



*COMMONWEALTH of VIRGINIA*  
**Lake Barcroft Watershed Improvement District**

**Operations Director's Report**  
**(February 2012 – July 2012)**

**Engineering/Projects**

**Concrete Restoration for the Dam *(update)***

- On April 12, 2012, Contracting Specialist Inc. (CSI) started the restoration of the concrete surface on the downstream side of the east abutment (applying a new 8" layer of steel reinforced concrete).
  - As of July 30, 2012, CSI has completed approximately 80% of the work on the east abutment.
    - The remaining tasks include the following:
      - Rubbing down the new concrete surface with finishing stones.
      - Caulking the control and construction joints.
      - Re-grading, seeding, and applying straw to the earthen slope.
      - Installing the new chain link fence along the walkway at the top of the dam.
      - Installing new supports for the utility conduit that runs along the east abutment walkway.
      - And a few other small miscellaneous tasks.
  - LBWID is expecting that the remaining tasks will be complete by the end of August 2012.
  - So far the LBWID Trustees and I are pleased with the results on the east abutment.
- On July 6, 2012, CSI started the restoration of the concrete surface on the downstream side of the west abutment (applying a new 8" layer of steel reinforced concrete).
  - As of July 30, 2012, CSI has completed approximately 10% of the work on the west abutment.
    - The remaining tasks include the following:
      - Finish removing the deteriorated concrete from the existing surface.
      - Install the drainage membrane.
      - Install the drainage pipe.
      - Install the reinforcing steel.

- Form and pour new concrete surface.
  - Rub down the new concrete surface with finishing stones.
  - Caulking the control and construction joints.
  - Re-grading, seeding, and applying straw to the earthen slope.
- As of now, LBWID is expecting that the west abutment will be completed by the end of October 2012.
- In addition to the abutments, CSI is going to patch some voids in the cyclopean surface of the dam, below the bascule gate.
  - It is expected that this task will take about 2 weeks and will happen sometime between mid-August and mid-September.
- On May 2, 2012, LBWID received approval from the Virginia Division of Dam Safety for the revised plans for restoring the fixed elevation spillway.
  - LBWID is currently negotiating with CSI to establish a fair and reasonable price for this phase of the project.
    - LBWID is hoping to finalize the negotiations and award this phase to CSI by August 10<sup>th</sup>.
    - It is expected that this phase will take approximately 35 working days.
      - CSI has proposed to add a second crew for this phase so that progress on the restoration of the abutments is not adversely affected.
- LBWID has contracted with WR&A for “construction phase services” to insure that actual construction of all phases of the project is being done correctly and that the correct materials are being used.
  - This is a time and materials based contract with a not to exceed limit of \$84,000.00
  - WR&A is providing the following:
    - Reviewing contractor’s submittal of material shop drawings.
    - Responding to RFI’s (Request for information) from the contractor.
    - Concrete testing.
    - Site inspections as needed.
    - Attending meetings as needed.
- The total cost of this project is anticipated to be approximately \$980,000.00

### **New Hydraulic System manifold for the Dam (update)**

- To continue modernizing the dam’s hydraulic control system, LBWID contracted with Advanced Fluid Systems, Inc., to replace the dam’s hydraulic system control panel with a modern hydraulic system control manifold.
  - Many of the components of the previous hydraulic control panel were outdated and are no longer being manufactured, they could only be refurbished.

- The new hydraulic control system manifold requires much less space in the dam house, is much easier to service, and greatly reduced the amount of hydraulic pipes and hoses that were previously needed. In addition, the individual components that make up the control system manifold are less expensive than refurbishing the components of the old control panel, which in return, has afforded LBWID the opportunity to keep spare parts in inventory.
- Advanced Fluid Systems, Inc., did a great job with the installation of the new control manifold and it is performing beautifully.
  - This project was completed on June 6, 2012
- The cost of this project was \$13,877.70

### **Computer and Network Infrastructure upgrades for office/ dam (update)**

- In February 2012, LBWID contracted with Applied Controls Engineering (ACE) to perform some upgrades to the computer and network infrastructure for the office and dam. The upgrades include the following items:
  - Upgrade the internet router to one that has more robust internet security capabilities.
  - Move the LBWID website from an in-house server to an outsourced website hosting service.
  - Upgrade the dam's webcam configuration so that residents will not have to use passwords to gain access to the webcam.
  - Upgrade the desktop computer that is in the office that serves as a back up Human Machine Interface (HMI) to the dam's pro-logic control system.
  - Upgrade the custom software program that allows LBWID staff to access dam's historical data and generate performance reports.
- The cost of the total upgrades was \$15,000.00

### **Dam Hydraulic Accumulator Replacement (new)**

- LBWID has contracted with Advanced Fluid Systems, Inc., to replace the 3 accumulators in dam's hydraulic system.
  - The accumulators help maintain hydraulic pressure when the hydraulic system is sitting idle.
  - They also perform like a shock absorber when the hydraulic system turns on and off.
- The existing accumulators are 40 years old and are very difficult to service (to install new bladders) because they have to be removed completely to access the bottom side.
  - The bladders have not been replaced in more than 12 years.
- Advanced Fluid Systems, Inc., will be installing accumulators that can be serviced in place. The bladders are accessible from the top of the accumulators.
  - The existing accumulator isolation valves (needle valves) will also be replaced with high pressure ball valves (3 valves total).
- This project is scheduled for mid to late September 2012.
- The cost of this project is \$9,881.00

