

Lonnie Wood

From: Tom Frederick [tfrederick@rivanna.org]
Sent: Wednesday, June 08, 2005 10:07 AM
To: Aaron Keno
Cc: Bill Ellis; Bob Wichser; Jennifer Whitaker; Andrea Terry; Lonnie Wood
Subject: Dredging Report on Airport
Follow Up Flag: Follow up
Flag Status: Red

Please consider the attached comments on your dredging letter. I have edited this on the basis that this will go public, so the public and Board become the audience. All of you please consider these edits and offer me your suggestions.

June 2, 2005

Mr. Thomas L. Frederick, P.E.
Executive Director
Rivanna Water and Sewer Authority
695 Moores Creek Lane,
Charlottesville, Virginia 22902

Re: Potential Dredging of
South Fork Rivanna Reservoir (SFRR)

Dear Mr. Frederick:

As you know, Rivanna Water and Sewer Authority (RWSA) is currently considering alternative concepts for expanding its water supply system. There are four concepts currently under consideration and one of those is dredging the SFRR to increase water supply storage. During the public comment meetings on these concepts, held in the fall of 2004 and spring of 2005, unsolicited proposals and expressions of interest in conducting the dredging and managing material disposal or use were received. A related idea was also presented to use the dredged sediment as fill for the proposed Runway 21 Extension at the Charlottesville-Albemarle Airport. Gannett Fleming has investigated these ideas and proposals, as requested, to the extent of rendering a professional opinion as to how these proposals might conclusively alter the findings and recommendations in Gannett Fleming's December 1, 2004 Technical Memorandum entitled *Concept Development – Dredging the South Fork Reservoir (SFRR)*. This letter summarizes that review.

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Background

The Technical Memorandum dated December 1, 2004 summarizes the quantity of sediment to be removed to achieve an increase in safe yield of 5.5 MGD, discusses parameters for accomplishing sediment removal and disposal, provides an order of magnitude range of estimated project costs for removal and disposal of sediment, and provides potential environmental impacts associated with this concept. This memorandum summarized key findings of this concept for comparison with the other three "short list" water supply concepts leading to a selection of a preferred water supply alternative under federal and state regulations.

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The original design volume of SFRR was estimated as 1,700 million gallons (MG); including 1,250 MG of useable storage (for water supply purposes) and 450 MG of dead storage. Sediment accumulation has decreased these volumes to a currently estimated 1,155 MG; including a useable storage of 800 MG and dead storage of 355 MG. By the

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end of the planning period (2055), total storage is projected to decrease to 400 MG including 200 MG of useable storage and 200 MG of dead storage.

Approximately 450 MG, or 2.2 million cubic yards (M CY) of useable storage has been lost to-date due to sediment accumulation since SFRR construction in 1966. An additional 600 MG (or 3.0 M CY) of useable storage is projected to be lost to sediment accumulation between now and the end of the planning period (2055).

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Available sediment gradation data indicates a wide range of grain size. Completed dredging investigations assume that there is 50% sand and 50% fines and the material is not hazardous. It is likely that some portion of the sediment is mostly sand, some is mostly fines, and some is a mixture. It is important to note that if dredging is to be used to achieve the 5.5 MGD safe yield goal, an implementation plan must assure that all classes of sediment are removed, not just the sediment that is most easily marketed.

Dewatering of the material could occur at very different rates and may result in variable density of dry material. In addition, dewatered material that is loaded in a truck will "fluff" (increase in volume), then must be recompacted in a structural fill and may result in variable in-place volumes. No attempt to quantify these variables was made, and the in-place SFRR sediment volumes were used for the purposes of calculating transportation cost. Any variation in disposal volume would simply result in small changes in stacked height and have no impact the amount of land needed.

Dredging quantities are projected in the referenced December 1, 2004 memorandum. Generally, there is 2.2 M CY of material that would result from SFRR if completely dredged at this time, and another 3 M CY of material that would result from future sedimentation and dredging over the next 50 years.

