City & Borough of Sitka
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BLUE LAKE EXPANSION PROJECT

MONTHLY UPDATE FOR CITY ASSEMBLY

Report No. 19 Month ending June 30, 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

- June 4 – Barnard completed the new tunnel intake structure on time, Project Milestone No. 4.
- June 4 – The Electric Department reduced generation at the Blue Lake project to help fill the reservoir before the Generation Outage (scheduled to start in late August, 2014).
- June 12 – An executive partnering session was held in Sitka, with managers from the City, McMillen, Barnard and its subcontractors.
- June 16 – Jacobs completed the dam contraction joint grouting plan in preparation for the BOC meeting.
- June 19 – ASRC McGraw Constructors (AMCL) completed the tree felling activities in the burn area at the east end of Blue Lake. This work is included in Contract 8, Reservoir Debris Management.
- June 23-26 – A WEG site representative was on site to inspect the installation of 69 kV Main Transformer No. 1.
- June 24 and 25 – A FERC Board of Consultants (BOC) meeting was held in Sitka.
- June 27 – Electrical installation and testing of main transformer T1 was completed in the Blue Lake switchyard.
- June 27 – Barnard completed the roof and roof hatch at the Gate House.
- June 30 – The new intake structure is 50% submerged.
- June – NAES performed the following tasks related to the turbine generator installation:
    - Unit 3 is fully installed and ancillary mechanical and electrical equipment is 50% complete.
    - Unit 5 is 70% installed and ancillary equipment is 10% complete.
    - Unit 4 is 40% installed and ancillary equipment is 10% complete.
    - Continued to install control cables
- June – NAES has pulled all of the 12.5 kV cables.
- June – NAES has substantially completed the control room so the City is able to install the control station and SCADA equipment.
- June – EPS completed the testing of the switchyard control panels and relays.
- June – EPS began testing MV switchgear CTs and relays.
- June – Barnard showed good progress on the dam construction completing 8 block placements TO DATE – 51 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.

- June – Crux completed one curtain grout hole on the right abutment. A total of 4 out of 11 have been completed to date.
- June – Crux completed three curtain grout holes on the left abutment. A total of 3 out of 19 have been completed to date.
- June – Crux completed all of the micro piles required by the contract and began drilling for the placement of rock anchors.
- June – Barnard has completed about 50% of the reservoir access road.

COST SUMMARY - updated 6/30/2014

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	$41,321	$10,746,343
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	$27,052	$272,298
Contract 7 - Steel Building	$1,145,712	$0	$1,084,397
Contract 8, Debris Management**	$2,258,714	$0	$1,412
Contract 9, General Construction	$93,901,406	$5,094,265	$68,883,167
Temporary Filtration**	$1,651,424	$25,468	$316,510
Diesel Fuel	$1,260,000	$0	$0
Remaining Project Costs		$0	$0
License Amendment	$1,400,000	$35,480	$1,271,826
Engineering	$9,498,393	$2,211	$11,858,774
Construction Management	$8,076,201	$254,215	$5,889,513
City Performed Work	$1,495,000	$19,070	$1,978,454
Incentive Payment	$1,600,000	$0	$0
Cost of Bond Issuance/Reserve Account	$3,500,000	$0	$0
TOTALS	**$140,798,653**	**$5,499,083**	**$105,138,013**
ESTIMATED TOTAL PROJECT COST	**$145,256,725**		

*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 #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 July:
    - The start of dry commissioning is scheduled for July 7. All equipment required to operate the T/G No. 3 will be install so that testing of Unit 3 may begin.
    - Dam contraction joint grouting to elevation 403' will begin on July 18.
    - The first placement on the dam spillway is scheduled for July 1.
    - The scour wall is well ahead of schedule and should be completed in July.
    - Crux will be working on both abutments from two cranes to complete the curtain grouting.
    - 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.
- Project commissioning plans are now being developed by the Contractor and the City. This is a high priority.

