

Intermunicipal Airport Master Plan Task Force
Surface and Stormwater Considerations for the Master Plan

March 6, 2025

The Intermunicipal Airport Master Plan Task Force was formed to identify issues of concern related to the upcoming revisions of the Master Plan for Westchester County Airport. The Task Force is composed of individuals from seven local communities: City of Rye, Village of Rye Brook, Village of Port Chester, Town of Greenwich, Town of New Castle, Town of North Castle, and Town of Rye. The individuals are volunteers selected by the elected officials in their municipalities who have varied backgrounds in local governance, land use planning, law, and engineering. The Master Plan topics of concern were each addressed in separate reports, with the understanding that there is overlap among some topics. The purpose of this report is to summarize the issues related to surface water contamination and stormwater runoff at the Airport and make recommendations to our elected officials about how these topics should be addressed in the Master Plan update. Specifically, this report summarizes the types of contaminants, their sources, the extent of contamination, offsite receptors, stormwater volumes, existing stormwater controls and future plans that should be considered as part of the Master Plan.

Surface Water Runoff: Flow and Contamination

As background for this topic, it is important to read the groundwater report prepared by the task force. The groundwater report identifies a number of sites of contamination on the airport property, which influence contamination of the surface water. Further, it describes the main drainage divide on the property which separates natural surface flow with 157 acres draining toward Rye Lake/Kensico Reservoir and the remaining 537 acres draining toward Blind Brook and its tributaries.

The 1999 Stormwater Management Plan (SMP)¹ describes the practices developed to provide water quality treatment and attenuate peak rates of runoff to stormwater prior to leaving the airport property.

The 1999 SMP and relevant updates also included various stormwater pollution prevention measures which have been implemented in order to eliminate or minimize, to the maximum extent practicable, the transport of pollutants from the airport to Rye Lake/Kensico Reservoir and Blind Brook. These measures included the following:

- Regulatory and Contractual Agreements
- Activity-Specific Source Control Best Management Practices (BMPs)
- Site-Specific Stormwater BMPs
- Installation of Water Quality Structures
- Spill Prevention Measures
- Aircraft Deicing Improvements
- Formation of a Stormwater Pollution Prevention Team

¹ [full copy of original 1999 plan could not be found]

A State Pollutant Discharge Elimination System (SPDES) permit (Permit No. NY 0075132) was originally issued for the airport in 1984 and was most recently renewed in 2019.² A new permit is now being negotiated with DEC. The SPDES permit requires regular water quality monitoring for seven outfalls that discharge directly to New York State-regulated waters. The airport is also required to provide periodic Discharge Monitoring Reports (DMRs), and to post SPDES signs at each outfall. In addition to monitoring activities, the SPDES Permit also requires that the airport use BMPs to minimize the risk of pollutants migrating to the stormwater infrastructure. For example, to protect waterways surrounding the airport from polluted runoff caused by chemicals such as fuel spills, the airport has installed catch basin inserts in the critical storm drains and currently has 54 ‘Ultra-Urban Filters’ in place.³

The SPDES outfalls are as follows and shown on Figure 1. Referenced detention basins are shown on Figure 2 and design drawings for upgrades are provided in the Appendix:

1. SPDES Outfall No. 001: Runoff generated/collected in tributary areas BB-8F and BB-8FD conveyed to Basin B. Outfall No. 001 discharges stormwater runoff from Detention Pond B into Blind Brook.
2. SPDES Outfall No. 003: Runoff generated/collected in tributary areas BB-7F discharges from Detention Basin A through Outfall No. 003 into Blind Brook.
3. SPDES Outfall No. 004: Tributary Drainage Sub Areas RL-5F and BB-7FA (overflow runoff) that combines runoff from the Hangar “E” facility, Runway 16/34, Runway 11/29, Taxiways C and K, and a portion of the General Aviation tiedown area has been conveyed to Outfall No. 004 with discharge to Rye Lake tributary.
4. SPDES Outfall No. 007: Tributary Drainage Sub Area RL-1F that accepts runoff generated in the aircraft run-up ramp area, a portion of the General Aviation tiedown area, Automobile Parking 2-82, ANG Buildings 1, 2, 3, 10 and 15 roof drainage has been conveyed to Outfall No. 007 with discharge to Rye Lake tributary.
5. SPDES Outfall No. 008: Tributary Drainage Sub Area BB-1BF (airport site portion) that accepts runoff generated in the Automobile Parking area and ANG Buildings 4, 5, and 11 has been conveyed to Outfall No. 008 with discharge to Blind Brook.
6. SPDES Outfall No. 009: Tributary Drainage Sub Area BB-1BF (airport site portion) that includes runoff from the Automobile and Aircraft Parking areas and Hangars 6 and 26 has been conveyed to Outfall No. 009 with discharge to Blind Brook.
7. SPDES Outfall No. 010: Tributary Drainage Sub Area BB-1BF (airport site portion) that includes runoff from the Hangar 6 Aircraft Pad and Hangar V Entrance Road has been conveyed to Outfall No. 010 with discharge to Blind Brook.

