Duck River Development Agency
Comprehensive Regional Water Supply Plan

Meeting Minutes

Workshop No. 3
Henry Horton State Park
December 9, 2009

Meeting Participants

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Attachments: Agenda, MS PowerPoint presentation

A summary of the discussion follows:

Needs Assessment

- Participant comment: When computing the safe yield for Normandy Reservoir, using a maximum drawdown to Elevation 840 ft for planning purposes is unacceptable due to impact on recreation and degradation of water quality in Normandy Reservoir. Using 850 ft as the maximum drawdown for Normandy Reservoir is much better.
- Participant comment: Does the water demand projection include full buildout of the industrial parks? Team response: No.
- Participant comment: What would the river deficit look like if Columbia's modeling constraint was set to 105 cfs or 110 cfs instead of 125 cfs as a weekly average? Team response: 100 cfs is the instantaneous minimum flow so the analyses used 125 cfs as a weekly average target. Additional modeling runs can be conducted to present the deficits for 105 cfs and 110 cfs weekly average targets. Modeling runs were conducted for 135 cfs and 150 cfs weekly average targets at Columbia which yield about 1 BG to 3 BG of deficit.
- Participant comment: It is important to document the daily need or duration of the deficit in the reliable capacity column which currently reflects the annual volume requirement. Team response: The number of days of deficit in each year of the period of record will be identified.

- Participant comment: Will there be a written document explaining the key points in the Needs Assessment? Team response: Yes. We are waiting on some additional information on water demands and then we can finalize the Needs Assessment.
- Participant comment: There are concerns about cultural impacts with some alternatives and whether they are addressed in the implementability criteria. An impact could occur that might not be reflected in the permitting process. Consider changing "environmental benefits" criteria to "environmental" to allow the inclusion of environmental impacts. Environmental impacts will be addressed under the permitting aspects of the Implementability criteria, but may not cause a delay in the project. Team response: We want to make sure we do not double count the impacts, and we will consider changing the definition for the environmental benefits criteria.

Alternatives

- *Alternative #1 – Water Efficiency Measures*
  - Participant comment: The "up to 30% reduction" in the alternative description is not a realistic goal for water efficiency. Could show a range of 10% to 30% for potential reduction in water demand. The high range in the estimate is not applicable for Duck River utilities because EPA protocol includes utilities that have lots of room for improvements (i.e., systems with no water metering in place, etc.) and the Duck River utilities have implemented these measures.
  - Participant comment: Current regulations already require that utilities have water efficiency plans in place. Utilities have no authority to enforce water conservation. Realistic expectation is 5% savings for water efficiency.
  - Participant comment: Regarding full cost pricing for water, Tennessee utilities include depreciation in the rate schedule.
  - Participant comment: Water conservation is voluntary and that should be noted under implementability criteria.
  - Participants agreed that this is a Baseline Alternative.

- *Alternative #2 – Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels*
  - Participant comment: Consider changing the title from "modify" to "increase". Team response: Title changed subsequent to workshop.
  - Participant comment: This alternative should be fatally flawed. It does not add storage for the region and relies on the Normandy Reservoir as the sole source of supply to meet the projected needs. This alternative is not acceptable because it unfairly burdens the reservoir users with problems in the downstream segment.

- Participant comment: This alternative would put the reservoir and river system in the same condition as in the drought of 2007.
- Participant comment: The additional impact on recreation associated with drawdown in Normandy Reservoir should not be considered as an issue because the drought of record is such a severe and infrequent occurrence.
- Participant comment: The Normandy Reservoir- Duck River system survived the drought of 2007.
- There was disagreement among workshop participants regarding whether to fatally flaw this alternative so additional information will be provided.
- The status of this alternative is to be determined in future stages of the project.

- *Alternative #3 – Regional Drought Management Plan*
  - Participant comment: Change title to Regional Drought Management Plan. Team response: Title changed subsequent to workshop.
  - Participant comment: Based on experience from the 2007 drought, the water utilities got little or no help from the State agencies. The water utilities support development of a drought management plan, but Agencies need to react faster than in 2007 to preserve water in the Normandy Reservoir-Duck River system.
  - TDEC will require each water utility on the Duck River to have a separate drought management plan and the plans will reflect the need for collaboration during a drought.
  - Participant comment: An alternative rule curve could be used for Normandy Reservoir during drought periods rather than instituting a permanent rule curve.
  - Participants agreed that this is a Baseline Alternative.

- *Alternative #4 – Optimize Releases from Normandy Reservoir*
  - Modeling assumes that we can better match releases from Normandy Reservoir to meet the target at Shelbyville. Options to better match releases and flow targets might include installation of additional stream gages, dam controls, instrumentation, etc. Automatic control is a possibility that should be investigated. Need to define a reasonable mode of operation from TVA's perspective.
  - Participant comment: Combine this alternative with changing from instantaneous to average weekly or daily flow constraints at Shelbyville or Columbia.
  - Participants agreed that this is a Baseline Alternative.

