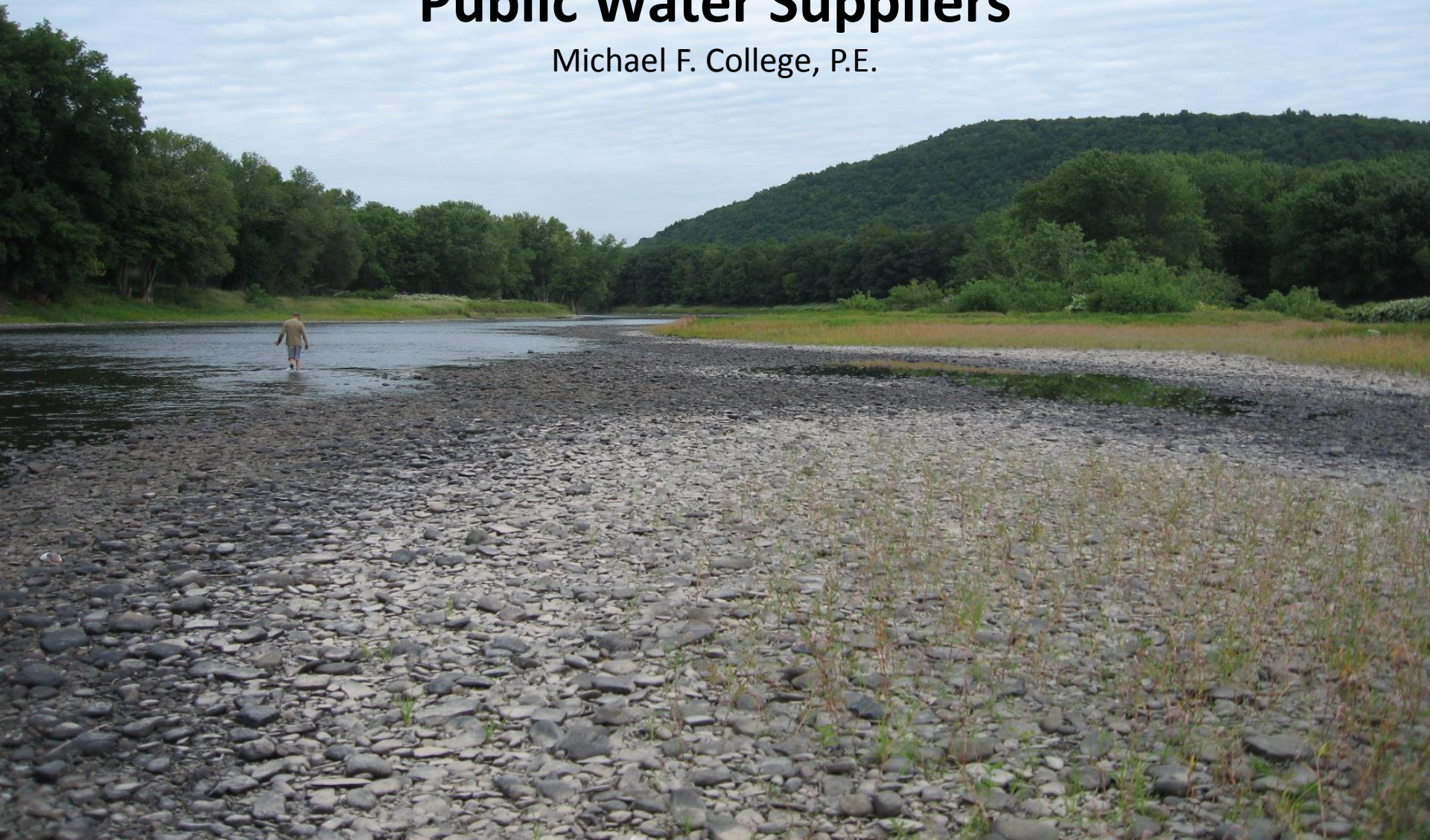


# Surface Water Considerations for Public Water Suppliers

Michael F. College, P.E.



