



## ***Village Safe Water Trip Report***

*Alaska Department of Environmental Conservation  
Division of Water - Facility Construction & Operation  
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**REPORT DATE:** 10/8/2012

**REPORTER:** Prashant KC, VSW Engineering Assoc.

**TRIP DATES:** 10/03/2012 to 10/04/2012

**LOCATION:** Stevens Village (SVS)

**PURPOSE:** Evaluation and critical onsite inspection of ongoing construction progress of new Water Storage Tank, Lift Station and Water Treatment Plant upgrades, Pad phase 2 and structural integrity of Waste Water Lagoon.

**CONTACTS:** George Thomas, Project Superintendent  
Henry Smoke, WTP Operator, Stevens Village  
Joshua Ortiz, Power Plant Operator, Stevens Village  
Giovanna Stevens, Administrative Assistant, Stevens Village  
Rosemary (Dee) Wiehl, post office clerk, Stevens Village

**ACCOMPANIED BY:** Dave Cooper, Engineering Manager, Summit Consulting Services.

**TRAVEL INFORMATION:** Alaska Air, Warbelows Air, Everts Air

### **ACCOMPLISHMENTS & FINDINGS:**

This was first site inspection after 2012 construction startup. The trip was intended to cover the critical phase inspection of Water storage tank testing before installing the insulations and Lift station foundation as well as other contributing site works. On Tuesday morning October 3, 2012, I arrived ANC at 8:15 A.M. I was accompanied by Mr. Dave cooper form Summit consulting. Our flight was delayed by 20 minutes so we departed ANC at 11:00 A.M, and arrived FAI at 11:55 A.M. Mr. Arlo Bante RMW for SVS came to pick us up from Fairbanks airport and we went to Warbelows air. Due to the time crunch and non availability of flight in Warbelows we almost had to cancel our trip. After struggling for 2 hours we finally got the spots in scheduled flight at 2:45 PM. I introduced Dave to Arlo and we had a chance to discuss the constructability of the project and some key elements to be looked upon.

We left Fairbanks at 2:55 PM, and arrived Stevens village airport at 3:40 P.M. Upon arrival we were welcomed by project superintendent Mr. George Thomas and Ms. Rosemary (Dee) Wiehl, and we proceeded to water treatment plant. There we decided to go through the water treatment plant, water storage tank, lift station, other outside works such as the pad, retaining wall, and wastewater lagoon respectively. So here are the findings as mentioned below.

## Current Progress

- The retaining wall was completed with appropriate measures taken. The defects in the retaining wall such as 8" settlement, wall alignment, keystone falling apart, toe buckling due to active pressure, improper keystone locking was fixed. Superintendent George reported that the defective sections were reconstructed and the backfills were compacted in 8" layers. Although there was not any compaction measuring device on site, the guide lines were followed to achieve 95% relative compaction. The comparison is shown below:



*Retaining wall settled 6"-8" (Before)*



*Retaining wall section reconstructed (After)*



*Another settled section of retaining wall (Before)*



*Retaining wall section reconstructed (After)*



*Retaining wall stones falling apart (Before)*



*Retaining wall stones reconstructed (After)*

- Water storage tank staves were erected and bolted together. The ladder, manway hatch, fill, draw and heat add loops were installed. The roof rails were partially done. During inspection the WST was under testing. George reported that it took 4 days to fill the tank and the tank was leaking from two spots. He further said he was trying to contact the manufacturer to resolve the situation. The water tank connection was modified which means instead of separate head add loop the heat will be supplied to fill and draw line and for proper diffusion the fill line will be extended close to the tank wall. The wall and roof insulation will be installed after the tank passes the leak test.



*Bolted Water storage tank staves*



*Roof rails yet to be installed in WST*



*Heat add loop, Fill and Draw line in WST*



*Prashant and Dave discussing the modification in WST*



*WST Insulation stacked inside the WTP*



*Seepage through the bottom of WST during testing*

- Lift station slab was poured with valve vault incorporated. The wall penetrations for duplex pumps, emergency backup suction line, vault drain line and for electrical were installed. According to George and Dave the Lift station superstructure is scheduled right after the “approval to construct” is received from ADEC and the time frame to receive was 2-3 days from day of inspection.