According to the expired SPDES permit, Outfalls 001, 003, 004, 007, and 010 are monitored monthly for flow, carbonaceous biochemical oxygen demand (CBOD), pH, oil and grease, and propylene glycol (sampled twice per month). Outfalls 001, 004, and 007 are also monitored quarterly for benzene, toluene, ethylbenzene, xylene, and linear alkylbenzene sulfonate (LAS). No monitoring requirements were shown in the permit for Outfalls 008 and 009. Monitoring results for the last 50 rounds of data

² NYSDEC SPDES Permit, Region 3 folder, IndSPDES subfolder, ID NY0075132.

<https://www.dropbox.com/sc/fo/6s8i1v7pbcohfnbfmbqlj/ACKEWArNuGy3iLqHopfaBI8?rlkey=qd5h1ivma057i76tnqo1yk2t0&e=1&dl=0> (Accessed August 10, 2024).

³ Westchester County Airport Stormwater Management. <https://airport.westchestergov.com/environmental-management-system/stormwater-management> (Accessed August 10, 2024).

show only 6 minor exceedances: Outfalls 001 and 010 for CBOD and Outfall 004 for low PH and oil and grease.⁴

It is important to note that no outfalls are monitored for per- and poly-fluoroalkyl substances (PFAS), which is a dominant class of contaminants of the shallow groundwater at the airport resulting from historical firefighting activities. Yet, on the NYS DEC Brownfield Cleanup webpage, surface water sampling results for the airport are cited as having detected PFAS-compound perfluorooctanesulfonic acid (PFOS) in all samples collected across the site ranging in concentration from 2 ppt to 4,280 ppt. PFOS concentrations in tributaries leaving the airport were said to range from 9 ppt to 180 ppt.⁵ In April 2024, EPA set a national drinking water standard for perfluorooctanoic acid (PFOA) and PFOS of 4 ppt.⁶

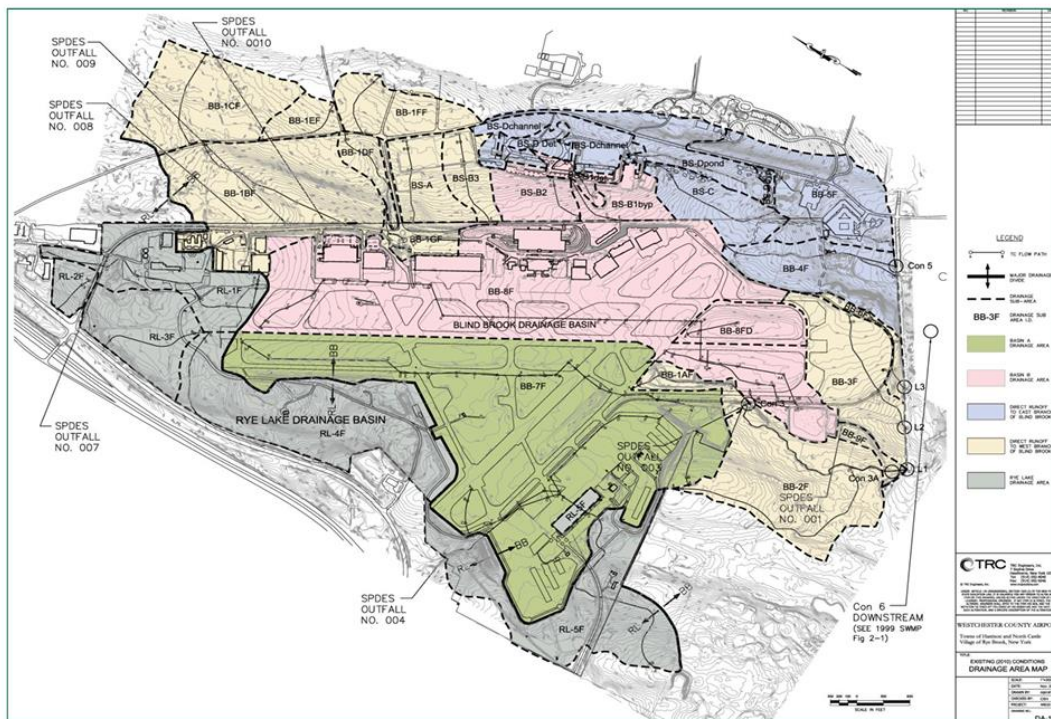
It is likely that the lack of PFAS monitoring in SPDES outfalls is due to the fact that the SPDES permit was last extended in 2018 and no changes to the monitoring parameters or frequencies have been made since at least 2018, therefore the newer discoveries of PFAS contamination have not been taken into consideration for the airport's SPDES permit.

