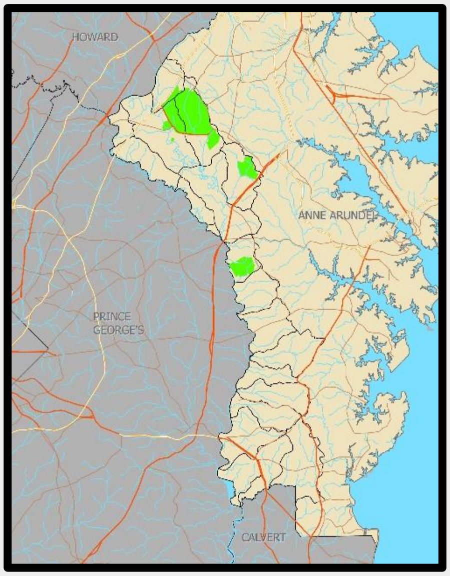
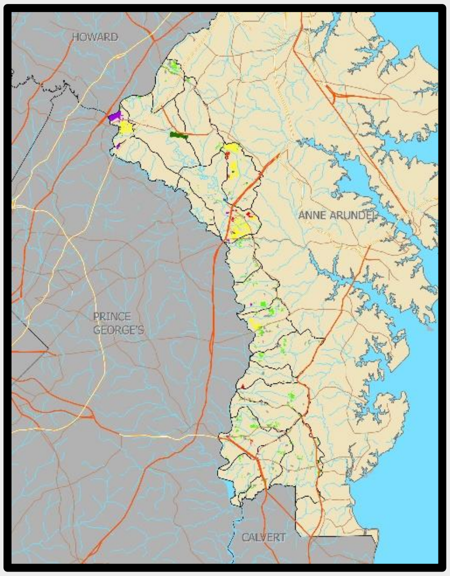
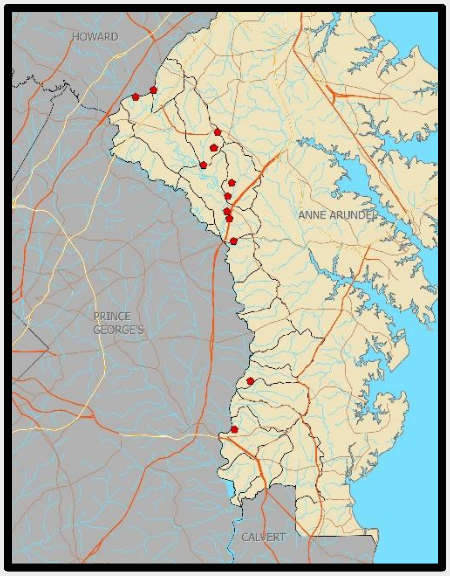
Patuxent River PCB TMDL Implementation Plan







Anne Arundel County, Maryland

September 2024

Anne Arundel County
Bureau of Watershed
Protection
& Restoration

Patuxent River PCB TMDL Implementation Plan

September 2024

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Acronyms

BMI	Brownfield Master Inventory
BMP	Best Management Practice
CHS	Controlled Hazardous Substance
EPA	Environmental Protection Agency
GIS	Geographic Information System
HLI	Historic Landfill Initiative
LRP	Land Restoration Program
MDE	Maryland Department of The Environment
MDP	Maryland Department of Planning
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRC	National Response Center
PAXTF	Patuxent River Tidal Fresh
PCB	Polychlorinated Biphenyl
PRC	Performance Reference Compound
QAPP	Quality Assurance Project Plan
SAP	Sampling and Analysis Plan
SEMS	Superfund Enterprise Management System
SHA	State Highway Administration
SIC	Standard Industrial Classification
SOPs	Standard Operating Procedures
SSO	Sanitary Sewer Overflow
SW-WLA	Stormwater Wasteload Allocation
TMDL	Total Maximum Daily Load
TRI	Toxic Release Inventory
TOC	Total Organic Carbon
VCP	Voluntary Cleanup Program
WIP	Watershed Implementation Plan

1 Background and Introduction

Under Anne Arundel County's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit 20-DP-3316 MD0068306 dated November 5, 2021 (MDE, 2022c), the County is required to develop Total Maximum Daily Load (TMDL) implementation plans to address water quality impairments for approved and established TMDLs with stormwater wasteload allocations (SW-WLAs). Anne Arundel County currently has one (1) individual polychlorinated biphenyl (PCB) TMDL located in the Patuxent River Tidal Fresh (PAXTF) portion of the Patuxent River watershed.

PCBs are a class of human-made compounds widely used from 1929 through 1979 in manufacturing and industrial applications because of their exceptional fire-retardant and insulating properties. PCBs were used in paints, plastics, hydraulic fluids, lubricants and as coolants in transformers, capacitors, and other electrical equipment. In some cases, older equipment containing PCBs may still be in use. PCBs have been identified as an inadvertent byproduct in certain manufacturing processes, such as dye production.

PCBs are stable molecules with a very slow rate of decay and potential for on-going inputs to the environment from unidentified and unremediated sources including the PCB uses mentioned above. Their slow rate of decay and potential for uncontrolled sources make PCBs relatively persistent in the environment. PCBs are hydrophobic (do not mix well with water) but are soluble in solvents, oils, and fats. They tend to bind to soil particles and can volatilize and move through the air.

PCBs in stream systems can accumulate in sediments, invertebrates, and in the fatty tissue of aquatic organisms including fish. PCBs bioaccumulate in the food chain impacting the health of aquatic ecosystems. Human health risks due to PCB exposure include reproductive and developmental issues and cancer.

Rising concerns about the toxicity, human health effects, and persistent nature of PCBs in the environment led to a federal ban on the sale and production of PCBs in 1979, and requirements for owners of PCBs to properly dispose of PCB material and remediate contaminated areas.

In 2020, Anne Arundel County developed a restoration plan to address the Patuxent River PCB TMDL in *Patuxent River Watershed Polychlorinated Biphenyls TMDL Restoration Plan* (Anne Arundel County, 2020), which presents the findings of a desktop source assessment and an initial monitoring phase. However, the 2020 restoration plan was completed before the issuance of Maryland Department of the Environment's (MDE) *Guidance for Developing Local PCB TMDL (Total Maximum Daily Load) Stormwater Wasteload Allocation (SW-WLA) Watershed Implementation Plans (WIPs)* (PCB Implementation Plan Guidance) which was published in August 2022 (MDE, 2022a). This updated version of the County's PCB implementation plan follows MDE's 2022 guidance and meets MDE's recommendation to update TMDL plans at least once in each MS4 permit term when significant changes in methods, watershed conditions, and/or regulations have occurred. The plan also satisfies the County's MS4 permit requirement to develop a PCB source trackdown monitoring plan for all applicable TMDL WLAs where watershed reductions are required to meet water quality standards under Part IV.G.3., Assessment of Controls, PCB Source Tracking.

This PCB implementation plan documents the County's completed efforts to identify potential sources of PCBs in the Patuxent River watershed through a Desktop Source Assessment and communicates the County's plans to confirm sources through monitoring using a Multi-Phase Source Trackdown

Investigation. The implementation plan is supplemented by separate documents including Sampling and Analysis Plans (SAP) for each of the three major phases of the Multi-Phase Source Trackdown Investigation, described below, and a Quality Assurance Project Plan (QAPP) which details the specific field, laboratory, data analysis, and reporting methods, and the quality assurance / quality control measures to be implemented during the trackdown.

In completion of the Desktop Source Assessment, the County researched and compiled data to identify potential sources of PCBs for Phase I source trackdown investigations. Following MDE's guidance for the Subwatershed Risk Assessment and Prioritization, the County then assessed the relative risk for PCB presence in each subwatershed in the Patuxent and ranked the subwatersheds in order of priority based on the findings of the Desktop Source Assessment.

The first of the three phases of the Multi-Phase Source Trackdown Investigation is Phase I Sampling: Subwatershed PCB Screening, which is conducted following completion of the Desktop Source Assessment and Subwatershed Risk Assessment and involves monitoring in the downstream portions of each subwatershed to determine which will and will not require further source trackdown investigations. Phase II: In-stream PCB Characterization uses a bracketed sample design within the subwatersheds identified through Phase I efforts to isolate areas of concern within the stream network that contain upland sources of PCBs. Phase III then characterizes PCBs within the MS4 using outfall and stormwater Best Management Practice (BMP) monitoring and stormdrain backtrack monitoring to identify sources of PCBs within the storm sewershed where Phase II source trackdown investigations identified sources of PCBs transported to the stream through the MS4.

Anne Arundel County shares responsibility for the Patuxent PCB TMDL with several MS4 jurisdictions and is therefore collaborating with Howard and Montgomery Counties and the Maryland State Highway Administration (SHA) on development of sampling plans, forthcoming Quality Assurance Project Plans, field sampling, and laboratory analysis. The jurisdictions will share resources and data where appropriate to reduce the overall burden of the source trackdown and allow for more complete decision making. There is currently a potential partnership with SHA which will be explored.

The County's PCB implementation plan is presented in this document and describes the following:

Section 1 Provides introduction to the PCB TMDL and the watershed

Section 2 Describes the methods and results of the Desktop Source Assessment and Subwatershed Prioritization

Section 3 Describes Multi-Phase (Phase I/II/III) Source Trackdown approach

Section 4 Provides next steps in the overall implementation timeline

Section 5 Provides cost estimates for all phases of PCB Source Trackdown

The Patuxent River is a tidal tributary of the Chesapeake Bay that drains portions of Anne Arundel, Calvert, Charles, Frederick, Howard, Montgomery, Prince George's, and St. Mary's counties (Watershed Counties). The Patuxent River Mesohaline, Oligohaline, and Tidal Fresh Chesapeake Bay Segments (Figure 1-1), hereafter referred to simply as the Patuxent River watershed, have several impaired waters listings in *Maryland's DRAFT 2024 Integrated Report of Surface Water Quality* (303(d) list and 305(b) Report; MDE, 2024). These impairments, which include bacteria, sediment, nutrients, and toxics, apply to all the Watershed Counties.

The County's PCB implementation plan specifically addresses the Patuxent River watershed PCB TMDL (MDE, 2017) approved by the EPA on September 19, 2017, for Anne Arundel County. The TMDL for Anne Arundel County applies to the freshwater portion of the Patuxent River, the Patuxent River Tidal Fresh (PAXTF), hereafter referred to simply as the Patuxent River watershed. MDE has estimated the TMDL baseline loads and allocations using the initial sampling and modeling results as documented in the published TMDL (MDE, 2017). The estimated PCB load from Anne Arundel County's MS4 is 100.4 g/yr for the TMDL 2010 baseline year. The TMDL requires a 99.9% reduction in PCB load, which equates to a PCB load reduction of 100.3 g/yr. Because the actual locations of PCB hotspots and the level and extent of contamination are unknown, identification of sources and specific remediation strategies is not feasible at this time. As such, the County is following MDE guidance and will use Source Trackdown methods to identify PCB sources and remediation opportunities.

The 12-digit subwatersheds within the Patuxent River Watershed do not have unique tributary/branch names and are labeled using the 12-digit values, all of which differ by two digits within each 8-digit watershed. For efficiency and ease of communication, the County instead referred to the 12-digit subwatersheds by their 8-digit watershed name and the last two digits of their 12-digit subwatershed number (Table 1-1). For example, subwatershed "21311040934" located within the Upper Patuxent River will be referred to as "Upper Patuxent 34" herein. For the purposes of labeling subwatersheds in maps, acronyms of the 8-digit names will be used (e.g., "UP 34").

Within Anne Arundel County's portion of the Patuxent watershed, there are three major 8-digit watersheds and 20 12-digit subwatersheds, shown in Figure 1-2.

