

**DELAWARE RIVER BASIN COMMISSION
REGULATED FLOW ADVISORY COMMITTEE
May 13, 2010**

MEETING SUMMARY

The May 13, 2010 meeting of the Regulated Flow Advisory Committee (RFAC) began at approximately 10:00 a.m. at the Delaware River Basin Commission (DRBC) offices in West Trenton, NJ. Dr. Joseph Miri of the New Jersey Department of the Environmental Protection chaired the meeting.

Approval of the minutes from the June 17, 2009 RFAC meeting

Stewart Lovell requested that a typographical error be corrected: his last name was misspelled in the minutes. The minutes were unanimously approved with the correction noted.

Some audience members commented that the minutes from the June 17, 2009 meeting were long but very thorough. Peter Freehafer stated his preference that the minutes be condensed. Joe Miri said he preferred that the minutes be as thorough as possible, especially since RFAC meetings are held infrequently. Mary Ellen Noble agreed, saying the thoroughness of the minutes was quite helpful and should continue to be prepared in the same fashion. Bill Gast asked that the minutes be distributed to committee members for review as soon as they are available, without waiting for the next meeting. Joe Miri agreed, saying that this issue was not unique to RFAC but to all DRBC committees. He asked DRBC staff to consider Bill Gast's suggestion.

Hydrologic Conditions Report

Amy Shallcross of DRBC reported on current hydrologic conditions in the basin. Year-to-date precipitation totals at three key locations (above Montague, above Trenton and at Wilmington) are all above normal. Current streamflow at USGS stations in the basin are mostly in the normal range; the same applies to groundwater levels at USGS monitoring wells, with the exception of some areas in Delaware and the coastal part of New Jersey.

The NYC reservoirs are currently holding about 268 BG, or 99% of usable storage. All three reservoirs are currently releasing at the L2 rates set in the FFMP program. Two Corps of Engineers reservoirs in the lower-basin, Beltzville and Blue Marsh, are currently at about 100% of the normal pool (flood control storage is available beyond the normal pool). The salt front is currently at River Mile 66, which is close to the normal location for mid-May (River Mile 64). In terms of drought the basin is in normal conditions; some neighboring areas outside the basin (western PA and upper northwestern NY) are currently considered abnormally dry. The three-month outlook from NOAA/NWS has equal chances of having above- or below-normal temperatures and precipitation.

Subcommittee on ecological flows (SEF) preliminary report on trout habitat-water temperature relationships in the upper basin

Mark Hartle, SEF chair, discussed preliminary findings on trout habitat-water temperature relationships that he collected based on the literature and other sources. The subcommittee plans to meet to discuss this information and fine-tune recommendations.

Mark said a great deal of literature exists on trout habitat and water temperature suitability, citing some of the standard references. He provided the upper lethal temperatures for adult brook trout (75°F), adult brown trout (80.6°F) and adult rainbow trout (77°F), as well as brown trout in earlier life stages. He also discussed the preferred temperature range for each species, which vary significantly with season and life stage. He said these temperature ranges are valid for short periods of time, with survival compromised if temperatures are elevated for long periods. There are stress and disease issues, with trout starting to die after 48-96 hours.

Mark indicated that the basis for preferred temperature ranges can be quite diverse and gave some examples. Temperature ranges can have a basis in regulations (e.g., Pennsylvania Chapter 93 water quality standards for cold water fishes) or in legal agreements (e.g., PPL Lackawaxen River temperature regulation program). They can be based in adopted policy (e.g., avoid thermal stress day) or in scientific studies (e.g., Delaware River DSS). Mark asked for comments on his presentation to be provided to SEF members so they can be factored into the report in preparation.

Bob Bachman commented that the temperature that defines the upper limit of the preferred range needs to be evaluated. For example, while 75°F was used in the Delaware River DSS, this now appears too close to the lethal limit of 77°F; an upper limit of 68°F might be more appropriate, but it will change all the habitat figures calculated for the baseline in the DSS. This will require the re-evaluation of alternative reservoir releases programs. What happens to the trout population when temperatures are between 68°F and 72°F needs to be determined.