As for other discharges, according to Westchester County Department of Environmental Facilities, the airport operates under Wastewater Discharge Permit No. 7515. Under this permit, the airport is permitted to discharge industrial wastewater to the Westchester County Sewer System, Yonkers Joint and Blind Brook, subject to conditions of the permit and the provisions set forth in the Westchester County Sewer Act. These are piped discharges and, assuming all piping systems are maintained, these discharges do not impact surface water.

⁴ EPA Enforcement and Compliance History Online—Discharge Monitoring Reports, Site ID NY0075132. https://echo.epa.gov/trends/loading-tool/reports/effluent-exceedances?permit_id=NY0075132 (Accessed August 17, 2024).

⁵ NYSDEC Environmental Site Remediation Database for Westchester County Airport (Site ID C360174). <https://extapps.dec.ny.gov/cfm/extapps/derexternal/haz/details.cfm> (Accessed August 17, 2024).

⁶ EPA Final PFAS National Drinking Water Standard. <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas> (Accessed August 17, 2024).



⁷ Westchester County Master Plan Update, DY Consultants, December 2017.

<https://airport.westchestergov.com/images/stories/masterplan/04Chap2EnviOrviewFNLDec17.pdf> (Accessed August 10, 2024).

⁸ Final Environmental Assessment (EA) Airport Drainage Improvements Storm Water Management Upgrades, TRC Engineers, Inc., April 2015.

<https://airport.westchestergov.com/images/stories/pdfs/NewsandPublicNotices/EnvirAssess20150417.pdf>

Detention Basins

The 1999 SMP recommended a bioswale system for treatment of Outfall 007 flow, which flows to Rye Lake, and improvements/expansions to two existing stormwater detention basins, Basins A and B (Basin A was expanded once in 1999 and Basin B was constructed in 1993). The Plan concluded there was no need to construct a third “Detention Basin C.” However, an updated study in 2008 concluded that the fully developed conditions used as the basis of the 1999 SMP recommendations were not accurate and, as a result, higher than planned peak discharge rates from the detention basins and at the downstream confluence of the east and west branches of Blind Brook were occurring during a 10-year storm event.⁹ A 2010 update of the 1999 SMP corrected for these issues.

In 2015, an assessment of drainage improvements at the airport was performed (“2015 EA”) and it recommended 28 acre-feet of expansion of Detention Basins A and B.¹⁰ The basis of this recommendation was the finding that the 1999 design did not allow for adequate flood storage capacity. Construction of a Detention Basin C was again considered, but this time as an alternative to the expansion of Basins A and B. Basin C would have been located on the approximately 36-acre site of the former horse training ring or paddock at the southeastern corner of the airport property. It would have provided an additional 15-17 acre-feet of flood water detention, however, it was determined to be much more costly than expanding Basins A and B. Basin C would have involved greater tree and wetland disturbance and required an offsite control for an outlet structure. However, the “Blind Brook Watershed Flood Resiliency Study,” conducted by Ramboll for the City of Rye in 2023, concluded Basin C would provide an additional 8 acre-ft of stormwater detention.¹¹ While a small benefit, the permit and cost issues are relatively modest compared to other options and the report says that it offers some benefit when part of a scheme of multiple smaller projects. Also, additional detention could play a role in preventing downstream discharge of PFAS-contaminated runoff.

