



Duck River Development Agency  
Comprehensive Regional Water Supply Plan

**Meeting Minutes**  
Workshop No. 4  
Henry Horton State Park  
February 24, 2010

**Meeting Participants**

Name	Organization	E-Mail	Telephone
George Rest	O'Brien & Gere	<a href="mailto:restgb@obg.com">restgb@obg.com</a>	301.731.1160
Tom Dumm	O'Brien & Gere	<a href="mailto:dummte@obg.com">dummte@obg.com</a>	301.731.1162
Doug Murphy	Duck River Agency (DRA)	<a href="mailto:doug@duckriveragency.org">doug@duckriveragency.org</a>	931.684.7820
Linda Justice	Duck River Agency (DRA)	<a href="mailto:linda@duckriveragency.org">linda@duckriveragency.org</a>	931.684.7820
Justin Adams	Trauger & Tuke	<a href="mailto:jadams@tntlw.net">jadams@tntlw.net</a>	615.256.8585
Kelly Powell	CPWS	<a href="mailto:kelly.powell@cpws.com">kelly.powell@cpws.com</a>	931.375.7646
Betty Wiley	Duck River Watershed Association	<a href="mailto:bettybwiley@comcast.net">bettybwiley@comcast.net</a>	615.776.5257
Sherry Beard	Duck River Watershed Association	<a href="mailto:tnpinkkayaker@msn.com">tnpinkkayaker@msn.com</a>	615.426.4572
Steve Alexander	US Fish & Wildlife Service	<a href="mailto:steven_alexander@fws.gov">steven_alexander@fws.gov</a>	931.528.6481
Joanne Pogue	Duck River Board (DRB)	<a href="mailto:jpogue_2000@yahoo.com">jpogue_2000@yahoo.com</a>	931.381.2169
Paul Myatt	DRB		931.670.0682
Randal Braker	Duck River Utility Commission	<a href="mailto:manager@druc.org">manager@druc.org</a>	931.455.6458
Ryan Owens	TDEC	<a href="mailto:ryan.owens@tn.gov">ryan.owens@tn.gov</a>	931.490.3941
David Money	TDEC - DWS	<a href="mailto:david.money@tn.gov">david.money@tn.gov</a>	931.480.4172
Elaine Boyd	TDEC	<a href="mailto:elaine.boyd@tn.gov">elaine.boyd@tn.gov</a>	615.532.0288
Scott Young	Tullahoma Utilities Board (TUB)	<a href="mailto:syoung@tub.net">syoung@tub.net</a>	931.455.4515
Bill Wade	E&WE	<a href="mailto:wade@energyandwatereconomics.com">wade@energyandwatereconomics.com</a>	931.490.0060
Rodney Knight	US Geological Survey	<a href="mailto:rrknight@usgs.gov">rrknight@usgs.gov</a>	615.837.4731