PA FBC/NYS DEC white paper on flow needs for trout habitat

Mark Hartle provided a briefing on the white paper that resulted from a collaboration of technical staff from PA Fish and Boat Commission (PA FBC) and New York State Dept. of Environmental Conservation (NYS DEC), Bureau of Fisheries. The paper, entitled “Recommended Improvements to the Flexible Flow Management Program for Coldwater Ecosystem Protection in the Delaware River Tailwaters” was completed in January 2010 and is available online at the PA FBC web site.

The white paper presents recommended release rates from the NYC Delaware Basin reservoirs that would be preferable from a biological perspective to improve trout habitat and better support cold-water ecosystems in the tailwaters. The proposed increased release rates apply to the storage zones L1, L2 and L3 as defined in the FFMP agreement, with the largest increases assigned to Cannonsville reservoir. The increased releases from Cannonsville will provide improved benefits for fish habitat and temperatures for the West Branch and mainstem Delaware River. The proposed release rates from Cannonsville under normal operating conditions (L2) are approximately doubled with respect to the FFMP rates.

The white paper recommendations are based on numerical simulations of reservoir operations (performed with the OASIS model) and trout habitat and temperature at various locations upstream of Montague (performed with the USGS Delaware River Decision Support System, or DR DSS). The main objective was to determine release rates that would improve trout habitat and temperature for non-drought years. The analysis was not constrained by the needs of NYC or other water users. After testing several scenarios that prioritized releases over different seasons, one scenario was selected as the final proposal. The baseline was the FFMP program, as revised in December 2008. Based on input from diverse stakeholders and agency biologists, there was agreement that the L2 release rates shape the fishery (L2 rates apply during normal operations). This concept was used to design all scenarios.

NYC combined diversions were modeled with a seasonal pattern based on actual use and an annual average of about 660 mgd (these values represent the 75-percentile of monthly NYC diversions for recent years). The habitat and temperatures predicted by the DR DSS correspond to the 10-year period that spans October 1989 to September 1999 and contains both warm and cool years. Actual meteorological data was used: the six summers from 1994 to 1999 use actual data; while the four summers from 1990 to 1993 use data from 2000 to 2003 (1990-1993 data was not available). The water temperature threshold in the DR DSS was set at 24°C (75.2°F). The habitat metrics in the DSS were chosen as ten-year averages to represent persistent habitat relevant to spawning/incubation and dwarf wedge mussels.

Mark Hartle reviewed simulation results from the OASIS and DSS models for selected scenarios. Flows, trout habitat and water temperature were evaluated. The preferred scenario provides both increased trout habitat and decreased thermal stress days. Specific results vary by location, season and life cycle. All the scenarios tested bring an increase in the total number of drought days, but the preferred scenario has the lowest such increase (23 percent).

Discussion followed the presentation. Mary Ellen Noble asked that the presentation be posted on the RFAC web page in DRBC's web site. Bob Bachman said the white paper shows that the increased release rates would bring a dramatic increase in adult trout habitat in the West Branch and a measurable increase in the mainstem Delaware River down to Lordville. He recognized that it is difficult to relate predicted increases in habitat to actual impacts on the fish, but said the increased release rates proposed would have a beneficial impact on the trout populations on the tailwaters. He added that the ecological improvements of the increased flows include insect hatches, since cold water insects are affected at 68°F and have maximum reproductive success just below that temperature. Bob Bachman said the potential benefit to insects is another reason why the recommended release rates will help the fish.

Mark Hartle highlighted one proposed change that would bring a significant improvement in habitat. The April release rates from Cannonsville are too low in the FFMP (80 cfs in the L2 zone); the proposal has the April release rates elevated to 400 cfs.

Peter Kolesar said that all these analyses are biased because of the assumption that NYC is taking out more water from the Delaware Basin than it actually does. In reality, more water will stay in the reservoirs at any given time and more water will actually be spilled (warm water, a problem for the fish) than what the model predicts. He said the system should be operated based on the best knowledge of what has actually transpired over the last several months or years, and using that information to make predictions for the next year or two. Thom Murphy said there are opportunities to make improvements to the FFMP. NYC is looking at methodologies to manage the risks to water supply while releasing greater amounts of water based on their current needs. However, to pursue this approach, NYC needs commitments from the other decree parties so that long-term sustainable conditions are not compromised.