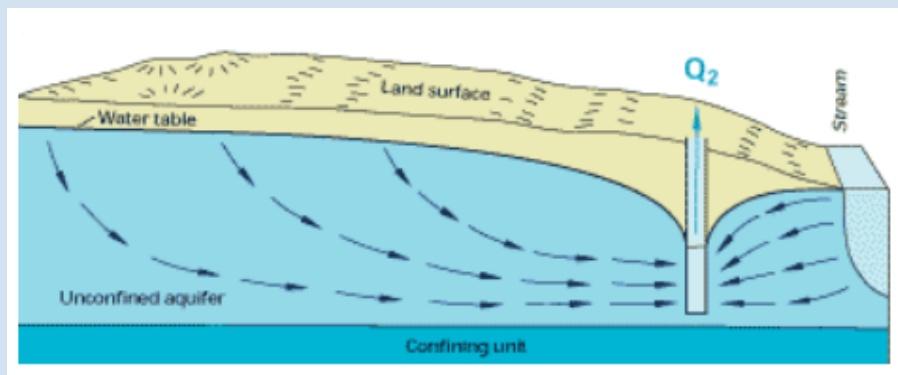


# Scenarios

(for PWS, surface water)

Direct withdrawal from surface water (SW):

- NY MOU w/NYSDEC
- PA MOU w/PADEP
- MD No existing MOU



Groundwater (GW)  
withdrawal with surface  
water impacts:

- Coordinated review with SRBC groundwater staff

# GW Withdrawal Impacting SW





# GW Withdrawal Impacting SW



# GW Withdrawal Impacting SW





# Aspects of Surface Water Review

- Notifications
- Reasonable Foreseeable Need
- Environmental Screening
  - Aquatic Resource Survey
- Access
- Storage
- Metering & Monitoring
- Drought Plans
- Feasibility
- Intake Design
- Source Redundancy
- Water Conservation
  - Unaccounted for Water
  - Per Capita Use
  - Water Conservation Program / Leak Detection
  - Metering of Users
- Passby Flows
  - Low Flow Protection Policy (LFPP)

# SRBC Low Flow Protection Policy (LFPP)



Mike College  
[mcollege@srbc.net](mailto:mcollege@srbc.net)  
717-238-0423 x1238



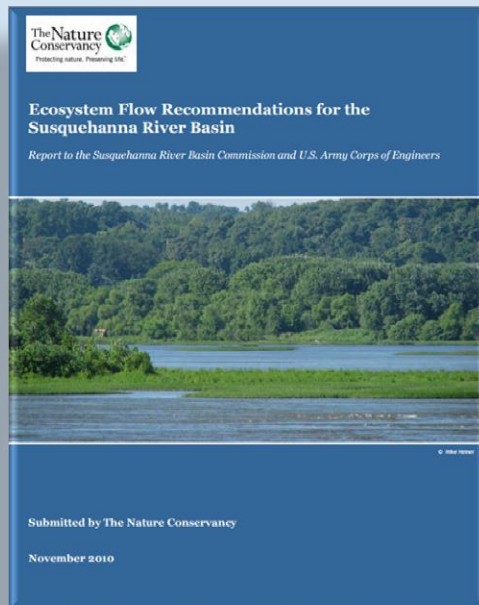
# Terminology

- Passby Flow:
  - Prescribed quantity of flow (water) that must be allowed to pass the point of impact at all times when a withdrawal is occurring.
  - The amount of water that has to “pass by” the point of withdrawal during low flow events.
  - Think ‘interruptible’ withdrawal.
  - Is not meant to supplement naturally occurring low flow conditions.





