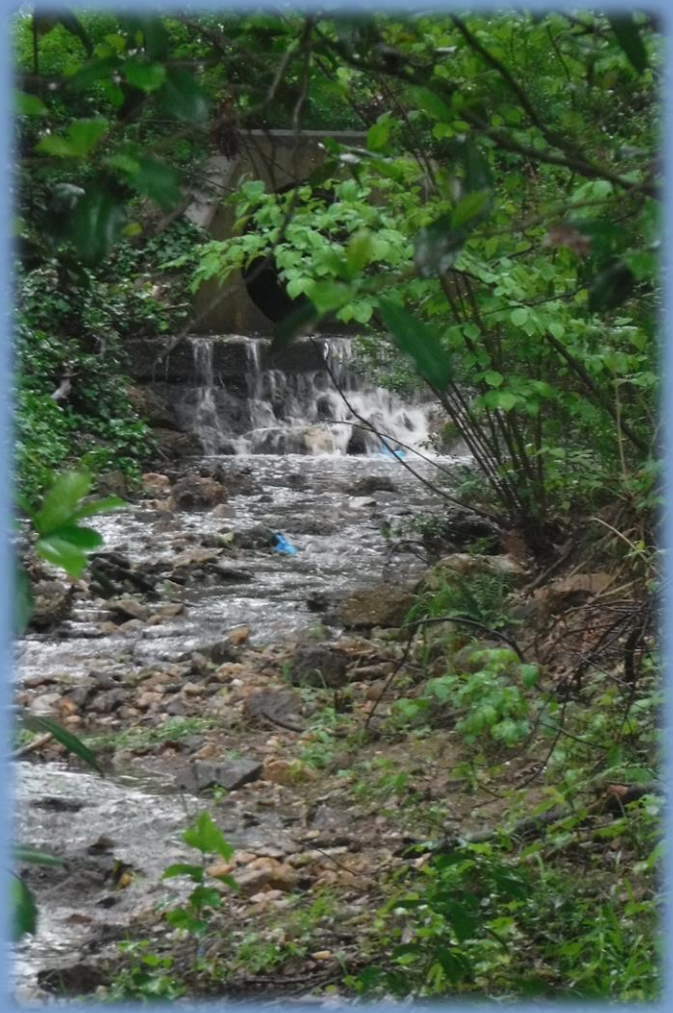
Accotink Creek TMDL Study
5th TAC Meeting

Tuesday October 18th, 2016

Today's Agenda

- Changes since last TAC meeting
- Allocation Principles
- Load Duration Approach to Chloride TMDL
  - Chloride Allocations
- Revised Lower Accotink Sediment Model
  - Sediment Allocations
- Next Steps



Noteworthy Changes/Updates Since the Last TAC meeting

- Chloride Model Development
  - Comments at last TAC meeting
  - HSPF → Flow*standard → **Load Duration**
  - Emphasis on implementation

- Chloride TMDL as a seasonally allocated load
  - Established the winter season as November-April
  - Question for later: How should we apply the seasonal load? Apply it over the season or the year? Consider implementation

- MS4 aggregation for chloride TMDL changed to aggregation by watershed

- WLAs for industrial permits

Allocation Principles

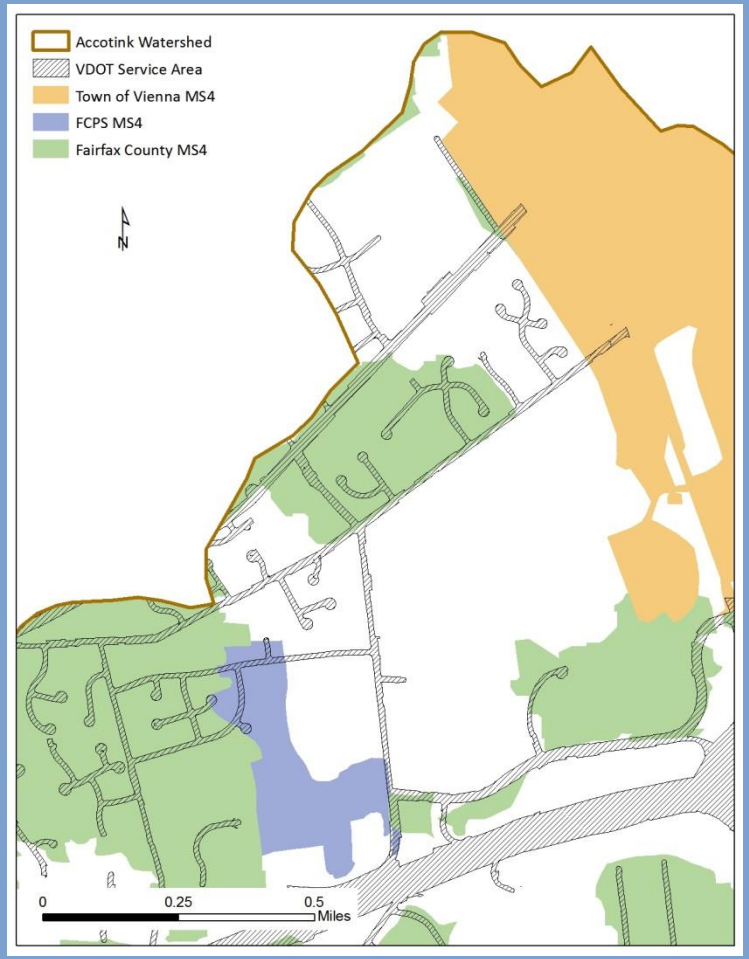
1. Allocations for impairments do not overlap
2. MS4 allocation based on percent area within one service area or another
3. Aggregate MS4 allocations
   - Different approach for Chloride vs. Sediment

