City & Borough of Sitka
Electric Department
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BLUE LAKE EXPANSION PROJECT

MONTHLY UPDATE FOR CITY ASSEMBLY

Report No. 20 Month ending July 31, 2014

SCOPE

- 83 ft. dam raise with modified tunnel system and new 15.9 MW powerhouse ($89 million)
- Eight supply contracts for Owner-Furnished equipment and materials ($16 million)

PROJECT HIGHLIGHTS DURING THIS MONTH

- July 13 – The final public tour was conducted.
- July 15 – McMillen approved the start of dry commissioning in the powerhouse.
- July 15 – ASRC McGraw Constructors (AMCL) moved their excavator to the burn area at the upstream end of Blue Lake. They have grubbed and burned the burn area to above elevation 360. This work is included in Contract 8, Reservoir Debris Management.
- July 16 – ADEC made a site visit to review environmental compliance. No substantial concerns were raised. Barnard and McMillen had very good records.
- July 21 – The line crew completed the 69kV termination on Main Transformer No.1. The transformer is ready to energize.
- July 22 – The Electric Department reduced generation at the Green Lake project to help fill the Green Lake reservoir before the Generation Outage (scheduled to start August 16, 2014).
- July 22 – Barnard completed preliminary testing of the Indian River temporary filtration plant and began putting the plant into service.
- July 25 – EPS located the nitrogen leak in Main Transformer No. 2 and the line crew repaired it.
- July 31 – The new intake structure is 90% submerged.
- July – NAES performed the following tasks related to the turbine generator installation:
    - Unit 3 is fully installed and electrical equipment is terminated. Mechanical equipment is 80% complete.
    - UEE has performed 100% of the dry commissioning on Unit 3.
    - Unit 5 is fully installed and has reached final alignment and ancillary equipment is 90% complete.
    - Control wiring is being terminated on Unit 5.
    - Unit 4 is 90% installed and ancillary equipment is 80% complete.
- July – CBS began installing SCADA equipment in control room.
- July – EPS completed testing MV switchgear CTs and relays.
- July – Barnard showed good progress on the dam construction completing 2 block placements. TO DATE – 53 of 53 blocks placed on the Dam Raise. In June Barnard started work on the spillway section of the dam, which is the most complicated formwork for the dam raise. Eight of 9 placements completed on the Left Abutment and Cutoff Wall. 3230 CY of 3350 CY has been placed at the powerhouse. Concrete tests have been better than required by the specification.
- July – Crux completed all but 6 curtain grout holes on the right abutment.

- July – Crux completed all curtain grout holes on the left abutment.
- July – Barnard completed the structural installation of the concrete scour wall in the creek channel immediately below Blue Lake dam and began placing rip-rap armoring above the wall.
- July – Barnard installed 90% of the culverts on the Blue Lake road supplied by the USFS.
- July – Barnard completed the reservoir access road.

COST SUMMARY - updated 7/31/2014

Project Element	Current Contract Total or Projected Amount	Payments	
		Paid this Month	Paid to Date*
Supply Contracts			
Contract 1 - Turbine Generator Equipment	$11,573,707	$335,510	$11,081,853
Contract 2 - Switchgear	$647,672	$12,915	$597,403
Contract 2A/2B - SS/Raw Water Switchgear	$300,000		$208,547
Contract 3 - Gates and Hoist	$780,185		$703,376
Contract 4 - Penstock	$836,315		$795,778
Contract 5 - 69 kV Transformers	$603,406		$543,130
Contract 6 - Bridge Crane Equipment	$270,518		$272,298
Contract 7 - Steel Building	$1,145,712	$6,391	$1,090,788
Contract 8, Debris Management**	$2,258,714	$291,117	$292,528
Contract 9, General Construction	$94,169,548	$4,155,878	$73,039,045
Temporary Filtration**	$1,651,424	$242,179	$558,689
Diesel Fuel	$1,260,000	$117,473	$117,473
Remaining Project Costs			$0
License Amendment	$1,400,000	$21,795	$1,293,621
Engineering	$9,498,393	$39,827	$11,898,601
Construction Management	$8,076,201	$535,287	$6,424,799
City Performed Work	$1,495,000	$64,655	$2,043,110
Incentive Payment	$1,600,000		$0
Cost of Bond Issuance/Reserve Account	$3,500,000		$0
TOTALS	**$141,066,795**	**$5,823,026**	**$110,961,039**
ESTIMATED TOTAL PROJECT COST	**$145,256,725**		

*Paid to Date includes unpaid retainage

COST CHANGES THIS MONTH

- Change order 11 for $447,187.51 will be submitted in early August.

