

**South Fork Rivanna Reservoir Stewardship Task Force  
DRAFT Minutes of Task Force Members Meeting  
November 13, 2008**

A meeting of the members of the South Fork Rivanna Reservoir (SFRR) Stewardship Task Force was held on Monday, November 13, 2008, at 6:00 p.m. in basement conference room of City Hall, Charlottesville, VA.

**SFRR Stewardship Task Force Members Present:** Ms. Holly Edwards ó Charlottesville City Council, Mr. Mark Fletcher ó citizen from University of Virginia (UVA) representing recreational interests on the SFRR, Mr. Michael Gaffney ó Rivanna Water & Sewer Authority Board of Directors, Mr. Thomas Jones ó citizen representing property owners along SFRR, Ms. Karen Joyner ó Ivy Creek Foundation, Mr. Chris Lee ó Charlottesville Regional Chamber of Commerce, Mr. John Martin ó Rivanna River Basin Commission, Ms. Wren Olivier ó Sierra Club, Dr. Liz Palmer ó Albemarle County Service Authority Board of Directors, Mr. Ridge Schuyler ó The Nature Conservancy, Ms. Dede Smith ó Citizens for Sustainable Water Supply, and Ms. Sally Thomas ó Chair, member of the Albemarle County Board of Supervisors and representing the League of Women Voters.

**SFRR Stewardship Task Force Members Absent:** None

**Also Present:** Ms. Tamara Ambler ó RWSA Water Resources Manager, Mr. Tom Frederick ó RWSA Executive Director, Ms. Barbara Hutchinson, Charlottesville-Albemarle Airport Authority Executive Director, Dr. Robert Wichser ó RWSA Water & Wastewater Director, members of the public, and media representatives.

**1.0 Call to Order**

The meeting of the SFRR Stewardship Task Force was called to order by Ms. Thomas on Monday, November 13, 2008 at 6:00 p.m.

**2.0 Approval of Minutes**

Ms. Thomas mentioned that the task force had received the September 29<sup>th</sup> minutes for approval, and would be receiving the October meetings via email for review.

Ms. Smith suggested for the September 29<sup>th</sup> minutes that the chart presented at that meeting by Stephen Bowler be included as an attachment for reference.

Ms. Thomas noted that that should be available on the website pertaining to the SFRR.

**3.0 Introductions**

Ms. Ambler called Chris Gibson at Gahagan & Bryant, and he joined the meeting via telephone. SFRR members introduced themselves to Mr. Gibson as follows: Holly

Edwards ó Charlottesville City Council; Mark Fletcher ó University of Virginia; Mike Gaffney ó Rivanna Water and Sewer Authority; Chris Lee ó Charlottesville Regional Chamber of Commerce; Tom Jones ó residents along the Reservoir; Karen Joyner ó Ivy Creek Foundation; John Martin ó Rivanna River Basin Commission; Wren Olivier ó Sierra Club; Liz Palmer ó Albemarle County Service Authority; Ridge Schuyler ó The Nature Conservancy; Dede Smith ó Citizens for a Sustainable Water Supply; Sally Thomas ó League of Women Voters.

Ms. Thomas mentioned that the format of this meeting would be open questions from task force members.

Tom Jones asked if there was anything else Mr. Gibson wanted to share in terms of updates regarding dredging or the reservoir situation since the last time he presented.

Mr. Gibson responded that Gahagan and Bryant had not really ödelved any deeperö into the matter since their last presentation in Charlottesville, as they were waiting to see what the next steps locally would be. He added that this has been “*pro bono*” for his firm up to now, and they haven’t really planned on doing anything further under that arrangement at this time.

Mr. Jones also asked about trees left in the bottom of the reservoir, specifically what the effect would be if there were standing trees left in the water when it was flooded.