- *Alternative #5 – Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam*
  - Participant comment: The USACE has good tools for presenting impacts due to flooding.
  - Participant comment: Normandy Reservoir was built for flood control.
  - Participant comment: Would power of attorney (i.e., eminent domain) be required to acquire additional land downstream?
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #6 – Modify Normandy Reservoir Flood Rule Curve*
  - Participant comment: Revise text for alternative to identify that it "will" increase flooding due to a reduction in flood storage.
  - Participant comment: Need more detail about flooded areas and impacts in order to make a decision.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #7 – Reduce Irrigation Withdrawals*
  - Participants agreed with a fatal flaw designation for this alternative.

- *Alternative #8 – Modify River Constraints to Preserve Storage in Normandy Reservoir*
  - Participant comment: Reducing the flow constraint at Shelbyville could ultimately increase the deficiency at Columbia. TDEC identified that changing the constraints at Shelbyville and Columbia are not mutually exclusive.
  - Participant comment: Are we mandated to provide 100 cfs at Columbia? TDEC identified that Normandy releases water to meet the Shelbyville constraint not Columbia. TVA identified that the goal of Normandy Reservoir's operation is based on maintaining flow at Shelbyville.
  - Participant comment: The flow numbers could be changed in the future.
  - Participant comment: The technical memorandum should include a detailed explanation of river constraints.
  - Participant comment: Lots of improvements are already in place or are taking place at the WWTPs because of USEPA requirements or guidelines.
  - Participant comment: Flow requirements could be altered with improved wastewater treatment that reduces nitrogen levels. However, wastewater assimilation is not the only consideration. Consequently, wastewater improvements may not lead to a reduction in flow constraints.

- Participant comment: Goal should be to obtain the highest quality of water for all needs.
- Participant comment: Regarding driver for wastewater improvements, Tysons is subject to more stringent industry guidelines and Shelbyville made improvements to reduce nutrients in order to avoid nitrogen toxicity.
- Participant comment: If the Columbia constraint is not met and the Shelbyville constraint is met, will a release from Normandy Reservoir be enacted? Will releases to meet the Columbia constraint eventually become the new operating policy? If so, making releases from Normandy Reservoir to meet the Columbia constraint actually becomes the "No Action" alternative at some point in the future.
- The status of this alternative is to be determined in future stages of the project.

- *Alternative #9 – Raise Normandy Dam*
  - State Designated Natural Area at Short Springs would be impacted at about 2 ft above the current pool level. Alternative could be phased in by changing the pool level as needed if the dam was raised.
  - Participant comment: How much additional private land is needed? Team response: Approximately 50 acres. Eminent domain may be needed to acquire permanent flood easements.
  - Participant comment: Impacts to roads and bridges near Normandy Reservoir should be considered.
  - Participant comment: This alternative offers the advantage of additional flood storage.
  - Participant comment: Is reference to obtaining permit "likely" an accurate statement? Team response: Five years ago a study was conducted on this alternative and the ability to obtain a permit was discussed. TVA identified that the permits could be obtained and recommended this alternative in the 2000 DEIS.
  - This alternative and the other three alternatives from 2000 DEIS plus the Tennessee River pipeline alternative are designated required alternatives and their status will be determined in future stages of the project.

- *Alternative #10 – Improve DRUC Intake*
  - Participant comment: Consider this alternative as part of Alternative #2.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #11 – Construct Second DRUC Intake*
  - Participant comment: Consider this alternative as part of Alternative #2.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #12 – Construct Fountain Creek Reservoir*
  - Participant comment: Constructing Fountain Creek Reservoir will require knowledge of water losses and locations in the reservoir area. If water goes underground due to karst topography it may not be available for storage in the reservoir.
  - This alternative and the other three alternatives from 2000 DEIS plus the Tennessee River pipeline alternative are designated required alternatives and their status will be determined in future stages of the project.

- *Alternative #13 – Construct Fountain Creek Reservoir with Downstream Release*
  - Participant comment: Modify title to clarify what is meant by "run-of-the-creek" reference. Team response: Title changed subsequent to workshop.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #14 – Upgrade Existing Columbia City Dam to Allow Releases*
  - Participants agreed with a fatal flaw designation for this alternative.