# SRBC Low Flow Protection Policy (LFPP)



**Table 5.2 Flow recommendations for the Susquehanna River ecosystem.**

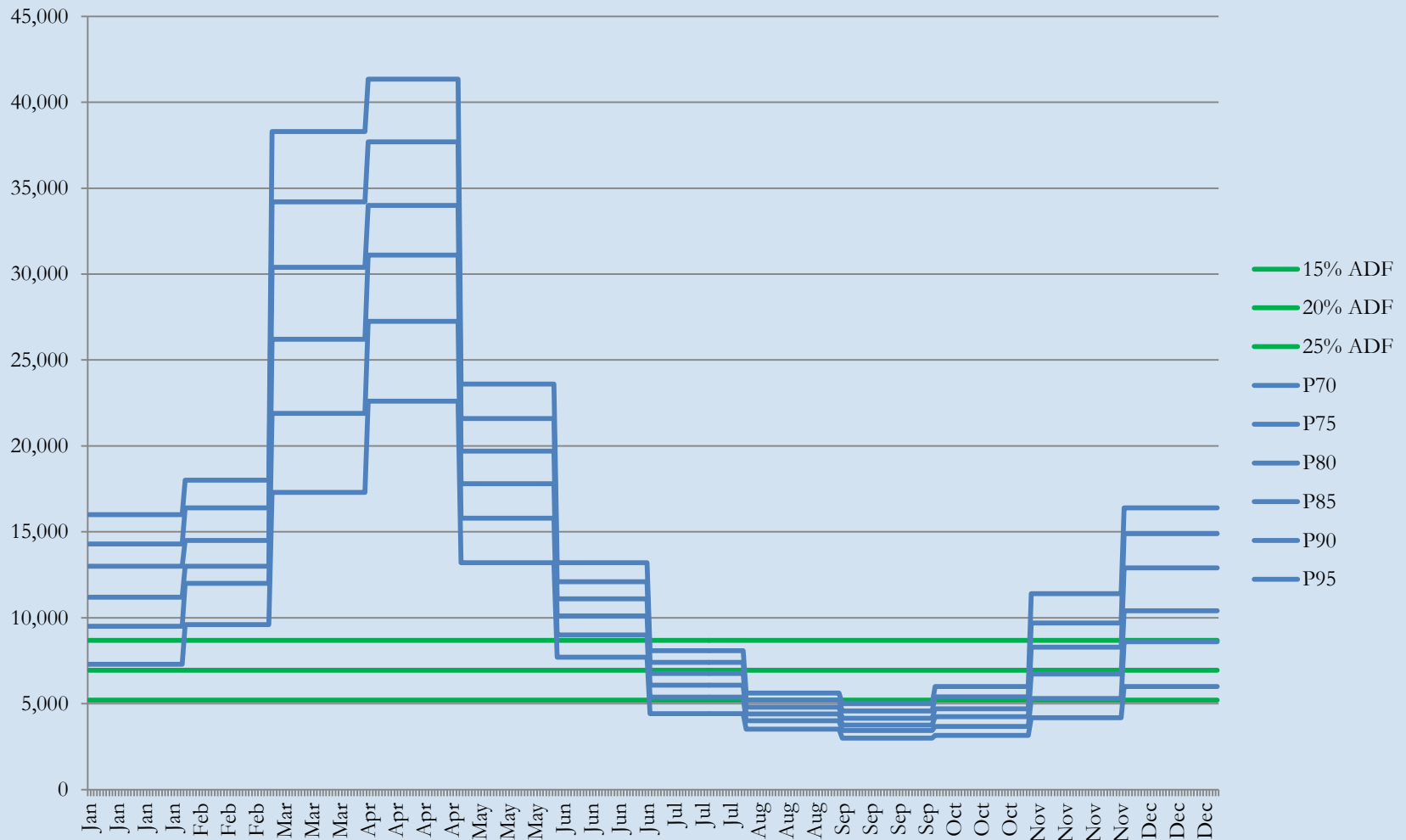
Season	Flow Component	Flow Statistic	Flow Recommendations		
			Headwater streams < 50 sq mi	Streams and small rivers (50 – 200 sq mi)	Major tributaries and mainstream (>200 sq mi)
Annual and Interannual Events	High Flows	Large flood	Maintain magnitude and frequency of 20-yr flood	Same for all streams	Same for all streams
		Small flood	Maintain magnitude and frequency of 5-yr flood	Same for all streams	Same for all streams
		Bankfull	Maintain magnitude and frequency of 1 to 2-yr high flow event	Same for all streams	Same for all streams
All Months	High flows	Monthly Q10	< 10% change to magnitude of monthly Q10	Same for all streams	Same for all streams
		Seasonal flows			
	Low flows	Monthly Median	Between 45 <sup>th</sup> and 55 <sup>th</sup> percentiles	Same for all streams	Same for all streams
		Monthly Range	≤ 20% change to area under curve between Q10 and Q75	Same for all streams	Same for all streams
		Monthly Low Flow Range	No change to area under curve between Q75 and Q99	≤ 10% change to area under curve between Q75 and Q99	≤ 10% change to area under curve between Q75 and Q99
Fall	High flows	Monthly Q75	No change	No change	No change
		Monthly Q95			
Summer	High flows	Frequency of events > Monthly Q10	NA	NA	Maintain 1-5 events
		Frequency of events > Monthly Q10	Maintain 2-8 events	Maintain 2-8 events	Maintain 2-8 events

# Low Flow Protection Policy 2012-01 (LFPP)

- Replaced previous “passby” policy (No. 2003-01).
- Ensures flow alterations related to withdrawals do not cause significant adverse impacts to water resources during low flows.
- Incorporates scientific advances in ecosystem flow protection criteria.
- Used to establish limits and conditions on withdrawal approvals or supports a denial of an application request where such standards cannot be met.