Mr. Gibson replied that Gahagan & Bryant talked about this during their investigation of the reservoir, and even if the areas were öclear cutö with just stumps left there would be an impact on the dredging operation as machines are not designed to dig stumps and clear chokes out of the dredge pump. öYou’re going to be looking at higher costs.ö He added that that issue is something the firm recommends the SFRR and RWSA look at prior to dredging, and Mr. Frederick had indicated that there was a plan for clearing of the lake prior to filling but not an öas-builtö that showed everything that needs to be done so it could be easily maintained. öThat’s something that needs to be found out for sure because that could affect your costs anywhere from 30 to 60%.ö

Mr. Gibson said that the firm had talked about bathymetry studies, and side-scans to show öanything that was sticking up above the existing mudline but wouldn’t show anything that was completely covered.ö He added that if the probing and samplings showed wood within the core, it would be pretty obvious that there were stumps on the bottom.

Dr. Palmer commented that Gannett Fleming has indicated if dredging for capacity was done, it would require about 14,000 linear feet from the mid-portion of the reservoir upstream, and Gahagan & Bryant had indicated there were some problems in the stretch up to Reas Ford.

Mr. Gibson replied that they had talked about cutting off dredging activities at the Reas Ford Bridge, as there was nowhere to access to put a dredge in as you move further up, and a decent-sized machine could not pass under the bridge because of the pilings.

Ms. Thomas asked how large of an access site was needed to perform the dredging.

Mr. Gibson responded that a good square is a 200-foot x 200-foot area, but more space is obviously better. "Basically enough space for a crane to lift the dredge in andí ..approximately 100 to 150 linear feet on dry land to start putting the pipe together, to do the fusing they have to do to put the pipe together." He added that they are currently working on a project with an access are of ¾ acre, but that is a completely cleared piece of land near water level.

Mr. Gaffney noted that at a previous meeting Gahagan & Bryant said that they could do a dredging study for \$275,000 that would provide a cost to dredge Rivanna with a cap of 10% and guarantee it, and asked him to outline the "unknowns."

Mr. Gibson replied that he isn't sure they would ever guarantee that 10%, because there are a lot of unknowns that are tied to today's economy, primarily in fuel costs. He said that the interest in rehabilitating the lake may wane if the material is not found by private companies to be particularly useful. Mr. Gibson emphasized that the most important steps are figuring out logistics, the type of material coming up, and what can be done with it; he said that once that is established "you can get a pretty firm grasp on what it's going to cost for the conditions at the site at that time."

Dr. Palmer asked him if the 30% figure for fuel costs with dredging included disposal.

Mr. Gibson replied that he is excluding the variable of disposal, as the costs for that are operational ó manpower, ownership equipment, and movement of material.

Ms. Olivier asked if he has been involved in other comparable dredging projects.

Mr. Gibson responded that the biggest difference here is the topography around the site ó the reservoir down in a deep valley with material for disposal needing to be moved 60 to 70 feet uphill and limited flat areas for disposed materials. He emphasized that while it is not impossible, it is more complicated and will take "a good bit of thought and engineering" to make sure that disposal areas are safe. Mr. Gibson said that the quarry would eliminate some of those issues, but it is 100 feet uphill from the reservoir.

Mr. Martin asked about what's needed for the staging area, if it needs to be close to a roadway in order to get the truck with the dredge on it there.

Mr. Gibson replied that access there is key, as fully-weighted loads would weigh 30,000 - 35,000 pounds including the vehicle if it's a small dredge; a larger dredge would come in as three to six sections. He mentioned that there is a nice flat at Reas Ford where people go fishing that would make a good access area, but some sort of entry road would have to

be built or it would only need to be graveled and not paved but would need to be substantial enough to support a load.

Mr. Martin asked if the embankment would need to be improved along the reservoir in order to haul the dredge in and out of the water.

Mr. Gibson replied that the easiest way to do it would be to lift it in and out with a crane, or travel-lifts if you are near a coast. He also said that there would need to be a place to store fuel for the dredge.

Ms. Smith asked if these types of questions would be answered by the type of study the firm has mentioned during their previous presentations.