Dwarf Wedge Mussel studies update

Bob Tudor gave an update on dwarf wedge mussel (DWM) studies. About ten years ago, concerns were raised by staff from the National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS) that the reservoir operating plan could have the effect of an incidental take on an endangered species, specifically, DWM populations in the mainstem Delaware River between Hancock and Port Jervis. FWS is charged with protecting endangered species under the Endangered Species Act. After meeting with DRBC and the Army Corps of Engineers (ACOE), FWS staff decided to proceed with an informal consultation to protect the DWM populations.

Recognizing that the first step would be to determine the DWM habitat needs, staff from the three agencies decided to commission a study of DWM populations in the Upper Delaware. The three agencies jointly developed the scope of work. DRBC and ACOE provided the funding and FWS contracted with Professor Piotr Parasiewicz of the University of Massachusetts to conduct a multi-year study, which started in 2004. The project took longer than expected and the FWS terminated the contract in the summer of 2009. However, the study is not finished and there are funds remaining that could be used to do some additional work. Bob Tudor reported on a meeting on February 23, 2010 attended by FWS, DRBC, USGS, NPS, ACOE and PA Fish & Boat Commission. At the meeting it was agreed to convene a working group to re-scope this effort and apply the remaining funds to the tasks that would be most beneficial to finalize the project. Bill Lellis, Don Hamilton, Erik Silldorff and others will participate in the working group, to be led by FWS.

Bob Tudor indicated that when the FWS study was initiated, the expectation was that we would learn something about the DWM habitat needs and their relation to streamflows. This knowledge would be factored in when developing a new reservoir releases program. Due to the delay, the decree parties are working to develop the next iteration of the FFMP without any new information on DWM. However, when the FWS study is completed, their findings could be considered at that time and integrated with results from other studies. For instance, NPS commissioned a separate study of the habitat needs of a DWM population near Callicoon, NY. A report was completed in 2008, linking DWM habitat to minimum flows at Callicoon. Bob Tudor said he is making arrangements to have a FWS senior manager attend the next Commission meeting in July and provide a briefing to the commissioners on the status of this project.

Erik Silldorff said Bill Lellis has internal USGS funding to conduct a separate project that will look at some of the basic questions on DWM habitat needs, with some field work scheduled for this summer. This project is not related to the U.S. Fish & Wildlife Service studies and is separately funded.

Report on Decree Party Work Group activities

Bob Tudor gave a briefing on ongoing work to develop the next version of the reservoir operations plan, the Flexible Flow Management Program (FFMP). The original FFMP was agreed to by the decree parties in September 2007 and expires on May 31, 2011. The decree party work group meets twice a month and Bob Tudor is the facilitator of the meetings. The decree party principals are the policy makers and convene conference calls once a month. The principals are currently working on defining some pivotal issues, including the sustainability of supply and use of reservoirs, as well as options that may be based on the safe yield of the reservoir system.

The decree party work group is charged with technical issues, including an assessment of the impacts of various components of the FFMP. The current work plan calls for completing impact assessments of the FFMP over the next few months and then defining what changes could be incorporated into the next version of the FFMP. The goal is to have the new program formulated prior to the expiration of the current FFMP on May 31, 2011. The assessments look at the impact of the FFMP on key management variables, such as lower basin reservoir storage, upper basin fisheries and ecological protection, upper basin recreation, and flood damage mitigation. Water quality, water supply reliability and salinity repulsion in the Delaware estuary are also being evaluated. Findings from recent and ongoing studies will also be considered, including the flood model developed for DRBC, the inundation mapping developed by the ACOE, the DWM study for FWS, the SEF report on trout temperature needs, and the ecological flows white paper from

PA FBC and NYS DEC. There is also a study of salinity intrusion in the estuary being conducted by the City of Philadelphia. Philadelphia is concerned with the combined effect of low flows at Trenton, deepening of the shipping channel, changes in upper basin land use, and climate change. The work group will prepare impact assessments on all these issues that will go to the principals.

Developing the next FFMP is a balancing operation. How do we try to satisfy multiple objectives (water supply, ecological uses, flood mitigation, recreation, etc.) with a limited resource? What can we do to optimize the system without compromising any fundamental needs, one of which would be protecting water supply for human needs? This is related to issues of water availability also: NYC is looking at ways to release more water for fisheries based on actual NYC demands. The decree parties are trying to design a long-term program that is sustainable. However, they would not want to create the nation's preeminent trout fishery only to have to adversely impact it when NYC needs the extra water in the future. Some of the decree parties would like to take another look at the safe yield of the system, which is related to the Supreme Court decree. The drought of record in the 1960s lasted 5 years and set up a new worst-case condition with a lower system safe yield. Designing a program based on the current safe yield would likely be different than the Good Faith Agreement that has been in place for many years.