# Susquehanna River @ Harrisburg



# Aquatic Resource Class (ARC)

*Table 1. Aquatic Resource Class\* Criteria*

ARC	Description	Drainage Area (square miles)	Total Stream Length (miles)	Percent Composition
1	Headwaters	$\leq 10$	40,421	81
2	Creeks	$>10 <50$	4,357	10
3	Small Rivers	$\geq 50 <200$	2,139	4
4	Medium Tributary Rivers	$\geq 200 <1,000$	1,300	3
5	Medium Mainstem Rivers	$\geq 1,000 <5,000$	467	1
6	Large Rivers	$\geq 5,000$	582	1

\* For planning purposes, maps showing generalized ARC stream designations in the Susquehanna River Basin and its six major hydrologic subbasins are provided as Attachments C1 through C7.



**ARC 1**  
(2 mi<sup>2</sup>)



**ARC 3**  
(64 mi<sup>2</sup>)



**ARC 6**  
(8,880 mi<sup>2</sup>)



# ARC 1 (2 MI<sup>2</sup>)



# ARC 3 (64 MI<sup>2</sup>)





# ARC 6 (8,880 MI<sup>2</sup>)



# De minimis Thresholds

*De minimis* withdrawals:

“Unless a proposed net withdrawal, evaluated both individually and cumulatively, is considered by the Commission to be too low in magnitude to have any appreciable effect on instream flows, a passby flow or conservation release condition will be imposed in the approval. *De minimis* withdrawal thresholds are stepped by ARC as previously described (see Table 2).”

**Table 2. *De minimis* Withdrawal Thresholds by Aquatic Resource Class**

<b>ARC 1</b>	<b>ARC 2</b>	<b>ARC 3</b>	<b>ARC 4</b>	<b>ARC 5</b>	<b>ARC 6</b>
None	5% monthly P95	5% monthly P95	5% monthly P95	10% monthly P95	10% monthly P95

# Passby Flow

## When Recommended?

Individual Instantaneous withdrawal is greater than de minimis threshold

**OR**

Cumulative Water Demand (Proposed Withdrawal + Existing Upstream Users) is greater than de minimis threshold

1. Percent Exceedance Value Method – Used throughout the basin in rivers and streams of varying sizes, and based on ARC. Variability in climate, geology, and hydrology among physiographic provinces and states is accommodated for in the selection of representative reference stream gages or applicable regional regression equations used to compute the monthly percent exceedance values. The calculated monthly passby flow/conservation release values are the standard thresholds for low flow protection. Percent exceedance flow values are specified as the required monthly passby flow/conservation release values according to Table 3 below.

**Table 3. Passby Flow/Conservation Release Schedule**

ARC 1	ARC 2	ARC 3	ARC 4	ARC 5	ARC 6
monthly P70	monthly P75	monthly P80	monthly P85	monthly P90	monthly P95