Mr. Gibson responded that they would.

Dr. Palmer asked if the dredge would need to be removed during a flood or high-water event.

Mr. Gibson explained that he doesn't believe the equipment would need to be removed in a flood, as dredge anchors would likely be able to be used. He added that he has observed one situation in the Outer Banks where the dredger made a miscalculation on tide difference and the spuds on the dredge broke, but typically the dredges will operate in a three to five-knot current or five to nine feet per second velocity.

Ms. Thomas asked about the size of an operation, as there may be a portion of the site to be dredged that would be less than the entire site.

Mr. Gibson responded that there are economies-of-scale in everything, and if the material and disposal sites are very localized there may be advantages to a smaller project. But if the quarry were used with 10,000 feet of pipeline required to start, a greater volume of dredging will yield a lower unit cost. He said that going another 5,000 feet up the river would require another booster pump, and hence costs would rise as there are two pieces of equipment being operated. Mr. Gibson emphasized that there are break-points depending on what is being accomplished, and they can be analyzed.

Ms. Smith asked if that information would come out of a study, including different scenarios and how much each would yield in terms of gallons.

Mr. Gibson responded that they would look at a number of different cases, but they probably won't hit every possible scenario because of endless "what-ifs." He said that they would likely cover four or perhaps five or different scenarios, and what they would cost.

Ms. Smith asked if they could estimate a cost within 10% in the short term.

Mr. Gibson said that he thinks that is fairly reasonable, with caveats built in pertaining to future changes in the market.

Mr. Gaffney commented that there is potential for some of the "new islands" to be considered wetlands, and asked what the DEQ and Army Corps' thoughts are on dredging those islands.

Mr. Gibson responded that he isn't sure what their positions would be, but there's a good probability that they will consider them functioning wetlands, which means they will either need to be kept or mitigated. "It becomes a very expensive proposition." He added that the first cut at this should be avoidance, and look at what it would cost to dredge with no mitigation; looking at mitigation is beyond the scope of what his firm proposed but certainly could be looked at.

Ms. Smith asked if the study would include determination of wetlands.

Mr. Gibson replied that it would, but without a permitting process underway the Corps won't give a definitive "yes" or "no" but will just provide general direction.

Mr. Gaffney commented that that's why Gahagan & Bryant wouldn't give firm costs until the permit process is underway.

Mr. Gibson confirmed this, stating that land acquisition is a big piece, permitting is a big piece, and construction costs tend to be easier to pin down with those other pieces known.

Mr. Fletcher asked if it was typical to get an environmental impact study with a project like this.

Mr. Gibson said that would be done way before it was put out to bid, and one of the worst things that can be done is to put a project out to bid before you have a permit and all the permit conditions. "You've opened yourself up to a claim."

Mr. Fletcher asked what it would cost to get to that point.

Mr. Gibson replied that after an initial feasibility study, a permitting process, and an environmental impact study would range from \$50,000 - \$250,000. "It is a bit of a range because honestly at this point I don't know what we've had thrown at us." He said that in the case of the wetlands, for example, an avoidance approach would be one scenario and mitigation would be quite another. He clarified that that process would provide the information needed to put the project out to bid, adding that the Ragged Mountain information may exist "such as species analysis, etc." but he just hasn't seen it yet.

Ms. Edwards asked him what his experience is with breaching dams and the dredging it requires.

He responded that some others in his company might have experience with that scenario, but he does not.

Ms. Thomas asked if he had experience dredging reservoirs for water supply.

Mr. Gibson replied that their Baltimore office did the Montclair project, and his company also did the San Gabriel Reservoir in California. Gahagan & Bryant also did the sedimentation studies on three lake dams for the Susquehanna River in Pennsylvania for hydroelectric energy and water supply. He stated that on the Susquehanna they had been dredging on a regular basis into the late 1980s to do coal dust recovery, but hadn't moved forward with any further dredging.

