City & Borough of Sitka
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BLUE LAKE EXPANSION PROJECT

MONTHLY UPDATE FOR CITY ASSEMBLY

Report No. 18 Month ending May 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

- May 18 – Gave public tour of project.
- May 28 – Conducted preconstruction meeting with ASRC McGraw Constructors (AMCL) for Contract 8 Reservoir Debris Management.
- May 29 – Bruce and EPS completed the commissioning of the switchyard control building, control panels and relays. City and Borough of Sitka (CBS) control work in the switchyard is now done, until the No. 2 switchyard is energized.
- May – Dam plunge pool was pumped out and prepared for scour wall installation.
- May – Crux Subsurface (Crux) began working night shift on the dam curtain grouting and completed 3 holes on the right abutment. There will be a total of at least 9 holes on the right abutment and 17 holes on the left abutment. No geological surprises have been discovered, however, the contractor has had difficulty with the drilling.
- May – Barnard, NAES, and Schmolk continue the build out of the intake gate house.
- May – Barnard has tested the fit of the fixed wheel gate and will complete the intake structure June 4 as planned.
- May – Schmolk continued the mechanical build out of the powerhouse.
- May – Conducted multiple generating equipment commissioning meetings with contractors and suppliers. Progress is slow.
- May – AMCL removed transformers from the No. 1 side of the switchyard and have begun constructing the transformer foundation and oil containment pit.
- May – NAES performed the following tasks related to the turbine generator installation:
    - Completed secondary concrete placement around draft tubes
    - Completed alignment of all 3 turbine spiral cases
    - Installed all inlet valves and welded all turbine inlet pipes to the penstocks
    - Completed alignment of all generator sole plates
    - Located all Turbine generator control panels in powerhouse
    - Moved all stators and rotors to powerhouse
    - Completed alignment of generator, bearings, exciter and runner in BL3
    - Modified BL5 bearing pedestals to correct error in the soleplate alignment.
- May – NAES has completed the installation of conduit and cable tray in and outside the powerhouse.
- May – NAES began pulling wire in cable trays.

- May – NAES completed the installation of the low voltage and medium voltage switchgear in the powerhouse.
- May – Barnard placed CDF around the new penstock from the turbine inlet pipes up to the water treatment plant access road.
- May - Barnard began erecting the spillway form support structure for the dam spillway construction.
- May – Completed the mid-level outlet pipe installation at the dam.
- May – Barnard showed good progress on the dam construction completing 6 block placements TO DATE – 42 of 53 blocks placed on the Dam Raise, 8 of 9 placements completed on the Left Abutment and Cutoff Wall and 3230 CY of 3350 CY have been placed at the powerhouse. Concrete tests have been better than required by the specification.

COST SUMMARY - updated 5/31/2014

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	$26,892	$10,705,022
Contract 2 - Switchgear	$647,672	$0	$584,488
Contract 2A/2B - SS/Raw Water Switchgear	$300,000	$0	$208,547
Contract 3 - Gates and Hoist	$780,185	$0	$703,376
Contract 4 - Penstock	$836,315	$0	$795,778
Contract 5 - 69 kV Transformers	$603,406	$0	$543,130
Contract 6 - Bridge Crane Equipment	$270,518	$0	$245,246
Contract 7 - Steel Building	$1,139,321	$0	$1,084,397
Contract 8, Debris Management**	$2,258,714	$0	$1,412
Contract 9, General Construction	$93,901,406	$3,823,204	$63,788,902
Temporary Filtration**	$1,651,424	$54,143	$291,042
Diesel Fuel	$1,260,000	$0	$0
Remaining Project Costs		$0	$0
License Amendment	$1,400,000	$6,021	$1,236,346
Engineering	$9,498,393	$2,323	$11,856,563
Construction Management	$8,076,201	$61,414	$5,618,351
City Performed Work	$1,495,000	$111,675	$1,959,384
Incentive Payment	$1,600,000	$0	$0
Cost of Bond Issuance/Reserve Account	$3,500,000	$0	$0
TOTALS	**$140,792,262**	**$4,085,672**	**$99,621,984**
ESTIMATED TOTAL PROJECT COST	**$145,250,333**		