Deicing

Among the stormwater quality improvements implemented by the airport, most significant are those impacting the deicing of aircraft. The airport has implemented and follows strict deicing procedures, capturing and diverting spent deicing fluids to storage tanks. Runways are deiced using potassium acetate, which is biodegradable. This fluid runs off into the stormwater system. Any deicing fluid that ends up in the airport stormwater runoff is conveyed to detention basins, where discharges to the Blind Brook are monitored. The April 2024 groundwater sampling showed no glycols detected indicating that collection systems for aircraft deicing may be working as designed. Further, the NYS Department of Health Bureau of Environmental Quality collects samples at six locations in the water distribution system and these samples are sent to a certified laboratory for analysis during the deicing season from October to April. Over the 10 years this voluntary water quality monitoring has been conducted, no indication of

⁹ Final Environmental Assessment (EA) Airport Drainage Improvements Storm Water Management Upgrades, TRC Engineers, Inc., April 2015, p. 1-8.

<https://airport.westchestergov.com/images/stories/pdfs/NewsandPublicNotices/EnvirAssess20150417.pdf> (Accessed August 10, 2024).

¹⁰ Final Environmental Assessment (EA) Airport Drainage Improvements Storm Water Management Upgrades, TRC Engineers, Inc., April 2015, p. 1-8.

<https://airport.westchestergov.com/images/stories/pdfs/NewsandPublicNotices/EnvirAssess20150417.pdf> (Accessed August 10, 2024).

¹¹ “Blind Brook Watershed Flood Resiliency Study, Final Report,” Ramboll Americas Engineering Solutions, Inc., for Rye City Council, August 2023, <https://www.ryeny.gov/home/showpublisheddocument/16652/638295951117067536> (Accessed August 10, 2024).

adverse impact of airport deicing operations has been observed.¹² Further, there have been no detections of propylene glycol, a common deicing compound, in the samples taken from the SPDES stormwater outfalls. However, in past years when the deicing fluid has been discharged into the Blind Brook it has had a “gas like” odor that has caused concern among some Purchase College students and Rye Brook residents who call 911 thinking it is a gas leak. This, in turn, has regularly impacted emergency service providers who have had to respond.

Stormwater Volume and Downstream Flooding: SEQRA Issues

A major goal of the 1999 SMP, in response to a 1991 consent order issued by NYS DEC, was to divert runoff from the 157 acres flowing to the Rye Lake/Kensico Reservoir watershed to the Blind Brook watershed. In order to accomplish this goal, additional storm drain collection systems were installed that redirected stormwater from several outfalls that previously discharged to the Rye Lake/Kensico Reservoir watershed. According to a 2010 update of the SMP, 143 acres were diverted.¹³

This series of events raises the question as to whether the County’s actions were consistent with the State Environmental Quality Review Act (SEQRA). Specifically, the SEQRA at 6 CRR-NY 617.4 (b) (6)(i) states:

The following actions are Type I if they are to be directly undertaken, funded, or approved by an agency:... (6) activities other than construction of residential facilities, that meet or exceed any of the following thresholds; ... (i) a project or action that involves the physical alteration of more than 10 acres.

Diverting over 100 acres of stormwater through the construction of new drainage systems can be interpreted as “physical alteration” and therefore, a full SEQRA process, including public comment, would have normally ensued. However, it is likely that the actions directed by the consent order took legal precedence over following the SEQRA process. The result of this course of events was that the full downstream impacts of stormwater detention were not examined in detail and the amount and timing of detention for storm events of different intensities and durations were not considered.

For later improvements in 2012 and 2013, the County declared themselves lead agency and declared the design of the stormwater upgrades as Type 2 actions under SEQRA,¹⁴ for which Section 617.5(c) (27) states it applies to:

...conducting concurrent environmental, engineering, economic, feasibility, and other studies and preliminary planning and budgetary process necessary to the formulation of a proposal for action, provided those activities do not commit the agency to commence, engage in or approve such action.