We do not expect these change items to impact the overall project schedule.

CONSTRUCTION SCHEDULE MILESTONES: PLANNED/ACTUAL

Construction Start	11-20-2012 / 12-03-2012	Sub. Comp. BLU #3	10-24-2014/
Drainage Tunnel Comp.	07-01-2013 / 05-05-2013	Sub. Comp. FVU	11-12-2014/
Tunnel ex. complete	08-19-2013 / 07-24-2013	Sub. Comp. BLU#5	11-22-2014/
Intake Structure complete	06-04-2014/06-04-2014	Substantial Completion	02-01-2015/

NOTES ON PROJECT SCHEDULE

- The most recent look-ahead schedule submitted by Barnard shows the following work to be performed in August:
    - The start of Generation Outage is scheduled for August 24. Barnard is planning to beat that date, planning to start the outage in mid August.
    - Dam contraction joint grouting to elevation 403' will begin end of August.
    - The dam concrete is scheduled to be complete end of September.
    - Crux will be working on both abutments from two cranes to complete the curtain grouting of the dam's rock abutments.
    - Barnard and CBS are reviewing the generation outage work plan and schedule.
- Wet commissioning is scheduled for October 10 when the penstock is rewatered.
- The CM team and Electric Department continue working on the City-performed work tasks to ensure these activities are completed on time.

OTHER ITEMS OF INTEREST

- We were able to raise the water level by 8 feet in Blue Lake and 3 feet in Green Lake during July. This now means we likely will have a better than expected water level in Blue Lake, going into the coming winter. Since we have been able to store adequate water in Blue Lake we have begun storing additional water in Green Lake. This will allow a greater probability of not requiring substantial diesel generation during the generation outage.
- Good progress on the dam work continued in July. The difficult spillway construction has now started. It is expected to be completed in August.

PROJECT RISK PROFILE
A discussion of the major risk areas follows below. As a general rule risks are measured as follows:

LOW: Probability of less than 10%, or mitigation cost less than $1 million.
MODERATE: Probability of more than 30%, or mitigation cost up to $5 million.
HIGH: Probability of more than 60%, or mitigation cost likely more than $5 million.

The City's project team believes the following risk areas will dominate the potential for increases in overall Project cost. We also believe these areas pose the greatest risk for schedule delays.

Construction Schedule: In Barnard's most recent (July 31, 2014) schedule, the critical start of the 2014 Generation Outage is shown starting on August 16, 2014, 8 days ahead of schedule. The completion of the balance of plant items in the powerhouse and curtain grouting are the biggest areas of concern for meeting this date.
CURRENT RISK: MODERATE

Generation outage schedule: A lot of work remains to be done in the powerhouse before wet commissioning of the turbine-generators can start. The current schedule calls for only 17 days of wet commissioning for this equipment. This is optimistic. The additional water we now have in the lakes may mitigate the impacts of this risk.
CURRENT RISK: MODERATE

Weather and Lake Levels: Water levels in Blue Lake and Green Lake are nearly balanced at the end of July. We expect very adequate water levels during testing of the new turbine-generators in October, 2014.
CURRENT RISK: VERY LOW

Temporary Water Filtration Plant: During the August through September 2014 outage of the Blue Lake tunnel, the City will get its drinking water from a temporary water supply. This temporary system has been installed at Indian River. The commissioning is complete and the filtration system has been tested in service. The total capacity of the system is not large enough to provide spare pumps. We are addressing this situation. Barnard is providing the filtration project as a change order to Contract 9. The filtration project is being managed by McMillen LLC and CH2M Hill is overseeing the start-up. The City Water Department will operate the plant with assistance from CH2MHILL and the supplier.
CURRENT RISK: VERY LOW

Other: This is a broad combination of bad things that might happen such as: earthquakes; construction site accidents; floods; extreme winter weather; fire; labor unrest; etc. We expect that many of these risks would be covered by insurance at least in part.
CURRENT RISK: LOW

PROJECT PHOTO RECORD THIS MONTH

Photos are taken of each work area each month from a fixed location to document construction progress by work area. Relevant photos of the project for this month are provided on the following pages.