*Paid to Date includes unpaid retainage

COST CHANGES THIS MONTH

- A work change directive has been issued to install a rock trap in the tunnel during the generation outage.
- A work change directive has been issue to replace culverts supplied by the USFS on the Blue Lake road

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 #5	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#4	11-22-2014/
Intake Structure complete	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 June:
    - Meet Contract Milestone No. 4 – Intake Structure complete, by June 4, 2014
    - Complete the powerhouse control room build out.
    - Complete the installation and energize Transformer no. 1 (T1) in the switchyard.
    - Continue turbine generator installation of Units 3, 4, and 5
    - Continue placing monolith blocks on dam
    - Begin placing spillway on dam
    - Begin scour wall construction in the dam plunge pool
    - Continue curtain grouting on the dam's rock abutments
- The CM team and Electric Department continue working on the City-performed work tasks to ensure these activities are completed on time.
- Project commissioning plans must be completed. This is a high priority and lags behind schedule.
- Barnard is erecting the support system for spillway forms.

OTHER ITEMS OF INTEREST

- The warmer than normal weather this winter has been good for construction and put more water in the reservoirs. We are managing the reservoirs to store additional water in Blue Lake for use following the generation outage. This additional water will decrease the amount of diesel generation required substantially. We will be making judgments on what appears to be a lack of snow pack.
- The progress on the dam work improved during May.
- The contractor has progressed well on the intake construction this month. This has set us up well for water management related to the generation outage.
- A FERC Board of Consultants (BOC) meeting is scheduled for June 25 and June 26.
- The CM team is developing a contraction joint grouting plan for review by Hatch and the BOC.
- An executive partnering session is scheduled for June 12.
- The Blue Lake Project was featured in an article in Energy & Infrastructure magazine and internationally in India Power Journal.

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 (May 23, 2014) schedule, the critical start of the 2014 Generation Outage is shown starting on August 24, 2014, zero days ahead of schedule. The powerhouse dry testing, and curtain grouting are the biggest areas of concern for meeting this date.
CURRENT RISK: MODERATE

Generation outage schedule: The commissioning plans must be prepared to properly execute the generation outage and the current schedule calls for only 17 days of wet commissioning. 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: It is now essentially certain that the tunnel intake structure will be completed on schedule. We are now decreasing the flow through the Blue Lake powerhouse to fill Blue Lake and balance water levels between Blue Lake and Green Lake. There is ample water in both lakes. There is now zero need for added diesel generation in the early summer of 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 is currently being installed at Indian River. This system must be in place and fully operational prior to the Generation Outage. Any delay in the filtration plant beyond August 23, 2014, will delay the Project. Barnard will be providing the filtration project as a change order to Contract 9. The filtration project is being managed by McMillen LLC and CH2M Hill has completed the final design. The City Water Department will operate the plant with assistance from CH2MHILL and the supplier.
CURRENT RISK: MODERATE [*The current status of the filtration system design and planned construction is described in Appendix 1. If the filtration system is constructed as planned, we will be on track for the Expansion Project.*]

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 began erecting the spillway form support structure for the dam spillway construction. Barnard showed good progress on the dam construction completing 6 block placements

Figure 2. Drainage Tunnel and Scour Wall, Crux Subsurface (Crux) began working night shift on the dam curtain grouting and completed 3 holes on the right abutment. There will be a total of at least 9 holes on the right abutment and 17 holes on the left abutment. No geological surprises have been discovered, however, the contractor has had difficulty with the drilling.

Figure 3. Intake Portal and Right Abutment, Barnard has tested the fit of the fixed wheel gate and will completed the intake structure June 4 as planned.