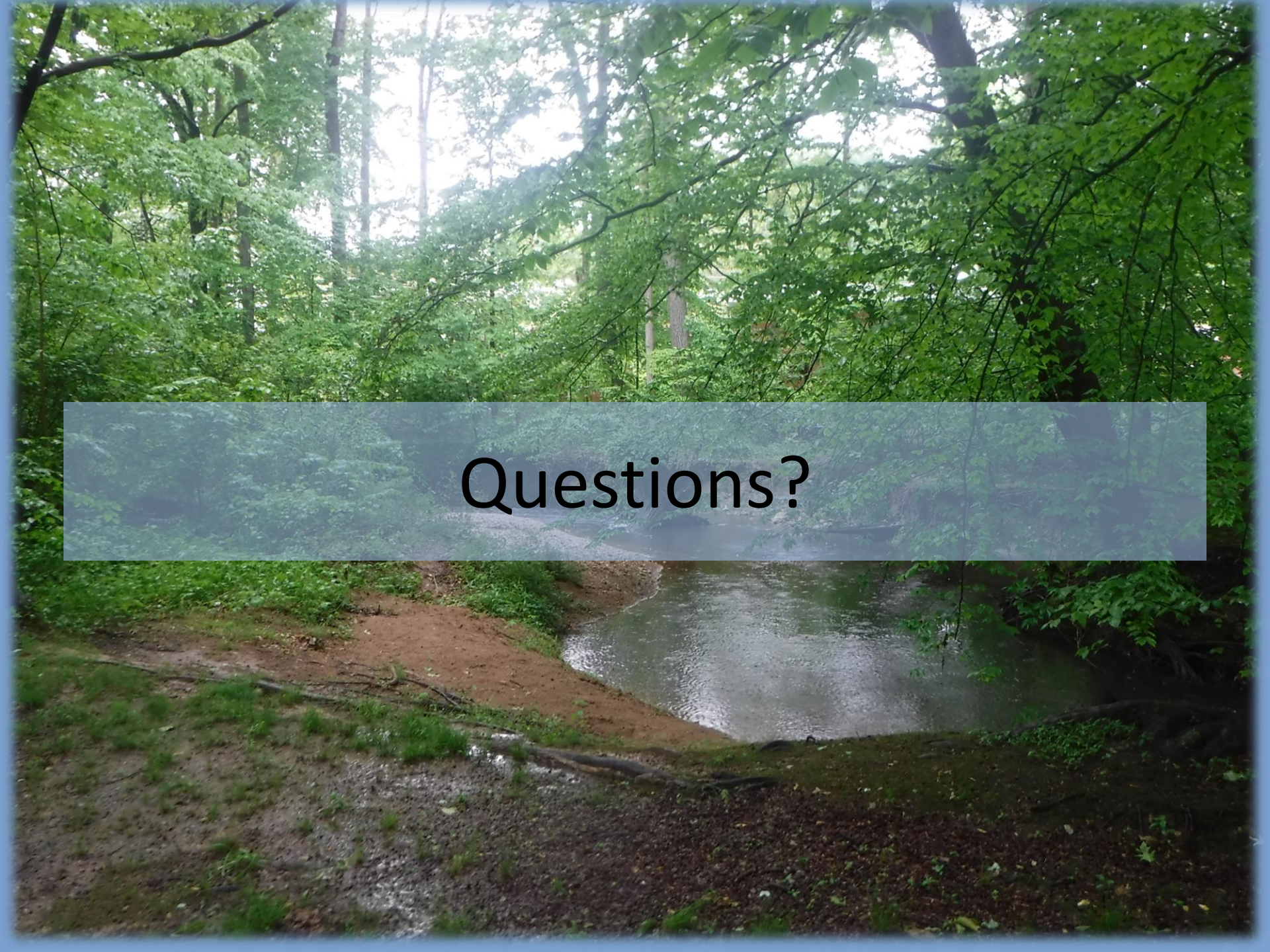
Allocations Do Not Overlap

- Models used for downstream watershed may include contribution from upstream watershed, but
- Upstream allocation separate and subtracted from downstream allocation
  - Long Branch subtracted from Upper Accotink
  - Upper Accotink subtracted from Lower Accotink

MS4 Allocations Based on Service Areas

- Available service area GIS layers: Fairfax Co., VDOT, Town of Vienna, Ft. Belvoir, Fairfax Co. Public Schools
  - City of Fairfax digitized from maps
  - GMU and NVCC added from parcel layers
- If an area is in any of the service areas, it is included in the MS4 allocation; otherwise it is in an industrial stormwater wasteload allocation or the load allocation

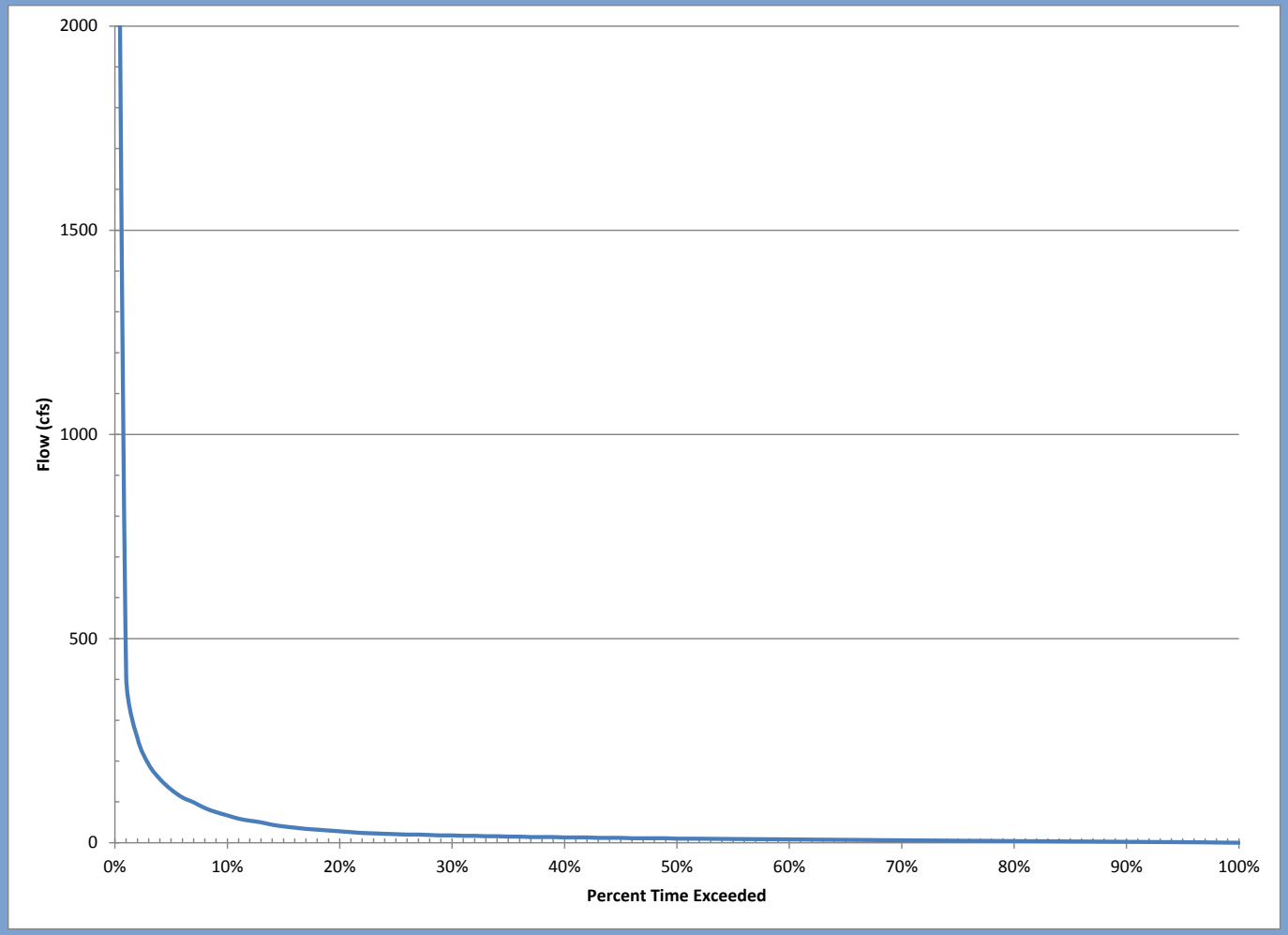



Questions?

