Delaware River Basin Commission

RFAC meeting

April 7, 2011

QUESTIONS RECEIVED

Seven sets of questions were received from members of the public by the March 24 deadline. Submissions are listed below, in the order received.

Two sets of questions were received from members of the public after the March 24 deadline. Submissions are listed below, in the order received.

QUESTIONS for RFAC meeting

SET # 1

Submitted by: Phil Chase
Affiliation: Upper Delaware Council
Received on: March 15, 2011

Questions for the DRBC:

1. Recently (the last 6 months) the Delaware diversions to NYC have increased to just under 700 mgd. Why this unexpected increase?

2. Why should the Delaware watershed supply 800 mgd to NYC when for the last decade only 515 mgd has been the average?

3. In 1931 the Supreme Court granted NYC 440 mgd to be diverted out of the Delaware watershed to the Hudson watershed. In 1954 this diversion was increased to 800 mgd. In a study by the Rand Corp it was stated that someday in the future this 800 mgd may be decreased. What must be done to reduce this 800 mgd so that the present cold water resources of the upper Delaware are not downgraded?

4. When the proposed connection hooking the Catskill Aqueduct to the Delaware Aqueduct just outside of Newburgh, NY is completed, can we expect 800 mgd Delaware diversion to become the norm?

5. It has been stated by the NYCDEP that the $2 billion filtration plant for the Croton will be able to supply just under 300 mgd for the City but will not be used except for emergencies. Is it true that this is due to the cost of pumping rather than gravity flow for the Delaware and Catskill reservoirs?

QUESTIONS for RFAC meeting

SET # 2

Submitted by: Peter Kolesar (a) and James Serio (b)
Affiliation: Columbia University (a); Delaware River Foundation (b)
Received on: March 21, 2011

Our Purpose

The following questions are motivated by our intention to thoroughly evaluate any candidate release proposals being considered for adoption when the current FFMP expires at the end of May 2011. Our evaluations include, but are not limited to, intensive analysis via the OASIS and USGS DSS habitat models of the Delaware. Thus, we require enough specificity about a release proposal to enable us to model it in OASIS and in the DSS.

Hence, we are interested in identifying candidate release policies that are being developed or proposed by any of the decree parties, by the DRBC or any of its committees or subcommittees, or by any of the stakeholders who have been represented at recent RFAC meetings. In particular we ask:

(1) Question for New Jersey:

Does New Jersey have a release proposal for June 1 implementation? If so, please provide specific parameters so that we can evaluate its performance as compared to other candidates. If not, is there a plan to develop and test a release policy for June 1 implementation?

(2) Question for Aquatic Conservation Unlimited Inc.:

Does ACU have a release proposal for June 1 implementation? If so please provide specific parameters so that we can evaluate its performance as compared to other candidates. If not, is there a plan to develop and test a release policy for June 1 implementation?

(3) Question for New York State DEC:

What are the opinions of the experts at the New York State Department of Environmental Conservation, Division of Fish, Wildlife & Marine Resources, Bureau of Fisheries, and the Pennsylvania Fish and Boat Commission, Bureau of Fisheries who authored the Joint Fisheries White Paper of January 2010, regarding the habitat benefits and deficits of the proposed release tables A through F that NYS-DEC presented at the March 8 RFAC meeting, particularly as compared to their own release recommendation (scenario 6)? What is their opinion of its performance during periods of drought?