## **Dam Hydraulic Cylinder Isolation Valve Replacement *(new)***

- LBWID has contracted with Advanced Fluid Systems, Inc., to replace the dam's hydraulic cylinder isolation valves.
  - The 8 existing isolation valves are "gate" style valves and LBWID is slightly concerned that they are not providing a 100% seal when being used.
    - Each one of the dam's hydraulic cylinders has 2 isolation valves.
    - This small leak-by was detected during testing of the hydraulic cylinders.
      - This leak-by does not affect the performance of the dam's hydraulic system; it only occurs when the valves are closed during testing of the hydraulic cylinders or when a hydraulic cylinder has to be shut down for maintenance.
  - Advanced Fluid Systems, Inc., will be installing 8 high pressure ball valves.
    - High pressure ball valves are better suited to provide 100% isolation.
  - The project is scheduled for mid-September and should take about 4 days.
  - The cost of this project is \$8,983.00

## **HVAC System for the Dam's Control House *(new)***

- LBWID had a ductless HVAC system installed in the dam's control house.
  - The HVAC system was installed to provide a more appropriate environment for the dam's control systems (computer and hydraulic).
    - During the summer, the heat in the dam's control house can be very abusive on electronic and hydraulic equipment.
  - The HVAC system has a 25 seer efficiency rating (which is very good).
  - The cost of the HVAC system was \$4,850.00.
    - HVAC unit - \$2,300.00
    - HVAC electrical - \$1,800.00 (Juniper Construction)
    - Attic Insulation - \$750.00 (WID staff will install the insulation)

## **Revision of Dam O&M Manual *(new)***

- To incorporate information from the numerous dam upgrades that have been completed over the past 4 years, LBWID has contracted with WR&A to revise/update the Operation & Maintenance Manual (O&M Manual) for the dam.
  - It is projected to take approximately 4 months to complete the update.
    - This project will start in mid-August 2012.
- This a time and a material based contract that currently has a not to exceed limit of \$10,000.00.

## **Operations**

### **In-house dredging program, spring dredge season (*update*)**

- LBWID had a successful spring dredging season and was able to remove 1,290 cubic yards of sediment from the Tripps Run side of the lake.
  - The spring dredging season consisted of 18 days of dredging, averaging 72 cubic yards per day.
    - LBWID's most productive day resulted in 96 cubic yards of sediment removed.
  - LBWID will start the fall dredging season in late September and will be focusing on the Holmes Run side of the Lake (the equipment will be staged at Beach 3).
    - We will also be aiming to remove 1,250 + cubic yards of sediment from that side of the Lake as well.

### **2012 Bathymetry Survey (*new*)**

- On July 9<sup>th</sup> and 10<sup>th</sup>, Princeton Hydro performed the annual bathymetry survey of the upper ends of the Tripps Run and Holmes Run sides of the lake.
  - The preliminary results indicate that the LBWID's in-house dredging program is working as planned.
    - Dredging 1,250 to 1,500 cubic yards of sediment from the upper ends of the Tripps Run and Holmes Run side of the lake each year to maintain approximately 5 feet of water depth were possible.
      - This equals 2,500 to 3,000 cubic yards of sediment being removed from the lake each year.
      - Over a 4 year period, 10,000 to 12,000 cubic yards will be removed.
        - This is the same amount that was being removed from the lake when dredging was being outsourced on a 4 to 5 year cycle.
  - Once the final survey maps are received, they will be posted on LBWID's website for the community to view.
  - The cost of the 2012 survey and new maps is \$8,200.00.

### **Tree Planting and Landscaping at LBWID Compound (*new*)**

- LBWID staff planted 25 trees/plants along the compound shoreline to create a more dense screening of the LBWID compound from the lake
- A 32 foot long x 9 foot tall vine arbor was erected in front of the dumpster to help screen the view of it and the parking lot from the lake.
- Cost of the project was approximately \$2,000.00.

### **June 29<sup>th</sup> Storm Damage (*new*)**

- As a result of the severe June 29<sup>th</sup> storm, numerous trees at the LBWID compound either fell or were significantly damaged.
  - Cost of removing the downed or damaged trees was \$9,000.00.

- This work was completed by Luchts, Inc.
- In addition to the tree damage some parts of the compound's electrical system was damaged.
  - Cost of repairing the electrical system was \$1,300.00.
  - This work was completed by Juniper Construction.

### **Tree Removal from the Lake *(new)***

- As a result of the severe June 29<sup>th</sup> storm, 7 trees from resident's properties fell into the lake.
  - To date LBWID has removed 5 of the trees
    - 4 very large oak trees
    - 1 large pine tree
  - With agreement from the property owners, the LBWID removes the tree at a steeply discounted price (see LBWID Tree Removal Policy on the LBWID's website).

Respectfully,  
Davis Grant  
LBWID Operations Director