Table 1-1: Subwatershed Names

8-Digit Watershed Name	12-Digit Subwatershed Number	Unique Subwatershed Identifiers
Middle Patuxent River	021311020908	Middle Patuxent 8
Middle Patuxent River	021311020909	Middle Patuxent 9
Middle Patuxent River	021311020910	Middle Patuxent 10
Middle Patuxent River	021311020914	Middle Patuxent 14
Middle Patuxent River	021311020915	Middle Patuxent 15
Middle Patuxent River	021311020916	Middle Patuxent 16
Middle Patuxent River	021311020917	Middle Patuxent 17
Upper Patuxent River	021311040930	Upper Patuxent 30
Upper Patuxent River	021311040932	Upper Patuxent 32
Upper Patuxent River	021311040934	Upper Patuxent 34
Upper Patuxent River	021311040935	Upper Patuxent 35

8-Digit Watershed Name	12-Digit Subwatershed Number	Unique Subwatershed Identifiers
Upper Patuxent River	021311040936	Upper Patuxent 36
Upper Patuxent River	021311040937	Upper Patuxent 37
Upper Patuxent River	021311040938	Upper Patuxent 38
Upper Patuxent River	021311040940	Upper Patuxent 40
Little Patuxent River	021311050946	Little Patuxent 46
Little Patuxent River	021311050947	Little Patuxent 47
Little Patuxent River	021311050948	Little Patuxent 48
Little Patuxent River	021311050949	Little Patuxent 49
Little Patuxent River	021311050952	Little Patuxent 52

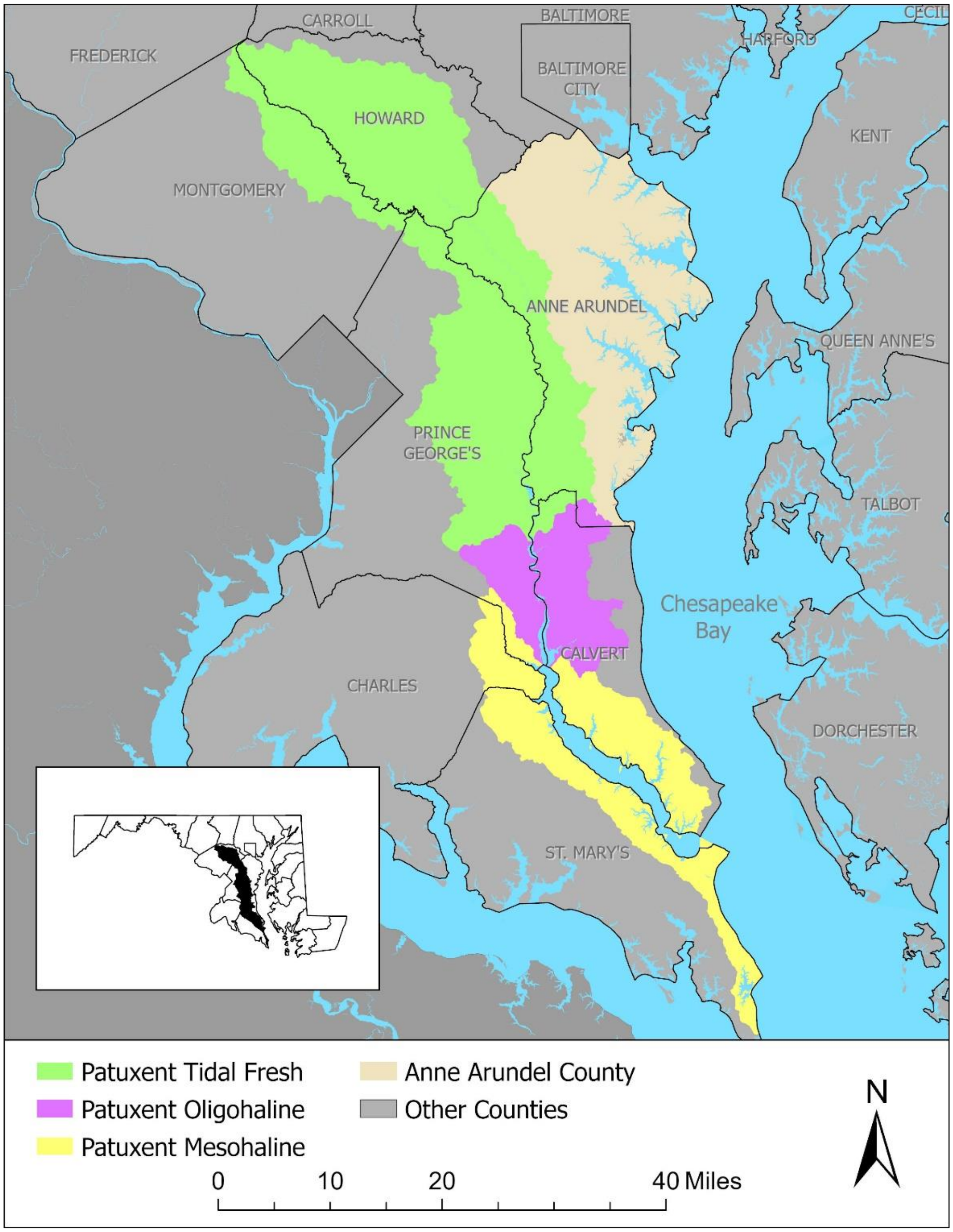

Figure 1-1: Patuxent River Mesohaline, Oligohaline, and Tidal Fresh Chesapeake Bay Segments

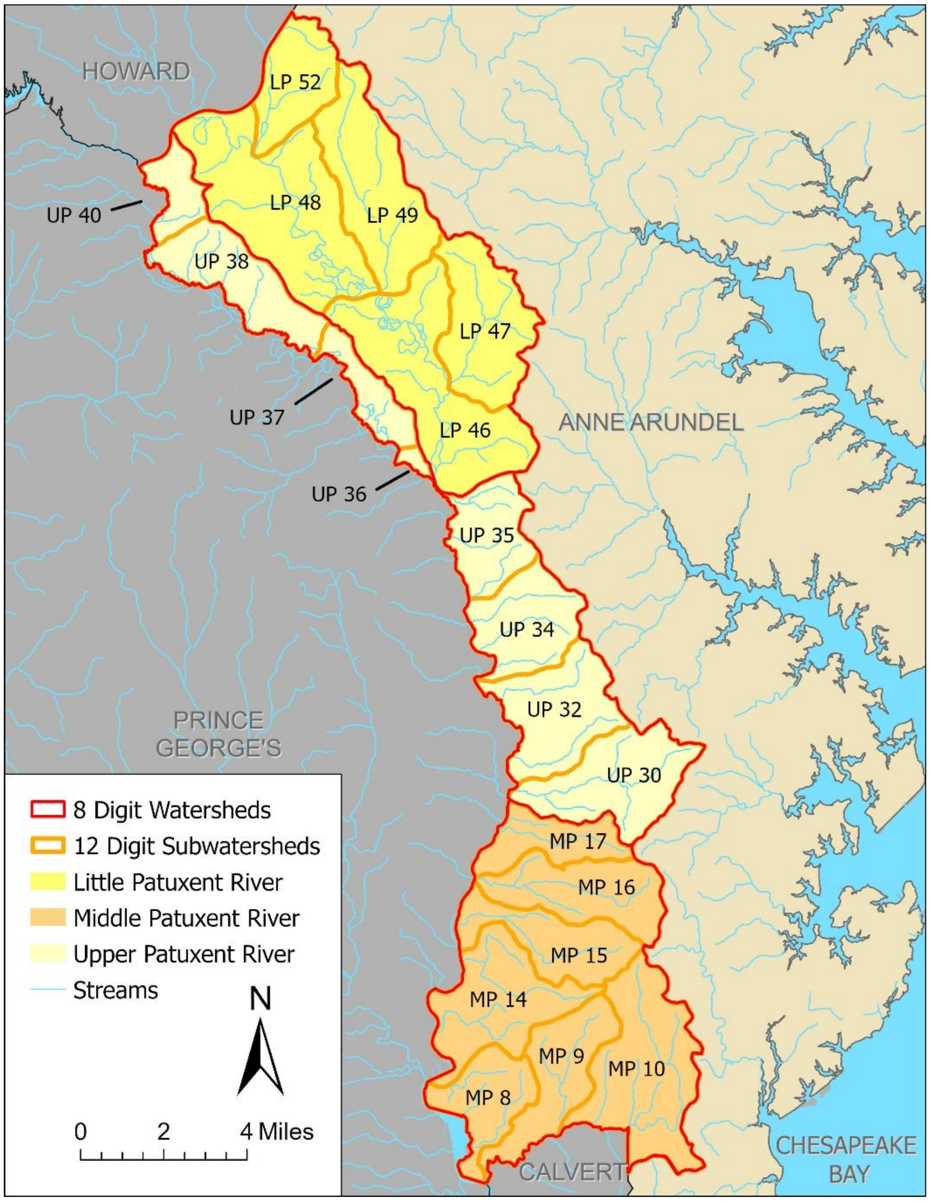

Figure 1-2: Anne Arundel County Patuxent River Subwatersheds and Hydrology

2 Desktop Source Assessment and Subwatershed Prioritization Strategy

2.1 Methodology

The Source Trackdown strategy is comprised of a Desktop Source Assessment followed by a Subwatershed Risk Assessment and Prioritization. The County began the Desktop Source Assessment by compiling spatial data relevant to the Patuxent watershed in Anne Arundel County from the data package provided by MDE, open-source databases linked in MDE's guidance, and from County and local agency datasets. The spatial data provided in MDE's data package included Transformers, PCB Activities, Hazardous Waste Sites, Historic Landfills, Solid Waste Acceptance Facilities, Sewage Sludge Utilization, and Military Installations. MDE also listed other resources that required downloading from data portals including NPDES permittees, Toxic Release Inventory, National Response Center PCB Releases, Angler Access, and Sewer Overflows. A few datasets were provided by MDE in the form of shapefiles for mapping (Hazardous Waste Sites, Military Installations), while some datasets were able to be mapped directly using geographic coordinate information (Toxic Release Inventory, Sewage Sludge Utilization, Angler Access), and those without coordinates were able to be mapped using address information (Transformers, PCB Activities, Solid Waste Acceptance facilities, and NPDES permittees).

Once potential sources of PCBs were located, the County utilized MDE's provided "TMDL Subwatershed Risk Assessment" template spreadsheet to assign risk values and rank each subwatershed by its comparative risk of PCB contamination. This was achieved by intersecting a spatial representation of potential source locations with 12-digit subwatersheds in a Geographic Information System (GIS), ArcGIS Pro, to determine which sources existed in each subwatershed.

In the Guidance, MDE categorized each source of PCBs (as well as the Public Angler Access sites) into three different tiers (i.e., high, medium, low), that correspond to a risk value per record used to generate a total risk score for each subwatershed.

- Tier 1 sources have a high potential risk for PCB contamination and include Transformers, Hazardous Waste Sites and Military Installations and contribute 10 points per record.
- Tier 2 sources have a medium potential risk and include PCB releases (NRC database), Historic Landfills, Solid Waste Facilities and Sewage Sludge Utilization Activities and contribute five points per record.
- Tier 3 sources have a low potential risk and include PCB Activities, Toxic Releases, Public Angler Access sites, and Sewer overflows and contribute one point per record.
- Different National Pollutant Discharge Elimination System permittees are considered to represent different PCB risks depending on their Standard Industrial Classification (SIC) code. Eight of the major PCB-relevant SIC codes fall under Tier 1, eleven fall under Tier 2, and two fall under Tier 3.

Scores for each PCB source category were calculated individually and summed to determine the overall risk score for each subwatershed. The subwatersheds in each watershed were then ranked relative to each other by total risk score, with "1" being the subwatershed with the highest risk for PCB contaminations, and high priority for source trackdown investigations and "20" being the lowest risk and low priority for follow up investigations.

In the Patuxent watershed, the highest ranked subwatershed was Little Patuxent 40 with a risk score of 80 and the lowest ranked was a tie between Upper Patuxent 32, Middle Patuxent 9, Middle Patuxent 10, Middle Patuxent 8, Upper Patuxent 37, Upper Patuxent 38, and Upper Patuxent 36, which all had risk scores of zero. Full results are included in sections 2.1.1 and 2.2.1. Any ties were broken based on the percentage of PCB era land use in the subwatershed. For more information on PCB land use, see the *Land Use* subsection in Section 2.2.

The following section, 2.2 presents the results of the Source Assessment data compilation and the Subwatershed Risk Assessment and Prioritization.

2.2 Potential PCB Sources

The County compiled and reviewed the following data associated with potential sources of PCBs.

EPA PCB Transformer Registry Database

The County reviewed EPA's "PCB Transformer Database" that was provided in MDE's data package and found that there were no PCB transformer sites in Anne Arundel County's portion of the Patuxent TMDL watershed. Therefore, there was no risk value assigned for this PCB source type.

EPA PCB Activities Database

The County reviewed EPA's "National Spreadsheet of Facilities that have notified of PCB activities" data file that was provided in MDE's data package and found that of the four toxic release records identified, two were located in the Little Patuxent 48 subwatershed, and two were located in the Little Patuxent 49 subwatershed (Figure 2-1). Each of the records contributed one Tier 3 point each to the risk assessment for their respective subwatersheds.

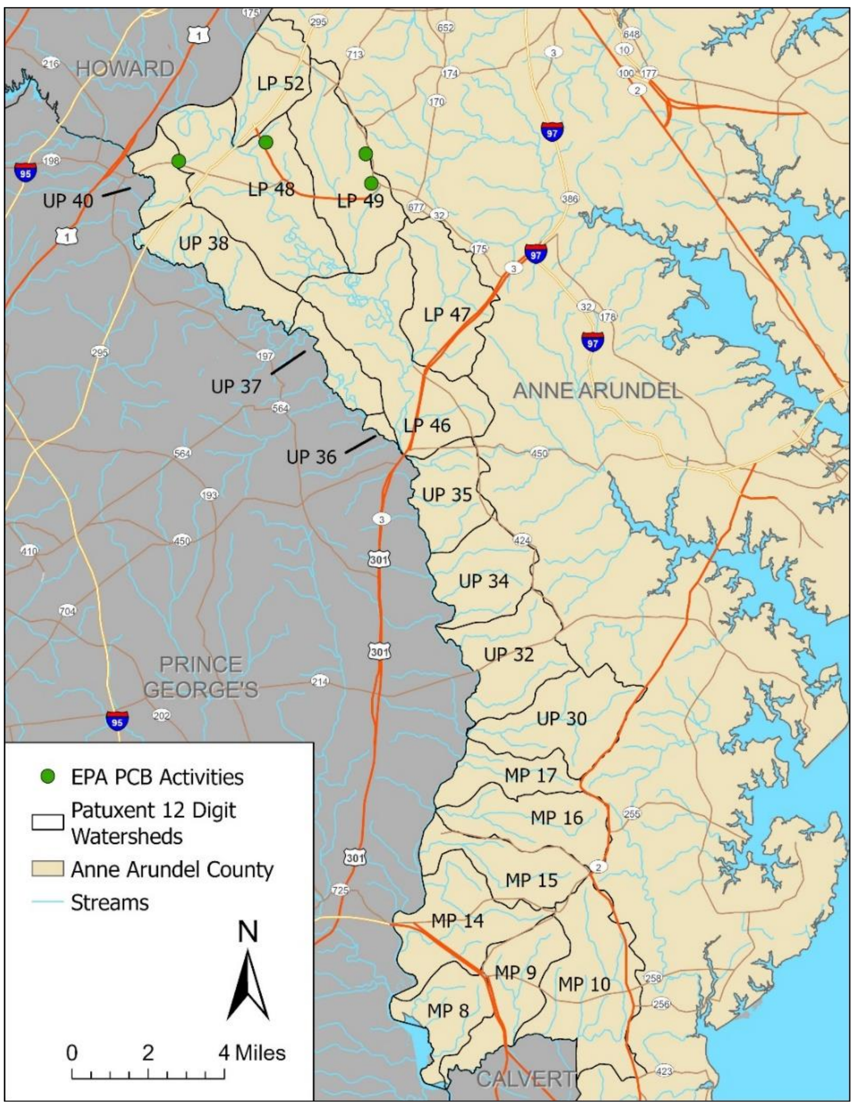

Figure 2-1: EPA PCB Activity Records in the Patuxent Watershed

Hazardous Waste Sites

The County reviewed the Land Restoration Program (LRP) shapefile and the Brownfield Master Inventory (BMI) tables included in MDE's data package, as well as the Superfund Enterprise Management System (SEMS) database recommended by MDE and found 11 hazardous waste sites within the watershed. However, it was determined that these records were not relevant because they did not reference PCB contamination in their corresponding factsheets or in the attributes of the datasets (Appendix B). Therefore, there was no risk value assigned for this PCB source type within the watershed.