(4) Questions for New York City DEP:

Since NYC DEP, via its consultants Hazen & Sawyer, shared elements of the approach that they are developing, we have specific questions that arise from their April 7 presentation. To the extent possible, our questions will be reference specific pages or elements of the April 7 Hazen and Sawyer presentation:

a) Referencing page 11. Probabilistic streamflow forecasts from the current 'release day' date forward through to June 1 play a central role in your determination of 'water availability.' Specifically, how are those forecasts made? Specifically what simulated forecasts (hindcasts) are used in your OASIS simulations? Can this data be made available for our analysis?

b) Referencing page 11. Cumulative Delaware (PCN) diversions from the current 'release day' date forward through to June 1 play a central role in your determination of water availability. Specifically, how are those diversion forecasts made? Specifically what simulated forecasts (hindcasts) are used in your OASIS simulations? Can this data be made available for our analysis?

c) Referencing page 12. We understand that both the design of the release tables and the procedure for switching from one table to another are critical elements of the type of release policy that you are developing. Page 12 gives a table selection 'example.' In order to understand your proposal fully we require an unambiguous specification of the release table selection algorithm.

d) Referencing page 14. It is our understanding from the comments made during the April 7 presentation that this page, which describes a possible approach to spill mitigation, is at this time a hypothetical which will not be developed in time for June 1 implementation. Please verify if this understanding is correct. If it is not, please provide an unambiguous specification of the spill mitigation proposal.

e) Referencing page 15. Since there is a broad support within the fishing conservation community for June 1 implementation of a release plan based on the proposal of the Joint Fisheries White Paper, and since release table/schedule F, developed by NYS -DEC which is part of your portfolio of release tables, comes the closest to the Joint Fisheries White Paper proposal -- while having certain release quantities that are the substantially lower than those in the Joint Fisheries recommendation, we are concerned to see from your results on page 15 that schedule F would only be used some 8% of the time during the month of August. August and indeed the entire summer are critical for the trout population and ecology. What is your assessment of this low frequency of implementation schedule F at times when it would appear to be needed most?

f) Referencing page 16. The scatter plot on this page while indicating that 'on average' the tested policy OST-FFMP has higher releases than the FFMP, is also troubling in that there are numerous occasions in which the weekly average releases under OST FFMP are substantially lower than under the current FFMP. We note that this happens on a number of occasions when the FFMP releases themselves are already undesirably low. What is your assessment of the impact of such reduced releases on the fishery?

g) Referencing pages 18 through 22. These pages contain time traces of reservoir storage, of the release table in effect, of reservoir releases and of river flows at key gauge stations. We request that you add to this portfolio of graphs a time trace of NYC Delaware diversions.

h) We are troubled by the pattern of low releases and reservoir flows shown on page 19 through 22, during the drought of 2002. What is your assessment of the impact of such reduced releases on the fishery?

i) Question: (Relative to making an independent assessment of the performance of OST-FFMP or its variants.) We require enough specificity about all of the components of your proposal in order to be able to evaluate it using the OASIS and DSS models of the Delaware. What are your plans and timeframe for providing such information?

(5) Questions for RFAC, the DRBC and the Decree Parties:

We have broad concerns regarding the standards and methodologies of evaluation to be utilized in analyzing and selecting a release policy to replace the current FFMP. There is a need for openness, transparency and verification. (See our query relative this issue to NYC-DEP above. (4 i))

Background: During the time period leading up to the adoption of the FFMP in 2007, the OASIS simulation model of the Delaware was defined as the benchmark by which any release proposal was to be evaluated. That model, publically available, included a standard 'driving database' of daily water flows into the reservoirs and key tributaries over the period January 1, 1928 to September 30, 2000. To our knowledge , all analyses run by the DRBC or the decree parties or interested stakeholders, such as ourselves, were conducted using this model and this database, and were run with constant daily NYC Delaware diversions. This standardization facilitated communication between our stakeholder coalition and the DRBC and decree parties – and we feel accelerated the progress toward development of an implementable release program.

The OASIS database for the Delaware model has been updated to run to September 30, 2006.

Question: Are we to understand that the OASIS Delaware model and this expanded database are the current benchmarks?

The research reported in the Joint Fisheries White Paper employs a pattern of New York City Delaware diversions with a constant annual level but that vary by month. (See Figure 2 of the White Paper.) Our own recent OASIS based research has also used patterns of NYC Delaware diversions at a constant annual level but that vary by month. The results reported by Hazen and Sawyer on March 8 apparently use a different pattern of NYC Delaware diversions.