Figure 4. Gate House Location, Barnard, NAES, and Schmolk continue the inside build out of the gate house.

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

Figure 6. Lower Portal Area, Barnard placed CDF around the new penstock from the turbine inlet pipes up to the water treatment plant access road.

Figure 7. Powerhouse Site, NAES has completed the installation of conduit and cable tray in and outside the powerhouse. AMCL placed forms for the raw water intake.

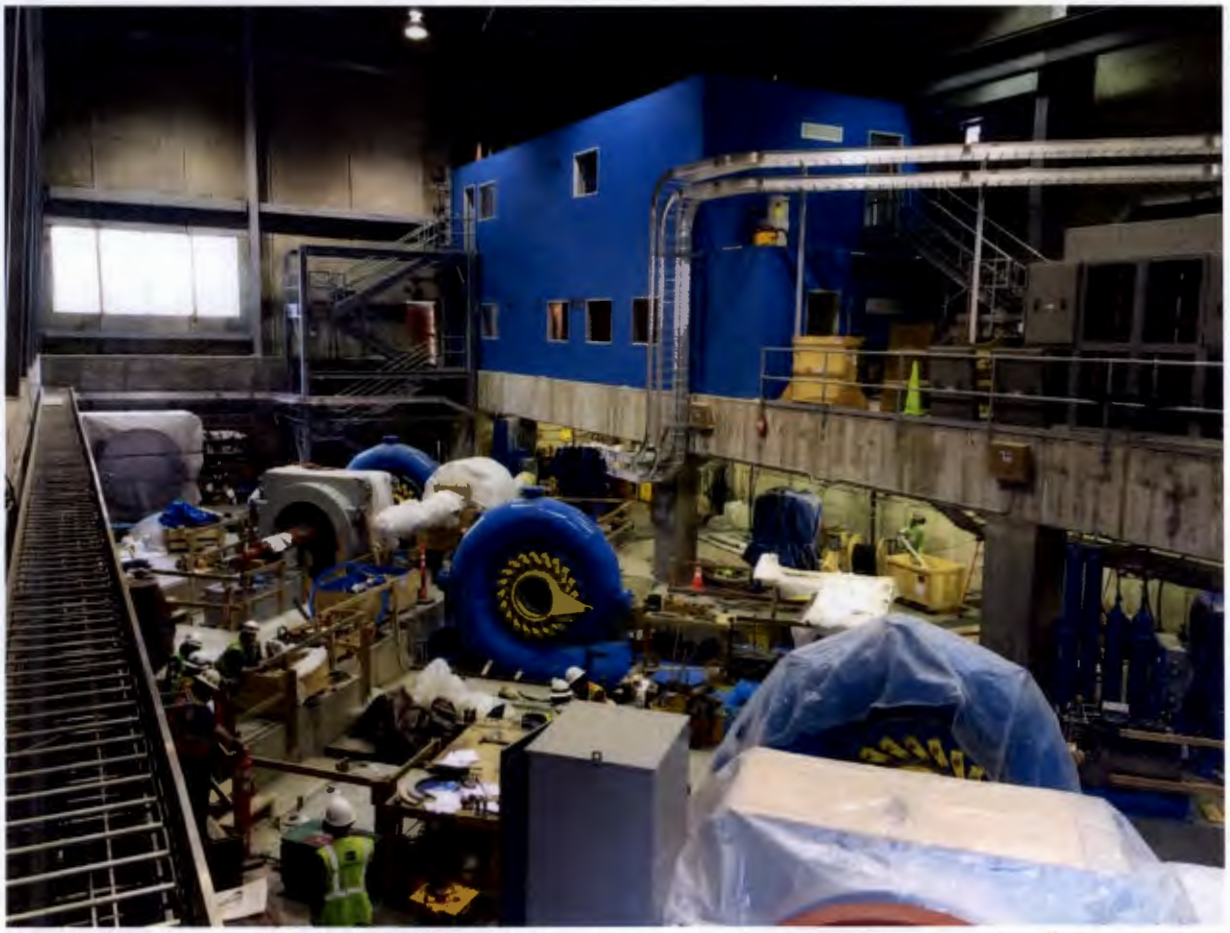


Figure 8. Powerhouse Interior, NAES performed the following tasks related to the turbine generator installation: completed secondary concrete placement around draft tubes, completed alignment of all 3 turbine spiral cases, installed all inlet valves and welded all turbine inlet pipes to the penstocks, completed alignment of all generator sole plates, located all Turbine generator control panels in powerhouse, moved all stators and rotors to powerhouse, completed alignment of generator, bearings, exciter and runner in BL3, and modified BL5 bearing pedestals to correct error in the soleplate alignment. NAES also completed the installation of the low voltage and medium voltage switchgear in the powerhouse.