National Pollutant Discharge Elimination System (NPDES) Permitted Wastewater and Stormwater Dischargers

The County reviewed facilities returned in the "Wastewater Permits Interactive Search Portal" database as linked in MDE's guidance. MDE provides a list of Standard Industrial Classification (SIC) codes that indicating "facilities which have the potential to discharge PCBs in wastewater or stormwater" and all those facilities with PCB-relevant SIC codes are required to be included in the subwatershed risk analysis. Different SIC codes correspond to different levels of risk, as determined by MDE.

Of the 15 permit records with PCB-relevant SIC codes identified in the source assessment, three facilities were omitted from the risk assessment. Two of the dischargers, *Anchor Concrete Products* and *National Security* (Fort Meade) were already represented by the Toxic Release (TRI) and Military Installation categories, respectively. A third discharger, *Cunningham Excavating Inc,* was already represented in the NPDES dataset with an alternative site name, *Tolson & Associates Rubble Landfill*. These three records were therefore disregarded to avoid double-counting or overrepresenting any one specific discharger in the risk assessment.

The remaining 11 records include three in Little Patuxent 46 (contributing 16 points to the risk value of the subwatershed), three in Little Patuxent 49 (contributing 20 points), two in Little Patuxent 47 (also 20 points), one each in Middle Patuxent 14 and Middle Patuxent 17 (contributing 10 points each), and one each in Little Patuxent 48 and Little Patuxent 52 (contributing 5 points each) (Table 2-1 and Figure 2-2).

Table 2-1: National Pollutant Discharge Elimination System Discharger Record Tier Distribution

Subwatershed	Tier 1 Sources	Tier 2 Sources	Tier 3 Sources	Records Included in Analysis	Total Points Contributed
Middle Patuxent 14	1	0	0	1	10
Middle Patuxent 17	1	0	0	1	10
Little Patuxent 46	1	1	1	3	16
Little Patuxent 47	2	0	0	2	20
Little Patuxent 48	0	1	0	1	5
Little Patuxent 49	1	2	0	3	20
Little Patuxent 52	0	1	0	1	5

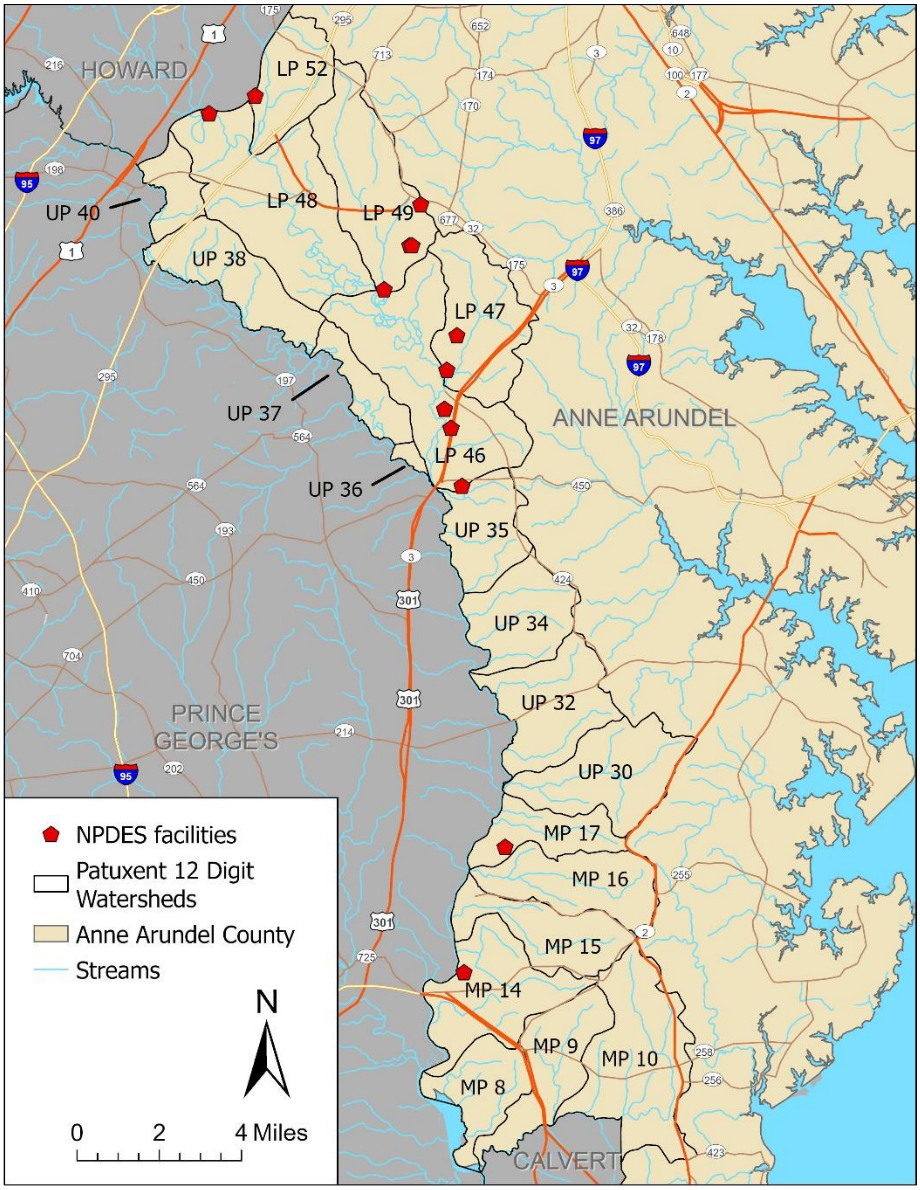

Figure 2-2: National Pollutant Discharge Elimination System Dischargers in the Patuxent Watershed

EPA Toxic Release Inventory (TRI) Database

The County performed a search of the Toxic Release Inventory (TRI) database and found that of the six toxic release records identified in the source assessment, two were located in the Little Patuxent 46 subwatershed, two were located in the Little Patuxent 52 subwatershed and one each was located in the Little Patuxent 48 and 49 subwatersheds (Figure 2-3). Each of the records contributed one Tier 3 point each to the risk assessment for their respective subwatersheds.

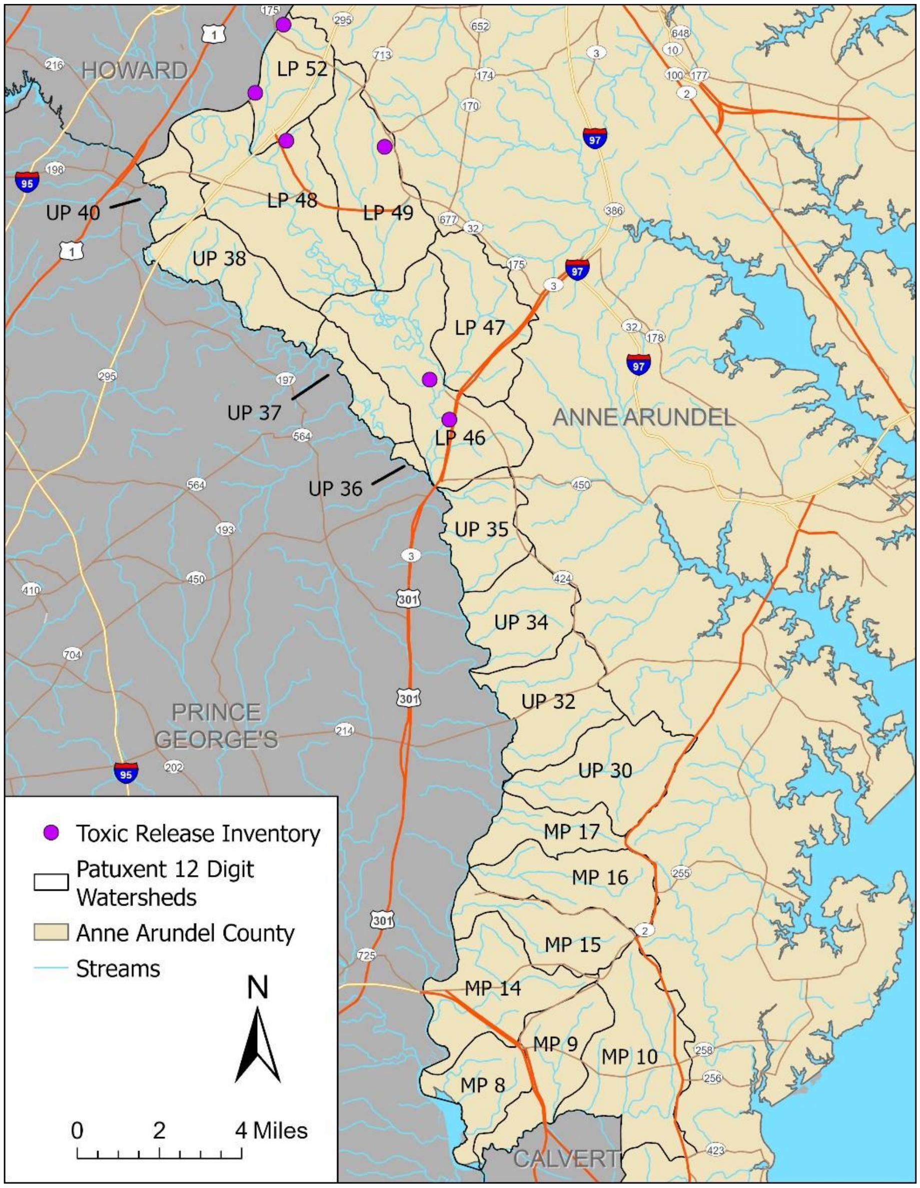

Figure 2-3: Toxic Release Records in the Patuxent Watershed

National Response Center (NRC) Database

The County filtered and queried the NRC database records by State, County, and PCBs to look for PCB incidents on record from 1990 to 2021. A total of seven National Response Center records were located in the Patuxent watershed. Four records were located in the Little Patuxent 48 subwatershed, while one record each was located in the Middle Patuxent 14, Little Patuxent 46 and Little Patuxent 47 subwatersheds (Figure 2-4). Each of the seven relevant records contributed five Tier 2 points to the risk assessment for their respective subwatersheds.