To assure 'apples to apples comparisons', standardization of evaluation procedures is important. It is our understanding that NYC DEP has its own OASIS model of the Delaware which runs over a different and somewhat extended timeframe -- apparently

from 1927 to 2008. It is our understanding that the results reported to RFAC on April 7 by Hazen and Sawyer were run with the NYC DEP version of OASIS.

Questions: Is it the intention of the DRBC and the decree parties to bring the DRBC OASIS model of the Delaware into correspondence with the New York City OASIS model of the Delaware? What is the DRBC and decree party policy with regard to sharing elements of the NYC model and its fuller database -- among themselves and with interested stakeholders?

On February 23, 2006 the Decree parties published a document “PROTOCOLS FOR MODELS SUBMITTED TO THE PARTIES TO THE 1954 U.S. SUPREME COURT DECREE” (http://water.usgs.gov/osw/odrm/protocols.pdf).

Question: Does this policy apply in the current round of release policy development, and does it apply to the NYC DEP OST?

Question: Has there been discussion about how the Delaware Basin enters and comes out of a declared drought and how that will affect the table and level of release? Specifics please?

Question: What role is being played by the Subcommittee on Ecological Flows in the development of a release proposal for June 1 implementation?

QUESTIONS for RFAC meeting

SET # 3

Submitted by: Elaine Reichart
[note – Chuck Schroeder submitted an identical set]
Affiliation: Aquatic Conservation Unlimited
Received on: March 22, 2011

Questions for Dr. Kolesar
on "Moving Towards an Improved Delaware Release Policy for June 1, 2011 Implementation"

1. Slide 16: Do you accept sacrificing the Lower Basin aquatic and water supply needs with your plan? Do you expect PA and NJ to accept the sacrifice of their aquatic systems for the one you favor?
2. Slide 16: Do you also accept spilling reservoirs as part of your plan?
3. Slide 16: Do you believe the Delaware Basin should subsidize NYC's desire for cheap water?

4. Slide 29: Please provide the calculations of 68% increase in spilling reservoirs; and "voids" would be 1%. What are your assumption sets? How did you calculate these assertions?
5. Slide 29: Please provide your support data for your assertion that NJ diversions would be 1% lower, and that Trenton median flows would decrease by 6%.
6. Please show your methodology and assumption sets.

7. General Question: Your presentation shows increased releases that may help the Trout under certain conditions. Where is the support for the Basin's other ecosystems further down river?

Questions for Grantley Pyke and Josh Weiss
on "New York City's Operation Support Tool (OST)"

1. Slide 6: "Release Requirements" – What are these requirements based on?
2. Slide 6: Please define "Flood Mitigation". Exactly what are you providing and how are you providing it? Please provide details.
3. Slide 6: Environmental/ release objectives: what are these? Are you going to provide protection for the salt vernier? Are you going to provide protection for the Delaware Bay and Estuary needs? Are you going to provide protection for the oysters and the lower main stem fresh water oysters? How exactly are you going to do this?
4. Slide 6: Is "ramping built into your model? Will you build in ramping?

5. Slide 7: "Probabilistic, risk based approach" - What is the base assumption set? Whose needs are primary and have priority? Water quality or flow and quantity for the Basin needs?

6. Slide 7: What does "requires commitment from other Decree Parties to long term sustainable water supply sources mean?
7. Slide 7: Exactly how does filling reservoirs to 100% provide any flood mitigation or control? How does a reservoir capacity triggered release program provide enhanced releases if the plan is to over draft?

8. Slide 8: Are the Decree Parties part of the development team to define the flood mitigation rule? If not, why not?

9. Slide 9: You show many tables. How will the public know what the day's proposed release value, diversion value, snow pack water equivalent value and refill guess parameters will be for the current day? Will you also publish the day's water quality value used in the calculations? Where will this information be posted?