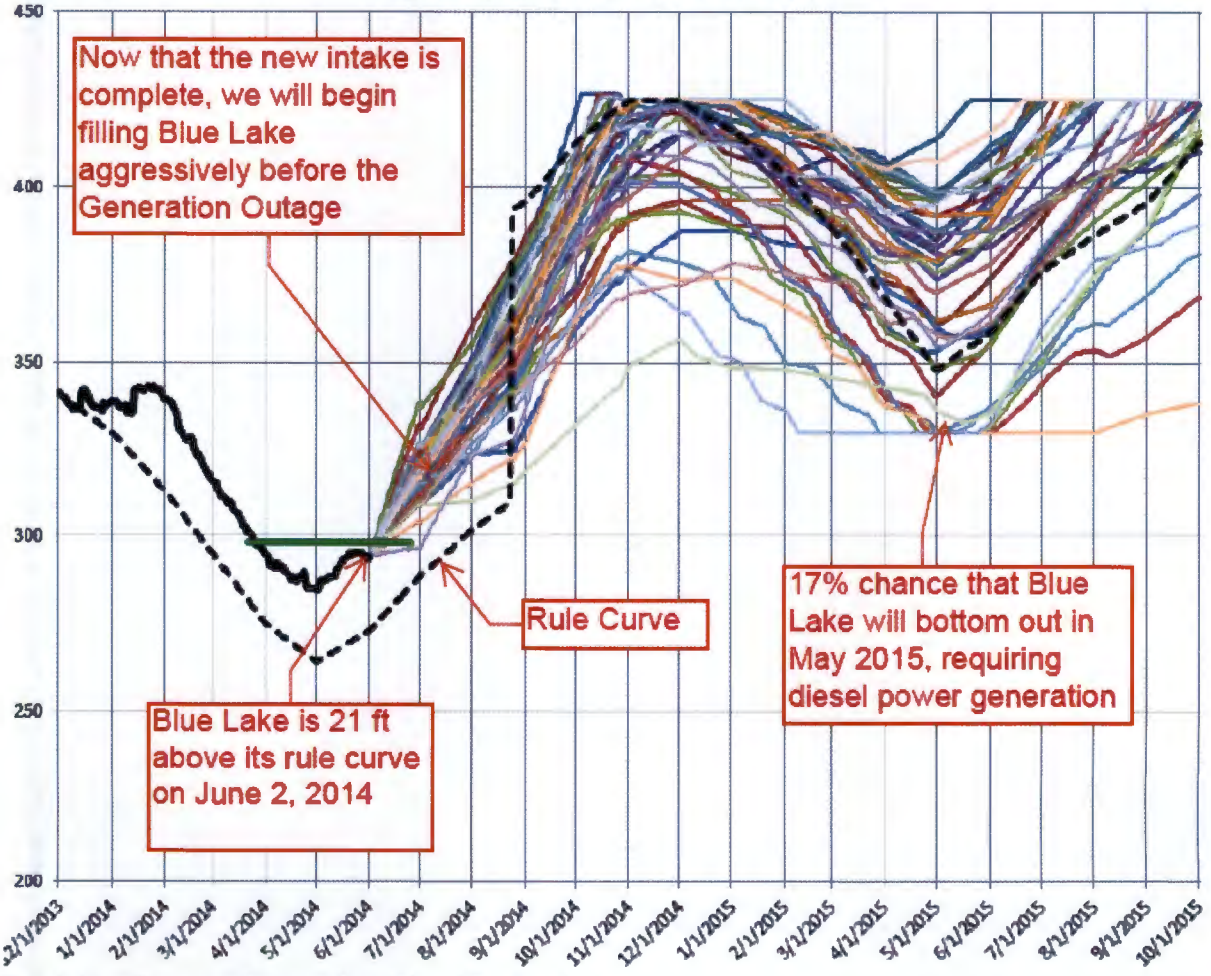
Lake Level Forecast

This June 2, 2014 forecast reflects the completion of the tunnel intake structure in early June and the shift to single-unit operation at Blue Lake to store water in Blue Lake.

Case 23. Start June 2, 2014. Multi-year simulation using 36 year hydrologic record. 117,000 MWH system load. Interruptible loads remain on. Blue Lake powerhouse cut back to one turbine starting June 2. 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 simulation assumes 90% of average inflow, corresponding to about a 1 in 10 year dry inflow. This reflects the lack of snow pack observed in the Blue Lake and Green Lake basins.