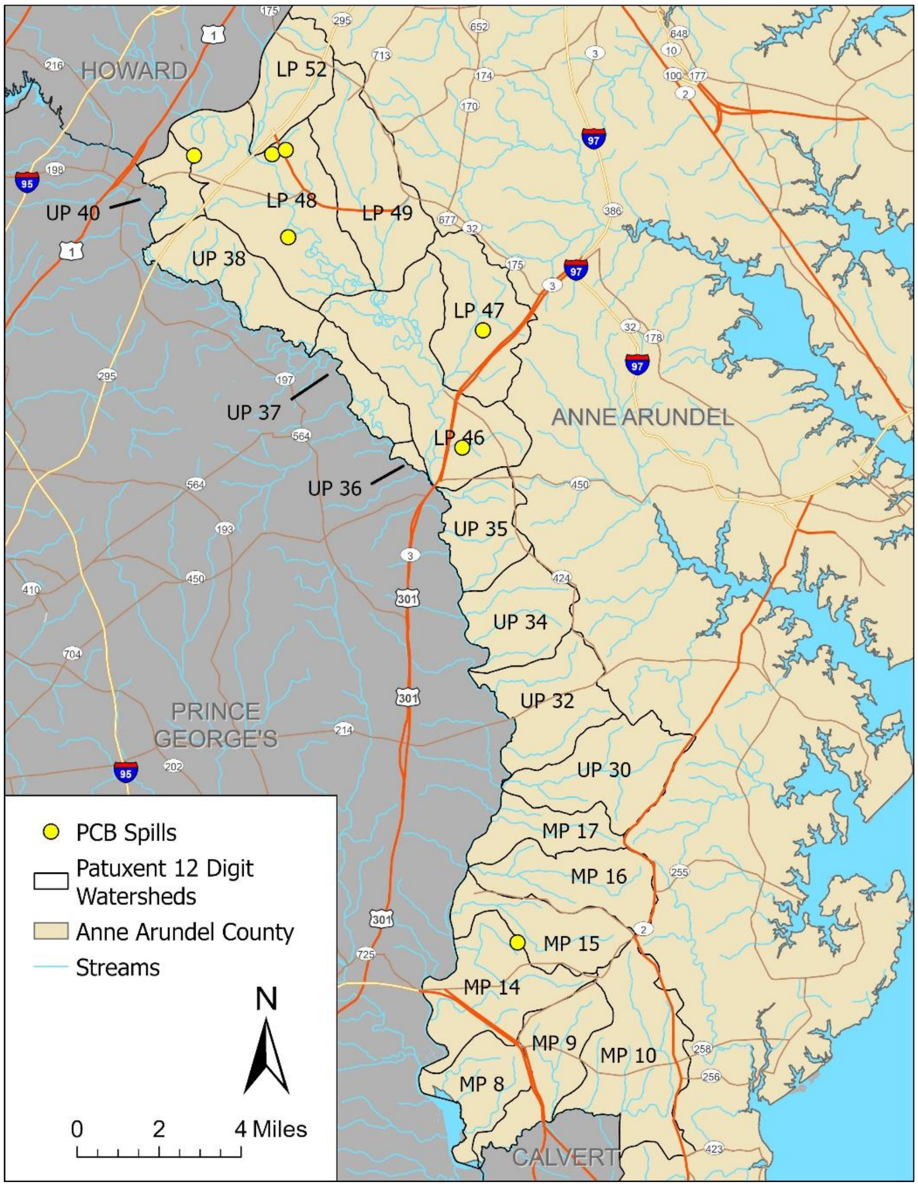

Figure 2-4: National Response Center Records in the Patuxent Watershed

MDE Historic Landfill Initiative (HLI) Report

The County reviewed the table provided in MDE's HLI report and found there were seven historic landfill records identified in Anne Arundel County's portion of the Patuxent watershed. There were two landfills located in the Middle Patuxent 14 subwatershed, two in Upper Patuxent 40 subwatershed, and one each in the Little Patuxent 46 and 48 subwatersheds (Figure 2-5). As *Holt Landfill* overlaps both the Middle Patuxent 15 and 16 subwatersheds, both subwatersheds were assigned a source value of "1" for the number of landfills and received 5 points each for the subwatershed risk value, per MDE's recommendation. This brings the total number of landfill records to eight.

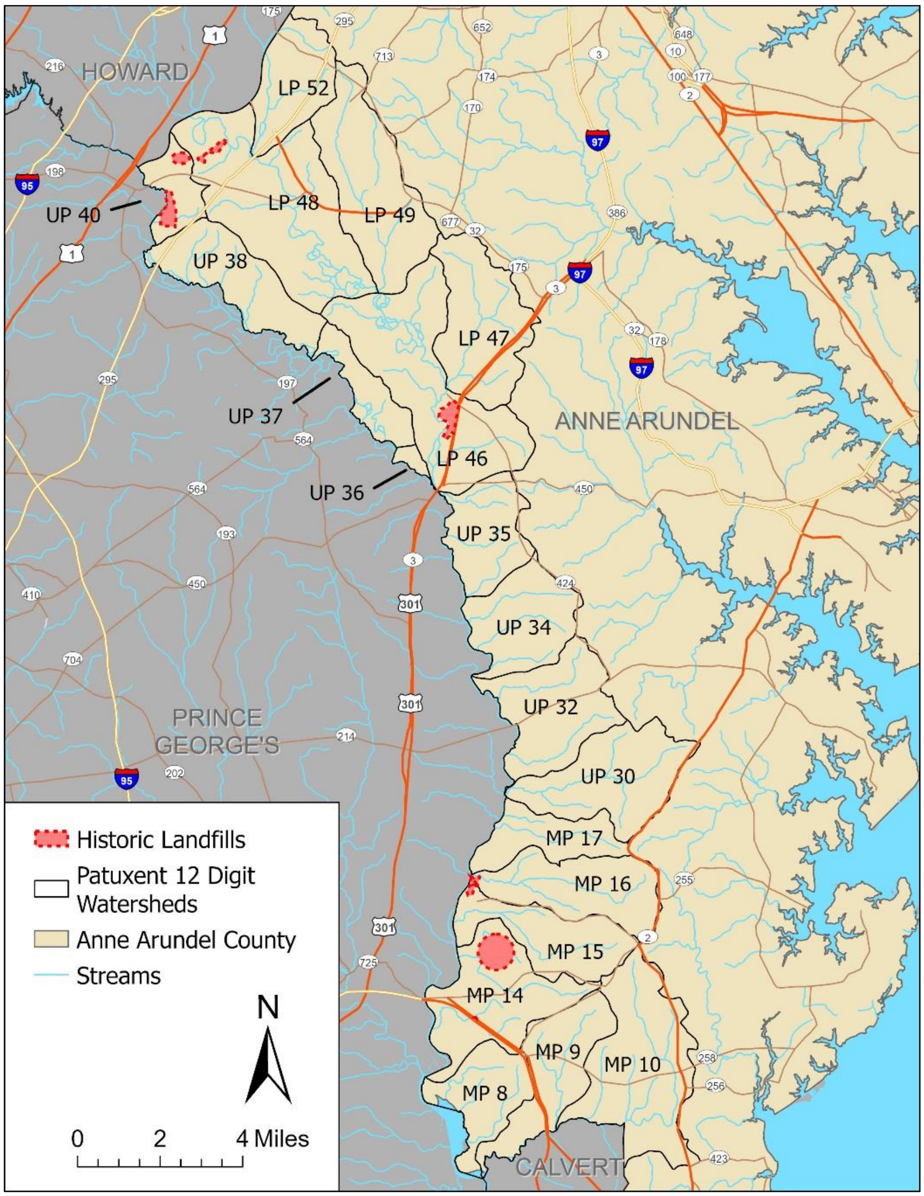

Figure 2-5: Locations of Historic Landfills in the Patuxent Watershed

MDE Permitted Solid Waste Acceptance (SWA) Facilities

The County reviewed the Solid Waste Facilities spreadsheet provided in MDE's data package and found that five solid waste facilities were located within the County's portion of the watershed, but three of the facilities (*PST Rubble Landfill*, *Tolson & Associates Rubble Landfill*, and *Annapolis Junction PF & TS*) were already represented by records in the NPDES dataset. As the NPDES records had higher risk scores than the SWA records, the County chose to include only the NPDES records in the risk assessment to prevent overrepresenting the same facilities. Of the two remaining relevant records, one solid waste facility was located in the Middle Patuxent 15 subwatershed, and one was located in the Little Patuxent 47 subwatershed (Figure 2-6). Each record contributed five Tier 2 points to the risk assessment for their respective subwatersheds.

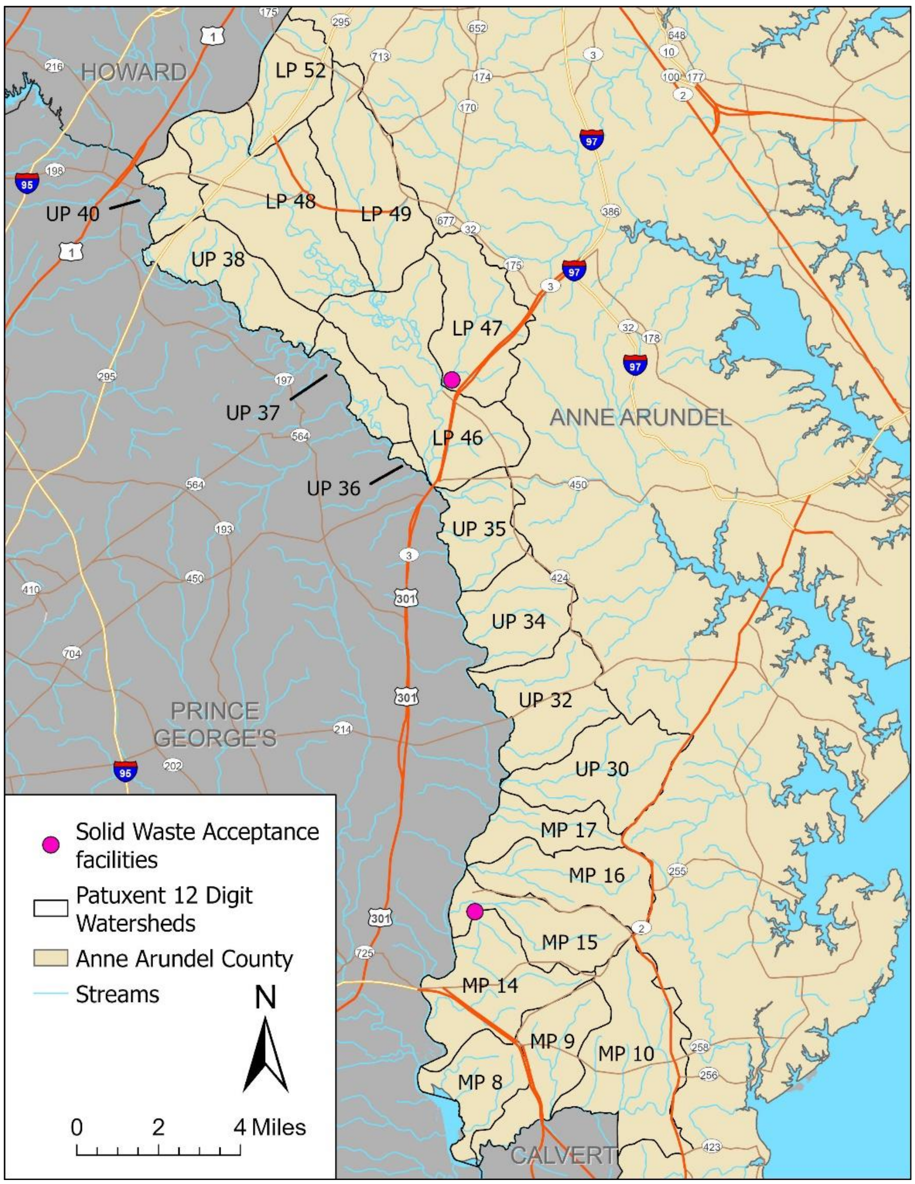

Figure 2-6: Solid Waste Acceptance Facilities in the Patuxent Watershed

MDE Permitted Sewage Sludge Utilization Activities

The County reviewed the sewage sludge utilization activities spreadsheet provided in MDE's data package and found that five sewage sludge utilization activity records were located in the Patuxent watershed. Two records were located in the Upper Patuxent 34 subwatershed, and one record each was located in the Upper Patuxent 30, Upper Patuxent 40 and Little Patuxent 52 subwatersheds. Each of the five records contributed five Tier 2 points to the risk assessment for their respective subwatersheds (Figure 2-7).

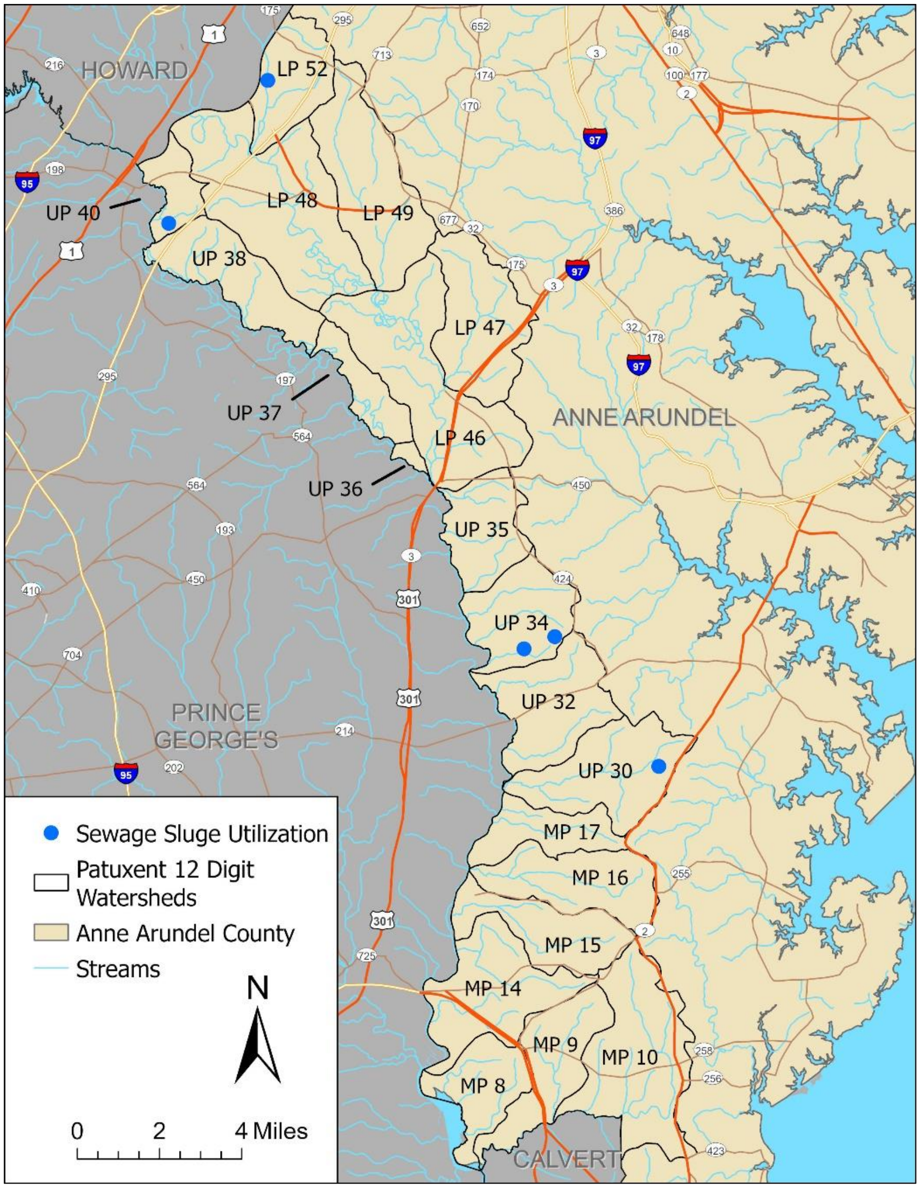

Figure 2-7: Sewage Sludge Utilization Facilities in the Patuxent Watershed

Public Angler Access Sites

The County reviewed the locations of tidal and non-tidal public access sites for recreational anglers using the webmap linked in MDE's guidance and found that a total of three public angler access sites are located in the Anne Arundel County portion of the Patuxent watershed. One site each was located in the Middle Patuxent 14, Middle Patuxent 17 and Upper Patuxent 34 subwatersheds, with access from the Anne Arundel County side of the river (Figure 2-8). Each record contributed one Tier 3 point to the risk assessment for their respective subwatersheds.