10. Slide 10: Define Reservoir Reliability: What times of the year do you intend to refill to 100%? If a storm is on the horizon, will you release to ensure that the reservoirs DO NOT refill to 100% in the summer? In the winter? in the Fall? in the Spring?
11. Slide 10: "Robust framework for quantifying risks and benefits - define what these risks and benefits are to "downstream users" that will be used in release decisions."
12. Slide 10: How exactly will you re-calibrate decisions - based on what criteria?

13. Slide 13: This table illustrating drought numbers: If the drought categories are based on capacity of the reservoirs, then do you foresee the probability of NYC drawing down the
    Delaware Reservoirs to L3 - L4 or L5 simply because it is the a) cheapest and or b) the cleanest water you available to you and not because the region is in a hydrological dry cycle?

14. Slide 14: What is the L1-c Storage curve? Why do you need it?
15. Slide 14: Are the Basin States involved in the development of the OST Spill Mitigation Rule?

16. Slide 18: Please provide a chart that identifies the flood surcharge (spills) in the OST Simulation of 6/1/01 - 9/30/08.
17. Slide 18: The difference between OST and FFMP is minimal. Where is the "benefit to the Basin" in terms of greater releases for aquatic ecosystems and flood control?

18. General Question: Where are the analyses for Pepacton and Neversink in your OST simulation?

Questions for Brenan Tarrier
on "Progress of the OST Table Development"

1. Slide 2: Please explain "equal or greater likelihood of voids being present at any given time" How big a void? How big will the voids be when there is snow pack? Will you be counting 100% water equivalent? If not, why not? How far out will you estimate an approaching hurricane? How much of a void will you provide before storm events? How will the public know the criteria, assumption sets and constraints for that particular instance? Will it be posted?

2. Slide 3: Who decides when the ERQ will be used? Who will decide how much of it to use? What is the design criteria for the size and use of the ERQ?
3. Slide 3: When you say the Salt Front vernier will be reattached, what does that mean?
4. Slide 3: What does "seasonal increment to the Montague Flow Objective elimination" mean?

5. Slide 5 & 6: Exactly how does filling reservoirs to 100% provide any flood mitigation or control? How does a reservoir capacity triggered release program provide enhanced releases if the plan is to over draft?

6. Slide 7, 8, 9: Do you accept sacrificing the Lower Basin aquatic and water supply needs with your plan?
7. Slide 7, 8, 9: Do you expect PA and NJ to accept the sacrifice of their aquatic systems for the one NYC favors?
8. Slide 7, 8, 9: Why is NY State DEC sacrificing its environment for NYC's desire for cheap (unfiltered water?)
9. Slide 7, 8, 9: Do you also accept spilling reservoirs as part of your plan?
10. Slide 7, 8, 9: Do you believe the Delaware Basin should subsidize NYC's desire for cheap water?

11. Slide 10: In the May 1–June 15 category you show no releases, which will translate into spilling reservoirs. Why are you allowing your design criteria to perpetuate spilling reservoirs?

12. General Question: Is "ramping" built into your model? Will you build in ramping up and down for releases?
13. General Question: Can you build into OST a restraint to limit over drafting above a consumption criteria of 650 mgd?

QUESTIONS for RFAC meeting

SET # 4

Submitted by: Glenn Erikson
Affiliation: Wild Trout Flyrodders
Received on: March 22, 2011

During the Regulated Flow Advisory Committee of the Delaware River Basin Commission meeting on Tuesday, March 8, 2011 a request was made for the various public attendees to provide questions to the authors of the models proposed by the NYS DEC (JFWP: Brenan Tarrier, Fred Henson and Jim Daley), NYC DEP (OST: Grantley Pyke and Josh Weiss) and Serio/Kolesar. With that in mind, we ask that

each of the following questions be referred to each modeling group
for response during the next RFAC meeting on April 7th:

1) Per the figures that have been made available to us, it appears that for each of the past three normal water years, all under FFMP flows, the East Branch of the Delaware River received less total annual water than it did under Revision 7, and for distinct and consistent periods of time it received less than under the drought program of Revision 7. **Can you confirm whether or not each of these two conditions will continue under your present model?**

