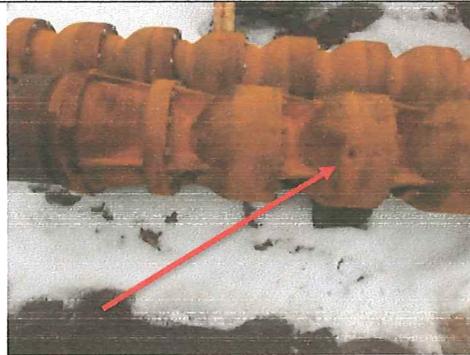
**Motor Recommendations**

Install Village motor, S/N 14T-1002-4-1.

**BOWL ASSEMBLY**



Byron Jackson 13 stage 12EMM bowl assembly



Hole through casting



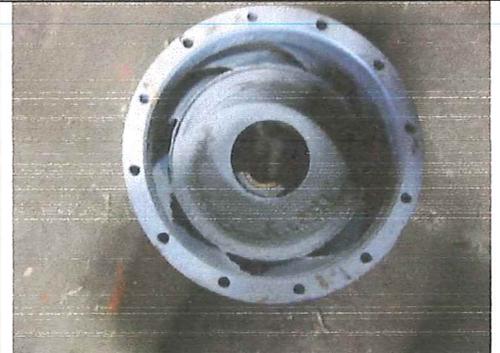
Hole in casting



Heavy exterior corrosion and hole in casting after disassembly and clean



Heavy corrosion erosion to casting volute (typ.)



Moderate erosion to casting interior (typ.)



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 WELL #10 PUMP INSPECTION REPORT

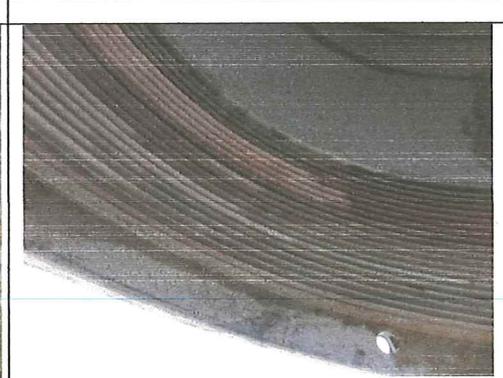
**Bowl Assembly Observations**

There is a hole through one of the castings. The casting discharge surfaces are heavily eroded and pitted. The casting interiors have moderate to severe erosion.

**Bowl Assembly Recommendations**

Replace bowl assembly.

**COLUMN PIPE**

		
<p>877' (tally) of 10" Line Pipe string racked in Layne sandblast area.</p>	<p>Male threads and coupling threads were inspected with API calibrated ring gauges.</p>	<p>Flattened threads.</p>
		
<p>Pitting at male end face.</p>	<p>Eroded coupling thread</p>	<p>Pit in pipe face within coupling.</p>

**Pipe Observations**

The Well 10, 10" Line Pipe string consists of forty-two lengths that tally 877'. One joint is a half random at twelve feet long while the remaining forty-one are single random lengths. Eleven of the joints are threaded 8RND, one joint is a transition from 8RND to 8V thread, and the remaining joints are 8V thread. Eleven 8V male threads and eight 8RND male threads are in poor condition. Twelve 8V male threads, including the transition length, and five 8 require thread chasing. Three 8V couplings and seven 8RND couplings have eroded and/or damaged threads.



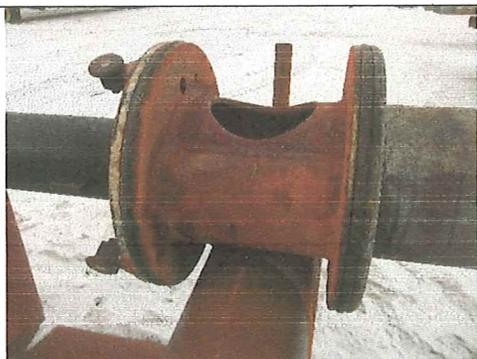
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VILLAGE OF SUGAR GROVE  
 WELL #10 PUMP INSPECTION REPORT

**Pipe Recommendations**

Cut and thread eleven 8V male threads and eight 8RND male threads. Replace three 8V couplings, seven 8RND couplings, and both surge control valves. Plan a contingency to cut and thread up to five 8V and seven 8RND threads pending their condition after removing the couplings to be replaced. Repair twelve 8V male threads and one 8RND coupling thread with machine chasing or file. Plan to replace pipe lost to cut and thread with approximately twenty-one feet of new 8" T&C Line Pipe, 8V thread. Epoxy coat all pipe for reinstallation.

**DISCHARGE HEAD**



Internals of the Baker pitless adapter in good condition.

**Discharge Head Observations**

The Baker pitless internal components are in good condition. The 10" x 44" welded pitless nipple has 8 RND threads and is in good condition.

**Discharge Head Recommendations**

Replace pitless O-Rings and reinstall.