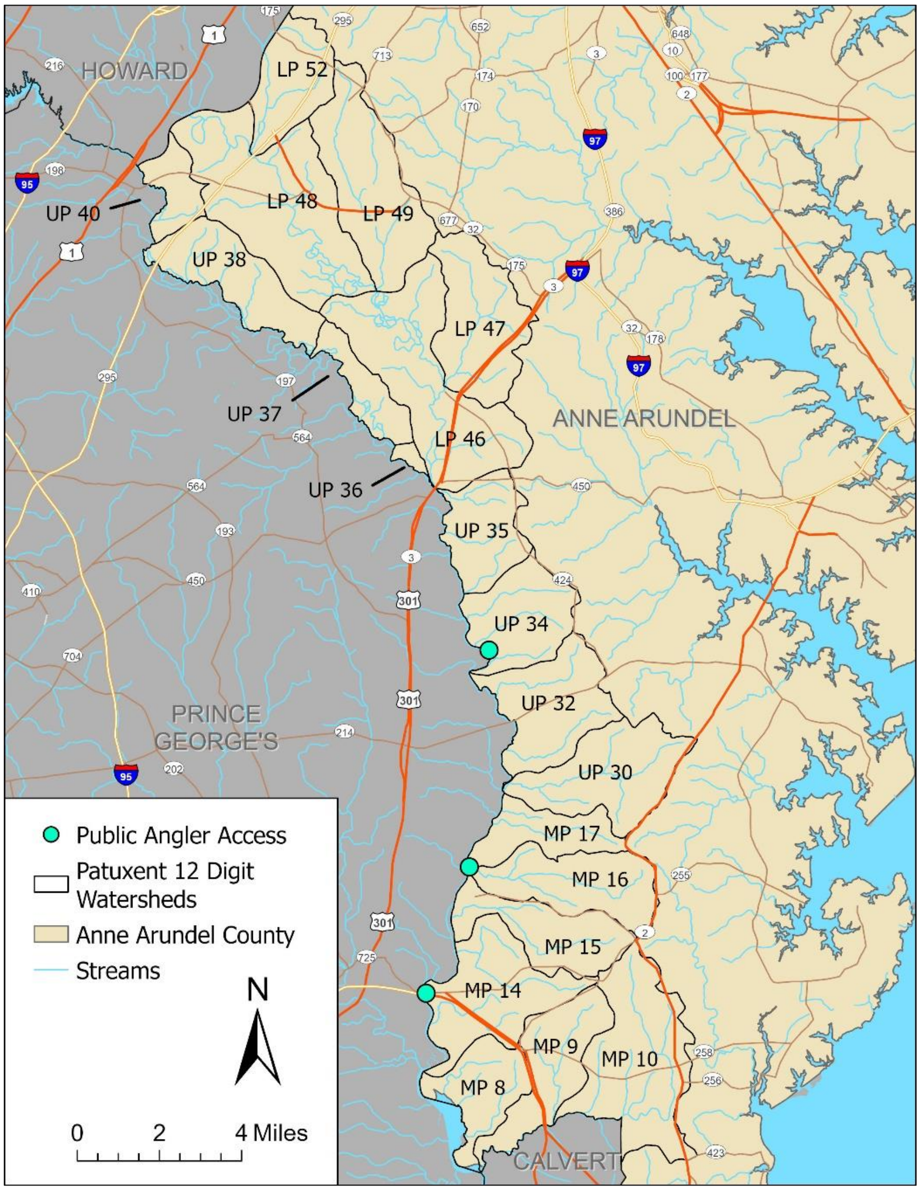

Figure 2-8: Public Angler Access Sites in the Patuxent Watershed

Sanitary Sewer Overflows (SSOs)

The County downloaded results from the SSO search portal linked in MDE's guidance and mapped them using a combination of approaches and found that a total of 96 records that reported at least 5 gallons spilled occurred within the Patuxent watershed since 2005. The majority of SSOs occurred within Lower Patuxent 46 (52 records). Additionally, there were fifteen records in Little Patuxent 47, fourteen in Little Patuxent 49, seven in Upper Patuxent 40, and four each in Little Patuxent 48 and Little Patuxent 52 (Figure 2-9). Each record contributes a risk value of one point to its respective subwatershed risk assessment score (Table 2-2).

Table 2-2: Sewer Overflow Records in the Patuxent Watershed

Subwatershed	Records Included in Analysis
Middle Patuxent 8	0
Middle Patuxent 9	0
Middle Patuxent 10	0
Middle Patuxent 14	0
Middle Patuxent 15	0
Middle Patuxent 16	0
Middle Patuxent 17	0
Upper Patuxent 30	0
Upper Patuxent 32	0
Upper Patuxent 34	0
Upper Patuxent 35	0
Upper Patuxent 36	0
Upper Patuxent 37	0
Upper Patuxent 38	0
Upper Patuxent 40	7
Little Patuxent 46	52
Little Patuxent 47	15
Little Patuxent 48	4
Little Patuxent 49	14
Little Patuxent 52	4

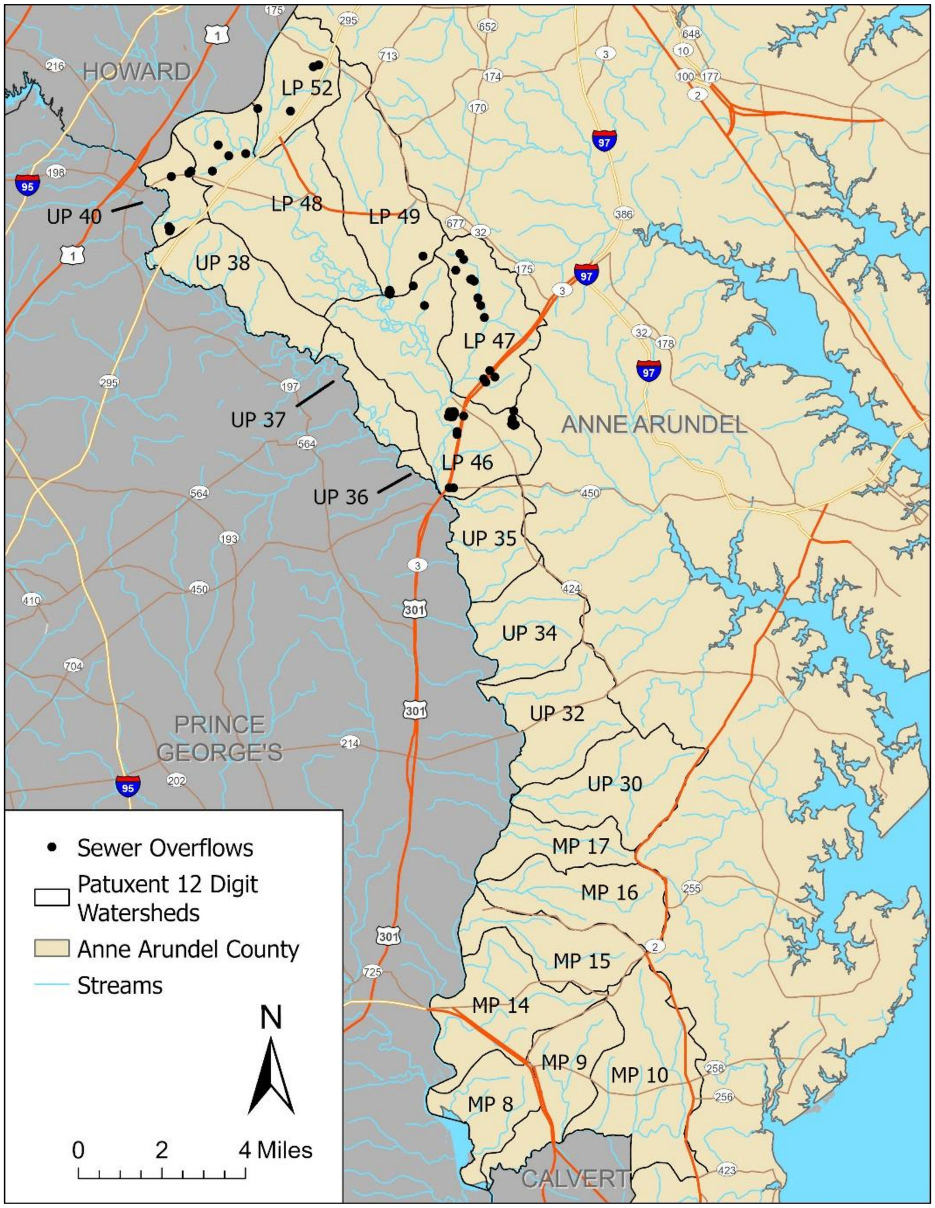

Figure 2-9: Sanitary Sewer Overflows Since the Year 2005 in the Patuxent Watershed

Military Installations

The County mapped the military installations and federal facilities shapefiles provided in MDE's data package and identified three military installations in the watershed overlapping into five individual subwatersheds. The *Governors Bridge Globecom Annex* lies mostly inside of the Upper Patuxent 35 subwatershed, and the *Naval Dairy Farm* is located fully within the Little Patuxent 47 subwatershed; therefore, both subwatersheds received ten Tier I points each. As *Fort Meade* overlaps both the Little Patuxent 48, 49, and 52 subwatersheds, each subwatershed received 10 Tier I points for the subwatershed risk value, per MDE's recommendation (Figure 2-10).

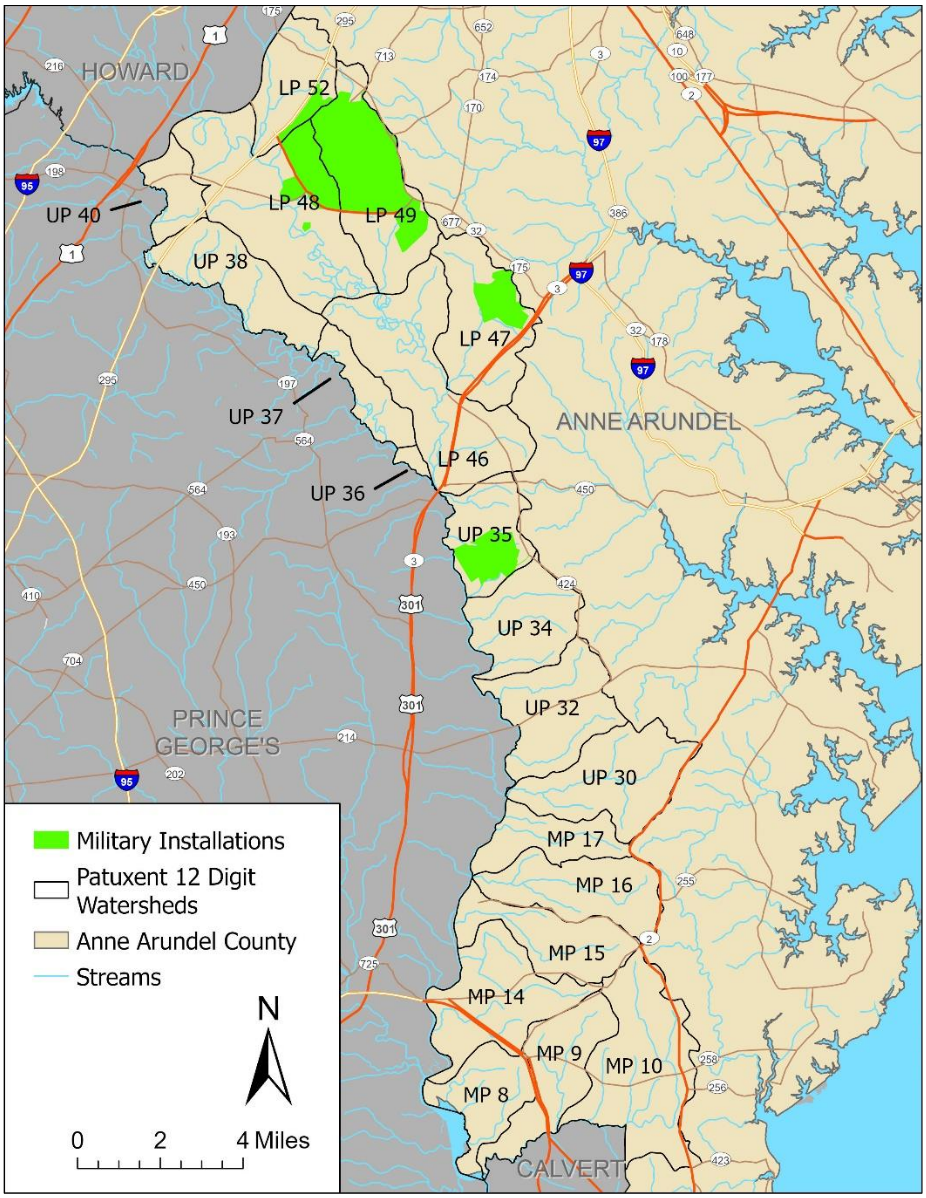

Figure 2-10: Military Installations in the Patuxent Watershed

Land Use

The County created a GIS feature class of PCB era development and non-PCB era development within the Patuxent watershed in Anne Arundel County using a combination of the Maryland Department of Planning (MDP) 2010 Land Use/Land Cover and MD Property View GIS shapefiles. Forested and agricultural land uses are not shown on Figure 2-11 and Figure 2-12 due to their not being "urban" PCB land uses. MDE specifies that urban land use types include low-density residential, medium-density residential, high-density residential, commercial, industrial, institutional, extractive, open urban land, large lot subdivision (agriculture), and large lot subdivision (forest). PCB era development is considered as all parcels developed between 1929 and 1979. The parcels were categorized as PCB era or non-PCB era by their listed build date unless no date was provided, in which case those records were lumped in with non-PCB era records.