2) In the event either of these two conditions on the East Branch continues: **How does the reduction of total annual water releases on the East Branch compare to the reduction or increase of annual releases on the West Branch and the Neversink?**

3) Related to questions 1 and 2 above and of particular concern to us are how these low flows of each model affects water temperatures on the East Branch, from May through September. We note that at Harvard during the 3 years of FFMP there were 18 thermal stress days---where water temperatures exceeded 70 degrees. In 2010 alone, there were 15 days. This compares poorly with Revision 7 years: 2004, 05, 06, and 07. These averaged 2.0 days, and thus the FFMP period experienced a 200% increase in thermal stress days over the Revision 7 period. Of particular note are the high temperatures observed in 2008 and 2010 during the last two days of August and the first two weeks of September. We found 7 days with water temperatures exceeding 68 degrees: 6 of these when flows were at 140 cps.

We looked for climatic conditions to explain this, but could not reasonably do so. The best proxy for atmospheric heat we found, NOAA's Cooling Degree Day records for NY State, Binghamton and Syracuse all show hotter summers for Revision 7 years than FFMP years. All three figure sets show 2009 as the coolest summer and 2005 as the hottest summer. Significantly, the 2005 cooling degree days averaged 10% hotter than 2010 over the three data sets (see www.nyserda.org/energy_information/nyepch.asp).

Yet the JFWP proposes to continue flows lower than revision 7 during the summer months, and to lower flows from 140 to 100 during these first two weeks of September. During the hottest days of summer, the results for OST would doubtless be worse.

Regarding our concern for this increase in thermal stress, we reviewed recent literature related to this stress in brown trout and note the following citations:
a) www.vermillionriverwatershed.org/attachments/056_VRW-6%20Trout%20Thermal%20Impacts%20Literature%20Review.pdf
b) www.uwyo.edu/wycoopunitsupport/docs/Interacting%20Effects%20of%20Water%20Temp.pdf
c) www4.ncsu.edu/~tkwak/Pender_%26_Kwak_2002.pdf
d) www.springerlink.com/content/d60q333u57951805/

These citations detail the harmfulness of high water temperature stress to trout, as well as the mechanisms by which this stress is so destructive. We believe the stress induced in trout as the summer moves thru the months of August and September is particularly troubling as this stress causes metabolic changes that include a reduction in fat stores. This reduction cannot likely be corrected by late season feeding, as the biomass available to trout in the fall and winter is the lowest of the year. Yet the energy requirements of spawning and overwintering are relatively quite high, and if trout do not have sufficient fat stores for these needs they are much more likely to die either from starvation or from other trauma they will be ill equipped to survive with low energy stores. Given the above we do not understand the logic of continuing to propose such low flows on the East Branch and we ask the authors of each model two related questions, **A) Can your model incorporate the above thermal stress day data to increase flows during the summer months, at least to those experienced on average during Revision 7 years?** and **B) Can your model include substantially higher flows than 100 cps during the first two weeks of September?**

4) Frazil ice, which forms within the water column, is associated with increased trout mortality through a variety of mechanisms including damage to gill structures. Such mortality has been found to be more prevalent in tailwaters, and in such waters has been found to be a significant cause of trout mortality during the winter season:
a) seo.state.wy.us/Forum/2007/Annear_winterhabitat_Mar07.ppt
b) http://rparticle.web-p.cisti.nrc.ca/rparticle/AbstractTemplateServlet?calyLang=eng&journal=cjfas&volume=60&year=2003&issue=2&msno=f03-006
c) cripe.civil.ualberta.ca/Downloads/07th_Workshop/Brown_et_al_1993.pdf
d)www.uwyo.edu/wycoopunitsupport/docs/response%20to%20trout%20in%20winter%20WY%20hubert2002.pdf
Maintaining a constant release during the coldest periods of the winter has been shown to reduce the damaging impacts of frazil ice in tailwaters. **What can each model do to minimize potential mortality to trout from frazil ice due to fluctuating winter releases?**