Blue Lake water level simulation

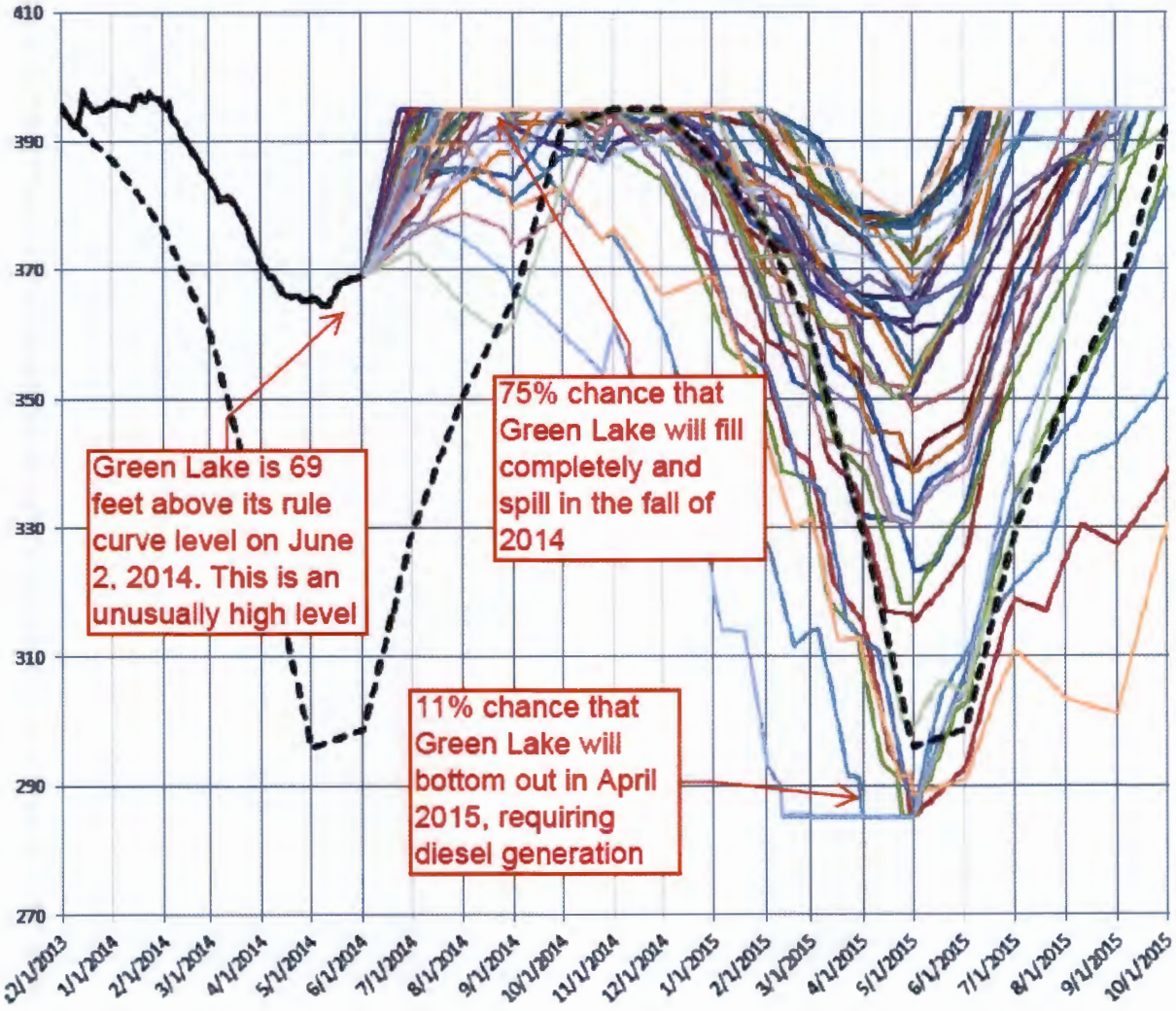


Total diesel generation predicted by this simulation:

Period	Dates	MWH of diesel	Cost at $0.45 per kWH
Spring 2014	-	0	$0
Generation Outage	Aug 26 – Oct 26, 2014	1,627(1)	$732,000
Spring 2015	Mar 30 – June 16, 2015	936 (ave)	$421,000 (ave)

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

Green Lake water level simulation



Note to Assembly

We are reaching an important risk milestone in early June. In May we were operating the Blue Lake Project to hold its lake level down so that the Contractor could finish the tunnel Intake Structure. This structure will be complete by its milestone date of June 4, 2014. We are now able to proceed with filling Blue Lake this fall in advance of the planned August 24 to October 26 Generation Outage.

Had a large storm occurred in late May, it could have interfered with construction of the Intake Structure. If that had happened it would have been a costly weather event for the City. That risk is now behind us.

Appendix 1 to Monthly Update for City Assembly

May 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.

- Barnard signed an agreement with Pall on the lease of the filter units.
- CH2MHill completed the final design and will be assisting with startup.
- McMillen will perform the construction management.
- The City will provide plant operation with possible assistance from the supplier.
- The piping and pumps are installed.
- Barnard is beginning the commissioning phase.