Mr. Schuyler thanked him for donating his time, and asked if the cost projections he provided Mr. Fletcher were in addition to the feasibility study.

Mr. Gibson responded that the feasibility study would get them to a point of what the options are for disposal, what the logistical problems of the site are, and what the costs are for different scenarios. "At that point, there's enough information to make an educated, reasonable decision about whether to move forward or to stop." He confirmed that it would not be wise to put out an RFP until that was done, and explained that a reasonable timeline would probably be: 6-8 weeks of field data collection; 30 days to take that data and examine disposal and land options, as well as compile cost estimates; 60 days possibly for the RWSA to do the reviews they need to; 9-12 months for the state permitting process. "You're looking at something in the 18-month timeframe. 20-21 months before construction."

Mr. Schuyler commented that Mr. Gibson has said in the past that the biggest obstacle to dredging was disposal, and asked what should be done to ensure a disposal site would last for 50 years or more.

Mr. Gibson responded that the investment may be to buy the site, but in other localities a dedicated easement is sought to use land for disposal; he mentioned the Army Corps' easement along the intra-coastal waterway that prohibits building construction. He added that if the authority or county were to buy land, the value of that land would be improved because of the disposal on it. Mr. Gibson clarified that the options are buying the land, having easement on property, or leasing it for the long-term; another possibility might be negotiating with a contractor to maintain the dredging operation and be responsible for the disposal. He confirmed that they also have to deal with the permitting.

Mr. Gaffney asked about the accuracy of the cost information he provided if the process is about two years out.

Mr. Gibson replied that basically they would look at the factors and extrapolate them for the future, including inflation/value of the dollar and future cost estimates. "If you don't have control over the disposal site, then that's an unknown."

Ms. Thomas asked if he had experience with geo-textile tubes.

Mr. Gibson responded that he has a lot of experience with geo-tubes, or burrito bags, and they are a very, very expensive proposition to get into. He explained that a 30-foot circumference geo-tube that holds 1.5 linear foot of material would be about \$20 per linear foot of bag; typically they are used in areas where they are also used as a structural benefit. For drying material, coagulants or centrifuge operations may be more cost-effective.

Ms. Olivier asked how long of an operation the dredging would likely take.

Mr. Gibson asked for a reminder on how many cubic yards would need to be removed to restore the reservoir to its original capacity.

Mr. Schuyler responded that it would take two million to restore it, and a total of five million over the fifty years.

Mr. Gibson explained that it would take about a full year of dredging to return it to capacity, and ice could impact that timeframe.

Dr. Palmer said that a dredging company that was going to use the quarry had indicated it would take about three years to restore it to its original capacity, and asked what it would look like to get material to the quarry from a dredging area two to three miles from there.

Mr. Gibson replied that all you would really see is a small 40 x 20 booster pump barge about every mile and a half; the pipes sink when they are full of material, so you wouldn't see those. A pipeline coming up the hill to the quarry would likely be visible, and a gravel road to cross it would probably be needed. You'd see the booster barges, and you would see the main dredge, and you would have a couple of work vessels that were tending those lines.

Dr. Palmer said that the noise really carries in that area, and asked him if he thought that was an issue.

Mr. Gibson responded that he didn't feel it was a big issue, and the noise is somewhere between a Dodge pickup and a Mack truck. He also added that people acclimate to the noise that the dredging makes.

Ms. Joyner asked for references for the feasibility study.

Mr. Gibson agreed to provide one, stating that he can mail ones that they did for two California projects.

Ms. Joyner clarified that what she would like is actually the RFP.

Mr. Gibson responded that they might not have the original RFP, but he would send it to Rivanna if he could find it.

Ms. Joyner asked if the cost formulas would be "transparent enough" to be used in assessing costs for other projects.

Mr. Gibson said that they try to put all of their cost analysis into easily understandable language.

Ms. Joyner asked him to explain the field work part of the feasibility study.