*Lift Station cast in situ slab*



*Valve vault*



*Wet well penetrations for valve vault and electrical*



*Superintendent George holding the wet well cover*

- The man way access from WTP to WST was in progress. The wall and the roof were partially done.



*Manway superstructure exterior*



*Manway superstructure interior*



*Building joint*

- Additional pad behind the water treatment plant (pad phase II) was in progress during inspection. The pads were compacted using both plate compactors and jumping jack depending upon the location. George reported that end level of the pad will be the very bottom the utilidor and sufficient spacing will be provided for the drainage. The new water main arctic pipe was layed out but the connection was yet to be made. George planned to re-route the sewer main in order demolish the transition section of the utilidor and complete the pad work.



Pad Phase II



New Water main connection point



Layer compaction



Pad phase II in progress



*Corporation truck fixed and in use*



*Gray Water and Sewer line (Quest pipe) to be re routed*

- The back entry porch of WTP was removed completely be put together after the completion of pad phase II.



*Back entry porch removed*



- The point of connection for the gravity sewer main connecting the freezer builder (clinic) and the new lift station with sufficient grade for gravity flow was determined during our presence.



*Shooting the level for the grade of gravity sewer main*

- The narrow access to the man way form the side of the blue raw water storage tank has been resolved by removing the preway oil heater.



*Narrow access to the man way ladder( **Before** )*



*Oil heater removed ( **After** )*

- After the walk through on lagoon footprint we discovered three major locations of fracture in lagoon berms, south and east side. The crack patterns are longitudinal and are extending with respect to time. The extend of cracks were severe and needs immediate recovery. if corrective measures are not taken. It might result to dike failure.



*South dike of Lagoon cracked at point of anchor*



*Extend of crack in south dike*



*West dike is fairly stable*



*Fractured East dike*



*Overall Lagoon*



*Extensive crack in East Dike*



- George reported that the landfill road project recently completed by Tutka used the blended gravel stockpiled meant for the construction of pad phase II south side of the lagoon. So had to use the stockpiled material close to the old airport belonged to the corporation.
- All Construction crews were wearing the designated PPE and were taking necessary measures from safety point of view. George mentioned he is conducting the weekly safety and keeping the records of the attendees.
- Had the conversation with first chief Randy Mayo and collected the original waiver of sovereign immunity.

## RECOMMENDATIONS:

- George, Dave and I went through the corrected 100% plan set recently submitted by Summit consulting for lift station and WTP modification. The intent was to develop the consistency between the plan set and actual construction and to make sure the project superintendent was aware of the changes made.
- Since the old treated water storage tank was converted to new raw water storage tank and raw water draw line was too low considering the settled material going to the pumps. So line needed to be elevated slightly to provide factor of safety for the pumps. But care should be taken not to lose the tank volume while doing so. In case of pump failure due to such factor the community will hard time to replace the pumps.



*Inspecting the draw line for modification*

- To use the 12 polytanks as a backup temporary treated water storage tank they needed to be isolated from newly constructed 12,000 gals WST with safety margin. Currently it does not have provision to isolate the main line going to tanks.
- There was a conflict with the center ceiling lighting with the crane in lift station wet well in similar job sites. The lighting placement should be adjusted as required.
- Dave cooper recommended minimizing the additional drain lines which were not properly insulated underneath the WTP. Right now there are three drain lines going to old lift station. The building drain, the backwash and the overflow from polytanks. The back wash and overflow can added to building drain going to new lift station.

**Photo Log Location:** G:\Water\FACILITIES\Photo\Photo\_Volume \_1\VSW 2012\Stevens Village\Site Visit (Prashant) October 3-4, 2012

**FOLLOW-UP:**

- Schedule site visit for next phase inspection.
- Approval to construct for WST and Lift Station to be submitted by John trap from Summit.
- Daily construction progress.
- Procurement status of Lift station control panel and pumps.

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