Figure 1. Dam and Left Abutment Area, Barnard showed good progress on the dam construction completing 2 block placements . TO DATE – 53 of 53 blocks placed on the Dam Raise. In June Barnard started work on the spillway section of the dam, which is the most complicated formwork for the dam raise. Eight of 9 placements completed on the Left Abutment and Cutoff Wall. Crux completed all curtain grout holes on the left abutment.

Figure 2. Drainage Tunnel and Scour Wall, Crux completed the scour wall.

Figure 3. Intake Portal and Right Abutment, The new intake structure is 90% submerged. Crux completed all but 6 curtain grout holes on the right abutment.

Figure 4. Gate House Location, Barnard completed the reservoir access road.

Figure 5. Dam Staging area, no change this month.

Figure 6. Lower Portal Area, Barnard prepared the penstock for generation outage work.

Figure 7. Powerhouse Site, AMCL continued work on the raw water intake and after bay.

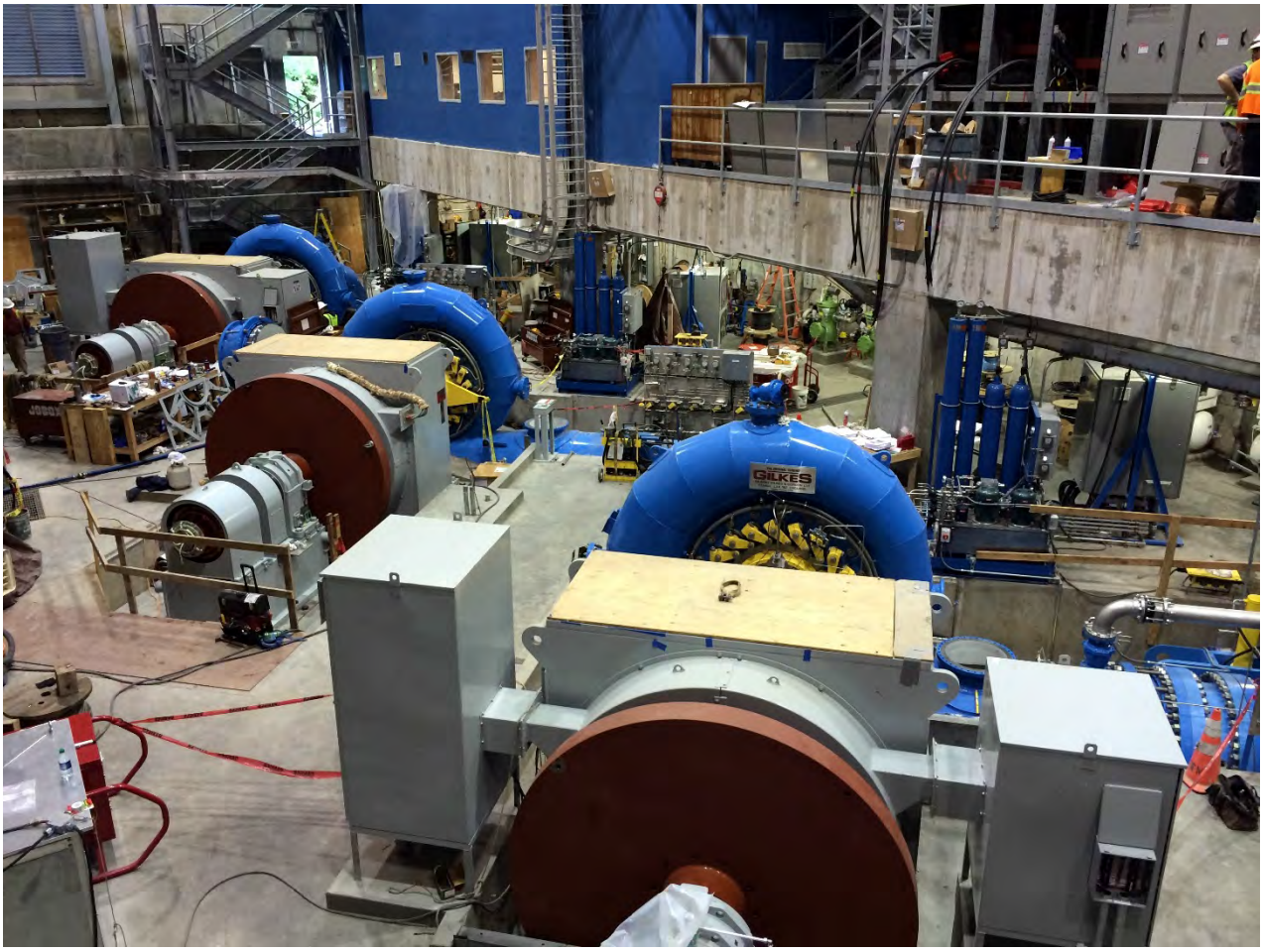