He explained that during data collection, they would be looking at getting bathymetry of the site, side-scan of the site to show what's above the sediment, geotechnical investigation to establish what type of material is present, and disposal options. Mr. Gibson said that there may be some areas that can be dredged deeper if there is no rock present, but that is not known yet.

Ms. Joyner asked if the side scans only show what's above the sediment, and also asked what bathymetry studies would provide.

He explained that with bathymetry you get an X, Y, and Z coordinate reading from the bottom, and side-scan technology allows you to see the shadows of the bottom; taking the two together provides detailed information about the topography and depth.

Mr. Gaffney asked about the timing of issuing an RFP vis-à-vis the permitting process, and if the feasibility study would include possibilities for disposal site.

Mr. Gibson replied that "permitting conditions, cost, and politics would all shake themselves out," adding that his firm tries to give elected officials information they need to make those choices. He said that along the lake area, they may end up with three disposal areas that have different implications depending on the dredger. "Every option that you leave open for the contractor has to be permitted." Mr. Gibson emphasized that the regulator agencies would definitely want to know where the material would be going.

Mr. Gaffney noted that he has been reading up on dredging projects in the Midwest that have qualified for federal funding, and asked Mr. Gibson if he was aware of these.

Mr. Gibson replied that his firm doesn't work on many projects that are not in coastal states, but if they are getting federal money it is probably through one of the WERTA bills. He noted a WERTA bill was passed in 2007, which means there will probably not be another one until at least 2010.

Ms. Smith asked if the appropriateness of the dredged material for sites like the airport would be addressed in the study.

Mr. Gibson responded that the airport could be covered in their report, but a direct pump to the airport is not very likely at all based on information he's seen so far. He said that building a containment site would be very difficult, and it would probably be easier to put the containment site near the reservoir, then truck the material to the airport if necessary.

The task force members thanked him for all of his help and information.

Ms. Thomas indicated that Barbara Hutchinson from the airport is also in attendance to make a presentation.

Ms. Hutchinson addressed the task force, reporting that the airport opened in 1955 as a joint operation of the city and county; in 1983 the localities transferred it to an authority for financial reasons. She explained that they are technically a political subdivision or government agency, but they operate like a private business, and their primary sources of revenue are parking lot fees, airline rates and charges, rental car fees, and other minor fee sources. Ms. Hutchinson reported that the runway extension project was first on the board in 2003, when the authority undertook a master plan update. In 2004, she said, the master plan was adopted as part of the county's comprehensive plan. She explained that in 2005 the authority initiated an environmental assessment for nine projects including the runway extension, and this assessment was completed in 2007. Ms. Hutchinson said that in 2006, the airport's first capital improvement program that included the runway extension was approved by the FAA and state. She reported that in January 2008 the airport received its finding of no significant impact for the environmental assessment.

Ms. Hutchinson stated that while the project was approved in theory, the FAA had not dedicated any funds to it and still have only assigned very limited funds to the project. She said that due to all the publicity about the reservoir dredging issue, the airport started receiving many local offers for fill material, but they did not have a site prepared to accept the material. Ms. Hutchinson said that the airport engineers are engaged in an early phase of establishing the runway extension, and the authority works through the Airport Improvement Program to get funding but that has yet to be re-authorized by Congress due to the election. She noted that state funds received that would normally match those federal funds sat unused, so the authority decided to use them for preliminary engineering work. Ms. Hutchinson said that the state may reallocate their funds, and the federal funds will likely be less than anticipated.

Ms. Hutchinson stated that she's hoping that the federal government will go ahead with the reauthorization for all airports, as the FAA is currently operating on a 30/60/90 day allocation basis. She explained that a local company is currently the low bidder, and Phase I-A is a project that will move the airport's internal perimeter road to make room for the future runway extension which will require moving dirt, cutting down trees and placement of that dirt for a future project. Ms. Hutchinson added that the airport is undergoing its own wetlands mitigation and have their permit in hand for that, as well as sediment and erosion control measures to meet regulatory requirements. She stated that they have undertaken the preliminary engineering, which included an investigation that showed a considerable amount of fill already available on-site. Ms. Hutchinson said that

the availability of on-site fill and the current economic situation may make the runway extension project less costly.