- *Alternative #15 – Build Offstream Storage Reservoir along Duck River*
  - Participant comment: This alternative appears to be fatally flawed.
  - Participant comment: Could hydroelectric facilities be added to an offstream impoundment to make this a better option?
  - A 5 BG reservoir with an average depth of 30 ft would need roughly 500 acres.
  - Participant comment: What is meant by the term "offstream"? Team response: Offstream refers to construction of a dam on a small stream or in an area where the possibility of impacting wetlands is minimal. The reservoir would "skim" high flows from the Duck River for refill and would provide storage during drought events.
  - Participant comment: Are there areas suitable for offstream storage? Team response: There are areas along the Duck River that would be suitable. The site would likely have a very small drainage area.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #16 – Utilize Quarries*
  - Records for the Belfast and Hardison Mill Quarries have been requested.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #17 – Construct Pipeline from Tennessee River*
  - Need to identify whether the pipeline would extend to the Columbia WTP or the Duck River at the Columbia pool.
  - Participant comment: Has the water quality of the Tennessee River been reviewed? TVA identified at the workshop that the water quality in the Tennessee River is very good.
  - Participant comment: Is this an interbasin transfer? Team response: No. The intake would be located in the immediate vicinity of the confluence of the Duck River and the Tennessee River so water withdrawals would be returned to their origin.
  - Participant comment: It needs to be pointed out that pumping from the Tennessee River would only take place in drought years.
  - Participant comment: It is important to note that this alternative is drought proof.
  - This alternative and the four alternatives from 2000 DEIS are designated required alternatives and their status will be determined in future stages of the project.

- *Alternative #18 – Construct Pipeline from Tims Ford Reservoir*
  - This alternative and the other three alternatives from 2000 DEIS plus the Tennessee River pipeline alternative are designated required alternatives and their status will be determined in future stages of the project.

- *Alternative #19 – Discharge Arnold Cooling Water to Duck River*
  - Revise description of the alternative to include reference to Woods Reservoir and the 57 MG holding tank.
  - Additional information will be collected on this alternative.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #20 – Purchase Water from Nearby Systems*
  - Participant comment: Water will have to be treated again due to likelihood of disinfection byproducts formed due to long travel times.

- Participant comment: Smaller version of alternative could be used to serve Williamson County or some partial area in the initial years of the planning period.
- Include interbasin transfer in the implementability criteria.
- The status of this alternative is to be determined in future stages of the project.

- *Alternative #21 – Utilize Groundwater Resources*
  - Based on USGS studies, there would not be a sufficient quantity of water available to meet the need especially during drought years. In addition, the Duck River is closely connected to groundwater aquifers and groundwater withdrawals could cause a reduction in river flow.
  - Participants agreed with a fatal flaw designation for this alternative.

- *Alternative #22 – Pump Treated Water from Columbia to WWTP to Columbia Dam*
  - Participant comment: Not supportive of this alternative because of the issue with potential flow vs. real flow. This alternative would require a detailed discussion of what problem this alternative solves.
  - Identify need for upgrade to Columbia WWTP and potential cost.
  - Revise the description of the alternative to identify that pumping would only be necessary during drought conditions.
  - Participant comment: Could we do a pumpback similar to this at Shelbyville?
  - TDEC identified that they would not necessarily be opposed to the idea of pumping treated wastewater to a point downstream of the existing Columbia Dam.
  - The status of this alternative is to be determined in future stages of the project.

- *Alternative #23 – Construct New Water Intake for Maury County at River Mile 163*
  - Participants agreed with a fatal flaw designation for this alternative.

- *Alternative #24 – Construct New Water Intake for Maury County at River Mile 108*
  - This alternative and the other three alternatives from 2000 DEIS plus the Tennessee River pipeline alternative are designated required alternatives and their status will be determined in future stages of the project.

- *Alternative #25 – Construct New Water Intake at River Mile 108 and Pump Back to Columbia Dam Pool*
  - Participant comment: It would be informative to know the flow in the Duck River at River Mile 108 near Williamsport when pumping occurs.

- Participant comment: When would this alternative be operated? Team response: Pumping would only occur on an as-needed basis.
- Revise title to identify that the discharge is to the Columbia Pool. Team response: Title changed subsequent to workshop.
- The status of this alternative is to be determined in future stages of the project.

- *Alternative #26 – Construct Infrastructure to Return Treated Water from Tullahoma WWTP to Normandy Reservoir*
  - Participant comment: Could Tullahoma get water from another source? Team response: Tullahoma is on a ridge between the Duck River and the Elk River basins and it just happens that the wastewater plant is located in the Elk River basin. It is appropriate that Tullahoma gets its water from Normandy Reservoir in the Duck River basin.
  - Participant comment: The cooling water from Arnold could be used to offset the loss of water from the Duck River through the Tullahoma WWTP. Team response: The wastewater flow would occur every day whereas the Arnold Cooling Water discharge may be periodic. Additional information will be obtained for Arnold cooling water.
  - The status of this alternative is to be determined in future stages of the project.