Figure 8. Powerhouse Interior, NAES performed the following tasks related to the turbine generator installation: Unit 3 is fully installed and electrical equipment is terminated. Mechanical equipment is 80% complete; UEE has performed 100% of the dry commissioning on Unit 3; Unit 5 is fully installed and has reached final alignment and ancillary equipment is 90% complete; Control wiring is being terminated on Unit 5, and; Unit 4 is 90% installed and ancillary equipment is 80% complete. Also, CBS began installing SCADA equipment in control room and EPS completed testing MV switchgear CTs and relays.

Other Items of Interest

The public was invited to participate in a contest to guess when the lake level would reach the new dam concrete. Approximatley 80 people participated in the contest.

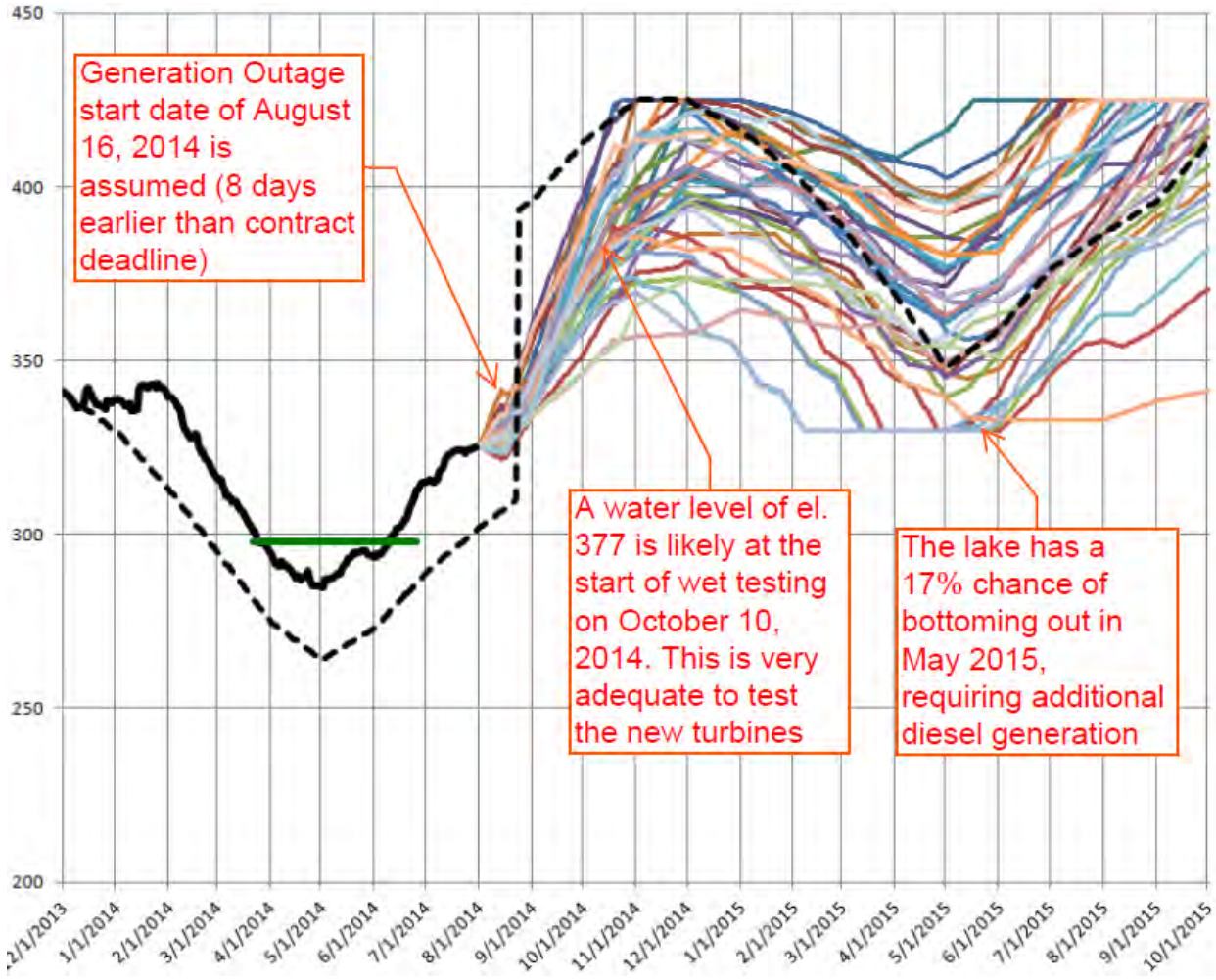
Project staff wrote a letter to the President to express concerns regarding federal loan and grant programs for renewable energy and invited him to view the project. An artificial response from the White House was received in response.