Proposals received

In May 2004, Blue Ridge Sand, Inc. submitted an unsolicited proposal or RWSA for dredging a select portion of the SFRR. Since that proposal contains competitively sensitive information, no details are included in this evaluation. Since RWSA was not seeking proposals and had not budgeted for such a project, no action was taken. In the spring of 2005 as public meetings were held on alternative water supply expansion projects, Blue Ridge Sand, Inc. again expressed interest in dredging SFRR. Several communications provided some detail on potential approach but many issues remain.

Another private entity known as Dock Doctors, Inc. also submitted a very brief proposal to perform dredging at SFRR.

Proposal Review Comments

None of the proposals are sufficiently detailed to allow long-term feasibility to be confirmed for the volumes of sediment necessary (5.2 M CY) to achieve the safe yield goal. None of the proposals established any higher degree of certainty in cost over time

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when compared to the December 1, 2004 Technical Memorandum, and none of them disclosed marketability in adequate detail. Many additional details must be identified and discussed to fully understand the methods proposed and potential cost. Primary issues include; specific site identification for dewatering facilities, haul roads, and disposal sites, material reuse purpose and quantity, contract period, required permits, financial stability of the company and its partners, and financial safe guards for RWSA to enter into such an agreement. See also related General Comments below.

Potential cooperative benefit with Airport

At the request of RWSA in February 2005, GF contacted Jim Nixon of Delta Airport Consultants about the potential use/disposal of dredged SFRR material at the Albemarle County Airport. Delta Airport Consultants is the consulting engineer assisting the Airport with expansion planning. GF prepared a data package related to accumulated sediment in SFRR and submitted to him in late February/early March. We asked Delta to consider the airport accepting this material and if so what conditions there would be. In May 2005, Mr. Nixon provided an email response (copy attached). Paraphrased summary comments include:

1. Current airport plans include the need for 1.5 to 2.0 M CY of suitable embankment material (engineered and compacted fill material) for a runway extension project. This material must meet Federal Aviation Administration stringent (FAA) density requirements. The construction is planned for 2009/2010.
2. Large lay-down areas are needed so the soils can be dried. Material must be within 2 % of optimum moisture content during placement and compaction (a stringent requirement).
3. Typically sandy material is good fill material and silty clays are not.
4. There may be an issue associated with arsenic content in the sediment.
5. The airport has no room for depositing material that is unsuitable for engineered fills unless current Albemarle County and US Army Corps of Engineer waivers for wetland and stream buffers are secured. Such waivers are not likely for this purpose.
6. The airport is currently paying \$9 to \$17 per CY for suitable embankment material.
7. A considerable amount of additional sampling and testing is required to assess what portion (if any) of the dredged material is suitable as embankment material.

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General Comments

To aid understanding of these issues and consider the impact on current RWSA water supply expansion, GF provides the following comments related to dredging SFRR and use/disposal of the material.

1. Any dredging project performed by a contractor would require a formal agreement with RWSA. In essence, RWSA would be relying on the approach and judgment of the private entity. Such a contract would include performance and

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maintenance bonds to guard against fatal mistakes and provide protection for RWSA. . It is likely to be difficult for long term bonds to be posted, especially in large sums of money; consequently, it may require several years of contract experience to begin to understand the long-term resource commitment associated with a dredging program.