**CABLE**

**Cable Observations**

The cable is 500 MCM / 600V three conductor with ground. There was no extra length of cable at the well head (pitless adapter) prior to removing the pump. The cable/motor assembly megged less than 1 megohm throughout the pump's removal. The "Layne Loaner" motor megged overload when tested without the cable.

The cable/flat cable assembly failed HyPot testing. The 500 MCM cable, tested with the flat cable removed, passed the HyPot test. Reference attached Cable High Potential Test.

**Cable Recommendations**

Reuse the 500 MCM cable. Replace the flat cable motor link.



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WELL #10 PUMP INSPECTION REPORT

**WELL**

**Well Observations**

The well construction log indicates that the well's total depth is 1432' below grade. The Layne pump pulling crew measured the total depth at 1436' below the top of the pitless adapter. The well is scheduled to be televised the week of February 17. A flash drive of the TV Survey and a written report will be furnished to the Village.

**Well Recommendations**

No need to bail fill and no other well recommendations unless the television survey indicates an issue (not anticipated).

BYRON JACKSON MOTOR INSPECTION - TYPE H

Inspected By M. Poppen Date 1/23/2020

Job Name Sugar Grove Well 10 Job # 992598

HP 300 Size 14" Voltage 460

Motor Serial # 14T-1002-4-1

Meg overload

Shaft Projection Spec 7 13/16

Shaft Projection Measured 7 13/16

Rotation good

Condition of Stator Can good

Condition of Lower Can good

Condition of O-Ring Joint good

Condition of Balance Tube good

Balance Tube Clear? Yes

Comments This motor is has been in Village storage for over ten years. It is in excellent condition.

Recommendations: Install motor.



# CABLE HIGH POTENTIAL TEST

Customer: Sugar Grove, IL Date 2/4/2020 Job No 962958

Well No.: 10 Location: Aurora, IL – Layne Yard

Cable Description 600 Volt, 500 MCM w/grnd. Length 895' Installed By \_\_\_\_\_

Type of Test Proof Max. Test Voltage 2,000 Duration 5 min. Motor Voltage 460

Weather Indoors Temperature 65°F Humidity \_\_\_\_\_

Test Equipment 6 kV Test Set Test Engineer J. Geltz Time \_\_\_\_\_

### READINGS ON VOLTAGE RISE

Test Voltage	Leakage I in Micro - Amps			
	AØ	BØ	CØ	
	Brown			
400	189.8-UA			
800	.589-MA			
1200	1.251-MA			
1600	2.260-MA			
2000	2.997-MA			

### READINGS WITH VOLTAGE CONSTANT

Time in Min.	Leakage I in Micro - Amps			
	AØ	BØ	CØ	
	Brown			
0	2.997-MA			
1	2.816			
2	2.514			
3	2.234			
4	1.935			
5	1.681			

### DISCHARGE TIME

#### Comments:

Cable assembly (500 MCM with Flat Cable) NOT Suitable for reuse:  
 Hypot test Power Cable w/B.J. Flat-Cable attached – FAIL.

Witness:

Signature:

\_\_\_\_\_ John Geltz

### WATER RESOURCES



# CABLE HIGH POTENTIAL TEST

Customer: Sugar Grove, IL Date 2/4/2020 Job No 962958

Well No.: 10 Location: Aurora, IL – Layne Yard

Cable Description 600 Volt, 500 MCM w/grnd. Length 895' Installed By \_\_\_\_\_

Type of Test Proof Max. Test Voltage 2,000 Duration 5 min. Motor Voltage 460

Weather Indoors Temperature 65°F Humidity \_\_\_\_\_

Test Equipment 6 kV Test Set Test Engineer J. Geltz Time \_\_\_\_\_

READINGS ON VOLTAGE RISE

Test Voltage	Leakage I in Micro - Amps			
	AØ	BØ	CØ	
	Brown	Yellow	Orange	
400	11.9	5.6	5.9	
800	12.2	7.3	8.3	
1200	14.1	7.6	8.6	
1600	17.8	6.6	8.2	
2000	18.2	6.1	8.1	

READINGS WITH VOLTAGE CONSTANT

Time in Min.	Leakage I in Micro - Amps			
	AØ	BØ	CØ	
	Brown	Yellow	Orange	
0	18.2	6.1	8.1	
1	4.4	.6	2.9	
2	4.1	.5	2.8	
3	3.7	.6	2.5	
4	4.1	.4	2.4	
5	3.9	.5	2.3	

DISCHARGE TIME

Comments: Cut off Flat-Cable = 22' Long.  
 Hypot test power cable only-no Byron Jackson Flat-Cable attached. Leakage values are quite low and cable appears suitable for reuse. However, note that reinstallation means cable as tested on spool above ground will be flexed over cable sheaves, squeezed against pipe by stainless steel banding and will be subject to possible down-hole damage, as well as significant hydrostatic pressure. Hypot testing may not detect leakage to atmosphere. (i.e. external holes in cable insulation).

Witness: \_\_\_\_\_ Signature: John Geltz

**WATER RESOURCES**