Lake Level Forecast

Case 27. Start July 31, 2014. Multi-year simulation using 36 year hydrologic record. 114,000 MWH system load until October 2015 (this assumes interruptible loads are off). Blue Lake powerhouse assumed to operate with two turbines, to help fill Green Lake prior to generation outage. Generation outage starts on August 16, 2014, eight days earlier than previously assumed. In each of these 36 simulations, D4 diesel is run 10 hours each day during the Generation Outage at an average output of 3 MW.

Note this is a shift in operating policy from June. We now have a high assurance that there will be adequate water in Blue Lake for turbine-generator testing in October, 2014. Our goal over the next three weeks is to shift water into Green Lake, so it is as full as the weather allows when the Generation Outage starts. The likelihood of spill at Green Lake is now about 44% in late 2014.

Blue Lake water level simulation

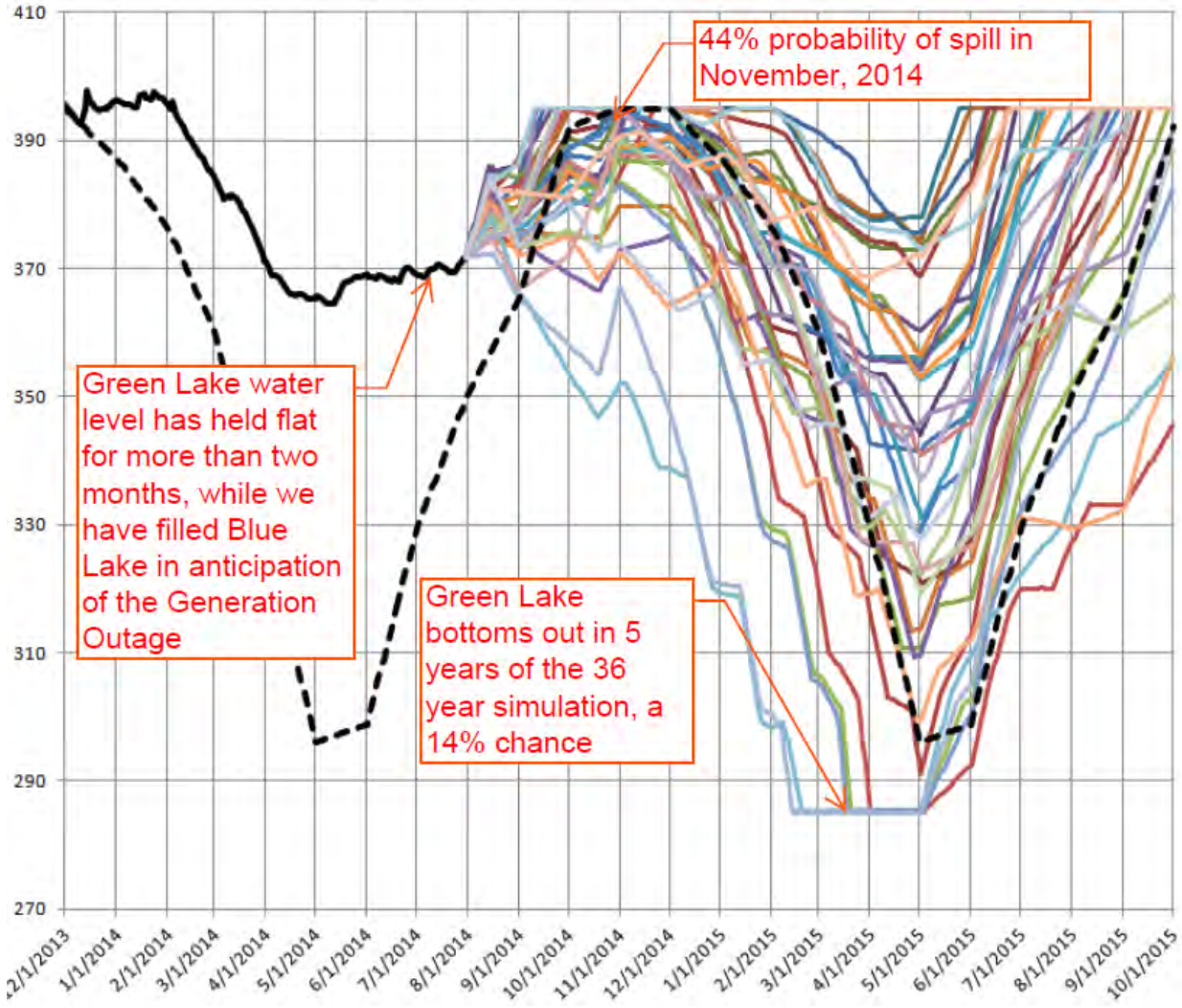