Discussion followed the presentation. Jeff Zimmerman asked if the decree parties are considering making the process more transparent and getting input from other people on how the FFMP is working. Bob Tudor said DRBC cannot set the rules for the decree party process, but RFAC offers a forum where the public can participate. Peter Kolesar added that many members of the public have spent the last 2-3 years amassing data and complained about the lack of transparency of the process.

Pete Bousum asked about the reassessment component of the FFMP, which was supposed to be completed in three years by a third party. Bob Tudor replied that with the economic downturn the basin states did not have all the fiscal resources to pursue the reassessment study. Instead, the parties directed the technical work group to take on the most significant pieces of the original scope of work prepared for the reassessment. The work group is working to develop internal issue papers for the principals – these materials are intended for internal confidential deliberation and are not public. However, there are various studies, germane to the FFMP that are or will be publicly available, including the PA FBC /NYS DEC study, the Philadelphia Water Department salinity study, and the flood report.

Peter Kolesar said he would encourage DRBC and the decree parties to open themselves to creative ideas that come from the public and not wait until the eleventh hour before the FFMP expires to entertain such suggestions. Jeff Zimmerman added that if the RFAC is the venue for the public to observe or learn about what is going on with the decree parties work group, then RFAC meetings should be held more frequently than once a year.

Proposed 2010 summer releases program

Brenan Tarrier provided a briefing via teleconference. He reviewed the features of the 2009 summer releases program, which used water from the interim excess release quantity (IERQ) to support enhanced releases from Cannonsville reservoir. The enhanced release rates apply during June, July and August when storage is in the low spill-mitigation zone (L1-c) or the normal zone (L2). Brenan recognized that the summer program release rates are lower than those proposed in the PA FBC/NYS DEC white paper, but said they represent a step in the right direction. This program performed well in 2009 and NYS DEC received positive feedback from the public.

Based on that experience, NYS DEC is proposing that an identical program be implemented again in the summer of 2010. This proposal is currently under consideration by the decree parties.

Elaine Reichart asked if it would be possible to implement this summer the higher release rates proposed in the PA FBC/NYS DEC white paper. She said we could do a mini-pilot program to see what the results would be on the cold-water fisheries. Peter Freehafer replied that the decree party principals would have to agree, since it represents a major policy change. Brennan added that the joint white paper is going to be considered as the parties work to develop the replacement program for the FFMP.

Thom Murphy indicated that the release rates proposed in the joint white paper produce a large increase in drought days, violating a constraint agreed to by the decree parties. The discussion that followed focused on the meaning of drought days and their link to NYC diversions from the Delaware basin. Bill Gast explained that drought day counts are used as a relative measure in evaluations of different operating plans. The absolute number of drought days is not paramount, but rather the difference between drought day counts from two alternative programs. Peter Kolesar argued that drought day counts should be obtained using actual NYC diversion figures, instead of assuming the maximum allowable diversion (765 or 800 mgd). He suggested that doing so will show that there is a lot more water available. Bill Gast recognized that the reference number used for drought day counts is not realistic, since actual NYC diversions are not as high as assumed in the model and that in reality you would have more water sitting in the reservoirs most of the time. Bob Bachman asked how the drought day count relates to something that anyone of us can appreciate, such as the actual risk to NYC water supply.

Peter Kolesar stated that the joint white paper cries out for careful consideration in formulating the next FFMP, but the response heard so far indicates that this may not happen. He said the white paper has to be considered expeditiously and thoroughly, since it shows that significant improvements in trout habitat are possible.

Joe Miri said there is another approach that could be used, as mentioned earlier by Bob Tudor. The question is whether an 800-mgd NYC diversion is sustainable under the drought of the 1960s on the basis of safe yield. As indicated earlier, these are issues that the work group and the principals are grappling with currently. Dr. Miri thanked the public for the comments and many good issues that have been raised.