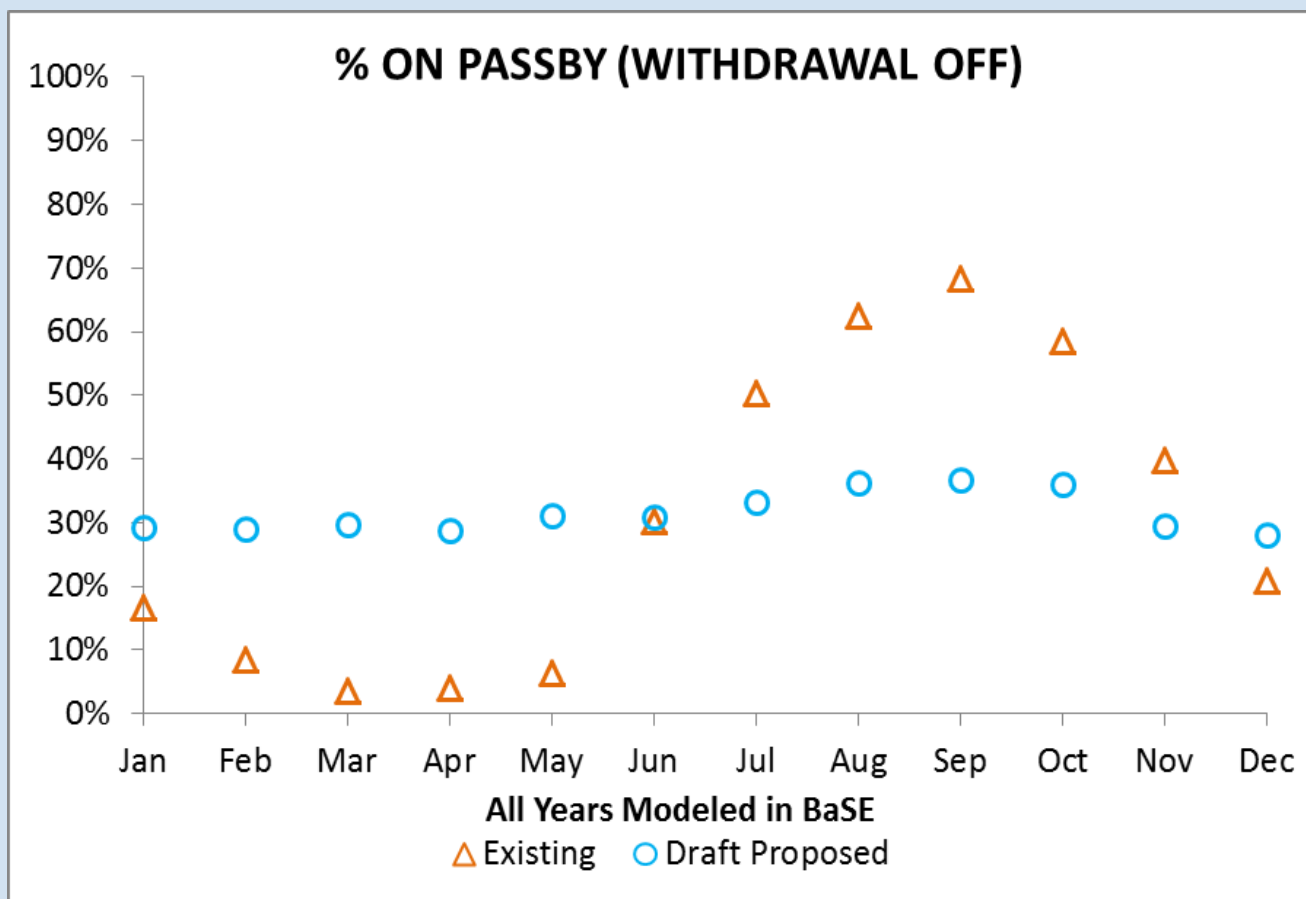
# LFPP – Additional Considerations

- Exceptional Quality Waters
- Impaired Waters
- Monthly vs. Seasonal Statistics (Operational Impacts)
- Project Specific Instream Flow Studies
- Agency Coordination
- Sensitive Resources
- Impacts to Flow Variability (Median Flows)
- Conservation Releases (Reservoirs)
- PA-MD Instream Flow Study (PA-MD IFS) Method

# LFPP - Discretion

- Policy/Technical Guidance vs. Regulation
- Case-by-case Considerations
  - Gross vs. Net Withdrawal
    - PWS – Point of return
  - Storage/Impoundments
- Existing Withdrawal Projects
  - Previously unregulated w/o passby flows
  - Renewals (w/o increase)
    - Was the quantity previously used?
- Alternative Sources
- Interim operating periods

# Passby Sample Previous vs. Current Policy





# Passby Sample Previous vs. Current Policy



# PADEP – MOU

## (as applicable to surface water PWS)

MEMORANDUM OF UNDERSTANDING BETWEEN THE SUSQUEHANNA RIVER  
BASIN COMMISSION AND THE PENNSYLVANIA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION REGARDING COORDINATION OF PROJECT  
REVIEW FUNCTIONS

THIS MEMORANDUM OF UNDERSTANDING is made by and between the  
Susquehanna River Basin Commission, a federal-interstate compact agency (the "Commission"  
or "SRBC") and the Pennsylvania Department of Environmental Protection ("DEP").  
WHEREAS,

1. The Susquehanna River Basin Compact, P.L. 91-575, Section 3.2 declares that "It is the policy of the signatory parties to preserve and utilize the functions, powers and duties of the existing offices and agencies of government...and the Commission is directed to utilize those offices and agencies for the purposes of this compact." And
2. Section 3.7 (2) of the Compact further declares that the Commission may employ any other agency or instrumentality of a signatory party for any purpose; and
3. Section 3.10 (1) provides that to assure that the Commission is apprised of all projects within the basin, monthly reports and listings of all permits granted or similar actions taken by officers or agencies of the signatory parties shall be submitted to the Commission in a manner prescribed by it; and
4. Section 3.10 (1) further provides that those projects which also require Commission approval shall be submitted to the Commission through appropriate offices or agencies of a signatory party; and
5. Section 3.10 (5) provides that the Commission, after consultation with the appropriate offices or agencies of the signatory parties, shall establish the procedure of submission, review and consideration of projects; and
6. Commission Regulation Section 803.6 provides that, to avoid duplication of work and to cooperate with other government agencies, the Commission may develop agreements of understanding with agencies of the signatory parties regarding joint review of projects; and
7. Such agreements may inter alia, outline the procedures for joint review and delegate SRBC approval authority to a signatory agency.