OTHER ITEMS OF INTEREST

- We were able to raise the Blue Lake water level by 20 feet in June. This now means we likely will have a better than expected water level in Blue Lake, going into the coming winter. We will be making judgments on what appears to be a lack of snow pack.
- Good progress on the dam work continued in June. The difficult spillway construction has now started.
- The FERC staff and Board of Consultants did not raise any issues of concern in our June meeting. The next Board meeting is expected in early 2015, when the project is substantially complete.

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 (June 17, 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: A lot of work remains to be done in the powerhouse before 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: The tunnel intake structure was completed on schedule and Blue Lake has been filling during the month of June. Water levels in Blue Lake and Green Lake are nearly balanced at the end of June. We expect very adequate water levels during testing of the new turbine-generators in late 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 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: LOW [*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 showed good progress on the dam construction completing 8 block placements. To date 51 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.

Figure 2. Drainage Tunnel and Scour Wall, Crux completed all of the micro piles required by the contract and began drilling for the placement of rock anchors.

Figure 3. Intake Portal and Right Abutment, Barnard completed the new tunnel intake structure on time, Project Milestone No. 4. The new intake structure is now 50% submerged.

Figure 4. Gate House Location, Barnard completed the roof and roof hatch at the Gate House.

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

Figure 6. Lower Portal Area, No change this month.

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 ancillary mechanical and electrical equipment is 50% complete, Unit 5 is 70% installed and ancillary equipment is 10% complete, Unit 4 is 40% installed and ancillary equipment is 10% complete and continued to install control cables.

Other Items of Interest:

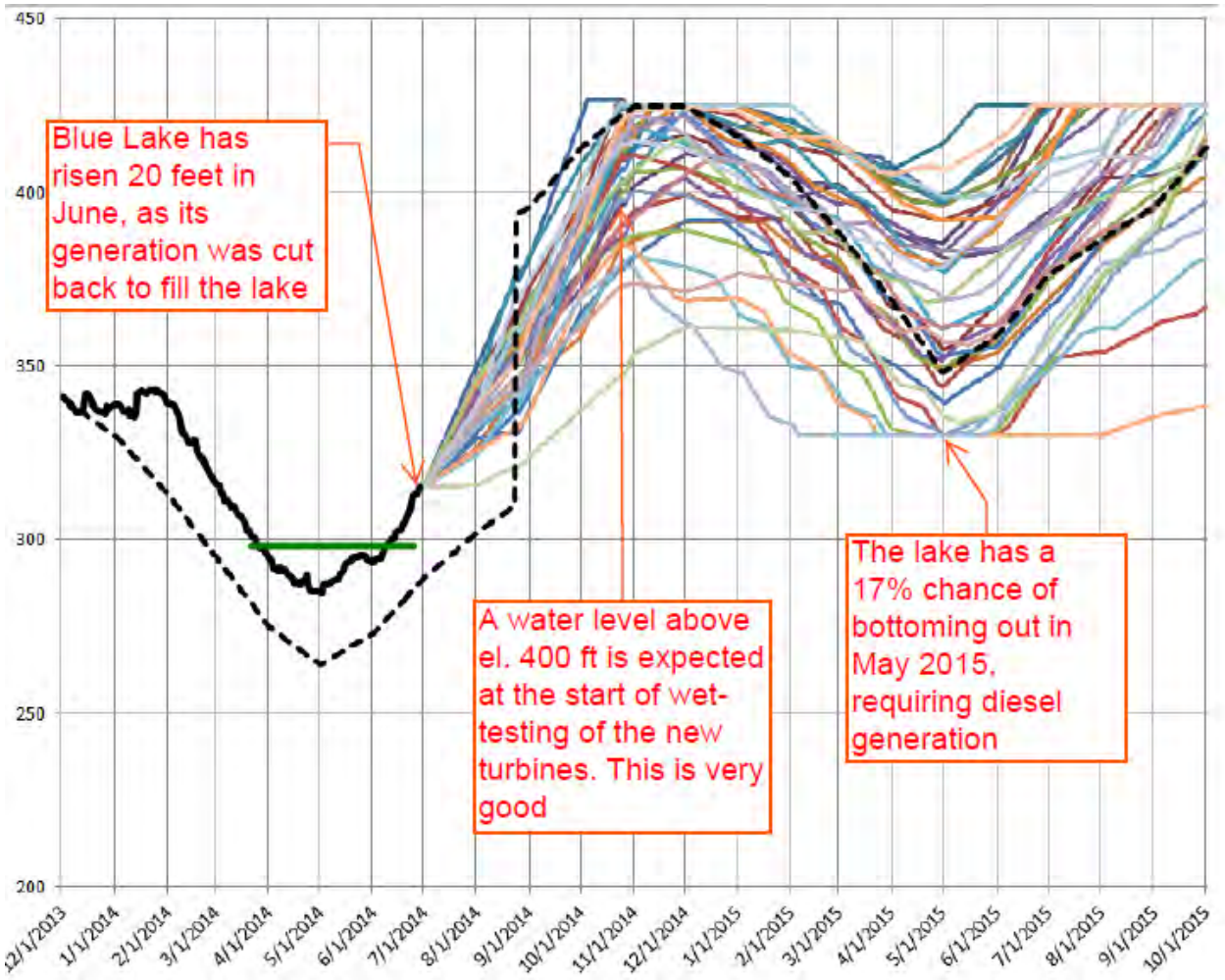
Figure 9. East End of Blue Lake, ASRC McGraw Constructors (AMCL) completed the tree felling activities in the burn area at the east end of Blue Lake. This work is included in Contract 8, Reservoir Debris Management. Photo by Phil Mooney, ADF&G.