Proposed amendments to the FFMP regarding short-term spill-mitigation releases in the presence of snowpack

Bill Gast gave a briefing on an amendment to the FFMP currently being considered by the decree parties, in reaction to a situation experienced earlier this year. There was an unusually high snowpack above the reservoirs and short-term forecasts were calling for a combination of rainfall and warm temperatures. NYC asked the decree parties to allow larger L1-a release rates to get some water out of the reservoirs in anticipation of the additional runoff that would come from melting snowpack (L1-a rates apply when storage is in the high spill-mitigation zone). This modification was quickly approved and implemented because the decree party work group had a meeting already scheduled that same week. There was consensus in the work group and all parties advised their principals to agree to the FFMP modification.

Bill Gast said this experience suggests the need for a provision in the FFMP that would enable the City to make these kinds of adjustments without having to get approval from all the parties on short notice. He said he has suggested ideas for allowing the City some flexibility in the

procedure used to calculate the reservoir release rates in the presence of snowpack. Currently the FFMP prescribes that in the period October 1-April 30, 50 percent of the water equivalent of the snowpack in the watersheds above the reservoirs is included in the determination of available reservoir storage. The provision under consideration would allow the City to use up to 100 percent of the water equivalent of the snow pack, if extraordinary meteorological circumstances are anticipated and forecasts call for higher runoff as a result of a large snowpack melt. In that case NYC would only have to notify the decree parties of the change in release rates. There will be a condition that if any of the parties object, NYC would refrain from making the larger releases. The work group will soon discuss draft language to allow this operational flexibility.

Jeff Zimmerman asked if similar provisions could be developed to deal with expected extraordinary inflows produced by back-to-back hurricanes. Thom Murphy replied negatively, because in the summer the water released in anticipation of a hurricane might not be replenished; whereas, some portion of the water contained in the snowpack will eventually get into the reservoirs.

Bob Bachman commented that snowpack-based releases could have a negative effect on the fisheries, when releases are at the highest rates, then drop to normal rates and then go back to the highest rates. He asked whether more water could be released from the reservoirs to bring reservoirs levels down, anticipating the probability of refill. Bill Gast replied that the 50 percent of snowpack was a conservative rule to allow for sublimation losses over the whole winter season. He said a larger percentage could be used when rain would contribute to snowmelt and produce heavy runoff in a short period of time. Regarding the “yo-yo” effect (release rates bouncing from high to low levels), Bill Gast replied that this issue was addressed last year, when the FFMP was modified to give the City some leeway on how to ramp release rates up and down, basically taking more time to do so. Jim Serio said this flexibility in ramping release rates had reduced problems with the “yo-yo” effect over last year.

Public comments on FFMP performance and public dialogue

Dr. Miri opened the public dialogue section of the agenda and invited comments on the FFMP. Bob Bachman said that PA FBC had sent a letter asking about the possibility of changing the release year from the first of June to the first of April, since this would have a big impact on the trout and the ecosystem. This would avoid the spills that result from the goal of full reservoirs by June 1. Gary Paulachok replied that June 1 is the beginning of the drawdown period specified in the Supreme Court Decree.

Bob Tudor said the decree parties are discussing the issue of unmanaged water. This is water that the City is not using which could be better utilized. The City is working to develop an operational support tool (OST) to assist in daily operations, allowing use of the unmanaged water. Thom Murphy added that OST will combine information from real-time data, flow and water quality computer models, and NWS weather forecasts. It will include the entire NYC water-supply system and evaluate the impacts of alternative operations in real time. This is a 4-year project, but NYC would like to bring individual components into play for testing and further development as they become available.

In response to a question, Thom Murphy said that NYC has determined that the safe yield of the combined Catskill/Delaware system is 1,222 mgd. When asked for a document on this determination, he said the document is not available to the public because it contains sensitive information. Peter Kolesar argued that having such document available for review is absolutely critical from the public perspective. It ties into previous comments by Dr. Bachman about the

whole issue of risk, which is fundamental to stakeholders that would like to comment in a constructive way on what the FFMP should be in the future. He said a meaningful public debate on these issues cannot take place if that document is treated as something confidential.

Jeff Zimmerman said if RFAC wants public comments on the FFMP we need more than an item on the agenda – we need to hold public sessions at locations throughout the basin. That would give the broader public an opportunity to comment on the various components of the program. Dr. Miri said this was a fair suggestion that would be considered.

