

**Kolb, Sara B.**

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**From:** Reed, Patty (School Board Member) [psreed1@fcps.edu]  
**Sent:** Thursday, July 08, 2010 7:42 PM  
**To:** Hone, Tina (School Board Member)  
**Subject:** Fw: Clifton well results to date

Hope you saw this.  
Patricia S. Reed  
Fairfax County School Board, Providence District  
571-423-1084  
Debra L. Cain, Executive Administrative Assistant  
571-423-1070 or Dlcain@fcps.edu

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**From:** Tistadt, Dean  
**To:** School Board Members  
**Cc:** Dale, Jack; Moniuszko, Richard A.; James, Denise; Sneed, Kevin; Ellis, Fred (Safety & Security)  
**Sent:** Thu Jul 08 19:12:34 2010  
**Subject:** FW: Clifton well results to date

Dear Board Members,

While we must wait for the final test results for radium 228, expected next week, it does appear that the action taken on this well has solved the contamination problems albeit at the expense of reducing its volume. This fix was inexpensive so if the decision is made to keep the school open, it will not be necessary to expend \$300,000 to solve this problem or to incur additional annual operating expenses (which were the previous solution estimates).

I do note that this potential expense was not included in the renovation cost estimate. If we renovate Clifton, it will still be necessary to expend monies to construct a water storage and pump system to support the sprinkler system. Those costs were included in the renovation cost estimate.

My thanks to Doug O'Neill for his expertise and all the work done by the Office of Facilities Management to expedite this work.

Dean

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**From:** Ellis, Fred (Safety & Security)  
**Sent:** Thursday, July 08, 2010 2:31 PM  
**To:** O'Neill, Doug  
**Cc:** Mutscheller, William; Tistadt, Dean; Sneed, Kevin; James, Denise; Vollmer, Steve  
**Subject:** RE: Clifton well results to date

Doug,

Tks for the thorough explanation of the preliminary results of the analysis of the Clifton ES well water. I continue to appreciate your expertise and suggestions, which have proven to be very helpful and accurate.

Dean, et.al., Doug has advised that we won't get the one radium (228) result back until next week, but he doesn't anticipate it to be problematic.

Fred Ellis

*We're moving! Effective July 19, 2010, the Office of Safety and Security will be relocated to the Gatehouse Administrative Center, 8115 Gatehouse Road, Falls Church, VA, 22042. My direct line phone number will be 571-423-2015. The phone number for my Administrative Assistant will be 571-423-2010. My email will remain the same.*

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**From:** O'Neill, Doug  
**Sent:** Thursday, July 08, 2010 2:22 PM  
**To:** Ellis, Fred (Safety & Security)  
**Subject:** Clifton well results to date

Fred,

The preliminary results (bacteriological, organics, inorganics, radon, radium 226, gross alpha, gross beta, and total uranium) for the water samples taken from the new well have been reported out. I am still waiting the results for the radium 228 and for the testing results to be sent in a final report (the preliminary results should not change).

The bacteriological samples showed total and fecal coliform organisms were not detected. The tested organic contaminants were found below Environmental Protection Agency (EPA) primary standards. The tested inorganic contaminants (iron and manganese) were found below EPA primary and secondary standards. The hardness was found to be elevated, but this is of no health consequence.

The radon results were found to be 919 picocuries per liter (pCi/L). Currently EPA does not have a standard for radon in water. There are complex proposed standards that are almost ten (10) years in the regulatory process. Much like the EPA radium water standards, the proposed radon water standards are for community water systems not non-community well systems similar to Clifton Elementary School. However, all federal standards should be adhered to assure the highest water quality.

EPA is proposing to allow public water suppliers to provide water with radon levels no higher than 4,000 pCi/L. However, EPA's proposal may require radon levels in drinking water to be no greater than 300 pCi/L in public water supplies if indoor air levels are not addressed through an aggressive public education campaign. A water radon level of 4,000 pCi/L contributes (transfer ratio) about 0.4 pCi/L of radon to the air in a typical single-story home.

The radon level of 919 pCi/L found in the Clifton well sample would contribute approximately 0.1 pCi/L of radon to the air. The health issue with radon in the water is more associated with radon contributing to inhalation health issues than with ingestion health issues. The most recent (2006) airborne radon measurements at Clifton were reported to be between <0.3 to 3.2 pCi/L. The EPA action level for indoor air radon is 4.0 pCi/L. The addition of the of the calculated transfer ratio of 0.1 pCi/L would have created a maximum of 3.3 pCi/L of indoor radon. This would have been below the EPA action level of 4.0 pCi/L.

There is a possibility of the 919 pCi/L radon level fluctuating over time. The laboratory that did our analysis has commented (based upon their historical knowledge) that radon levels like 919 pCi/L there may be a fluctuation in the range of up 3,000 pCi/L. This would have an additive transfer ratio of 0.3 pCi/L to the air. I would think that with the indoor air concentrations below 4.0 pCi/L that the radon concentration found in the well water (and those possible with fluctuations) would be negligible but still present.

The most recent gross alpha and gross beta samples were reported out in a negative result. The laboratory has informed me that this means that there were none detected. Previously, the gross alpha result was 23.3 pCi/L (which was above the EPA primary standard) and the gross beta result was 23.2 pCi/L. The most recent total uranium result was 3.0 micrograms per liter (ug/L). The previous total uranium result was calculated to be approximately 15 ug/L. The radium 226 was reported out as 0.765 pCi/L. The previous radium 226 result was 8.0 pCi/L.

Before the upper section sleeve was put in the new well, the water production was fifteen (15) gallons per minute (gpm). Valley Drilling reported that the new well was producing twelve (12) gpm after the sleeve was removed and before the bottom plug was installed. The water production after the plug was installed was eight (8) gpm. This water production is twice that of the front well that would possibly be removed during renovation (administrative suite). It is reasonable that the sixteen (16) gpm from the rear well and the eight (8) gpm from the new well will be sufficient water quantity for school operations.

Based upon the received preliminary results, it does appear that the plug has worked (though water quantity has been reduced) and that the iron, manganese, and radiological contaminants (absent the radium 228 results) have either been removed or significantly reduced. It is my opinion (and that of the testing laboratory) the radium 228 levels will be lower because of the absence of the gross alpha activity and the lowered radium 226. However this will need to be verified by testing results.

Douglass T. O'Neill, M.S., R.E.H.S.  
Coordinator, Safety and Environmental Health  
Office of Safety and Security  
Fairfax County Public Schools  
(W) 703-658-3760  
(F) 703-354-8775

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Vendor number: **B54117859201**

Vendor name: **VALLEY DRILLING CORP OF VIRGINIA**

Address: **9172 JOHN S MOSBY HY**

**UPPERVILLE, VA 20184**

Phone number: **5405923239**

Fax number: **5405923259**

Toll free number: **8005829355**

Email address: **VDC@CROSSLINK.NET**

Contact:

SBME code: **B**

Send EDI?:

FAMIS status: **P**

CASPS status:

Create date: **07/01/85**

Last activity: **07/27/10**

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