Lake Level Forecast

Case 25. Start June 29, 2014. Multi-year simulation using 36 year hydrologic record. 117,000 MWH system load until August 26, 2014. Interruptible loads remain on. No water wasting and Blue Lake powerhouse cut back to one turbine. 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.

Based on these results, the generation load at Blue Lake is being increased to one unit at 3.0 to 3.5 MW. We are at a point where the likelihood of spill at Green Lake is near 50/50. We want to fill Green Lake as high as we can this fall, but not spill. So we are now striving for a 50/50 spill probability at Green Lake, as we move into the Blue Lake Generation Outage.

Blue Lake water level simulation

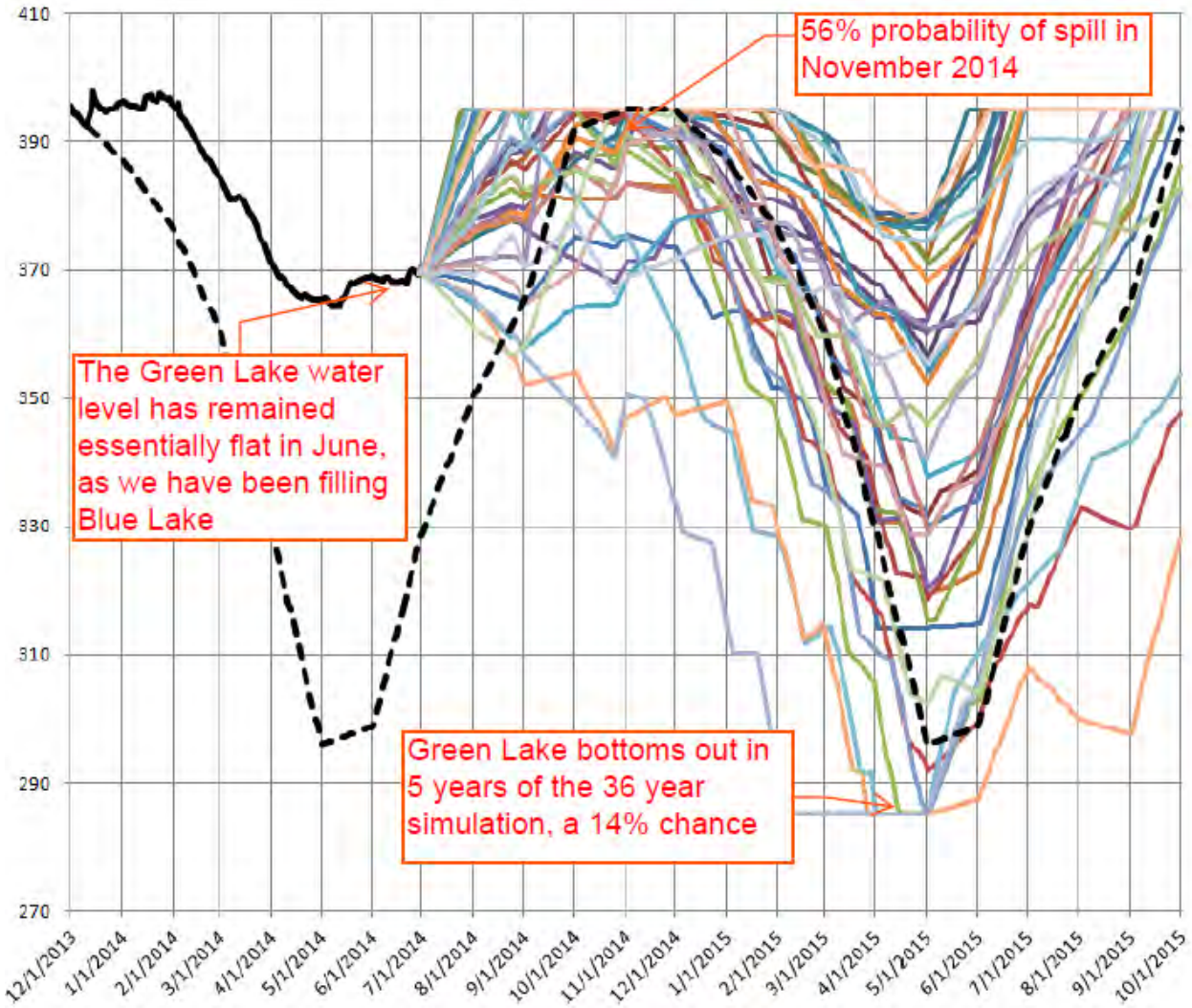


Total diesel generation predicted by this simulation:

Period	Dates	MWH of diesel	Cost at $0.45 per kWH
Spring 2014	-	0	$0
Generation Outage	Aug 26 – Oct 26, 2014	1,626(1)	$732,000
Spring 2015	Mar 30 – June 16, 2015	1215 (ave)	$547,000 (ave)

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

Green Lake water level simulation



Note to Assembly

While we can make all these fancy predictions, we are still basically at the mercy of the weather. A historic dry May helped us avoid high water levels in Blue Lake that could have interfered with construction of the new intake structure. More average rain and lake inflows during June allowed us to begin filling Blue Lake, after the intake was completed on June 4.

Note that all the forecasts above are based on 90% of average inflow (dry year conditions), due to the low snowpack observed in the Blue Lake and Green Lake basins. We will react to the weather and rain events, as they occur in July and August, adjusting our operating plan accordingly.

Appendix 1 to Monthly Update for City Assembly

June 30, 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 has completed the installation of the temporary Filtration equipment.
- CBS Water Department obtained all the necessary permits.
- CBS Water Department reestablished the water intake.
- CH2MHill is onsite to begin assisting with startup and testing of the plant.
- The City will provide plant operation with possible assistance from the supplier.
- Barnard has begun the commissioning phase. Filter units are tested individually before chlorine is added.
- The plant should be able to be put online July 20.