Name	Organization	E-Mail	Telephone
Kim Elkin	TWRA	<a href="mailto:kimberly.elkin@tn.gov">kimberly.elkin@tn.gov</a>	615.781.6643
Steven Barnes	TVA	<a href="mailto:sebarnes@tva.gov">sebarnes@tva.gov</a>	423.751.6436
Eslick Daniel	DRB	<a href="mailto:eedaniel@hughes.net">eedaniel@hughes.net</a>	931.682.3298
Robert Foster	Retired	<a href="mailto:rober2t@aol.com">rober2t@aol.com</a>	615.771.2812
John Rissler	USDA / NRCS	<a href="mailto:john.rissler@tn.usda.gov">john.rissler@tn.usda.gov</a>	615.277.2576
Carol Chandler	USDA / NRCS	<a href="mailto:carolchandler@tn.usda.gov">carolchandler@tn.usda.gov</a>	615.452.3838
Jim Clark	CPWS	<a href="mailto:jim.clark@cpws.com">jim.clark@cpws.com</a>	931.375.7601
Marjorie Collier	Duck River Watershed Association / Friends of Short Springs	<a href="mailto:marcollier@lighttube.net">marcollier@lighttube.net</a>	931.455.4186
Patricia Clemens	Friends of Short Springs	<a href="mailto:patclemens@bellsouth.net">patclemens@bellsouth.net</a>	931.455.8850
Leslie Colley	The Nature Conservancy	<a href="mailto:lcolley@tnc.org">lcolley@tnc.org</a>	931.840.8881
Gina Hancock	The Nature Conservancy	<a href="mailto:ghancock@tnc.org">ghancock@tnc.org</a>	615.383.9909
Sally Palmer	The Nature Conservancy	<a href="mailto:spalmer@tnc.org">spalmer@tnc.org</a>	615.383.9909
Lee Morrison	DRB	<a href="mailto:morr2142@bellsouth.net">morr2142@bellsouth.net</a>	931.703.4044
Rob Lantz	Garver	<a href="mailto:rmlantz@garverusa.com">rmlantz@garverusa.com</a>	615.440.0155
Brian McCrodden	HydroLogics	<a href="mailto:bmccrodden@hydrologics.net">bmccrodden@hydrologics.net</a>	919.856.1288
Lee Keck	TDEC - DWS	<a href="mailto:lee.keck@tn.gov">lee.keck@tn.gov</a>	615.532.0517
David Crowell	Shelbyville Water System	<a href="mailto:dcrowell@shelbyvillepower.com">dcrowell@shelbyvillepower.com</a>	931.684.7171
Tom Puckett	HB&TS Utility District, Williamson County	<a href="mailto:tpuckett_hbts@bellsouth.net">tpuckett_hbts@bellsouth.net</a>	615.794.7796
Kenneth Carr	Lewisburg Water & Wastewater	<a href="mailto:kenneth@lewisburgwater.org">kenneth@lewisburgwater.org</a>	931.359.6831
Richard Young	BDY Environmental	<a href="mailto:ryoung@bdy-inc.com">ryoung@bdy-inc.com</a>	615.772.6327
Richard Quin	Duck River Watershed Association	<a href="mailto:rquin@bellsouth.net">rquin@bellsouth.net</a>	931.797.5541
Don Safer	Tennessee Environmental Council	<a href="mailto:dsafer@comcast.net">dsafer@comcast.net</a>	615.354.0505
David McKinney	TWRA	<a href="mailto:dave.mckinney@state.tn.us">dave.mckinney@state.tn.us</a>	615.781.6577
Michael Bradley	USGS	<a href="mailto:mbradley@usgs.gov">mbradley@usgs.gov</a>	615.837.4703



Name	Organization	E-Mail	Telephone
Michael Eiffe	TVA	<a href="mailto:maeiffe@tva.gov">maeiffe@tva.gov</a>	865.632.3074
Caryl Giles	City of Spring Hill	<a href="mailto:cgiles@springhilltn.org">cgiles@springhilltn.org</a>	931.384.0626
Neil Loeffler	NLLA / DRUC	<a href="mailto:lefler@cafes.net">lefler@cafes.net</a>	931.393.3539
Joe Bishop	CTI Engineers, Inc.	<a href="mailto:jbishop@ctiengr.com">jbishop@ctiengr.com</a>	615.834.8300
Bill Walter	DRB		931.381.0393
Ben Smith	TACIR	<a href="mailto:bensmith@united.net">bensmith@united.net</a>	931.364.7312
Greg Sanford	Gresham, Smith & Partners	<a href="mailto:greg_sanford@gspnet.com">greg_sanford@gspnet.com</a>	616.770.8343
Bill Wolfe	US Geological Survey	<a href="mailto:wjwolfe@usgs.gov">wjwolfe@usgs.gov</a>	615.837.4756

**Attachments:** Agenda, MS PowerPoint presentation

A summary of the discussion follows:

#### Update on Needs Assessment

- Participant comment: Is the river deficit localized and specific to Columbia's withdrawal? Team response: The river deficit represents the deficit in the reach from Shelbyville to Columbia, but is most critical at Columbia because only Columbia has the withdrawal permit tied to the river flows.

#### OASIS Hydrologic Modeling

- Participant comment: Does the hydrologic modeling slide showing the number of days of deficit at Columbia reflect 2060 demand conditions? Team response: Yes.
- Participant comment: The modeling runs should be considered "best case" model runs because they assume perfect releases and river conditions. Team response: Agree that it is harder to do in practice than what we do with the model and it will be noted.

#### Environmental Permitting Briefing

- Participant comment: Does the Team think that Fountain Creek Reservoir will work? Team response: No. The water supply need to meet the projected deficit does not justify the reservoir.
- Participant comment: Utilities have been obtaining permit approvals using Safe Drinking Water Act security provisions (TCA 68221711 (?)) that may not have been justified otherwise. This provision relates to taking water from a reservoir to



meet downstream needs and denying water users adequate supply. In addition, water has been misappropriated for the users of the Duck River related to releases during drought conditions.