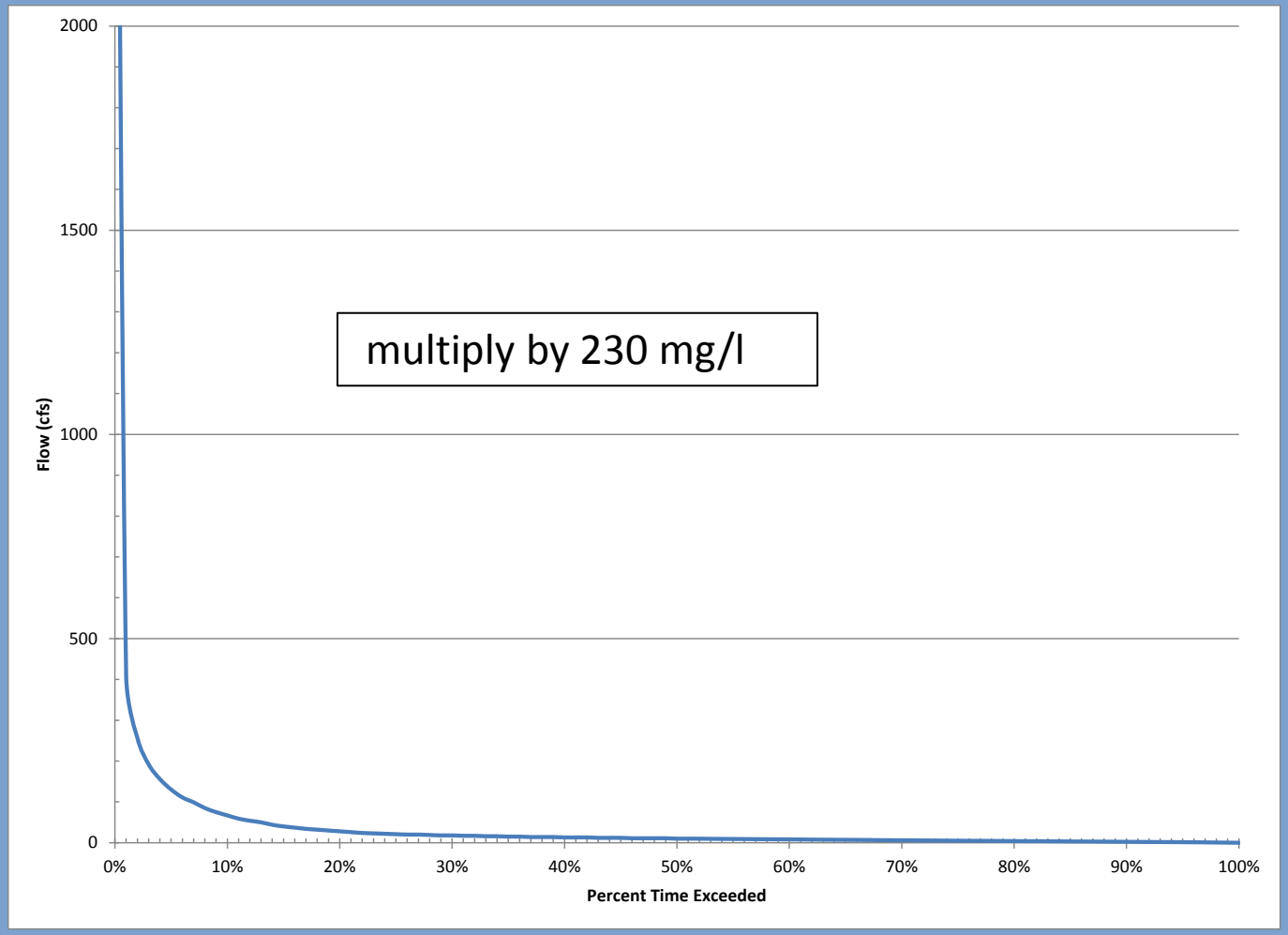
Chloride TMDL: Load Duration Curve Method

- EPA-sanctioned method
  - Used in some VA bacteria TMDLs
  - Used for Shingle Creek (MN) and Bear Brook (NH) chloride TMDLs
- Flow duration curve: % of time flow is exceeded
  - Area under curve is average daily flow
- Construct load duration curve: % of time load is exceeded = flow duration curve *criterion
  - Area under curve is average daily load meeting criterion