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

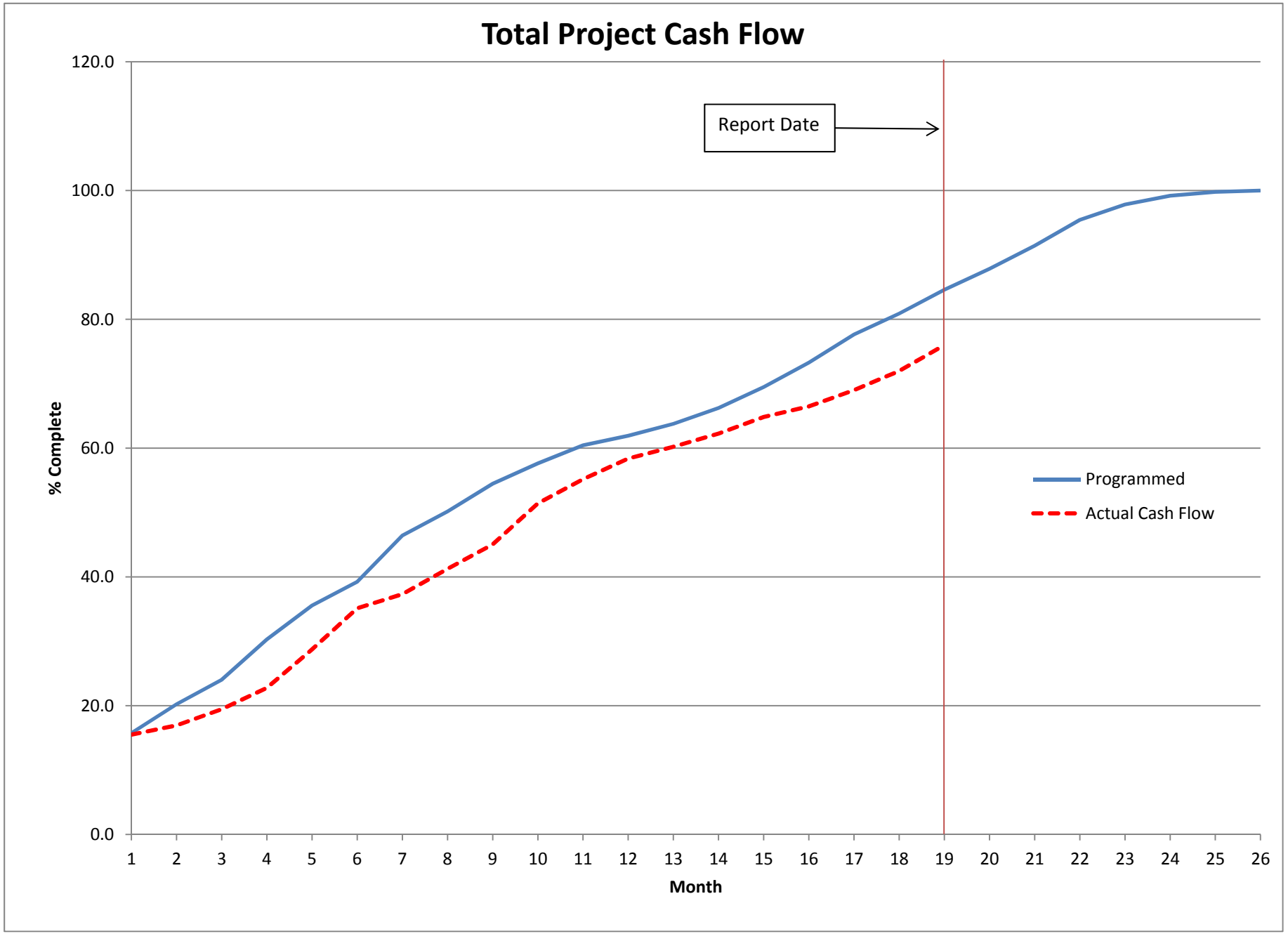
Summary of Titan 130 Diesel Turbine Project Status