Ms. Hutchinson said that the airport is a heavily regulated industry and must comply with a number of agency requirements; paying for undertaking dredging on their own would not be an option. She also said that the airport is under obligation to put the project out to bid, so that fill would have to be purchased from the lowest bidder ó even though the airport could suggest to a contractor that the material from RWSA be used. Ms. Hutchinson said that the airport would have to demonstrate that that material was prepped and ready to be put in, and that it was cheaper than what could be obtained on-site. She added that the authority would also have to meet the county's requirement for erosion and sediment control, and the only place they have to put waste material is near the runoff point to Chris Greene Lake ó which has its own cost implications.

Ms. Hutchinson explained that the airport has a present net income of \$178,128 per year, which óis not going to buy anything with respect to the dredging.ö She noted that that is their matching share for capital projects ó such as airport lighting, runway extension, vehicles to maintain the site, etc. Ms. Hutchinson said that the capital fund is heavily regulated and has to go for an aviation purpose. She also noted that the runway extension at the Philadelphia Airport has been mentioned as a comparable project, but that airport is on the Delaware River so material is readily available and dredging had already been set up by the Army Corps. Ms. Hutchinson also said the soil is comprised of gravel and sand and the city paid for the dredging in Philadelphia. With respect to the Charlottesville-Albemarle Airport, she stated ówe don't know when and if we will receive funding from the state and FAA, and that's our biggest problemí ö

Ms. Hutchinson presented a slide on the local airport site and evaluation of sites to provide fill material, noting that several locations were found that had acceptable material. She said that the project requires 2.5 million cubic yards, and 2.6 million cubic yards have been found on-site that could be available ó they are now waiting for estimates to use this material, and information on what would be needed to meet any DEQ and/or county requirements for erosion and sediment control, etc. Ms. Hutchinson reported that engineers have indicated that the road realignment would produce approximately 460,000 cubic yards of fill; the northwest quadrant would produce 1.4 million; the training area on that quadrant would produce 385,000 cubic yards; the area between Avionics and the runway would produce 100,000 cubic yards; the area under the church has not been considered for use but would also yield about 100,000 cubic yards.

She indicated that any near-term future federal funding would likely be assigned for an ancillary project that must precede the runway extension, not the runway extension itself.

Ms. Thomas asked how long the airport might take to inform the task force that fill might actually be needed.

Ms. Hutchinson replied that the FAA office that the airport deals with has indicated that they could come back with a letter of intent that is presented directly to Congress as a

request, but questions remain about the quality of material coming out of the reservoir and the cost in relation to competitive sites. She added that perhaps there could be a balance of material used from different sites if necessary and cost-effective. Ms. Hutchinson said that she has a meeting with an FAA representative on December 3<sup>rd</sup> that will give her more information about how much money is available and on what it might be spent. She clarified that the FAA's definition of "good material" is that comprised of mostly gravel and sand, which is different from what is used on roadways.

The task force thanked her for attending and presenting to them.

Ms. Hutchinson confirmed that the cost to purchase fill material has been estimated at about \$16 million for just the fill; costs for transporting it to the airport varied from \$4-6 per cubic yard.

Ms. Thomas referenced a chart on the wall from Gannett Fleming showing the depth of the reservoir, which she said gave the impression of a deep, short reservoir; the chart has been reworked, she said, to show it more proportionately.

The task force talked among themselves informally while Dr. Wichser set up his presentation on how dredging could affect water quality on the South Fork Reservoir.

Dr. Wichser explained that the reservoir's feeder streams nutrient load is attached to fine sediment particles, which means that the nutrients are carried by all watershed streams into the reservoir and when the particles move there they are removed from downstream. He said that reservoirs can be looked at as biological reactors that promote growth of algae, and when it removes nutrients it changes the chemical composition of the water. Dr. Wichser noted that the reservoir contains a phosphorus concentration of greater than 50 parts per billion, which makes it "enriched" even though the same would not hold true for a river.