Property parcels were combined with overlapping information on land use type to categorize urban and non-urban PCB era land uses. The majority of the subwatersheds are made up of less than one-quarter of PCB-era urban land uses, with an average of 7%. The Upper Patuxent 40 has the highest percentage at 34% (Table 2-3, Figure 2-11, and Figure 2-12). These results do not contribute directly to the subwatershed risk assessment score but can be used to aid in subwatershed prioritization. There were several cases where two or more subwatersheds had the same risk score, for example. The percentage of PCB era land use in the subwatersheds in question were used as tie breakers so that each subwatershed could be given its own rank. PCB land use information was also useful for determining potential locations for reference sites, detailed in the SAP.

Table 2-3: Land Use Percentages by Subwatershed

TMDL Subwatershed	PCB Era (1929-1979) Urban Land Use	Non-PCB Era Urban Land Use	Non-Urban Land Use
Middle Patuxent 8	3%	4%	93%
Middle Patuxent 9	7%	11%	83%
Middle Patuxent 10	5%	15%	80%
Middle Patuxent 14	7%	18%	75%
Middle Patuxent 15	5%	16%	78%
Middle Patuxent 16	4%	14%	81%
Middle Patuxent 17	4%	16%	80%
Upper Patuxent 30	5%	14%	80%
Upper Patuxent 32	11%	30%	59%
Upper Patuxent 34	7%	16%	77%
Upper Patuxent 35	7%	22%	71%
Upper Patuxent 36	0%	27%	73%
Upper Patuxent 37	2%	11%	87%
Upper Patuxent 38	1%	4%	95%
Upper Patuxent 40	34%	25%	41%
Little Patuxent 46	10%	32%	57%
Little Patuxent 47	15%	42%	44%
Little Patuxent 48	3%	23%	73%
Little Patuxent 49	2%	61%	38%
Little Patuxent 52	8%	39%	52%

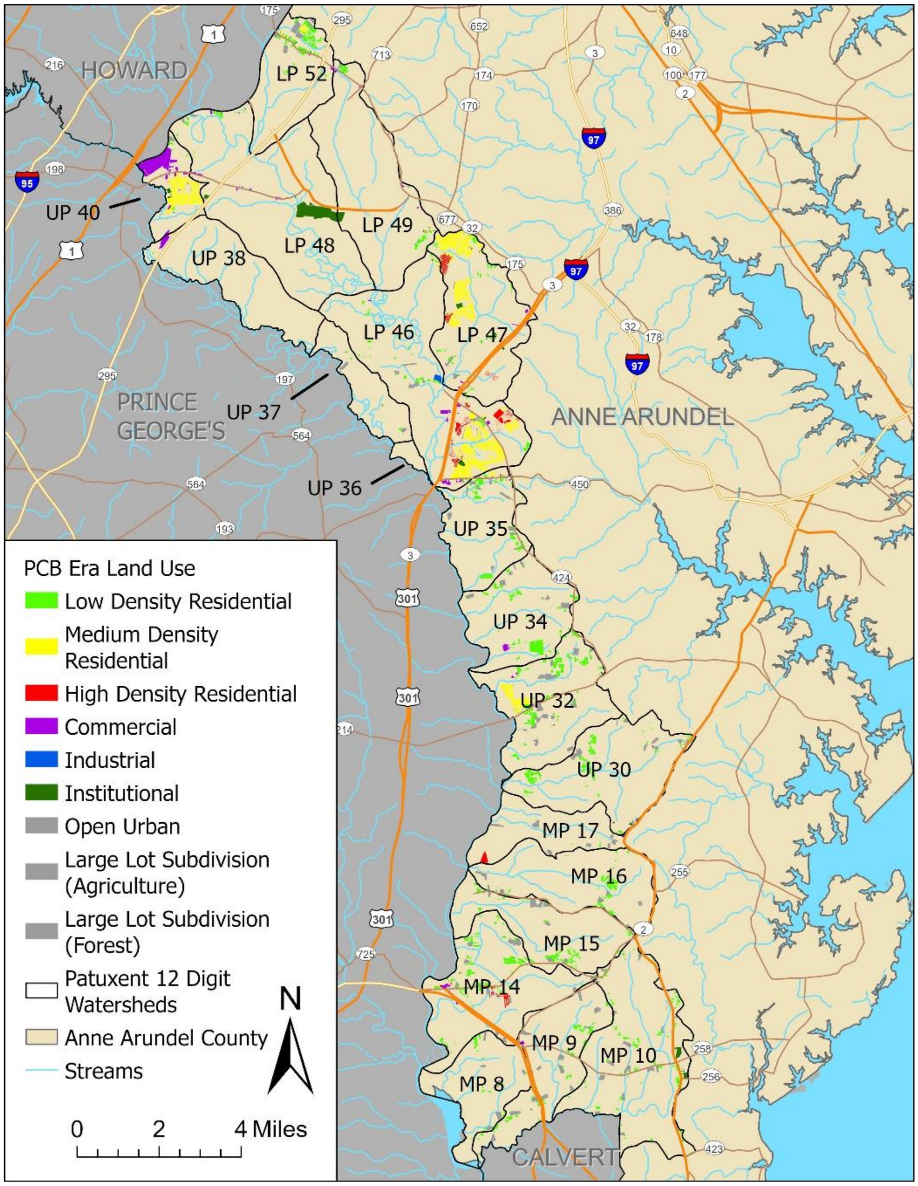

Figure 2-11: PCB Era Land Use Types in the Patuxent Watershed

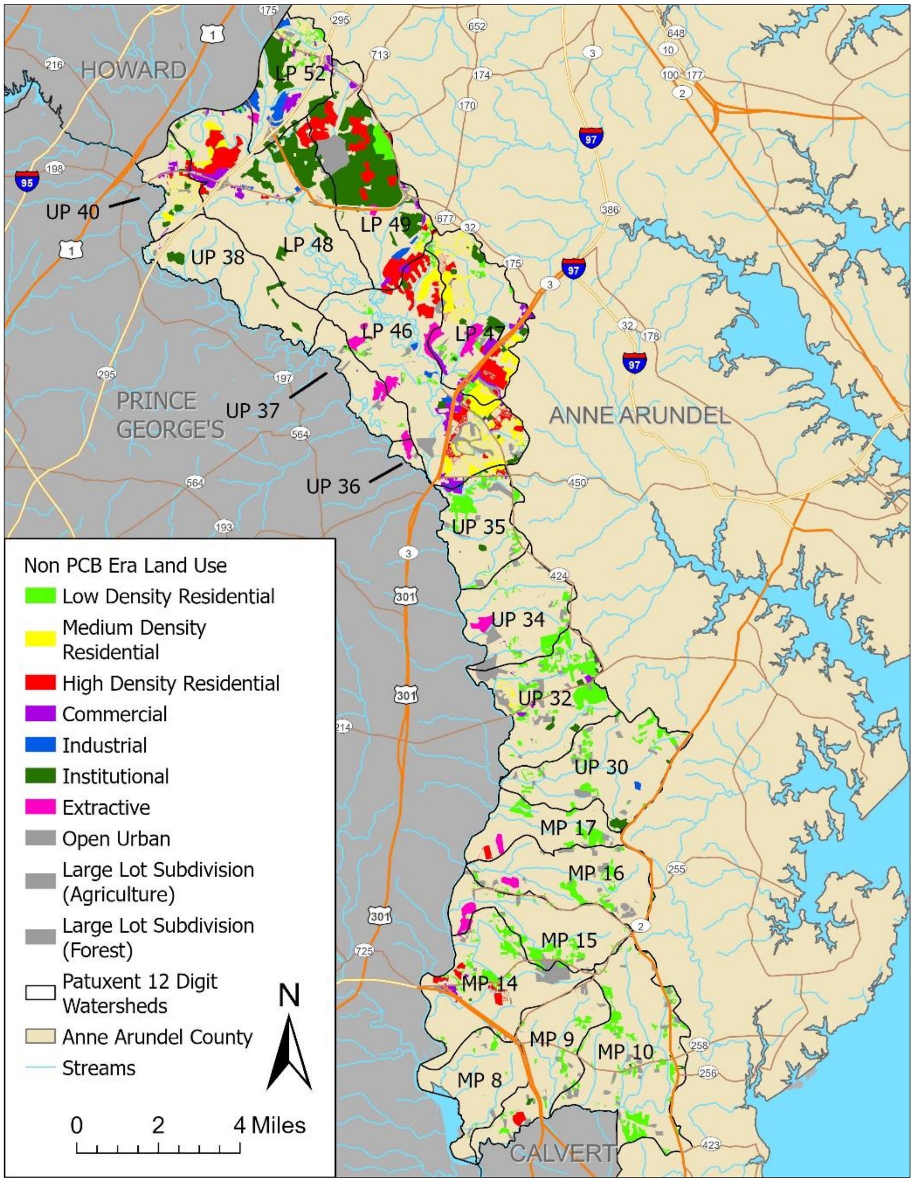

Figure 2-12: Non-PCB Era Land Use Types in the Patuxent Watershed

2.3 Subwatershed Risk Assessment Results

The resulting subwatershed ranking places Little Patuxent 46, 47, and 48 at the highest priority with corresponding risk scores of 80, 55, and 45, respectively. All remaining subwatersheds had comparatively low risk assessment scores, with ten additional subwatersheds ranging from 26 to 5, and the remaining eight subwatersheds with a risk score of zero (Figure 2-13, Table 2-4, and Table 2-5). Figure 2-13 shows the 12-digit subwatersheds labeled with subwatershed name and risk score rank in parenthesis. Any tied risk scores that occurred were ranked in order of highest urban PCB-era land use percentage. It is noted that the ranking system results in subwatershed rankings relative to the other subwatersheds in the Patuxent watershed. Therefore, the highest ranked subwatershed does not necessarily indicate significant PCB sources, and a lower rank does not necessarily indicate a lack of potential PCB sources.