¹² Westchester County Airport Stormwater Management. <https://airport.westchestergov.com/environmental-management-system/stormwater-management> (Accessed August 10, 2024).

¹³ Final Environmental Assessment (EA) Airport Drainage Improvements Storm Water Management Upgrades, TRC Engineers, Inc., Appendix F---Update to the 1999 Stormwater Management Plan, December 2010, <https://airport.westchestergov.com/images/stories/pdfs/NewsandPublicNotices/HPNEAApend201504.pdf> (Accessed August 10, 2024)

¹⁴ Final Environmental Assessment (EA) Airport Drainage Improvements Storm Water Management Upgrades, TRC Engineers, Inc., Appendix A---Westchester County Resolutions for Proposed Action, April 2015, <https://airport.westchestergov.com/images/stories/pdfs/NewsandPublicNotices/HPNEAApend201504.pdf> (Accessed August 10, 2024)

It is important to note that Type 2 actions under SEQRA are those that do not significantly impact the environment, are otherwise precluded from environmental review, and have been determined not to have a significant adverse impact on the environment. Once an action is determined to be Type 2, no further environmental review is required.

As the design activities did effectively commit the agency to “engage in such action,” as evidenced by the capital commitments summaries that accompanied the County documentation and the noted impacts of the detention schemes downstream, the need for greater public involvement and review under SEQRA was likely warranted.

Stormwater Volume and Downstream Flooding: Other Engineering Studies

In 2023, the City of Rye, assisted by Ramboll Americas Engineering Solutions, Inc., completed a hydrologic study of the Blind Brook watershed.¹⁵ This study defined the limits of the 8,600-acre (11.5 sq. mi) Blind Brook watershed (Figure 3) and the hydraulic grade line of stormwater from the point of origin at the airport to the point of discharge at Milton Harbor on Long Island Sound (Figure 4).



Figure 3---Blind Brook Watershed—Airport is at northernmost end of the watershed.

¹⁵ “Blind Brook Watershed Flood Resiliency Study, Final Report,” Ramboll Americas Engineering Solutions, Inc., for Rye City Council, August 2023, <https://www.ryeny.gov/home/showpublisheddocument/16652/638295951117067536> (Accessed August 10, 2024).

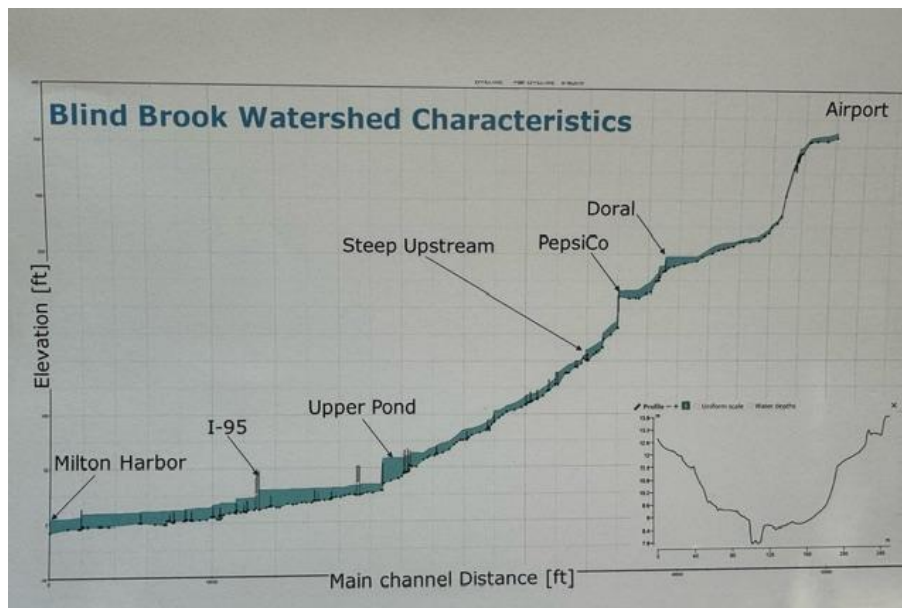


Figure 4—Hydraulic Grade Line from Airport to Milton Harbor and Cross-Section Profile (inset) at Upper Pond in Rye Brook—Note airport is at highest elevation in watershed.