Mary Ellen Noble said the FFMP calls for the state of New York to report yearly to the decree parties on the progress made towards increasing reservoir storage. She asked if such reports had been made. Peter Freehafer said verbal reports were made at the annual River Master Advisory Committee meetings. Mary Ellen Noble asked about the impact that water withdrawals for natural gas drilling would have on flows at the Montague gage. She said she was concerned about the impacts at build-out conditions. Amy Shallcross said DRBC is conducting a preliminary cumulative impact analysis of the stress on waters due to withdrawals and discharges from natural gas drilling.

Pete Bousum said he was looking for transparency in the decree party process, which cannot happen when all meetings are held behind closed doors. He said we should be here for a legitimate debate with access to information and noted that the real issues are never resolved. Elaine Reichart agreed on the call for transparency and said there should be an equitable distribution of water down the river. She said she was concerned about flooding, and from a property rights perspective or a life value perspective, she was completely unhappy with the FFMP and found practically no redeeming value in it. She added that “the meager amounts of current reservoir releases are ridiculous, laughable, problematic and unsafe from both an aquatic life perspective and a human life perspective.”

Jim Serio said he disagreed with Elaine in her assessment of the FFMP. He said the FFMP could be improved and argued for preserving the inventory of cold water in the reservoirs for fishery releases. He said the maximum summer release rates from Cannonsville (1,500 cfs) could probably be adjusted downwards for this purpose without too much increase in flood risk. Jim said the negative impacts on the river of a depleted cold water inventory are substantial and gave the example of last summer, when cold-water depletion and turbidity occurred sometime in August. Brenan Tarrier agreed that the turbidity in released water at the end of last summer was presumably the result of long periods of high releases and said NYS DEC staff is working to get a better analysis of the cold water inventory.

Brenan Tarrier asked if the committee chairmanship had to be discussed. Joe Miri said we have to resolve the situation where the next chairman is still Harry Otto of Delaware, who recently retired. Delaware needs to identify a replacement for Harry. He added that this issue will be on the agenda at the next RFAC meeting.

Next Meeting Date

The next meeting of the RFAC has been tentatively scheduled for September 16, 2010. The meeting date will be posted on the DRBC website once the date is confirmed.

REGULATED FLOW ADVISORY COMMITTEE (RFAC)**MAY 13, 2010****ATTENDANCE - in person**

NAME	AFFILIATION
BACHMAN, Bob	Friends of the Upper Delaware River (FUDR)
BAXTER, Stefanie	Delaware Geological Survey
BOUSUM, Pete	FUDR
GAST, Bill	Penn. Department of Environmental Protection – consultant (PADEP)
HAMILTON, Don	National Park Service – Upper Delaware Scenic and Recreational River
HARTLE, Mark	Pennsylvania Fish & Boat Commission
KOLESAR, Peter	Columbia University
LANIGAN, Senobar	New York City Department of Environmental Protection (NYCDEP)
LIAGHAT, Hoss	PADEP
LOVELL, Stewart	Del. Department of Natural Resources and Environmental Control (DE DNREC)
MAYER, Bob	NYCDEP
MIRI, Joe	NJ Department of Environmental Protection (NJDEP)
MOLZHAN, Bob	Water Resources Association of the Delaware River Basin
MURALIDHAR, D.	
MURPHY, Thomas	NYCDEP
NOBLE, Mary Ellen	Delaware Riverkeeper Network
PAULACHOK, Gary	United States Geological Survey – Office of the Delaware RiverMaster
PLUMMER, Dan	FUDR
QUINODOZ, Hernán	DRBC
REICHART, Elaine	Aquatic Conservation Unlimited
RUSH, Sherri	FUDR
SERIO, Jim	Delaware River Foundation
SHALLCROSS, Amy	DRBC
SILLDORFF, Erik	DRBC
SNOOK, Ian	NJDEP
STEVENS, Glen	Army Corps of Engineers
TUDOR, Bob	DRBC
ZIMMERMAN, Jeff	FUDR et al.

**REGULATED FLOW ADVISORY COMMITTEE (RFAC)
MAY 13, 2010**

ATTENDANCE - via teleconference

NAME	AFFILIATION
FREEHAFER, Peter	New York State Department of Environmental Conservation (NYSDEC)
TARRIER, Brennan	NYSDEC