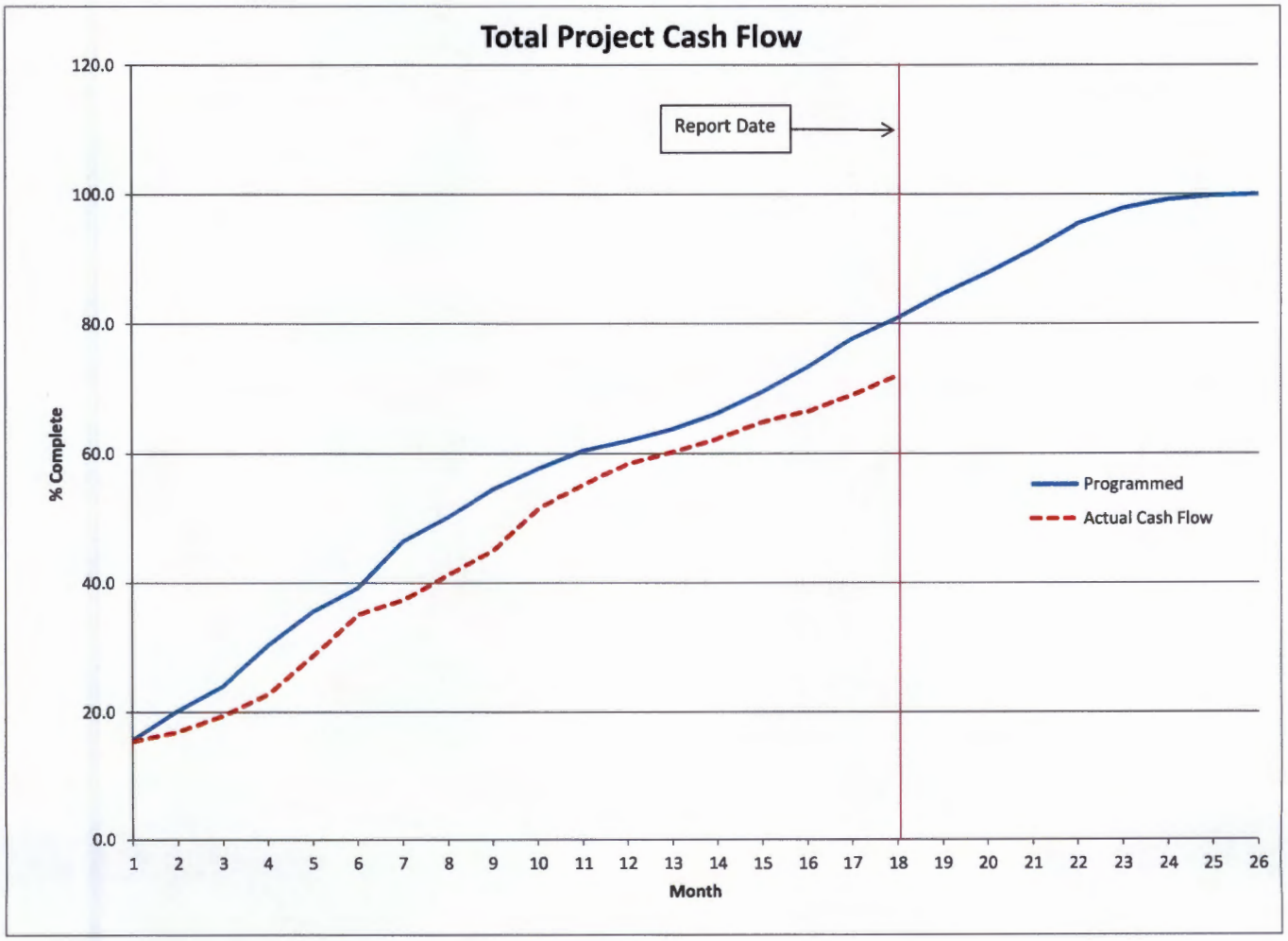
The Assembly approved additional funding for this work February 18. The total change order amount for Phase I & II is $3,106,790.00. The majority of the submittals have been submitted and approved.

Permitting is ongoing with ADEC and DNR. Everything is on track currently for acquisition of all required permits prior to operation.

Summary of Titan 130 Diesel Turbine Project Status

- Assembly is complete of the Titan Turbine Generator.
- Fuel tanks are in place and will be complete by end of May.
- Substation work is complete except for one late arriving device, not critical.
- Substation control work is in progress.
- Titan training school by Solar is scheduled June 2-6.
- Titan commissioning complete by late June.
- All acceptance tests complete and Titan ready for service by July 15.

Figure 1. Titan 130 Diesel Turbine


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
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Month

BLUE LAKE EXPANSION PROJECT MONTHLY CONSTRUCTION REPORT

For Period Ending: MAY 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

Barnard completed the final concrete placements in the gate chamber in May. The gate guides, sill beam and lintel were also set, aligned and cast in second stage concrete. We have started installing the T-Rails and ladder up the gate shaft.