In Figure 4, the height of the blue band shows the water surface elevation in the 100-year storm event. What is clear from this figure is the steepness of the hydraulic grade line starting at the airport, the steepness of the sides of the cross section (taken at the Upper Pond in Rye Brook) and the height of the resulting water surface elevation (measuring 25 ft at the Upper Pond, which is approximately 6 ft higher than the height of Bowman Dam, which contains the pond). The report concluded that increased retention at the airport (such as adding Detention Pond C) and at SUNY, among other measures, would have impacts on reducing downstream flood impacts.

Because of the airport's position in the watershed and the amount of acreage it contributes to flow, an analysis should be performed by the airport to determine the prior impact of diverting the Rye Lake surface flow to the Blind Brook in Rye Brook. Improvements should also be considered by the airport now to address this issue by performing a hydrologic study that considers downstream impacts. This study should then be used by the airport to develop additional detention schemes and assess their impacts on downstream flooding. As a starting point, the peak discharges estimated in the 2010 update to the 1999 SMP can be used, provided the estimates are accurate for the final constructed conditions and that rainfall estimates are updated for current practice. The discharge rates from the 2010 update are shown in Figure 5. Volumes of detention are shown in Figure 6.¹⁶

¹⁶ Final Environmental Assessment (EA) Airport Drainage Improvements Storm Water Management Upgrades, TRC Engineers, Inc., Appendix F---Update to the 1999 Stormwater Management Plan, December 2010, <https://airport.westchestergov.com/images/stories/pdfs/NewsandPublicNotices/HPNEAApend201504.pdf> (Accessed August 10, 2024)

TABLE 6 UPDATE TO THE 1999 STORM WATER MANAGEMENT PLAN WESTCHESTER COUNTY AIRPORT COMPARISON OF PEAK DISCHARGE RATES (cfs)																
Location of Confluence	1-Year Storm				2-Year Storm				10-Year Storm				100-Year Storm			
	Pre-1987	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects	Pre-1987	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects	Pre-1987	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects	Pre-1987	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects
CON 1 - Rye Lake	216.3	116.3	116.3	116.3	330.2	179.7	179.7	179.7	594.8	372.3	372.3	372.3	1062.2	763.9	763.9	763.9
CON 3 - On Blind Brook @ Basin A discharge	256.1	108.4	103.8	105.8	399.2	167.7	163.1	165.6	626.1	344.2	281.8	286.8	994.4	683.8	495.6	504.5
CON 3A - On Blind Brook @ Basin B discharge	N/A	151.8	141.1	143.8	N/A	279.8	260.2	264.0	N/A	741.0	531.9	536.2	N/A	1286.7	1016.6	1026.0
L1 - West Branch of Blind Brook @ Lincoln Ave.	266.4	152.8	142.1	144.7	417.2	281.4	261.8	265.6	672.7	743.5	535.0	539.6	1095.5	1292.5	1023.2	1032.5
L2 - On Lincoln Avenue 470 feet east of L1	21.6	25.2	25.2	25.2	35.2	38.7	38.7	38.7	68.2	70.2	70.2	70.2	128.5	125.5	125.5	125.5
L3 - On Lincoln Avenue 1000 feet east of L1	5.1	3.4	3.4	3.9	8.3	5.4	5.4	6.0	16.0	10.3	10.3	11.1	30.3	19.3	19.3	20.1
CON 5 - Intersection of East Branch Blind Brook & Lincoln Avenue	41.8	66.5	66.5	67.3	69.6	106.2	106.2	107.1	138.0	194.5	194.5	195.7	264.6	378.8	378.8	380.4
CON 6 - Intersection of East and West Branches of Blind Brook	321.3	205.6	199.9	202.6	517.0	359.4	341.5	346.1	853.7	950.5	724.6	722.7	1451.7	1595.1	1318.8	1330.7

Figure 5—Peak Discharge Rates Estimated in 2010---Includes estimates after construction of improvements in discharge rates.