Total diesel generation predicted by this simulation:

Period	Dates	MWH of diesel	Cost at $0.45 per kWH
Spring 2014	-	0	$0
Generation Outage	Aug 16 – Oct 18, 2014	1,626(1)	$732,000
Spring 2015	Mar 30 – June 16, 2015	1890 (ave)	$850,000 (ave)

(1) Assumes approx 30 MWH per day for daily peaks, scheduled manually in model

(2) Green Lake water level simulation



Note to Assembly

The Blue Lake water level is expected to be very adequate for testing of the new powerplant in October 2014. If we have average precipitation in the winter of 2014-2015 we may need very little supplemental diesel generation in the spring of 2015.

Appendix 1 to Monthly Update for City Assembly

July 31, 2014

Summary of Temporary Filtration Project Status

Alternative Water Source Investigation Filtration (Blue Lake Project):

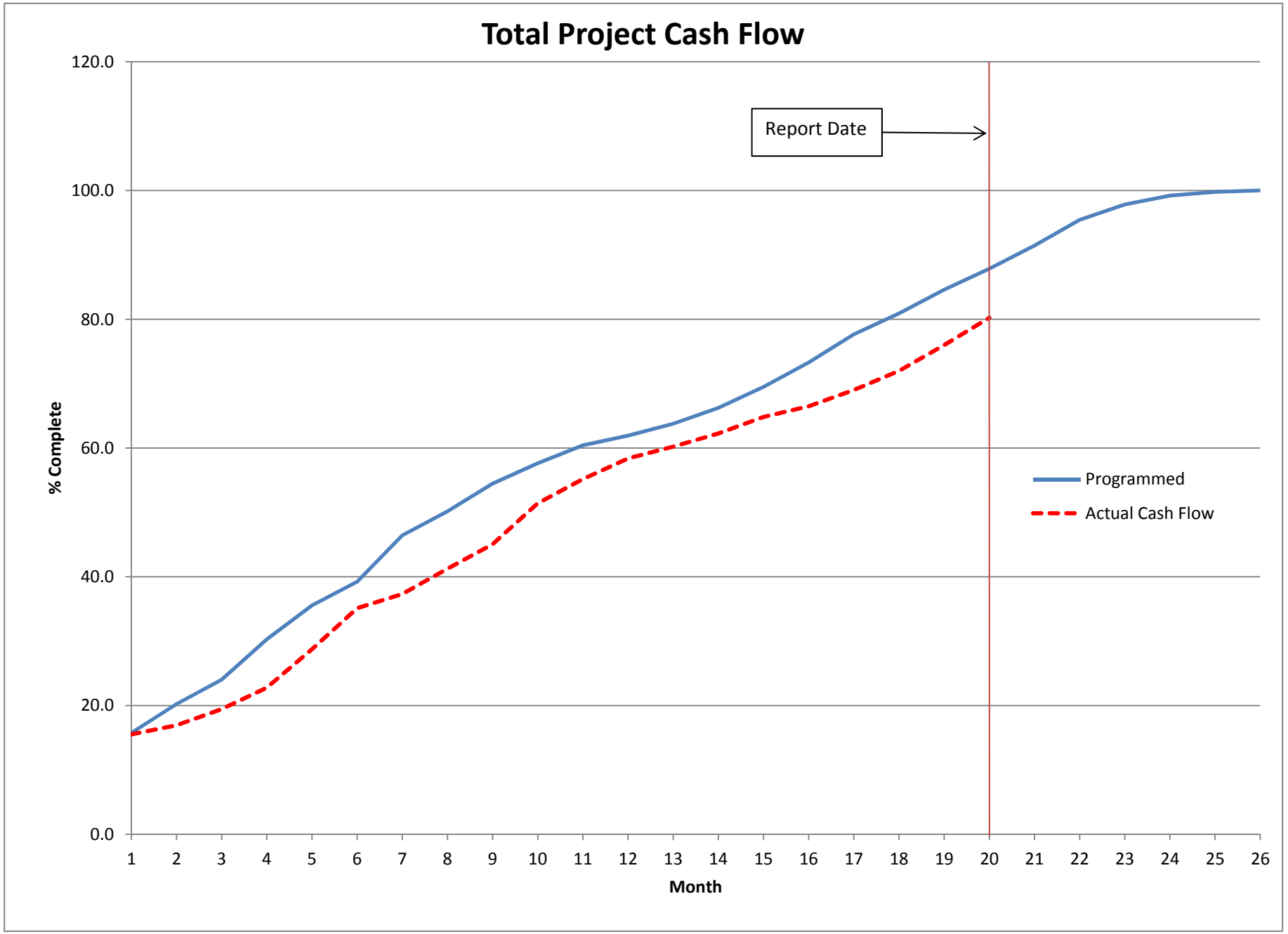
Barnard will be providing the Temporary Water Filtration Plant at Indian River as a Change Order to Contract 9.