5) Anchor ice has been shown to cause mortality to aquatic insects and young trout overwintering in riffle bank water, and low winter releases from our reservoirs are a known cause of anchor ice conditions. For reference we offer the following:
a) www.units.muohio.edu/cryolab/publications/documents/MooreLee91.pdf
We understand that maintaining a sufficient minimum winter release to keep water temperatures high enough to combat anchor ice, and also constant enough to minimize frazil ice will minimize anchor ice formation. **What can each model do to minimize anchor ice formation during the coldest period of the winter?**

6) The NYS DEC reports, and we concur by our own observations that brown trout spawning beds located in the East Branch are concentrated above Shinhopple and are present during the months of November, December and January. They are located in gravels of approximately ½" to 1" in average diameter. Such gravels are likely to be transported downstream in high water events. The increased constant release of the JFWP of 100 cps, if maintained on a constant basis would minimize this potential mortality. Please direct your answer to maintaining this constant release. **What can each model do to minimize potential mortality to brown trout spawning beds in the gravel beds of each of the tailwaters below the reservoirs?**

7) While we do not possess current figures, it none-the-less appears that there continues to be a relatively large amount of water that is spilled over the reservoirs each year. It may be possible for a significant amount of this reservoir spillage, if properly managed, to be converted to useful water for habitat improvement as well as other recreational uses. Therefore, we have two related questions: **A) Do you have access to figures detailing year by year the amount of spillage that you can share with us?** and **B) What can each model do to further minimize reservoir spillage?**

8) While we do not know if Didymo (Didymosphenia geminata) is a native or introduced species to this area, it has certainly bloomed excessively during the past several years, and is more prevalent in tailwaters than freestone rivers. Its impacts include a reduction in other aquatic plant communities, a reduction in the size and biomass in aquatic insect communities and thereby trout and other fish communities, and a reduction in the aesthetic value of our rivers. It is therefore important to minimize the possibility of transport of Didymo to other watersheds where it is not now present. Didymo has been found to experience a more rapid increase in biomass when water levels are low and constant during spring and summer, and this growth has been found to be substantially correlated with previous flood (i.e. spate) conditions, i.e.: *"The best hydrological predictor of D. geminata biomass is number of days since a flood greater than 75 to 100 m3/s."* (i.e. 2,650 to 3,530 cfs) See page 18: www.epa.gov/region8/water/didymosphenia/White%20Paper%20Jan%202007.pdf

Given the above, we ask: **What can your model do to insure a late spring 3,500 cps flood of short duration to minimize both the damage to habitat from Didymo as well as its potential spread?**

Finally, in the March 8 RFAC meeting there appeared to us to be a disconnect between statements made by Pyke/Weiss regarding the release benefits of OST as compared to the JFWP and the results of their own modeling. Simply put, it is disingenuous to state that the OST model achieves results of "releases matching or exceeding FFMP more than 75% of the time from May to October" when A) the details of their own table (OSTFFMP Preliminary Results: Table Duration, page 15) shows that during the worst month for thermal stress of—July—OST achieves this result only 35% of the time and B) the authors leave unstated the fact that drought occurs significantly less than the remaining 25% of the time. We must all remember that the purpose before us is not the successful manipulation of statistics, or persuasion of others to our point of view, but the minimizing of thermal stress in trout and optimization of the health of the entire fishery.

While it is understandable that the authors of any model would want to believe in its superiority, the health of the Upper Delaware fishery depends on the DRBC selecting that model which will provide optimal results. It is our hope that all model authors will

take great care in their future statements, so that the DRBC can make the most objective decision possible.