Table 2-4: Potential PCB Sources by Category per Subwatershed

PCB Source Category	Tiers 1-3	Tier 1	Tier 2				Tier 3			
	NPDES Permits	Military	PCB Spills	Historic Landfills	Solid Waste Facilities	Sewage Sludge Utilization	PCB Activities	Toxic Release Index	Angler Access	Sewer Overflows
Middle Patuxent 8	0	0	0	0	0	0	0	0	0	0
Middle Patuxent 9	0	0	0	0	0	0	0	0	0	0
Middle Patuxent 10	0	0	0	0	0	0	0	0	0	0
Middle Patuxent 14	1	0	1	2	0	0	0	0	1	0
Middle Patuxent 15	0	0	0	1	1	0	0	0	0	0
Middle Patuxent 16	0	0	0	1	0	0	0	0	0	0
Middle Patuxent 17	1	0	0	0	0	0	0	0	1	0
Upper Patuxent 30	0	0	0	0	0	1	0	0	0	0
Upper Patuxent 32	0	0	0	0	0	0	0	0	0	0
Upper Patuxent 34	0	0	0	0	0	2	0	0	1	0
Upper Patuxent 35	0	1	0	0	0	0	0	0	0	0
Upper Patuxent 36	0	0	0	0	0	0	0	0	0	0
Upper Patuxent 37	0	0	0	0	0	0	0	0	0	0
Upper Patuxent 38	0	0	0	0	0	0	0	0	0	0
Upper Patuxent 40	0	0	0	2	0	1	0	0	0	7
Little Patuxent 46	3	0	1	1	0	0	0	2	0	52
Little Patuxent 47	2	1	1	0	1	0	0	0	0	15
Little Patuxent 48	1	1	4	1	0	0	2	1	0	4
Little Patuxent 49	3	1	0	0	0	0	2	1	0	14
Little Patuxent 52	1	1	0	0	0	1	0	2	0	4

Table 2-5: Subwatershed Risk Assessment Ranking Results

TMDL Subwatershed	Tier 1 PCB Sources (#)	Tier 2 PCB Sources (#)	Tier 3 PCB Sources (#)	Total PCB Sources (#)	Total Risk Score	Rank
Little Patuxent 46	1	3	55	59	80	1
Little Patuxent 47	3	3	15	21	55	2
Little Patuxent 48	1	6	7	14	47	3
Little Patuxent 49	1	0	17	18	27	4
Little Patuxent 52	1	2	6	9	26	5
Upper Patuxent 40	0	3	7	10	22	6
Middle Patuxent 14	0	3	1	4	16	7
Upper Patuxent 34	0	0	1	1	11	8
Middle Patuxent 17	0	2	1	3	11	9
Upper Patuxent 35	0	2	0	2	10	10
Middle Patuxent 15	1	0	0	1	10	11
Upper Patuxent 30	0	1	0	1	5	12
Middle Patuxent 16	0	1	0	1	5	13
Upper Patuxent 32	0	0	0	0	0	14
Middle Patuxent 9	0	0	0	0	0	15
Middle Patuxent 10	0	0	0	0	0	16
Middle Patuxent 8	0	0	0	0	0	17
Upper Patuxent 37	0	0	0	0	0	18
Upper Patuxent 38	0	0	0	0	0	19
Upper Patuxent 36	0	0	0	0	0	20

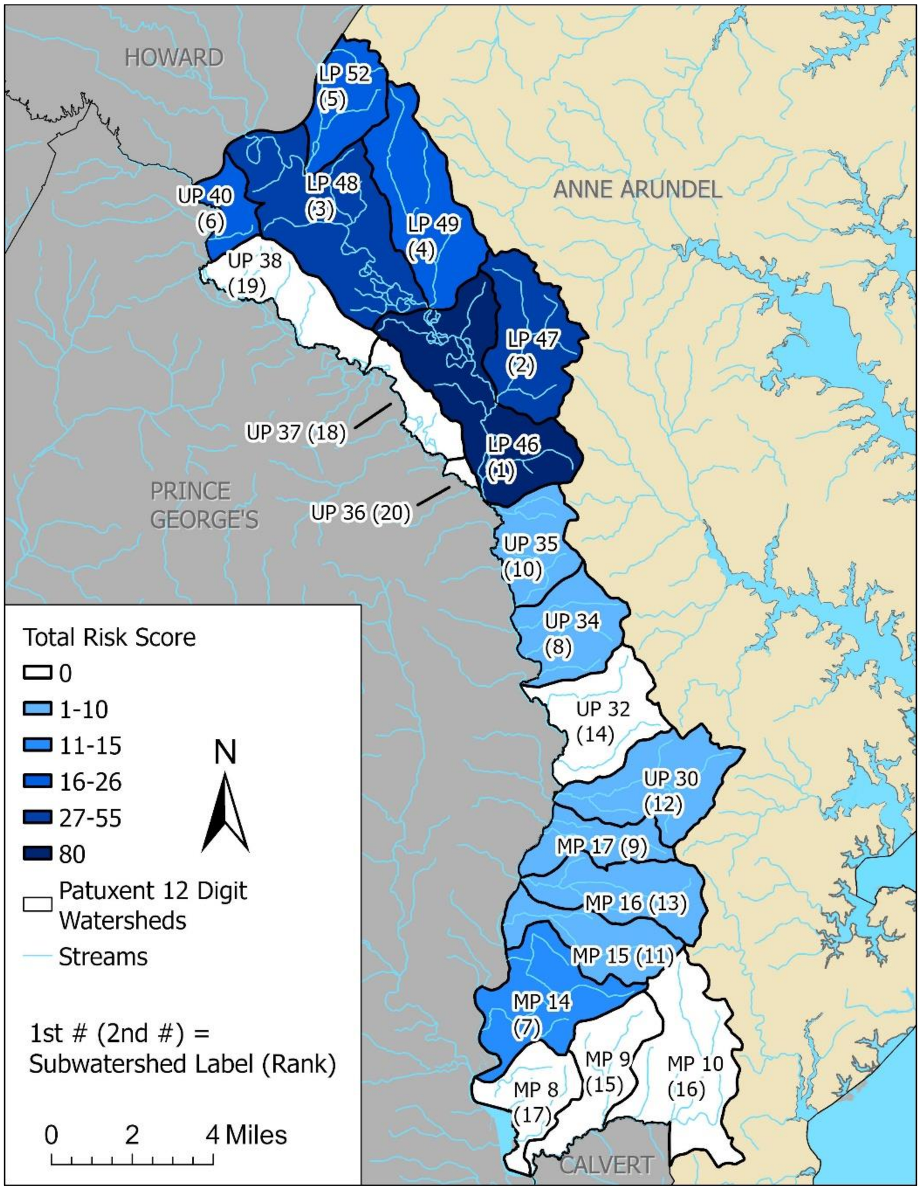

Figure 2-13: Subwatershed Ranking Results

3 Multi-Phase Source Trackdown Investigation

There are multiple phases for PCB monitoring following the completion of the desktop PCB source assessment and subwatershed prioritization. Sampling phases for PCB monitoring are defined in Sections 3.1, 3.2, and 3.3 per MDE's PCB Implementation Plan Guidance (MDE, 2022a).

3.1 Phase I: Subwatershed PCB Screening

The PCB monitoring process in Phase I involves the placement of a monitoring site in each subwatershed. Ideally, only a single site per subwatershed is adequate for monitoring, but in certain situations the County placed more than one site to fully capture the appropriate detail in large subwatersheds with multiple branches, subwatersheds with high risk assessment scores, or multiple separate tributaries in a subwatershed that drain directly to the mainstem. By capturing all the drainage from each subwatershed with separate monitoring sites, the County will isolate each area of the watershed, allowing for more detailed subwatershed-level investigation into the presence of PCB contamination. Results from these monitoring sites will inform which subwatersheds will require further source trackdown investigation in Phase II. An SAP (Anne Arundel County, 2024) has been completed by the County to detail the process and sites for Phase I sampling in the Patuxent watersheds.

As detailed in the Phase I SAP, the County selected 25 potential monitoring sites in Patuxent watershed. Sites were chosen based on their proximity to potential PCB sources located during the Subwatershed Risk Assessment, adequate coverage of the subwatershed drainage, and legally accessible property parcels. The conditions of some subwatersheds necessitated the placement of more than one monitoring site to capture the drainage. As per MDE's guidance, the County also selected four potential reference sites in each watershed to establish a control variable for the background levels of PCB contamination within areas of the watersheds where no urban development or potential source of PCBs are present as identified through the PCB Source Assessment. One of the four reference site options in each watershed will be selected based on accessibility and sampling suitability. Pending field reconnaissance to confirm the sampling suitability of the potential monitoring locations, a single time-integrative passive sampler will be deployed in the water column at each site for a minimum 3-month period. Once retrieved, passive samplers will be analyzed using a Performance Reference Compound (PRC) analysis and an EPA Method 1668A (US EPA, 2003) PCB congener analysis.

3.2 Phase II: In-stream Subwatershed PCB Characterization

Any subwatersheds with monitoring sites that showed PCB concentrations of concern will be reassessed during Phase II based on the data collected in Phase I. In Phase II, the County will review the subwatershed conditions in detail via desktop and place a new set of monitoring sites in the stream network to bracket sources where Phase I monitoring indicated the presence of PCBs at levels above reference values. Should Phase II sampling be needed in any Patuxent subwatersheds, an SAP and QAPP will be completed by the County to detail the process and sites for Phase II sampling.

Due to the potential for stream bed sediments to become a reservoir for PCB contamination, Phase II includes sediment sampling at each site in addition to the water column passive samplers used in Phase I monitoring, thereby involving multiple lines of evidence for investigation. At least three surficial sediment samples (the top two centimeters of substrate) along the cross section of the stream at each monitoring site will be collected during dry periods (72 hours post rain event of 0.1 inches or more). Sediment samples will be tested for total PCBs, total organic carbon (TOC), and grain size. As in Phase I, passive water column and sediment samples will be analyzed using a Performance Reference Compound (PRC) analysis and an EPA Method 1668A (US EPA, 2003) PCB congener analysis.

3.3 Phase III: MS4 PCB Characterization

Phase III monitoring will focus on MS4 PCB characterization in order to further narrow the field of search for the sources of PCB contamination detected in Phases I and II. Within the areas where Phase II monitoring suggested the presence of PCBs being transported to the stream network through the MS4, the County will use outfall and stormwater BMP monitoring and stormdrain trackback monitoring to identify sources of PCBs within the stormdrain system.

The County will sample select active outfalls and stormwater BMPs within the MS4 that discharge to the bracketed stream sections of concern. MDE's guidance requires only one monitoring type but recommends using automated samplers to collect composite water samples or passive sediment traps. The same analyses are required for monitoring methods as in Phase II. Sediment samples will be tested for total PCBs, total organic carbon (TOC), and grain size. As in Phase I, passive water column and sediment samples will be analyzed using a Performance Reference Compound (PRC) analysis and an EPA Method 1668A (US EPA, 2003) PCB congener analysis. For any outfalls or stormwater BMPs identified as having upland PCB sources, the County will then conduct a stormdrain trackback investigation involving a combination of outfall, in-pipe, catch basin/storm drain, and stormwater BMP sampling in the storm sewer pipe network to identify specific areas with sources of PCBs.

If monitoring in the storm sewershed identified any discrete PCB sources, MDE will identify responsible parties and pursue further investigations. If monitoring in the storm sewershed indicates specific pipe sections with PCB contamination due to groundwater infiltration or legacy sediment contamination trapped within the storm sewer, the County will further investigate these PCB sources. If Phase III monitoring does not identify any discrete sources that suggest significant PCB contamination, stormwater management practices may be required as the sources could be diffuse and have little potential for remediation.

4 Schedule

The County's PCB program schedule is shown in Table 4-1 below with task timelines displayed alongside the County's current MS4 Permit term starting with Year 2 (2023) through Year 5 (2026). Major elements of the planning phase are completed as of September 2024 and are submitted to MDE with this TMDL implementation plan, which contains the desktop source assessment and subwatershed risk assessment and includes the Phase I Source Trackdown SAP and spatial data package used for the desktop analysis. The spatial data package and SAP are submitted separately. As previously discussed with MDE, the County has chosen to develop and submit the Phase I Source Trackdown QAPP after MDE has completed review of the SAP and provided comments. MDE anticipates providing comments on the SAP within 45 days after the County's submittal (mid to late October).

The County is planning to begin preparation for Phase I subwatershed screening in December 2024 with deployment of the passive samplers scheduled for February 2025. Following a 3-month data collection period, samplers will be retrieved in May 2025 with data analysis occurring in June/July 2025. Per MDE's PCB Implementation Plan Guidance, the County is required to submit the Phase I Source Trackdown Monitoring Data Report and Monitoring Data Assessment Report before the end of the permit term (2026); however, the County anticipates developing both reports by the end of 2025 (Permit Year 4).

Per MDE's PCB Implementation Plan Guidance, the County will complete at least one round of monitoring associated with Phase II source trackdown investigations in subwatersheds identified as potential PCB sources from Phase I screening. Phase II will begin at the start of the next permit term (2027) with efforts focused first on a desktop analysis to inform sampling design. Following the desktop analysis, the County will prepare an SAP and QAPP for Phase II monitoring. Similar to Phase I, passive samplers will be deployed in the water column over a 3-month period with the addition of sediment grab samples collected once at each monitoring site during the sampling period. After Phase II laboratory analyses are completed, a statistical analysis will be conducted to determine the monitoring sites where the PCB concentrations are statistically significant indicating upstream sources of PCBs. The County will present results in a Monitoring Data Assessment Report for submittal to MDE. The timeline for Phase II desktop analysis, monitoring, and reporting will be similar to what is presented for Phase I in Table 4-1, with the effort taking approximately three years to complete.

At this time, it is uncertain whether a single round of Phase II source trackdown investigations will be sufficient to identify bracketed stream sections where upland PCB sources are present. Based on the results from Phase II monitoring, the County will determine if additional Phase II monitoring is needed, or if the County has enough information to move forward with Phase III. The same cycle of desktop analysis, monitoring, and reporting is required for Phase III and is likely to take at least three years to complete. It is anticipated that the multi-phase source trackdown investigation, in its entirety, will span several permit terms.

Table 4-1: Anne Arundel County PCB Program Schedule Through MS4 Permit Year 5

MS4 Permit Year 2 2023	MS4 Permit Year 3 2024	MS4 Permit Year 4 2025	MS4 Permit Year 5 2026
Watershed Implementation Plan			
Desktop Source Assessment			
Spatial Data Submittal Package			
Subwatershed Risk Assessment			
Sampling and Analysis Plan			
	(MDE Review)		
	QAPP		
	Monitoring		
		Reporting	

Phase I Source Trackdown

MDE Review

5 Estimated Costs

Cost estimates are provided in Table 5-1 below for PCB sampling and analysis within the Patuxent watershed for all phases of PCB source trackdown. Estimated costs are broken down by labor and direct expenses (i.e., mileage and laboratory costs) with 20% contingency added to the total to account for unknowns. Labor costs associated with sampler deployment and field collection of samples were estimated using the assumption that the field crew(s) can visit a maximum of six sites per 10-hour day.