<p align="center">TABLE 7 UPDATE TO THE 1999 STORM WATER MANAGEMENT PLAN WESTCHESTER COUNTY AIRPORT COMPARISON OF DETENTION BASIN FLOWS, ELEVATIONS AND STORAGE VOLUMES</p>												
	1-Year Storm			2-Year Storm			10-Year Storm			100-Year Storm		
	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects	Exist. (2010) Cond	Prop. (2011) Cond	Future (2011) Cond w/Capital Projects
Basin A Inflow (cfs)	187.6	187.6	187.6	261.0	261.0	261.0	341.8	341.8	341.6	372.6	372.6	372.6
Basin A Discharge (cfs)	18.7	14.2	14.2	26.0	28.0	28.0	161.2	102.1	105.1	326.4	246.0	250.2
Basin A Elevation (ft)	369.94	370.04	370.04	371.38	371.18	371.18	372.49	372.48	372.52	372.66	373.60	373.61
Basin A Storage (Ac-ft)	14.4	16.9	16.9	21.1	22.6	22.6	26.4	29.5	29.7	27.3	35.7	35.7
Basin B Inflow (cfs)	220.9	220.9	222.6	307.4	307.4	309.7	488.7	488.7	489.2	563.0	563.0	563.8
Basin B Discharge (cfs)	49.8	44.0	44.7	104.0	91.1	92.4	426.4	225.3	225.7	556.3	420.3	421.3
Basin B Elevation (ft)	362.26	362.15	362.17	363.08	362.91	362.93	363.92	364.47	364.48	364.04	365.79	365.79
Basin B Storage (Ac-ft)	17.9	18.3	18.4	21.6	22.3	22.4	25.5	31.1	31.2	26.1	39.1	39.1

Figure 6—Basin Flows, Elevations, and Storage Volumes ---"Future" numbers are planned as of 2010.

Considerations for the Airport Master Plan

There are several areas of concern presented in this white paper that were not previously addressed in the 2017 update to the Airport Master Plan.¹⁷ These are identified below:

1. The 2017 update Appendix describes the areas of environmental review that should be incorporated in any significant changes to the airport. In regard to stormwater, it says:

“Since HPN is in the northern portions of the Watershed, the larger Kensico Reservoir Watershed, therefore, would be the appropriate study area for evaluating indirect impacts related to stormwater and flooding.”

¹⁷ DY Consultants, “Westchester County Airport Master Plan Update, Chapter II: Environmental Overview, Final Report,” (December 2017), <https://airport.westchestergov.com/images/stories/masterplan/04Chap2EnvOrviewFNLDec17.pdf> (accessed August 31, 2024), 2-4.

However, the airport assessments of stormwater impacts have looked at generated volumes of stormwater only and have not sufficiently addressed downstream issues such as impacts of retention vs. release of stormwater in major storm events. In addition, since the detention basin work had not been completed at that time, there was little focus on maintenance plans and their importance in maintaining the capacity of the basins. According to an airport source, both basins are maintained as part of the airport's Wildlife Hazard Management Plan (WHMP). Landscapers trim invasive species spring through fall. However, significant overgrowth is apparent and capacity is therefore diminished relative to the original design of the basins.

2. PFAS contamination is a more newly identified issue and is not discussed.
3. Understanding of climate issues, and the role they play in causing increased intensity of storm events, is better understood now than when the master plan update was prepared, and thus should be reflected in the next master plan.
4. There is no discussion of steps the airport should make to reduce existing stormwater runoff or limit the generation of additional stormwater runoff.

In light of what is now known about PFAS contamination and the significance of stormwater flow volume at the airport, the new Master Plan should consider the following:

1. Sample for PFAS at outfalls. The identification of PFAS as a contaminant of concern at the airport is a relatively recent discovery. Therefore, the SPDES permit does not yet require sampling. Yet, these outfalls contribute flow to what ultimately become floodwaters in downstream communities. Contamination carried by these floodwaters can impact resident's yards and homes. Given the prevalence of PFAS in groundwater and surface water, outfall monitoring for PFAS should be performed until it is proven that there are no offsite impacts, whether as part of a revised SPDES permit or as separate voluntary monitoring for which results are shared publicly.
2. Conduct regular maintenance of detention basins. Detention Basins A and B are not regularly mowed and thus are becoming filled with silt and plant growth. This reduces their capacity for detention. In light of the importance of these basins to downstream flows, the airport must provide regular and diligent maintenance of the basins to maximize their capacities.
3. Reassess existing detention and plan for additional detention, as needed. The 2015 EA states that expansions to Basins A and B would reduce the peak discharge rate "6% below the pre-1987 levels for the 100-year storm." This is not an appropriate measure of success considering what is now known about the importance of updating, based on climate change, the rainfall intensity and duration predictions for use in design and the importance of the airport's location in the Blind Brook watershed. The absolute, quantified benefits of the detention achieved should be stated based on the final constructed dimensions of the basins, the design storm parameters evaluated, the volumes retained by storm recurrence interval, the timing and flow rates of releases following storm events, and the resulting reduction in water surface elevations downstream. According to the 2017 master plan update, the airport still lacked a composite GIS map of the airport that would include all airport drainage and utility information. If still the case, such mapping should be developed immediately as it would aid the modeling of accurate flow conditions and allow estimates of flows under different storm and detention scenarios.

If the calculated benefits are not significant enough for the current basins, further basin expansion should be considered and construction of Basin C, which was set aside in the past, should be reconsidered. In all cases, it is likely that new hydrologic studies are needed to determine the correct size and detention time for projected storms using rainfall predictions updated for climate change, as is commonly now done in stormwater engineering practice. Additional detention options should be identified and reviewed and, if necessary, land should be set aside for their construction. The 2022 Rye study concluded there are few other viable detention options downstream of the airport, therefore the airport's role in mitigating downstream flooding in the future is critical. In addition, as noted, there may be additional benefits in detaining PFAS-contaminated runoff at the airport and thus preventing it from contaminating Blind Brook and its floodplain.

4. Limit the addition of impervious surface at the airport. Detention of storm flows is limited as a method for preventing downstream impacts. Eventually, detained flows are released or absorbed into the ground. It is important to evaluate whether enough detention can be built at the airport to contain the future predicted flows (based on increases in storm intensity and duration due to climate change now expected) and what maintenance and cost burdens the additional detention will create for airport operations. Additional impervious surface will only add to this problem. These issues, must be carefully considered when contemplating the addition of new FBOs, parking, or terminal space. If new space is considered, appropriate storm recurrence intervals (i.e., 100-yr, 500-yr) should be selected in the design of detention to reflect future worst-case scenarios.
5. Engage in a more open project evaluation process. The concerns raised regarding the SEQRA processes followed suggest that greater engagement by the airport with the surrounding communities should have occurred prior to implementation of the selected projects. There is no question that decisions made by the airport regarding development resulting in increased impervious surface and changes to stormwater management have impacts on floodwaters in downstream communities. It is the spirit, if not the letter, of SEQRA to engage impacted offsite entities in the project development process. Going forward, whether strictly required by SEQRA or not, the airport should conduct an open process of engagement with downstream land owners and the governing bodies of downstream communities. This would also allow the airport to benefit from the extensive studies and monitoring that has been performed by some of these communities in recent years.
6. Notify municipalities and Purchase College when discharging deicing fluid from the basins. This will minimize the impacts of residents calling emergency services because of mistaken concerns with "gas leaks."

Conclusions

Since the last master plan update, new issues and knowledge have emerged regarding increased stormwater volumes due to climate change and new contaminants of concern (such as PFAS). Therefore, recommendations for the new master plan include the following:

1. The airport should seek to revise their SPDES stormwater discharge permit to include contaminants that are relevant to current operations and recent findings from environmental investigations. PFAS,

found in a number of groundwater samples, should be added to the permit.

2. The two-detention basin system should be re-evaluated in light of more intense storms and what is now known about downstream flooding. Increased storage capacity, in the form of additional basins or increased basin size, changes in the operation of the basins, and changes in the maintenance of the basins could all have impacts on downstream flooding.
3. Any anticipated additions to the stormwater volume anticipated through changes to drainage systems or additional airport development should be quantified. Emphasis should be placed on minimizing stormwater generation wherever possible.
4. The airport should collaborate with downstream communities on best stormwater management solutions. This should include the airport providing advance notice of any changes to stormwater volume or quality and the opportunity for communities to comment on and influence airport decisions impacting stormwater.

APPENDIX
DETENTION BASIN DESIGN DRAWINGS