2. As a public body, RWSA must bid any project considered and therefore, can not accept an unsolicited proposal. Current Commonwealth of Virginia regulations allow local municipal agencies to adopt regulations that provide for procuring contracts under conditions that consider other than low-bid. If RWSA is interested in this process, it should seek legal counsel on the process.
3. Approximately 2.2 M CY of material has accumulated in SFRR. An additional 3.0 M CY is projected to accumulate over the next 50 years. Planning a project for removing the currently accumulated material may be possible. There are numerous uncertainties associated with the future sediment accumulation and potential dredging that can not be accurately estimated at this time.
4. It is probable, that only a portion of the existing sediment may be useable as embankment material at the airport. If for instance, as much as 30% of the currently accumulated material (2.2 M CY) were useable, approximately 0.7 M CY would be available for embankment at the airport. This is about one-third to one-half of the projected need for the airport project. It is highly unlikely that sufficient useable material exists at SFRR to provide the entire amount of material needed by the airport in 2009/2010.
5. It is likely that most or all of the accumulated material must be dredged to make 0.7 M CY available. The remaining 70% still requires disposal. The airport has indicated it can not be disposed of at that location.
6. Assuming the airport is willing to pay for this material at their current rates stated above, the value could be as high as \$6M to \$12 M. However, to meet the tight FAA specifications for structural fill, the suitable structural fill material would have to be separated from the unsuitable material in the sediment after it is removed from the reservoir. These "gradation" costs, including the testing costs for quality control, would be in addition to the costs provided in the Technical Memorandum for dewatering and transportation. As a result, most of what the airport would pay for the material would not be net revenue, but would be offset by added preparation costs.
7. A decision to serve the airport with structural fill from dredged spoil would also likely have adverse consequences on water rates in the short-term. In the Technical Memorandum it was discussed that 0.1 M CY could be removed annually over 50 years and would achieve the water supply goal. However, to provide the airport approximately 0.7 M CY (based on 30% suitable for structural fill) by 2009/2010 might require up to 0.45 M CY per year to be dredged between 2006 and 2010. This complicated the sizing of a dewatering facility adjacent to SFRR and would burden the RWSA's capital improvement fund at the same time that large expenditures for the repairs to the Ragged Mountain Dam would also be mandated.

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8. If hazardous materials are identified in the sediment, removal and reuse or disposal may become significantly more complicated and costly or even prohibitive.
9. In March 2005, Gannett Fleming issued an opinion that any water supply alternative that might include the concept of Dredging South Fork Rivanna River Reservoir is disproportionately expensive when compared with other practicable and environmentally-acceptable alternatives.
10. None of the current unsolicited proposals offer sufficient evidence that this recommendation should change.

Recommendation

Even after the recent evaluation of unsolicited proposals, as well as RWSA's request that Gannett Fleming evaluate the feasibility of dredging sediment from the SFRR for the airport expansion runway project in 2009/2010, there remain a number of uncertainties that continue to lead to a probable conclusion that dredging as a water supply alternative would likely be logistically difficult and disproportionately expensive. Specific to the use of structural fill at the Charlottesville/Albemarle airport, it could provide some revenue, much of which would be offset by additional preparation costs, and it would "front load" more expenses in the first 5 years of a 50-year program in a way that would be adverse to RWSA's financial planning.

Gannett Fleming continues to conclude that future discussion of the costs and benefits of dredging as a program for the SFRR would better serve the community if studied in the context of maintenance of the reservoir, considering water quality, recreational, and aesthetic objectives, as opposed to water supply objectives. Since this letter summarizes the feasibility of the proposals named above only for water supply purposes, further studies would have to be done to consider other objectives. If the community remains interested in dredging the SFRR as a concept, a wider consideration of all the community's objectives for SFRR should be explored to determine if dredging has a legitimate role in the reservoir's future. It would be recommended that this wider consideration be explored before acting favorably toward the use of dredged spoil at the airport, or toward any other dredging proposal.

I trust this review provides sufficient information to guide RWSA on this matter. Please contact me if you would like to discuss the commentary provided.

Sincerely,
GANNETT FLEMING, INC.

AARON D. KENO, P.E.
 Vice President
 Fairfax Office Manager

Comment [tff1]: Aaron, I've edited most of this out because I'd like a softer approach to the future of dredging as opposed to launching into a bid situation. Keeps more options open as we have this dialogue with the community.

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May 17, 2005 Delta Airport Consulates Email

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