He said that the DEQ keeps water quality databases and there isn't a lot on the South Rivanna Reservoir, adding that they monitored it in 2002 and found different nutrient values but there is not much data prior to then that gives information about it from a chemistry standpoint. Dr. Wichser said that the water treatment plant processes are changed in relation to the changes in water quality, and more sediment requires different chemicals for removal. He noted that aluminum sulfate is added to remove that sediment, and federal and state laws stipulate meeting very strict requirements related to turbidity or cloudiness of water. Dr. Wichser said that the RWSA adds chlorination, fluoride, and corrosion inhibitors to the water supply, and there is a "zero-discharge plan," with all water being recycled and the sludge being removed and processed. He explained that backwashing allows for cleaning multi-media filters in a way such that sediment removed from the filters is discharged to equalization basins that are a part of the sludge treatment process.

In response to Ms. Edwards's question about sludge, Dr. Wichser said that the RWSA sends it to the Ivy Material Utilization Center where it is spread out as part of "clean fill" operations, although some localities use it and spread it on trees, etc.

Dr. Wichser said that spring rains require the RWSA to apply more chemistry due to changes in raw water quality.

He presented basic information and a diagram on hydraulic dredging, with water and sediment being sucked up and solids being shot back out of a pipe in the back of the dredging machine, adding that there are emissions from dredges. Dr. Wichser explained that the bottom of the reservoir contains water with suspended sediments, a sediment-water interface, and then deposited sediments; dredging the sediments at the bottom are of primary concern as they contain nutrients, metal deposits, and organic matter. He said that there are short-term increases in those materials during dredging, and one recommended mitigation measure is silt curtains placed around the perimeter of the dredging area.

Dr. Wichser added that if there were a fuel spill, there is potential that the water supply would have to be taken offline until that fuel spill is contained and compounds are not being taken in. "Right now the [treatment] processes would not remove fuel. It really doesn't take much fuel to contaminate water." He added that these types of dredges would hold anywhere from 300 to 800 gallons of fuel. Dr. Wichser said that if a spill were to happen, it could be 24 to 48 hours before the water supply were brought back online, but that could take longer if it happened in the summer when there was less water available for flushing and replenishing the water.

He said that DEQ has done a few core samples down by the bridge, and the levels of metals have been within acceptable range. Dr. Wichser reported that if a plume were released from the dredging operation, discharge could float up and down and could disturb sediment below the surface; as sediment is released it takes oxygen out of the water and this can result in a fish kill. He said that the system does recover to bring itself back into balance, but there is usually an impact from the incident.

Dr. Palmer asked about the size of the silt curtain, and Dr. Wichser indicated that perhaps a double-curtain would be used and that would need to be determined by the specifics of the permits to USFWS and DGIF.

Dr. Wichser explained that dredging disturbance is best limited during the time of year when fish are spawning and other critical bio-cycles are occurring. He said that seasonal rain periods should also be avoided as should drought times, as those aquatic systems are already stressed.

Dr. Palmer asked if this is why Gannett Fleming had dredging at 80-120 days per year.

Dr. Wichser responded that there are considerations for mechanical downtime, refueling events, weather, etc., and added that the EPA did a dredging study in Florida which is the

only study available on the impacts of biota. He said that their conclusions were that there were several taxonomic changes in algae-dominated systems, and trace metal concentrations in attached algae were reduced, and the environmental impacts of small-scale dredging impacts in urbanized areas are likely to be minor and short-term.

Ms. Smith commented that if you don't dredge, you will create an environment where storm events will create a plume-like scenario not only for the reservoir but for the other side of the dam, as more sediment is traveling over the dam.

There being no further business, the task force adjourned their meeting at 8:52 p.m.