- June 5 – Signed a long-term (3 year) maintenance agreement with Solar (Anchorage).
- June 19 – Conducted tour of the Titan project for the Assembly & Administrator.
- June 23 – Received approximately 17,000 gallons of fuel oil and began initial testing/commissioning of fuel oil auxiliary skid. Also energized & commissioned turbine start air compressors.
- June 23 – Solar Marketing Team (San Diego) were in town to film/document our project. This is the first permanent modular installation for Solar and will be a huge marketing tool for their future business plan.
- Critical item pending is delivery & installation of fuel forwarding pumps. Fuel system presently modified for fuel skid testing.
- Completed on-site factory training with Solar. Additional advanced training will be required as department begins to operate & maintain the turbine.
- Completed installation of Reverse Osmosis water treatment system for turbine water purge system.
- July 7 – Factory reps for CG Transformers & ABB 69kV circuit breakers will be on site to test/commission new transformer and circuit breakers.
- July 14 – Solar and a host of technical support engineers will be in town to begin testing & startup of turbine.

Figure 1. Titan 130 Diesel Turbine

City Supplied Work

Switchyard control panels fabricated by Bruce Belley, CBS Electric Department employee, for the Blue Lake Expansion project.


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: JUNE 30, 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 installation of the T-Rails and ladder in the gate shaft in June. The fixed wheel gate was also set at the bottom of the shaft.

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. The cable will be put on the drum and gate when the hoist is energized in July.

Intake Structure

Barnard completed the intake structure on June 4, 2014. This included installation of the trashracks and bulkhead. We expect to commission the bubbler lines from the gate house in early July and put the bubbler system into operation as the reservoir fills up.

Dam Raise

Barnard crews completed 8 major concrete placements on the dam. M3 – M5 are now at Elevation 403, and M2/M6 are at elevation 425.

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

Scour Wall

Crux Subsurface mobilized another crew to the site in early June to begin micropile installation. 13 micropiles are completed to date and 17 micropiles are drilled and cased awaiting grouting. Crux has also completed drilling for the rock bolts and post-tensioned rock anchors that are required in the plunge pool walls. We anticipate completion of the micropile work in early July followed by construction of the scour wall concrete beam.

Powerhouse

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 begun terminating cables for LV and MV switchgear as well as the major electrical cabinets for the Unit #3 Turbine/Generator.

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

ASRC has completed the concrete work for the raw water pump station and has started concrete placements for the afterbay weir. The station service transformer concrete pad was also completed in June.

ASRC also started Phase II of the powerhouse site utilities in late June.

Penstock

No work completed on Penstock in June.

Switchyard

T1 Transformer was installed and tested in June. The concrete work for this transformer is complete, and the site civil work will be completed in early July.

Temporary Filtration Plant

Barnard has nearly completed installation of the Temporary Filtration Plant. Testing and Startup activities has started and will continue into early July when we anticipate turning the plant over to the City for operation.

2. *Status of Construction*

Status of Ongoing Major Construction Activities

- Powerhouse Excavation – 98% complete
- Powerhouse Steel Building – 98% Complete
- Powerhouse Roof – 98% complete
- Precast Wall Panels – 99% complete
- Dam Raise –51 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 – Complete.
- Intake Structure Concrete – Complete.

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

3. *Construction Issues*

Unit #4 Generator Sole plates were misaligned in their initial set. NAES has completed the repair required (milling) and reset the sole plates. HIEC/NAES identified a QC issue with a bolt hole in the drive end bearing for Unit #4. This will require drilling and tapping a new bolt hole.

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 June 30, 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 – Scour Wall Protection Plate and Tunnel Liner Segments.

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 Turbine Floor

Figure 2: T1 Transformer

Figure 3: Afterbay Concrete Weir Placement

Figure 4: Dam Raise View from Plunge Pool

Figure 5: Micropile Installation in Plunge Pool

Figure 6: Access Road Slope Protection

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*