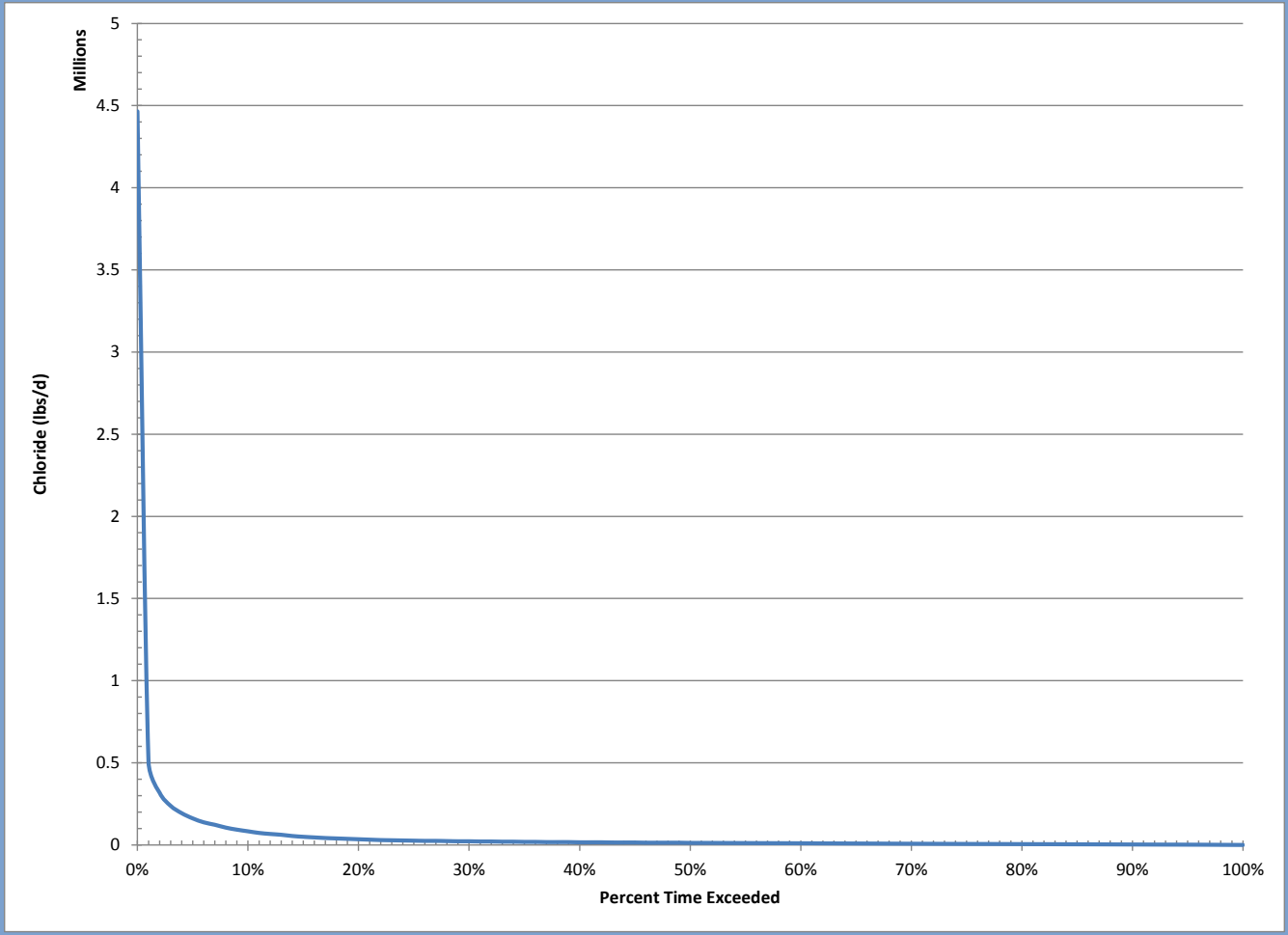
Flow Duration Curve



Flow Duration Curve -> Load Duration Curve



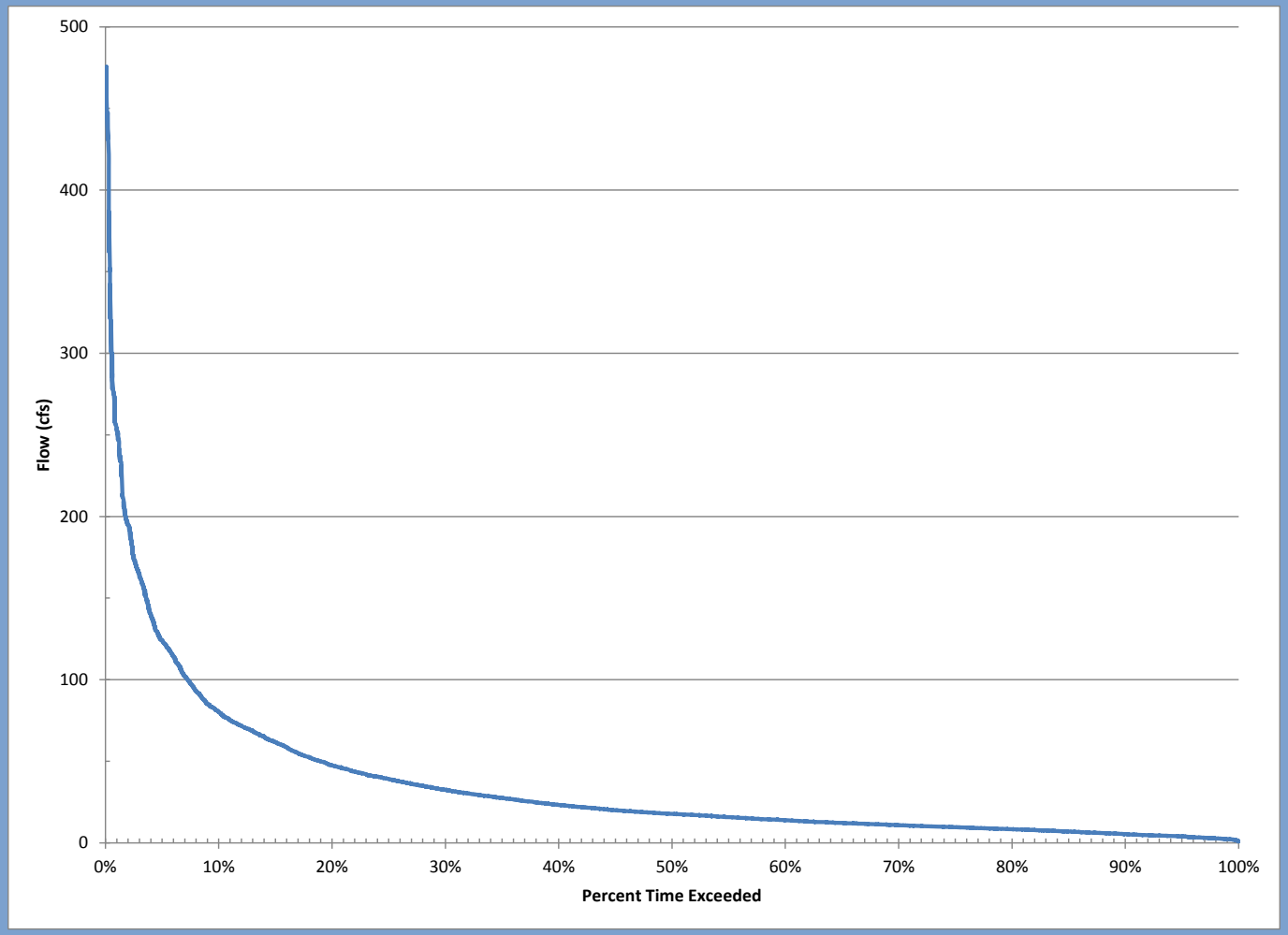
Load Duration Curve



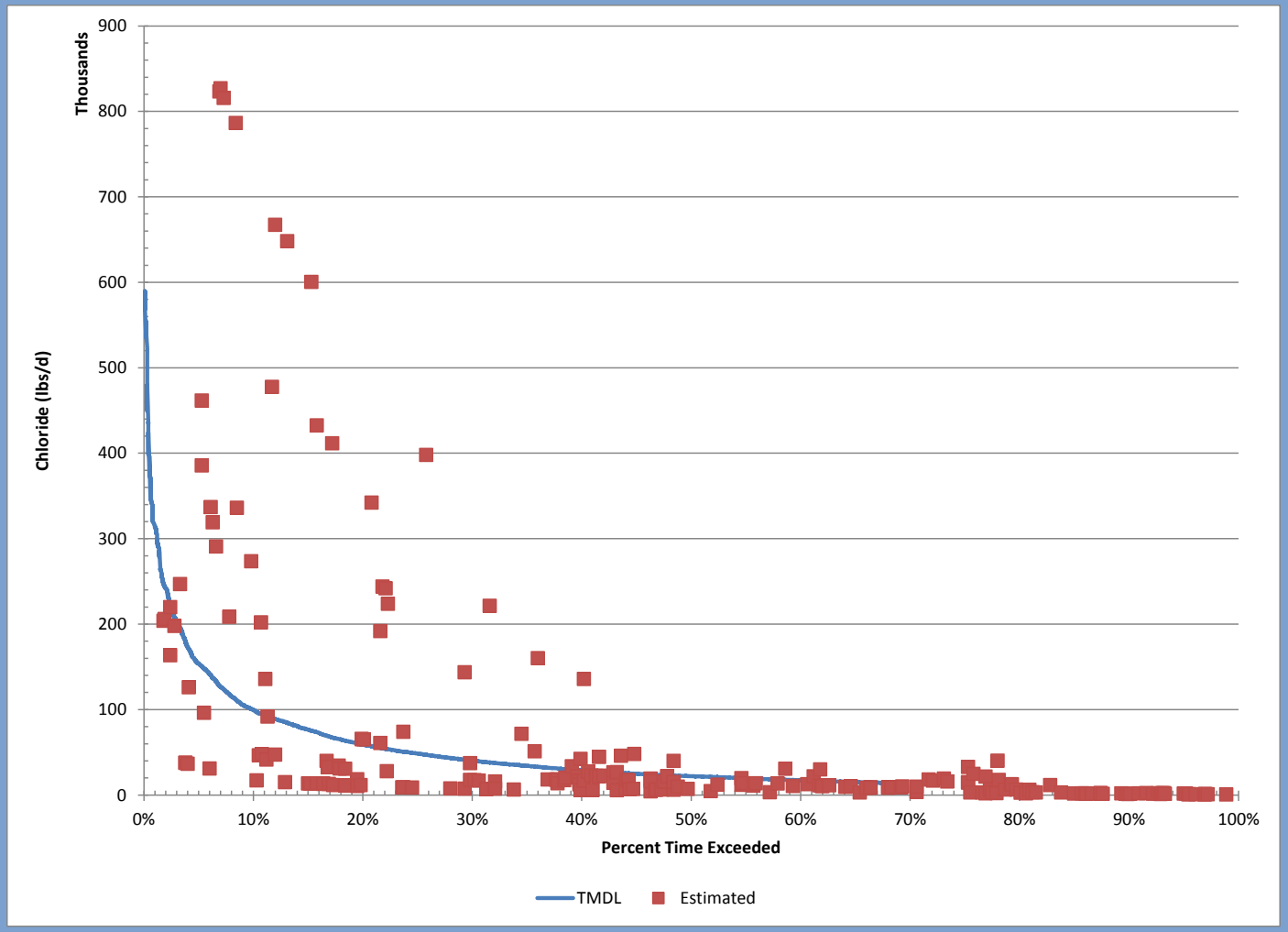
Load Duration Curve Based on Seasonal 4-Day Average Flow