Gate House

NAES and Schmolk have continued installing the electrical and mechanical gear inside the structure and down the gate shaft.

Intake Structure

Barnard crews have completed all concrete placments for the intake structure, including second stage concrete around the gate guides, lintel beam and sill beam. We anticipate setting the Trashracks and bulkhead gate in early June ahead of June 4 milestone date.

Dam Raise

Barnard crews completed 6 major concrete placements on the dam, mostly focused on Monoliths 3 through 5. These monoliths are now at Elevation 395, except M4.

Crux Subsurface remobilized to the site in late April and has started curtain grouting on the right abutment of the dam. They have completed 3 of 11 holes on the right abutment.

Scour Wall

Barnard dewatered the plunge pool in early May and completed preparation for the installation of Micropiles in early June. Work completed includes a concrete rate slab at EL 155.

Powerhouse

ASRC McGraw completed the control room and offices areas drywall, painting and ceiling installation. ASRC has delivered the casework for the control room and will begin assembly in early June. ASRC completed both second stage concrete placements for Unit #3 and the draft tube encasement for Unit #4 .

Schmolk Mechanical continues installation of all powerhouse plumbing and has continued installation of the HVAC system.

NAES Power Contractors has continued installation of the electrical gear including the low voltage and medium voltage switchgear. NAES has also started pulling cables from the major equipment to the LV and MV gear.

NAES has also continued installation of the Turbine-Generator equipment on all three units. Work completed in May includes setting and alignment of Unit #3 generator equipment, alignment of Unit #4 draft tube and generator sole plates, and they have started setting and alignment of the Unit #5 generator.

ASRC has also started concrete work for the raw water pump station. They have completed the floor slab and wall placements.

Southeast Earthmovers completed a portion of the powerhouse backfill in mid-May and has prepared the subgrade for the station service transformers. NAES has the conduit and grounding installed for these transformers as well.

Penstock

Barnard crews completed installation of penstock through Segment 8 in May. This work includes all welding, inspection and coating work in addition to the CDF backfill. Anchor Block #3 was also completed in May. BCCI also completed the pipe work for the 24" penstock drain line into the dissipation chamber.

Switchyard

ASRC and NAES started work in the Blue Lake Switchyard in late April. Work completed to date includes demolition of the existing transformers for T1 installation. Conduit and grouting have been installed for the new transformer pad. ASRC is currently completing the concrete work for the T1 transformer foundation and containment.

Temporary Filtration Plant

Barnard continued installation of the piping, pumps, tanks and filtration trailers for the Indian River Temporary Filtration Plant. We anticipate completing installation of the plant in early June and initiating the startup and commissioning process.

2. *Status of Construction*

Status of Ongoing Major Construction Activities

- Powerhouse Excavation – 95% complete
- Powerhouse Steel Building – 98% Complete
- Powerhouse Roof – 98% complete
- Precast Wall Panels – 99% complete
- Dam Raise –42 of 53 monolith blocks placed.
- Dam Spillway – 0 of 9 placements
- Dam Parapet Walls and Crest Slab – 0 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 – 212 CY placed to date.

- Intake Structure Concrete – 251 cy placed to date.

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

3. Construction Issues

Unit #5 Generator Sole plates were misaligned in their initial set. NAES/Gilkes/HIEC have been working to complete a solution to this issue that involves plugging the existing anchor holes in the drive end bearing and stator frames.

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 May 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
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:

Intake Structure trashracks were received in May.

Misc. Metals/Rebar - Barnard has been receiving misc. metals and rebar for various project features throughout the month of May.

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: Powerhouse Progress.

Figure 2: Unit 3 Rotor Alignment

Figure 3: CDF Backfill on Lower Penstock

Figure 4: Duct Bank and SST Foundation

Figure 5: T1 Transformer Foundation

Figure 6: Dam Raise and Spillway Shoring Deck

Figure 7: Intake Structure

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*