#### Water Supply Alternatives - General

- Each \$0.01 per 1000 gallons sold generates approximately \$70,000 - \$80,000 annually for DRA. In general, the nickel fee would go up about \$0.01 for roughly every \$1 million in capital cost. Other financing options such as grants may also be appropriate.
- Participant comment: What is the accuracy of the cost estimates? Team response: Costs are "order-of-magnitude" estimates which are essentially +50% to -30%.
- Participant comment: The purpose and need of the study does not include recreation so why is recreation considered in the water supply criteria. Recreation criteria should be removed so as not to skew the decision. Team response: Recreation was added to the list of criteria at one of the early workshops in response to stakeholder requests.

#### Alternative #1 - Water Efficiency Measures

- Joe Bishop provided an update on the utility survey.
- No comments.

#### Alternative #2 - Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels and Improve DRUC Intake

- Participant comment: Suggest Alternative #2 be removed from the analysis. Remove the 2.5 ft reference under recreation criteria or qualify that this is based on modeling and ideal or optimum conditions. This alternative has a negative impact on recreation.
- Participant comment: If recreation is at a zero level when the reservoir is 20-25 feet below normal, what difference does it make if the level drops an additional 2-3 feet.

#### Alternative #3 - Regional Drought Management Plan

- Participant comment: Need to make sure "crisis" actions are included in the regional drought management plan. Need to act in early stages of the drought.
- Participant comment: Do we know if there will be any changes to the river or reservoir release requirements if WWTP effluent is improved?

#### Alternative #4 - Optimize Releases from Normandy Reservoir

- Participant comment: What impact will the upgrades to the Shelbyville WWTP have on the study? Will the improvements at the Shelbyville WWTP change the target



flow for release from Normandy Reservoir? Participant response: The bid for construction of the improvements will be solicited this Spring and it will be a 30 month project. Team response: A reduction in the release requirement for Shelbyville would likely not impact deficits for river users due to existing 100 cfs instantaneous constraint at Columbia.

#### Alternative #5 - Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam

- Participant comment: The relationship between the frequency and magnitude of flood events needs to be defined and will require more information.
- Participant comment: Floods would not be worse than prior to construction of Normandy Reservoir (pre-1976). Floods could actually be more severe depending on reservoir releases and reservoir operation.
- Participant comment: Does the increase in reservoir level have to be 5 ft? Team response: No.
- Participant comment: Do the gates need to be replaced? Team response: No.
- Participant comment: How much advance notice does TVA need for storm events? TVA response: TVA uses rain gages and rainfall forecasts to set the release schedule. Worst flood events have been due to higher than expected rainfall amounts. Operation of the reservoir is a balancing act.
- Participant comment: One approach for determining the potential footprint of the flooding downstream of Normandy could be to define the magnitude of in-bank and out-of-bank flows in the Duck River.

#### Alternative #6 - Modify Normandy Reservoir Flood rule Curve (Early Refill)

- Alt. #6 is not as reliable as Alt. #5 in terms of refilling to the Summer/Fall pool level in Normandy Reservoir.
- Combine with Alt. #5.

#### Alternative #8 - Modify River Constraints to Preserve Storage in Normandy Reservoir

- Brian McCrodden and George Rest clarified the relationship between 125 cfs weekly average and 100 cfs instantaneous.
- Participant comment: The 100 cfs constraint at Columbia is out-of-date and is not a natural flow.
- Participant comment: Why would an EA or EIS be required? What would trigger the EA or EIS? No changes in the Normandy release are proposed. USF&WS identified that an EA or EIS would be required due to the change in flow regime and it is a State issue (environmental permitting is needed). In addition to the permitting identified by the Strategic Team, Section 7 would also be required.



Alternative #9 - Raise Normandy Dam (Increase Winter/Spring Pool and Retain Summer/Fall Pool Level)

- Participant comment: Does Normandy Reservoir need to be raised 5 ft? Team response: No. It may be possible to reduce the cost by raising the pool level by some increment of 5 ft.
- Participant comment: Should we be saying "increase" Normandy Reservoir release in the title for the alternative rather than modify? Participants agreed that it could increase or decrease and that modify was the best term.
- Participant comment: Would the Normandy Reservoir improvements (flood gates, etc.) add any benefit? In addition, new facilities (campgrounds, beaches, etc.) at Normandy Reservoir should be included under the recreation criteria. Team response: Newer gates would certainly add benefit because the existing gates are over 30 years old and the new campground and beach facilities will be included under recreation criteria.
- Participant comment: What negative impact might be associated with this alternative? If an EIS is required, what is the impact that would trigger the EIS? Participants identified that the current flow regime is beneficial to the species density and any change in flow release would need to be studied. Team response: Issues regarding inundation at Short Springs would need to be reviewed.
- Participant comment: There are two plant species of concern in Short Springs. Team response: No Summer/Fall inundation of the Short Springs area is proposed because the pool level will be retained at its current level of 875 ft. Some additional periodic flooding will occur in the Winter/Spring due to the increase in Winter/Spring pool level.