1. Calculate 4-Day Average Flow: 1987-2016, based on USGS gage at Braddock Road
2. Restrict Flows to Winter: November, December, January, February, March, and April
3. Calculate Flow Duration Curve: Percent Time Winter 4-Day Average Flow is Exceeded
4. Calculate Load Duration Curve: Flow Duration Curve *Chronic Criterion (230 mg/l)
5. Resize by area for Upper Accotink Creek and Lower Accotink Creek
6. For Long Branch, calculate a separate flow duration curve based on Long Branch flow data, 2013-2016

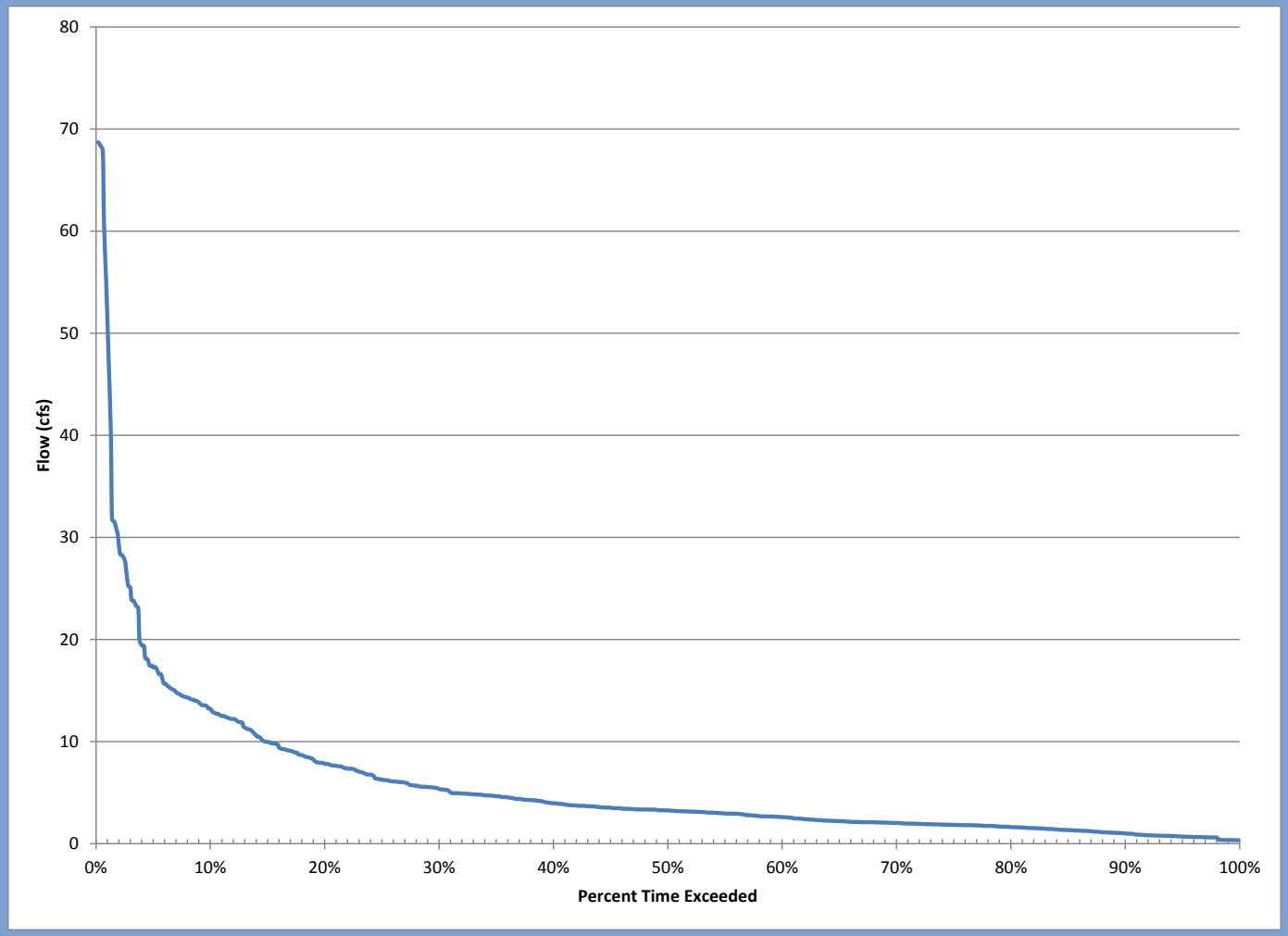
4-Day Average Flow, Accotink Creek at Braddock Road, Nov-Apr