The Temporary Filtration Plant is on line at a limited flow as planned.

The Assembly approved additional funding for this work February 18. The total change order amount for Phase I & II is $3,106,790.00.

Summary of Titan 130 Diesel Turbine Project Status

- Titan turbine was started successfully and the basic engine checks (over speed, ramping, etc.) were completed.
- Relay testing complete to pre-energization level by (EPS).
- Technical questions raise by CG transformer field tests are being resolved. This is our current delay problem.
- Line voltage "proving" of all of the new Titan substation tie in circuit is being planned with final grounding and device field labeling in progress.
- Expect all testing done and Titan ready for load testing on the 69kV line by week of August 11.
- Load testing plan to be developed by SED Generation Manager working with the Operating and Line Crews. Plan approval by the Utility Director and the Blue Lake Project Manager.
- JWA, Inc. will try to converge all SOLAR/EPS/SED participants for the planned load testing, and standby to assist for technical problems.


Total Project Cash Flow
120.0
100.0
80.0
60.0
40.0
20.0
0.0
% Complete
Report Date
Programmed
Actual Cash Flow
1
2
3
4
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Month

BLUE LAKE EXPANSION PROJECT MONTHLY CONSTRUCTION REPORT

For Period Ending: JULY 31, 2014
Prepared by: BARNARD CONSTRUCTION COMPANY, INC.

1. *Progress of work*

Environmental Protection

Barnard continues to install erosion and sediment control measures as required at the dam site, storage yard at Sawmill Cove Industrial Park and powerhouse area as ground disturbing activities continue. BMP maintenance and repair is ongoing as needed throughout the project site.

Gate Chamber Concrete

No work in July.

Gate House

NAES and Schmolk have continued installing the electrical and mechanical gear inside the structure and down the gate shaft. Barnard installed the fixed wheel gate hoist. Commissioning of the gate house electrical and mechanical systems was started in July.

Dam Raise

Barnard crews completed 2 major concrete placements on the dam. M2 now stands at EL 428 and M6 stands at EL 425. We continued formwork and rebar installation for the first spillway lift as well as the crest slab for M6 and the M2 parapet wall.

Crux Subsurface continued curtain grouting on the right and left abutments of the dam.

Scour Wall

Crux Subsurface completed installation of the micropiles and the post-tensioned rock anchors. BCCI completed installation of the scour wall concrete head beam and is nearly complete with backfill behind the scour wall.

Powerhouse

NAES Power Contractors has continued installation of the electrical gear including the low voltage and medium voltage switchgear. NAES completed the major electrical installations on Unit #3 and began dry commissioning this unit as well as other balance of plant electrical items.

NAES has also continued installation of the Turbine-Generator equipment on all three units.

ASRC has completed the concrete placements for the afterbay weir and has begun installation of the misc. metals for the small bulkhead gate and stop logs. ASRC also continued work on the minor concrete structures around the powerhouse including Station Service transformer pads, standby generator pad and afterway retaining wall curb.