Alternative #12 - Construct Fountain Creek Reservoir and Pipe Raw Water to Columbia WTP

- Participant comment: Karst topography raises concerns about the ability of the reservoir to hold water and Cedar Creek Landfill upstream of the proposed Fountain Creek Reservoir may impact water quality.
- Participant comment: Regarding the acres of wetlands impacted by construction of the reservoir, more wetlands will be created through mitigation. Don't agree with the "Highly Unlikely" classification for this alternative. All projects will be difficult.

Alternative #13 - Construct Fountain Creek Reservoir with Downstream Release

- No comments.



#### Alternative #15 - Monsanto Lake (Existing Offstream Storage Reservoir)

- Participant comment: How many acres is the reservoir and watershed? Team response: Monsanto Lake is roughly 450 acres when filled with water, the watershed is approximately 650 acres and the parcel on that side of the Duck River which includes the reservoir is approximately 850 acres.
- Participant comment: This is a large expense considering that it is three times the cost of raising Normandy Reservoir.
- Participant comment: Is the integrity of the earth dam sound? Team response: Indications from reports are that it is sound.
- Participant comment: Local perception is that this area has toxic materials and is not fit for water supply. This will be a difficult sell to water customers due to the contamination issue. Team response: It is our understanding that the contamination issue was on the Monsanto site on the opposite side of the river and that the Team is not aware of any contamination issues associated with Monsanto Lake.

#### Alternative #16 - Utilize Quarries

- Participant comment: Any history of the Hardison Mills quarry going dry during drought? Team response: The bottom of the Hardison Mills quarry is above the Duck River based on some field calculations and it did not go dry during the 2007 drought.

#### Alternative #17 - Construct Pipeline from Tennessee River to the Columbia WTP

- Participant comment: How often would you need to pump? Team response: Pumping would be need roughly 8 out of 10 years and the average number of days of pumping for the period of record was 23 days.

#### Alternative #18 - Construct Pipeline from Tims Ford Reservoir

- Participant comment: Interbasin transfers are common so this is not a significant hurdle.
- Participant comment: Tims Ford is a hydroelectric generating project so revenue reduction would need to be taken into account and that could be difficult to sell.

#### Alternative #19 - Convey Arnold Cooling Water to Normandy Reservoir

- Participant comment: What river feeds Woods Reservoir and how large is the watershed? Team response: Woods Reservoir is fed by the Elk River and its drainage area is 263 square miles.

#### Alternative #20 - Purchase Water from Nearby Systems

- No comments.



Alternative #22 - Pump Treated Wastewater from Columbia WWTP to Below Columbia Dam

- No comments.

Alternative #24 - Construct Water Intake near Williamsport and Pump Back to Columbia WTP

- Participant comments: The cost of water per day of need should be calculated in order to generate a cost for the alternative.
- Participant comment: In addition to data presented for 2060, how many days per year would pumping be required for 2020 and 2040?
- Participant comment: What is the impact on the water quality below the intake at Williamsport? What percent of the flow is reduced? Team response: The 2000 PEIS identified that a withdrawal of 31 cfs would reduce the flow in the river by about 21% during dry weather conditions.
- Participant comment: What about the Mt. Pleasant WWTP leak? Team response: Team will review issue.
- Participant comment: Would this facility only operate during drought conditions? Team response: Yes.

Alternative #25 - Construct Water Intake near Williamsport and Pump Back to Columbia Dam Pool

- No comments.

Alternative #26 - Construct infrastructure to Return Treated Wastewater from Tullahoma WWTP to Normandy Reservoir

- No comments.

General

- Participant comment: May want to group alternatives based on those that can be phased in to meet demands as they grow and those that need to be implemented all at once.
- Participant comment: What discount rate is proposed? Team response: A discount rate of 4% or 5% will most likely be used.
- Participant comment: What is the distinction between Backup and Cornerstone? Team response: Each of the "short listed" plans will include a Cornerstone alternative, along with one or more Backup plans that are compatible with the Cornerstone.
- Participant comment: Team should take a hard look at the backup alternatives and assess whether a combination of projects best meets the objectives.



- Participant comment: It may be worthwhile to review and polling data on the alternatives scorecard and describe what the polling data means.
- Participant comment: The accuracy of the demand forecast needs to match the accuracy of the hydrologic modeling. Provide demand forecasts and show shortfalls in 10 year increments.
- The Open House is scheduled for March 24, 2010 at Henry Horton State Park.