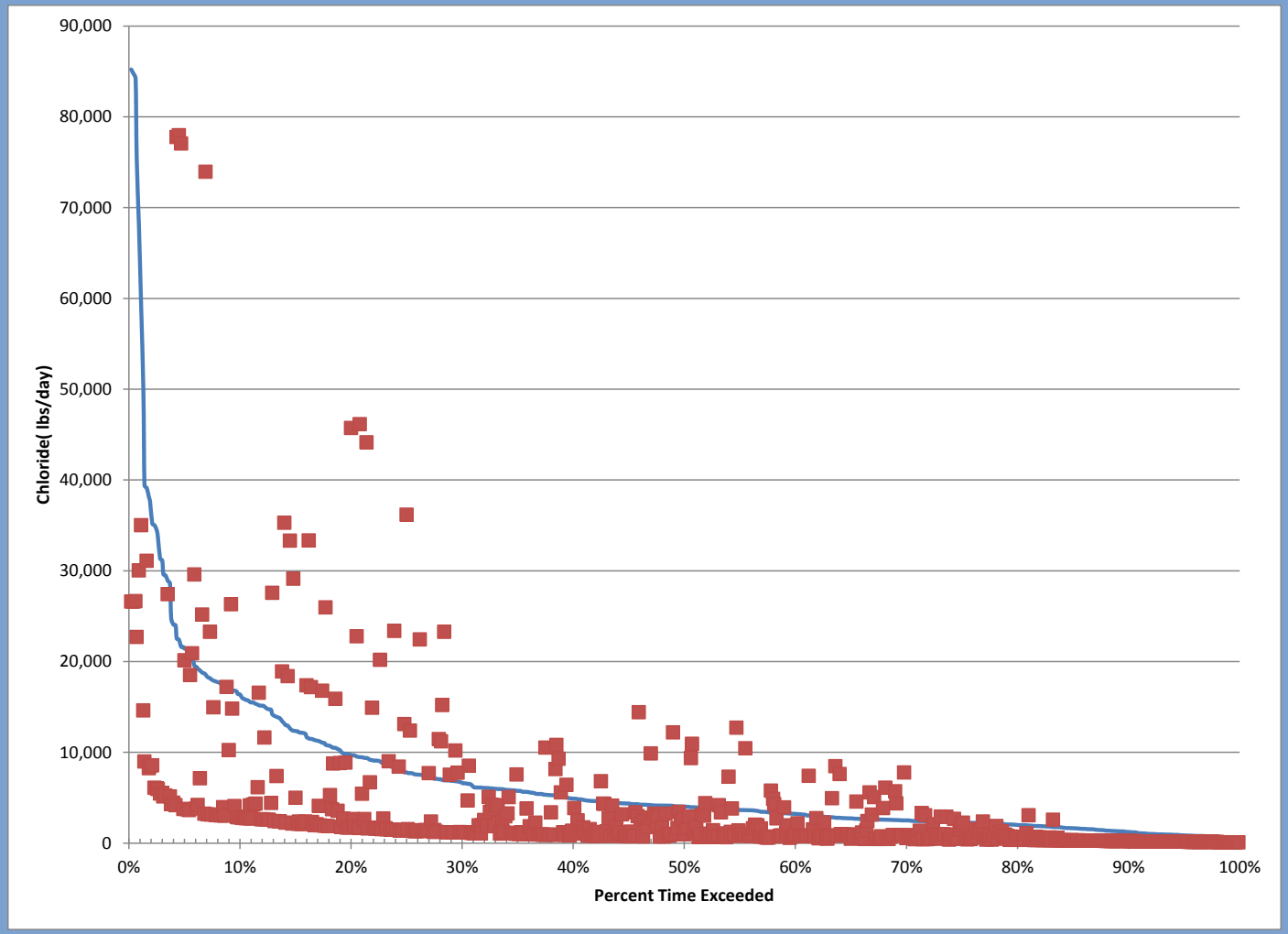
Seasonal Chloride Load, Accotink Creek at Braddock Road, Nov-Apr



Long Branch Seasonal 4-Day Average Flow Duration Curve



Long Branch Seasonal Load Duration Curve



Developing Chloride Wasteload Allocations

- MS4 WLA based on percent area within one service area or another
  - If an area is in a service area, it counts as part of MS4 allocation; otherwise it is in an industrial stormwater wasteload allocation or the load allocation
- Carwash GP, Mixed Concrete GP, Construction GP, and Cooling Water GP will not receive Chloride WLAs
- Industrial Stormwater (GPs and IPs) WLA based on percent area of the watershed that drains to their outfalls
  - Industrial Stormwater permits within MS4 service areas are subtracted from the MS4 aggregate WLA

Chloride TMDL Aggregation

- The chloride TMDLs have MS4 loads and Industrial Stormwater loads aggregated by TMDL watershed

- Justification:
  - The load duration model has no spatial resolution
  - The focus of the chloride TMDLs will be on implementation

- Regional Chloride Management Plan thoughts

DRAFT Upper Accotink Chloride TMDL Allocations (lbs/season)

TMDL Component	Source	Allocation	Percent
WLA	MS4	3,275,904	60%
	Industrial Stormwater	40,277	1%
LA	Load Allocation	1,564,571	29%
MOS	Margin of Safety	542,306	10%
TMDL	TMDL	5,423,058	100%

DRAFT Lower Accotink Chloride TMDL Allocations (lbs/season)

TMDL Component	Source	Allocation	Percent
WLA	MS4	2,597,689	60%
	Industrial Stormwater[1]	80,807	2%
LA	Load Allocation	1,245,396	29%
MOS	Margin of Safety	435,988	10%
TMDL	TMDL	4,359,880	100%

[1] Final TMDL allocations will reflect an individual industrial stormwater permit for Ft. Belvoir and will be revised to reflect that change. Currently it is included as a general industrial stormwater permit.

DRAFT Long Branch Chloride TMDL Allocations (lbs/season)

TMDL Component	Source	Allocation	Percent
WLA	MS4	848,112	66%
	Industrial Stormwater	NA[1]	NA[1]
LA	Load Allocation	303,272	24%
MOS	Margin of Safety	127,932	10%
TMDL	TMDL	1,279,316	100%

[1] Not Applicable: At this time there are no industrial stormwater discharges in the Long Branch watershed. The final TMDL may include a WLA to account for future growth and/or VPDES permits that may be assigned to existing industrial discharges in the watershed should they be required.

Question for the TAC

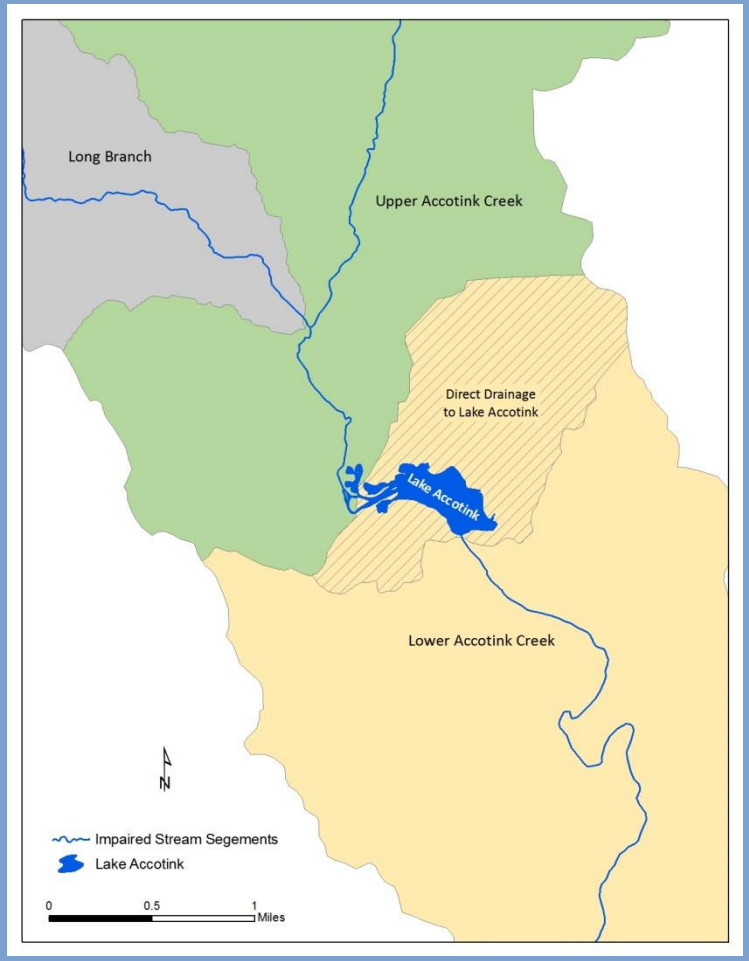
- Chloride TMDLs are currently set to apply from November 1 to April 30
- The TMDL can also have the same allocated load applied annually if that helps implementation efforts
- What is the group preference?