Penstock

No work completed on Penstock in June.

Switchyard

No work in the switchyard in July.

Temporary Filtration Plant

Barnard continued final punchlist items and startup testing on the Temporary Filtration Plant with CBS and CH2MHill.

2. *Status of Construction*

Status of Ongoing Major Construction Activities

- Powerhouse Excavation – 98% complete
- Powerhouse Steel Building – 98% Complete
- Powerhouse Roof – 99% complete
- Precast Wall Panels – 99% complete
- Dam Raise –53 of 53 monolith blocks placed.
- Dam Spillway – 0 of 9 placements
- Dam Parapet Walls and Crest Slab – 1 of 15 placements
- Left Abutment Thrust Block and Cutoff Wall – 8 of 9 placements completed.
- Powerhouse Concrete – 3230 CY placed to date.
- Gate Chamber Concrete – Complete.
- Intake Structure Concrete – Complete.

See Section 1 above for construction work completed in July 2014.

3. *Construction Issues*

No major construction issues in July 2014.

4. *Contract Status*

Barnard's key subcontractors for the Blue Lake Project are as follows:

Name	Scope
ASRC McGraw Constructors, LLC	Powerhouse Construction
Southeast Earthmovers, Inc.	Excavation
Blue Lake Tunnelers	Underground Construction
Crux Subsurface	Foundation Grouting, Micropiles, PRW's
O'Neill Surveying and Engineering	Land Survey
Baranof Materials Test Lab	Quality Control
NAES Power Contractors	Turbine-Generator Installation/Electrical

Barnard's key material suppliers for the Blue Lake Project are as follows:

Name	Scope

ASRC McGraw Constructors, LLC	Concrete Supply
Gerdau Reinforcing Steel	Concrete Reinforcing Steel
Haskell Corporation	Misc. Metal Fabrication

5. *Critical Events and Dates*

Please see attached summary progress schedule updated July 31, 2014.

Critical Dates for the Blue Lake Project are as follows:

Milestone	Date	Required Status of Construction
1	07/01/2013	Drainage Tunnel Complete – Completed May 6, 2013
2	08/19/2013	Initial Intake Excavation Complete – Completed July 21, 2013
3	06/04/2014	Intake Structure Complete – Completed June 4, 2014
4	08/24/2014	Ready for Generation Outage
5	61 days after start of Generation Outage	Substantial Completion of 1st Blue Lake Turbine Generator
6	91 days after start of Generation Outage	Substantial Completion of 2nd Blue Lake Turbine Generator
7	80 days after start of Generation Outage	Substantial Completion of Fish Valve Unit

6. *Reservoir Filling*

7. *Foundations*

Not applicable for this report.

8. *Sources of Major Construction Material*

The City and Borough of Sitka will be providing most of the major construction materials for this project. Please see list below.

Contract No.	Vendor	Scope of Supply
1	Gilbert Gilkes and Gordon, Ltd.	Turbines and Generators
2	Myers	12.47 kV Switchgear
3	Linita Design and Manufacturing	Bulkhead Gate, Fixed Wheel Gate and Hoist
4	T Bailey, Inc.	Penstock and Manifold
5	WEG Electric	69kV Transformers
6	Benchmark Industrial Services	Powerhouse Bridge Crane
7	CHG Building Systems	Powerhouse Building

Materials Received this Period:

Misc. Metals/Rebar – spillway rebar.

9. *Material Testing and Results*

Concrete testing is ongoing for the dam raise, gate chamber and powerhouse concrete.

Compaction testing was completed for the gatehouse retaining wall.

No issues have been encountered to date.

10. *Instrumentation*

Not applicable for this report.

11. *Photographs*

Figure 1: Dam Raise

Figure 2: Left Abutment Curtain Grouting

Figure 3: Powerhouse Turbine Floor

Figure 4: Gate House Roof and Hatch

Figure 5: Completed Reservoir Access Road

Figure 6: Intake Structure

Figure 7: Dry Commissioning Unit #3 Turbine Control Cabinet

12. Erosion Control and Other Environmental Issues

Barnard is continuing to install the required environmental protection measures on the project site ahead of ground disturbing activities. Ongoing maintenance of dewatering system at powerhouse excavation site will be required to maintain water quality in Sawmill Creek.

13. Other Items of Interest