QUESTIONS for RFAC meeting

SET # 5

Submitted by: Alycia Scannapieco
Affiliation: none provided
Received on: March 24, 2011

Questions for Grantley Pyke and Josh Weiss
on "New York City's Operation Support Tool (OST)"

You said, New York City's (NYCDEP) was developing an Operation Support Tool (OST) and an improved FFMP vote will be updated to now include enhanced reservoir flood mitigation options and enhanced schedules of releases and the options would be presented at the April 7th DRBC meeting. Dr. Murali said when figuring out the flood mitigation options the 3 floods in 2004, 2005 and 2006 would not be included which would not make the study valid, which is a direct contradiction from engineer resources I contacted. I assume you are putting in some data to reflect these flood occurrences.

1. Please provide me with detail information on how you have addressed these 3 floods in your study.

The forecasting and analytical tools provided by the OST will allow operation of the Delaware reservoirs to provide more net benefit to downstream stakeholders. Dr. Murali list included these options: seasonal storage target, snow pack based releases, proactive releases in anticipation of major events, change existing FFMP table content, add "flood mitigation" table for use when needed and modify duration in L1 and short-term release based on AHPS forecast. I know all of these options are just a work in progress.

2. What policies need to be modified to accommodate these flood mitigation options and when will these be in place?
3. Does approval of this report for the final FFMP vote begin these modifications or is there a process before they can even be implemented?
4. What are these policies and when do we get to see them?

Questions from Slide 7:

5. How does filling reservoirs to 100% provide any flood mitigation or control?
6. If filling the reservoirs what are the assurances that we will not flood again because there isn't any factor of safety during these times so what assurances can you give people downstream that we will not flood?
7. What changes in the OST FFMP are you going to make to insure it's not going to happen?

Questions from Slide 14:

8. Are the Basin States involved in the development of the OST?

9. What official documents or published guidelines must you follow to provide storage level capacities, releases and diversions and everyday activities and when can we see this documentation.

QUESTIONS for RFAC meeting

SET # 6

Submitted by: Joan Homovich
Affiliation: ACU, DOD
Received on: March 24, 2011

Questions for Grantley Pyke and Josh Weiss
on "New York City's Operation Support Tool (OST)"

Slide 7: Develop and evaluate alternative release plans

1. When you say release plans, do you mean more charts as those in FFMP and OST?
2. How do you develop the numbers that you plug in at the various levels?
3. What is the science that you use to release 85 cfs from Pepacton and 110 cfs from Cannonsville at Winter stage L1-c?

Slide 8: OST can be used to mitigate spills

4. Explain how the events of March 6 through March 12 would have been different if OST were in place?
5. How would OST alter the spills that currently are occurring?
6. What would OST have done before the event that (2 Weeks) was not done?
7. Specifically what would be altered?
8. How would the snow pack releases change (Flexibility in managing snow pack)?

Slide 8: OST Flood Mitigation under development

9. Who is developing the flood mitigation?
10. What dynamics will be used?
11. Will only the Cannonsville system be studied?
12. How much attention will be given to Pepacton and Neversink?
13. Where will the release figures come from?
14. Currently Rondout functions with diversions to stop its spilling and thus flooding. The three Delaware Reservoirs are confined to just releases. No diversions from the three occur until Rondout is lowered. The impact is that the action stage for the three is maintained for a long period of time. How is this going to be corrected in the new plan?

Slide 10: Delaware Releases based on OST Approach

15. The releases based on PCN storage are the basis for your charts. How are the figures for each devised? The max cfs for each is understandable but where does 250 cfs v. 185 cfs v. 100 cfs come from?
16. What is the science for these numbers? Size does not dictate releases, therefore how are the numbers assigned to each reservoir?

Slide 23: Will be upgraded to include enhanced reservoir flood mitigation

17. When will this happen?
18. Wasn't the initial order from the Decree parties to study and develop the flood mitigation aspects of the three systems because of the catastrophic floods of '04, '05, and '06? (Letter to Carol R. Collier dated September 21, 2006 signed by the governors of the 4 states). How long will it take to create the flood mitigation?