Questions?

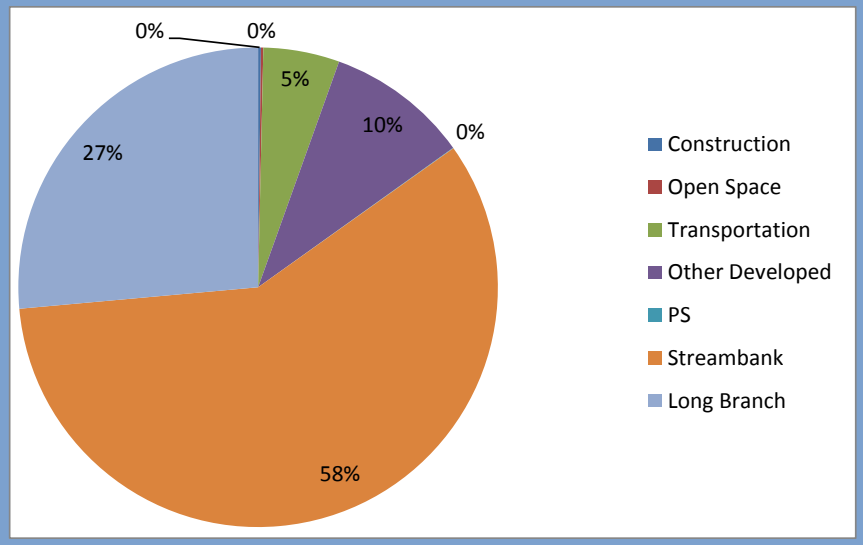
Sediment TMDL:

Revised Lower Accotink Sediment Model

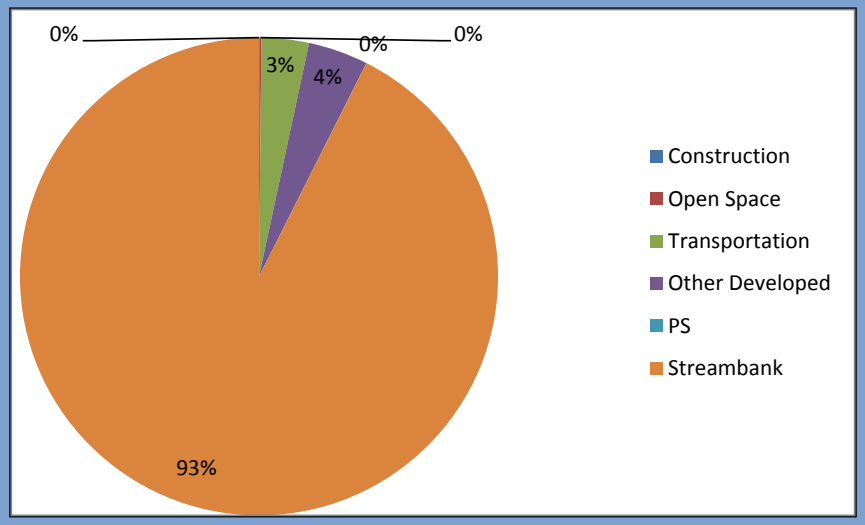
- Separate GWLF Model of Lower Accotink Creek
- 54% reduction taken from erosion and streambank loads in drainage to Lake Accotink
- Upper Accotink loads treated as point source (after 54% trapping from Lake Accotink)
- No trapping from Lake Accotink in All-Forest Scenario



Baseline Sediment Loads by Source

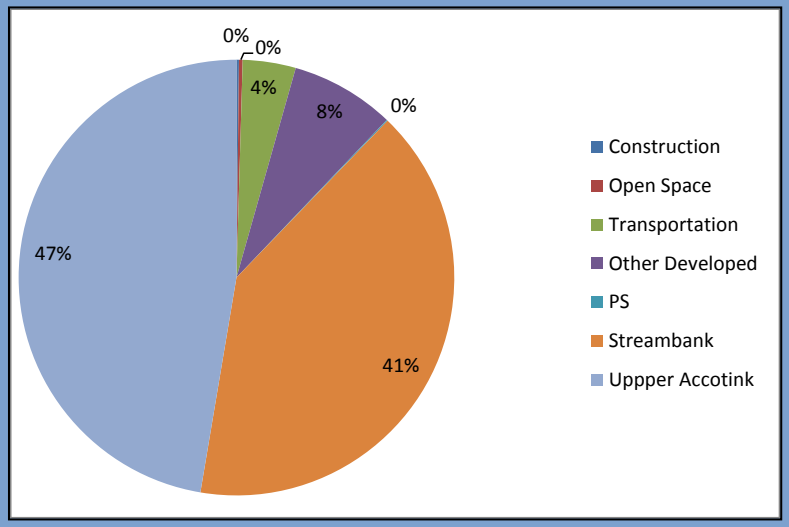


Upper Accotink Creek



Long Branch[1]