NOW THEREFORE, the parties to this memorandum set forth the following as the terms and conditions of their understanding:

- Adopted 1999
- Establishes procedure for coordinated, concurrent review
- PADEP is primary

2

3

4

5



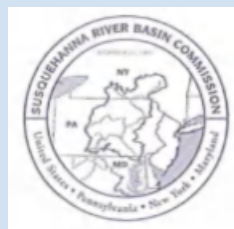
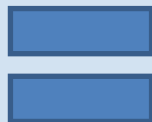
# PADEP – MOU

## (as applicable to surface water PWS)

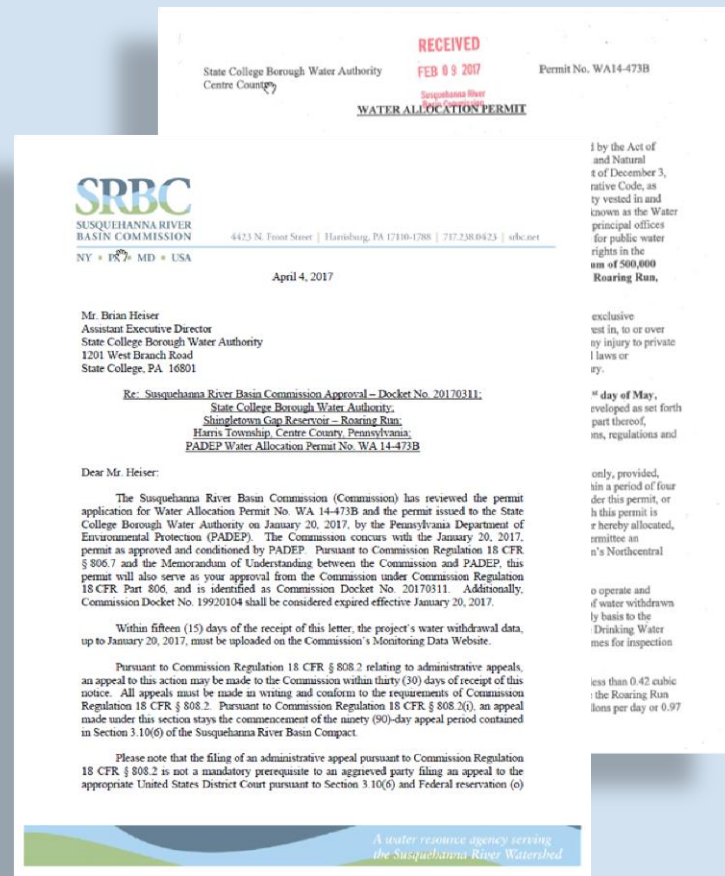
- Applicant submits application to PADEP
- PADEP provides copy of application to SRBC
- SRBC provides comment to PADEP
- PADEP duly considers comments
- PADEP provides copy of issued (final) Water Allocation Permit (WAP) to SRBC
- If in agreement – SRBC accepts WAP as SRBC approval
- SRBC can require separate application



WA 14-473B



20170311



# **PADEP – MOU**

## **(as applicable to surface water PWS)**

- Existing SRBC docket (issued prior to MOU being effective)
  - Submit letter to SRBC requesting submission of WAP renewal to PADEP (as part of the MOU process) to be considered renewal application.
  - Prior to 6-months before docket expiration
  - Submit WAP renewal to PADEP.
- Questions
  - Contact SRBC staff



# Consumptive Use of Water

- From § 806.4(a)(1):
  - Except for diversions, PWS are exempt.
  - Does not exempt individual users supplied by PWS that exceed 20,000 gpd (30-day average)

Except to the extent that they involve the diversion of the waters of the basin, public water supplies shall be exempt from the requirements of this section regarding consumptive use; provided, however, that nothing in this section shall be construed to exempt individual consumptive users connected to any such public water supply from the requirements of this section.