QUESTIONS for RFAC meeting

SET # 7

Submitted by: Sheila Gallagher and Thomas Church
Affiliation: none provided
Received on: March 24, 2011

1. How does the current draft of new Release Plan address the "No Adverse Impact" floodplain management model where ... "the actions of one property owner is not allowed to adversely affect the rights of other property owners."

2. Why does this plan not address the fact, and include voids to compensate for this, that historically all of the flooding in the past 15 years, has directly correlated with the levels in the three Delaware Systems reservoirs. The number one threat to our safety is over capacity reservoirs. Currently these three are 10% over capacity. How are the officials in charge planning to take reasonable care into account?

3. How do the advances in technology help put controls in place to alleviate some of the impacts of flooding downstream?

4. NYC should be considered a partner in the control of flooding and "develop plans to reduce loss of life, injuries, damages to property ... etc." (Vermont Journal of Environmental Law, Vol. 9, Pg. 168). What are their plans?

5. The ACE Model of the 2004, 05 & 06 floods proved that the reservoirs contributed substantially to the resulting flood crests. Why doesn't the current plan address minimal voids to insure that this will not happen again?

QUESTIONS for RFAC meeting

SET # 8

Submitted by: Garth Pettinger
Affiliation: NYSTU Delaware River Council
Received on: March 29, 2011
[note – this submission was received after the March 24 deadline]

1. Does NYC's proposed Catskill/Delaware UV Disinfection Facility contain provisions for the future installation of filtration units?

2. In reference to OST Article 4.2.2,
   What does NYC mean by the statement: "...given a commitment by the other Decree Party members to provide long term, sustainable source(s) of water in the future"?

QUESTIONS for RFAC meeting

SET # 9

Submitted by: Jeff Zimmerman
Affiliation: FUDR et al.
Received on: April 4, 2011
[note – this submission was received after the March 24 deadline]

Motivation: All of these questions flow from statements included in the Comments submitted March 21, 2011, by Thomas L. Brand of NJDEP.

1. What is the OST predicting for hydrologic conditions for the summer months of 2011?
2. Will the OST predictions for this coming summer allow releases to be in accordance with Schedule F as proposed by NYSDEC and NYCDEP?
3. If these questions cannot be answered now, when will it be possible to answer them?
4. Please explain exactly how, and who will make, decisions about which one of the release schedules A-F will be used at any particular time.
5. Will Schedule F only be applied when storage levels and forecasted inflows are above certain levels? If so, is it fair to say that the times when Schedule F will be used to determine release levels will most likely occur when hydrologic conditions at one or more of the reservoirs are high and therefore flows in the tailwaters and downstream without the Schedule F releases are more likely to be sufficient for maintenance of the fisheries?
6. What does Hazen & Sawyer's Slide 7 statement, "Requires commitment from other Decree Parties to long term sustainable water supply sources," mean?
7. Slide 15 in the Hazen & Sawyer presentation on OST indicates that, over the 81 years of base data utilized by the model, Schedule F would never apply during June, would apply 1% of the time in July and would apply 8% of the time during August. . Where are the promised conservation benefits for the fisheries?
8. Under what circumstances would it be appropriate to have additional schedules (G, H, I, and J) that would apply with 150 mgd, 200 mgd, 250 mgd and 300 mgd available, recognizing that actual NYC consumption has been dropping and, until the unprecedented extreme turbidity event of last October, had been trending below 500 mgd diversion from the Delaware System?
9. Why and by what authority does the City withhold 25% of the capacity of its Catskill and Croton Systems from its safe yield calculations while not applying any reserve to the Delaware System?

10. During 2005 Cannonsville was drawn down to 26% of capacity by October 10th, well below the normal fill percentage for that time of year. Why was Cannonsville drawn down this far while the City was not utilizing any of the 240 mgd safe yield of the Croton System and was discharging a daily average of 167 mgd to the Croton River from the New Croton Reservoir at the New Croton Dam between May 1 and September 30, 2005?