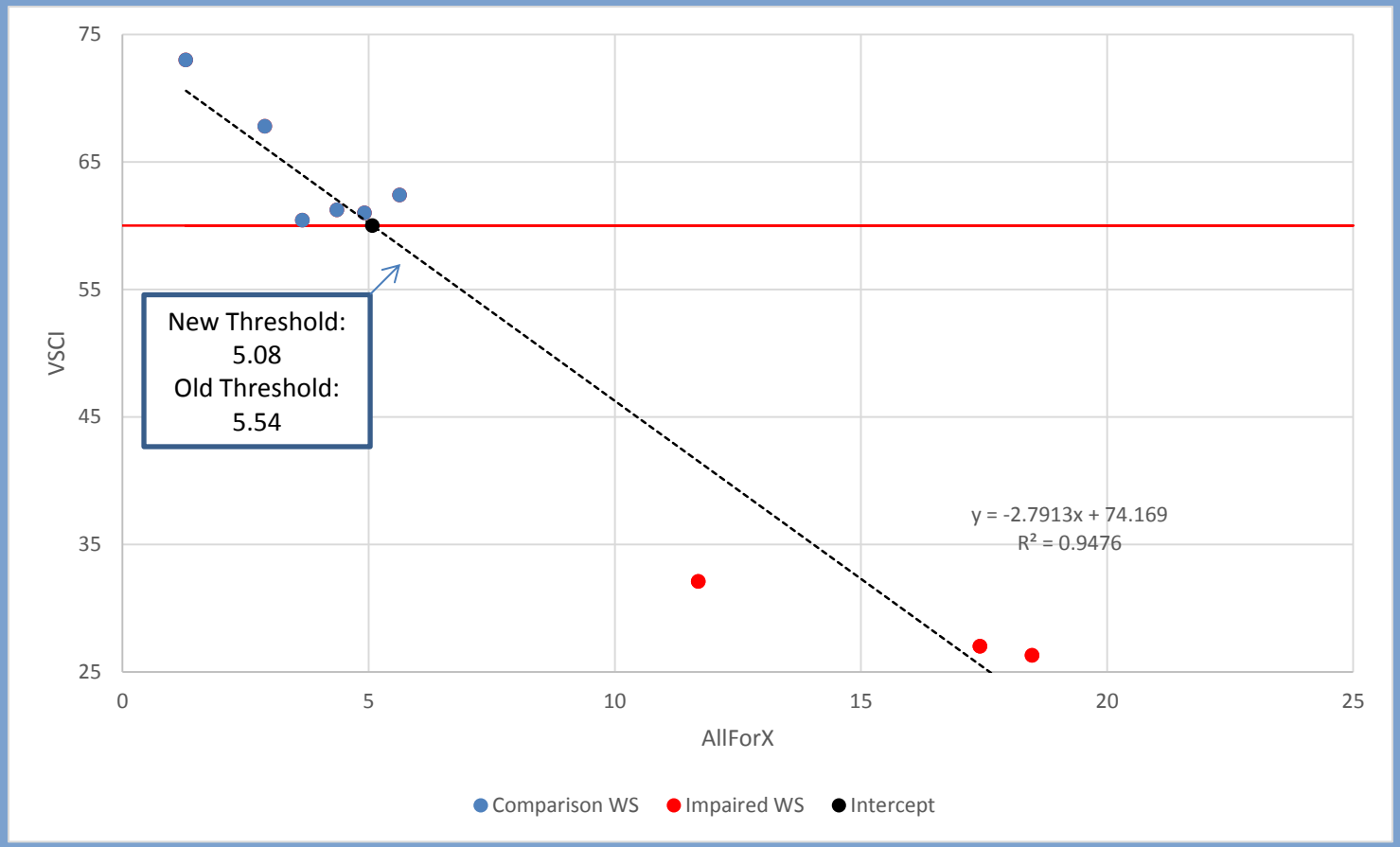
[1]Includes adjustment to match estimated loads.



Lower Accotink Creek[2]

[2]loads from upper Accotink Creek have 54% reduction due to Lake Accotink.

Revised AllForX Regression



DRAFT TMDL Reductions

Impairment	TMDL Reduction
Upper Accotink	73%
Long Branch	71%
Lower Accotink	57%

Developing Sediment Wasteload Allocations

- MS4 WLA based on percent area within one service area or another
  - If an area is in a service area, it counts as part of MS4 allocation; otherwise it is in an industrial stormwater wasteload allocation or the load allocation
- Cooling Water GP will not receive a sediment WLA
- Construction GP
  - WLA = stormwater flow*100 mg/L
- Carwash GP and Concrete GPs
  - WLA = average flow*60 mg/L TSS
  - Already a permit limit
  - Concrete GP stormwater outfall, WLA = stormwater flow*60 mg/L
- Individual Permits (stormwater)
  - WLA = Stormwater flow*60 mg/L TSS
  - Already a permit limit
- Industrial Stormwater GPs
  - WLA = Stormwater flow*100 mg/L TSS
  - Generally 100 mg/L is a benchmark

Sediment TMDL Aggregation

- The MS4 loads are aggregated by municipality within each TMDL watershed
- The Construction loads are aggregated by watershed
- Justification:
  - MS4s – the greater units are municipalities, and not all municipalities are interconnected
  - Construction – the general permit applies to multiple transient projects that meet the WLA through BMPs and more frequent inspections

DRAFT Upper Accotink Sediment TMDL Allocations (tons/yr)

TMDL Component	Source	Allocation	Percent
WLA	MS4s in City of Fairfax	538	18%
	MS4s in Town of Vienna	39	1%
	MS4s in Fairfax County	1,135	38%
	Industrial Process Water (each permit listed separately)	0.18	<1%
	Industrial Stormwater (each outfall listed separately)	22	<1%
	Construction	9	<1%
LA	Load Allocation	981	32%
MOS	Margin of Safety	302	10%
TMDL	TMDL	3,021	100%

DRAFT Sediment Wasteload Allocations for Upper Accotink Process Water Permits (tons/yr)

Type	Permit	Facility	Allocation
Car Wash	VAG750226	Enterprise Rent A Car	0.09
	VAG750238	Ravensworth Collision Center	0.09

DRAFT Sediment Wasteload Allocations for Upper Accotink Industrial Stormwater Permits (tons/yr)

Type	Permit No.	Facility	Outfall	Allocation
Individual	VA0001872	Joint Basin Corporation	001	15.85
Individual	VA0002283	Motiva Enterprises LLC	001	3.16
General	VAR051066	USPS Merrifield Vehicle Maintenance Facility	001	0.82
			002	0.12
General	VAR052188	Milestone Metals	001	0.12
			002	0.05
			003	0.19
			004	0.35
General	VAR051770	Fairfax County - Jermantown Maintenance Facility	001	1.22

DRAFT Lower Accotink Sediment TMDL Allocations (tons/yr)

TMDL Component	Source	Allocation	Percent
WLA	MS4s in Fairfax County	1,208	37%
	MS4s in Fort Belvoir	344	10%
	Industrial Process Water (each permit listed separately)	1	<1%
	Industrial Stormwater (each permit listed separately)	108	3%
	Construction	7	<1%
LA	Load Allocation	1,290	39%
MOS	Margin of Safety	329	10%
TMDL	TMDL	3,287	100%

DRAFT Sediment Wasteload Allocations for Upper Accotink Process Water Permits (tons/yr)

Type	Permit	Facility	Allocation
Concrete	VAG110046	VA Concrete Co. –Newington Plant 1 (Outfall 001)	0.67
	VAG110069	VA Concrete Co . Mid-Atlantic Materials (Outfall 001)	0.73
		VA Concrete Co . Mid-Atlantic Materials (Outfall 002)	0.17

DRAFT Sediment Wasteload Allocations for Lower Accotink Industrial Stormwater Permits (tons/yr)

Type	Permit	Facility	Allocation
Individual	VA0001945	Kinder Morgan Southeast Terminals LLC-Newington (Outfall 001)	0.61
	VA0001988	Kinder Morgan Southeast Terminals LLC-Newington 2 (Outfall 001)	2.51

INDUSTRIAL STORMWATER GENERAL PERMITS TOO NUMEROUS TO SHOW BY OUTFALL

DRAFT Long Branch Sediment TMDL Allocations (tons/yr)

TMDL Component	Source	Allocation	Percent
WLA	MS4s in City of Fairfax	20	2%
	MS4s in Fairfax County	746	65%
	Industrial Process Water	NA[1]	NA[1]
	Industrial Stormwater	NA[1]	NA[1]
	Construction	0.12	<1%
LA	Load Allocation	270	23%
MOS	Margin of Safety	115	10%
TMDL	TMDL	1,151	100%

[1] Not Applicable: At this time there are no individual or general permits and industrial stormwater discharges in the Long Branch watershed. The final TMDL may include a WLA to account for future growth and/or VPDES permits that may be assigned to existing industrial discharges in the watershed should they be required.


Questions?

Next Steps

- Draft the report
- Bring draft TMDL report to TAC
  - Last opportunity for advisory role
- Bring draft TMDL report to public

Revised Timeline