Due to budgetary limitations and the high number of 12-digit subwatersheds located in Anne Arundel County's portion of the watershed (20), the County will focus Phase I subwatershed screening within the thirteen 12-digit subwatersheds with risk scores higher than zero. This is explained in more detail in the County's SAP (Anne Arundel County, 2024). The subwatersheds with risk scores of zero are considered to be lower priority and the potential need for future Phase I sampling in them will be determined at a later date depending on the extent of sources identified in Phase I for the higher priority subwatersheds.

The estimated cost for Phase I sampling and reporting is approximately $260,000, which includes the following:

- finalizing the Phase I SAP based on MDE review,
- development of the QAPP for Phase I sampling,
- monitoring preparation and water column passive sampler deployment,
- field collection of water column samples from 25 screening sites and one reference site
- SiREM sampler preparation and laboratory analysis costs,
- data management and analysis, and
- development of the Phase I Monitoring Data Report and Monitoring Data Assessment Report.

The preliminary estimated cost for Phase II sampling is approximately $348,000, which includes the following:

- development of the Phase II SAP,
- development of the QAPP for Phase II sampling
- monitoring preparation and water column passive sampler deployment,
- field collection of water column samples in each of the subwatersheds that were identified as PCB sources in Phase I (estimated to be 18 sites),
- field collection of sediment samples at each of the Phase II study sites
- field collection of samples in the one reference site used in Phase I,
- SiREM sampler preparation and laboratory analysis costs,
- data management and analysis, and
- development of the Phase II Monitoring Data Report and Monitoring Data Assessment Report.

The potential number of screening sites for Phase II were estimated based on the assumption that three subwatersheds will require six Phase II sampling sites each for a total of 18 sites.

All elements of Phase III sampling are not yet determined and will be based on the needs of the specific sites identified for contamination confirmation; however, it is estimated that this phase of monitoring will cost approximately $440,000, which includes the following:

- development of the Phase III SAP,
- development of the QAPP for Phase III sampling,
- monitoring preparation and installing sampling equipment,
- field collection of composite grab samples and sediment samples at each site following eight storm events (estimated to be three sites),
- field collection of sewer trackback samples (estimating four samples for each site),
- SiREM laboratory analysis costs,
- data management and analysis, and
- development of the Phase III Monitoring Data Assessment Report.

The potential number of screening sites for Phase III monitoring were estimated based on the assumption that all subwatersheds from Phase II will need to be assessed (three sites) to further and more directly identify specific sources of PCBs. Sampling at reference sites is not required for Phase III monitoring.

Table 5-1: Total Planning and Monitoring Cost Estimate ($)

Phase	Labor	Directs	Contingency (20%)	Total Estimate
Phase I	$163,000	$54,000	$43,000	$260,000
Phase II	$216,000	$74,000	$58,000	$348,000
Phase III	$248,000	$118,000	$73,000	$440,000
Total Planning and Monitoring Estimate				**$1,048,000**

6 References

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Appendix A: Subwatershed Risk Assessment

Patuxent River Watershed TMDL Subwatershed Ranking Table

1. Middle Patuxent 8 Risk Score Table
2. Middle Patuxent 9 Risk Score Table
3. Middle Patuxent 10 Risk Score Table
4. Middle Patuxent 14 Risk Score Table
5. Middle Patuxent 14 NPDES Risk Score Table
6. Middle Patuxent 15 Risk Score Table
7. Middle Patuxent 16 Risk Score Table
8. Middle Patuxent 17 Risk Score Table
9. Middle Patuxent 17 NPDES Risk Score Table
10. Upper Patuxent 30 Risk Score Table
11. Upper Patuxent 32 Risk Score Table
12. Upper Patuxent 34 Risk Score Table
13. Upper Patuxent 35 Risk Score Table
14. Upper Patuxent 36 Risk Score Table
15. Upper Patuxent 37 Risk Score Table
16. Upper Patuxent 38 Risk Score Table
17. Upper Patuxent 40 Risk Score Table
18. Little Patuxent 46 Risk Score Table
19. Little Patuxent 46 NPDES Risk Score Table
20. Little Patuxent 47 Risk Score Table
21. Little Patuxent 47 NPDES Risk Score Table
22. Little Patuxent 48 Risk Score Table
23. Little Patuxent 48 NPDES Risk Score Table
24. Little Patuxent 49 Risk Score Table
25. Little Patuxent 49 NPDES Risk Score Table
26. Little Patuxent 52 Risk Score Table
27. Little Patuxent 52 NPDES Risk Score Table

1. Middle Patuxent 8 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	0

2. Middle Patuxent 9 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	0

3. Middle Patuxent 10 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	0

4. Middle Patuxent 14 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				10
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	1	2	5	5
Historic Landfills	2	2	5	10
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	1	3	1	1
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	16

5. Middle Patuxent 14 NPDES Risk Score Table

Major SIC Code Group	SIC Code Description	Individual Permit Dischargers (#)			General Permit Dischargers (#)		Total Dischargers (#)	Tier	Risk Value	Score
		Industrial Wastewater	Municipal Wastewater	Groundwater	Industrial Stormwater	Industrial Wastewater				
4400	Water Transportation	0	0	0	0.5	0.5	1	1	10	10
									Total Score	10

6. Middle Patuxent 15 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	1	2	5	5
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	1	2	5	5
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	10

7. Middle Patuxent 16 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	1	2	5	5
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	5

8. Middle Patuxent 17 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				10
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	1	3	1	1
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	11

9. Middle Patuxent 17 NPDES Risk Score Table

Major SIC Code Group	SIC Code Description	Individual Permit Dischargers (#)			General Permit Dischargers (#)		Total Dischargers (#)	Tier	Risk Value	Score
		Industrial Wastwater	Municipal Wastewater	Groundwater	Industrial Stormwater	Industrial Wastewater				
4900	Electric, Gas and Sanitary Services	1	0	0	0	0	1	1	10	10
									Total Score	10

10. Upper Patuxent 30 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	1	2	5	5
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	5

11. Upper Patuxent 32 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value*	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	0

12. Upper Patuxent 34 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	2	2	5	10
Public Angler Access Sites	1	3	1	1
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	11

13. Upper Patuxent 35 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	1	1	10	10
			Total Score	10

14. Upper Patuxent 36 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	0

15. Upper Patuxent 37 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	0

16. Upper Patuxent 38 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	0	3	1	0
Military Installations	0	1	10	0
			Total Score	0

17. Upper Patuxent 40 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				0
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	2	2	5	10
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	1	2	5	5
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	7	3	1	7
Military Installations	0	1	10	0
			Total Score	22

18. Little Patuxent 46 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				16
TRI Facilities (EPA TRI Database)	2	3	1	2
PCB releases (NRC Database)	1	2	5	5
Historic Landfills	1	2	5	5
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	52	3	1	52
Military Installations	0	1	10	0
			Total Score	80

19. Little Patuxent 46 NPDES Risk Score Table

Major SIC Code Group	SIC Code Description	Individual Permit Dischargers (#)			General Permit Dischargers (#)		Total Dischargers (#)	Tier	Risk Value	Score
		Industrial Wastwater	Municipal Wastewater	Groundwater	Industrial Stormwater	Industrial Wastewater				
3200	Stone, Clay, Glass, and Concrete Products	0	0	0	1	0	1	3	1	1
4200	Motor Freight Transportation	0	0	0	1	0	1	2	5	5
4900	Electric, Gas and Sanitary Services	0	0	0	1	0	1	1	10	10
									Total Score	16

20. Little Patuxent 47 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				20
TRI Facilities (EPA TRI Database)	0	3	1	0
PCB releases (NRC Database)	1	2	5	5
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	1	2	5	5
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	15	3	1	15
Military Installations	1	1	10	10
			Total Score	55

21. Little Patuxent 47 NPDES Risk Score Table

Major SIC Code Group	SIC Code Description	Individual Permit Dischargers (#)			General Permit Dischargers (#)		Total Dischargers (#)	Tier	Risk Value	Score
		Industrial Wastwater	Municipal Wastewater	Groundwater	Industrial Stormwater	Industrial Wastewater				
4900	Electric, Gas and Sanitary Services	0	0	1	1	0	2	1	10	20
									Total Score	20

22. Little Patuxent 48 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	2	3	1	2
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				5
TRI Facilities (EPA TRI Database)	1	3	1	1
PCB releases (NRC Database)	4	2	5	20
Historic Landfills	1	2	5	5
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	4	3	1	4
Military Installations	1	1	10	10
			Total Score	47

23. Little Patuxent 48 NPDES Risk Score Table

Major SIC Code Group	SIC Code Description	Individual Permit Dischargers (#)			General Permit Dischargers (#)		Total Dischargers (#)	Tier	Risk Value	Score
		Industrial Wastwater	Municipal Wastewater	Groundwater	Industrial Stormwater	Industrial Wastewater				
4200	Motor Freight Transportation	0	0	0	1	0	1	2	5	5
									Total Score	5

24. Little Patuxent 49 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	2	3	1	2
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				20
TRI Facilities (EPA TRI Database)	1	3	1	1
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	0	2	5	0
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	14	3	1	14
Military Installations	1	1	10	10
			Total Score	27

25. Little Patuxent 49 NPDES Risk Score Table

Major SIC Code Group	SIC Code Description	Individual Permit Dischargers (#)			General Permit Dischargers (#)		Total Dischargers (#)	Tier	Risk Value	Score
		Industrial Wastwater	Municipal Wastewater	Groundwater	Industrial Stormwater	Industrial Wastewater				
4000	Railroad Transportation	0	0	0	1	0	1	2	5	5
4200	Motor Freight Transportation	0	0	0	1	0	1	2	5	5
4900	Electric, Gas and Sanitary Services	0	0	0	1	0	1	1	10	10
									Total Score	20

26. Little Patuxent 52 Risk Score Table

PCB Source Category	Sources (#)	Tier	Risk Value	Score
PCB Transformers (EPA PCB Transformer Registry Database)	0	1	10	0
PCB Activities (EPA PCB Activities Database)	0	3	1	0
Hazardous Waste Sites (Superfund/CERCLA)				
Brownfields	0	1	10	0
VCP	0	1	10	0
CHS	0	1	10	0
NPL	0	1	10	0
NPDES Permitted Wastewater and Stormwater Dischargers (Active and Inactive)				5
TRI Facilities (EPA TRI Database)	2	3	1	2
PCB releases (NRC Database)	0	2	5	0
Historic Landfills	0	2	5	0
MDE Permitted Solid Waste Acceptance Facilities (Active and Closed)	0	2	5	0
MDE Permitted Sewage Sludge Utilization Activities	1	2	5	5
Public Angler Access Sites	0	3	1	0
Sanitary Sewer Overflows	4	3	1	4
Military Installations	1	1	10	10
			Total Score	26

27. Little Patuxent 52 NPDES Risk Score Table

Major SIC Code Group	SIC Code Description	Individual Permit Dischargers (#)			General Permit Dischargers (#)		Total Dischargers (#)	Tier	Risk Value	Score
		Industrial Wastwater	Municipal Wastewater	Groundwater	Industrial Stormwater	Industrial Wastewater				
4200	Motor Freight Transportation	0	0	0	1	0	1	2	5	5
									Total Score	5

Appendix B: Brownfield Master Inventory Fact Sheets

Fact Sheets:

1. 7621 Energy Parkway
2. Snow_Hill_IV
3. Davidsonville Nike Launch and Control
4. Fort_Meade
5. Maryland_City_Plaza_Shopping_Center

MARYLAND
Department of the Environment

Facts About…

Centre At Wayson's Corner
(VOLUNTARY CLEANUP PROGRAM)

Site Description:

This 30.78-acre property, located at 5481 Southern Maryland Boulevard, is in a zoned commercial area of Lothian, Anne Arundel County, Maryland. Bordering the property to the south is an automobile repair shop and gas station and to the north are private residences. The property is bordered to the west by commercial properties and to the east by Galloway Creek and Sands Road, beyond which are private residences.

There are no surface water bodies located on the property. The nearest surface water bodies is Galloway Creek, adjacent to the eastern portion of the property, which is a tributary of the Patuxent River. According to the submitted environmental reports, groundwater flow beneath the property is to the southwest. The site and vicinity are not served by municipal water and sewer systems.

Site History:

According to the environmental site assessments, prior to 1960, the property was utilized as agricultural land. Between 1960 and 1980 private residences occupied the northeastern portion of the property. The residences were demolished in the late 1980s. Currently, there are no structures located on-site and the property is being maintained as undeveloped, forested farmland.

Environmental Investigations and Actions:

A Phase I environmental assessment was conducted at the property in April 2005, and a Phase II environmental assessment was completed for the property in November 2006. Soil and groundwater samples collected from the property identified the presence of arsenic, lead and chromium in the soils located on-site and arsenic, lead, chromium in the groundwater beneath the site.

Current Status:

Petrie/Chaney Wayson's Corner, LLC was granted expedited inculpable person status for the Centre at Wayson's Corner property on May 8 2006, and subsequently submitted a Voluntary Cleanup Program (VCP) application package for the property on November 8, 2006, seeking a No Further Requirements Determination. On February 1, 2007, Petrie/Chaney Wayson's Corner, LLC requested that the VCP application package for the Centre at Wayson's Corner property be withdrawn. The VCP application was withdrawn and all prior VCP correspondence was void on February 2, 2007.

Contact:

Jim Metz	Maryland Department of the Environment Voluntary Cleanup/Brownfields Division	(410) 537-3493

Last Update: August 8, 2007

Davidsonville Nike Launch and Control

What You Need to Know

Site Location

The former Davidsonville Nike site is located at 3700 Elmer F. Hagner Lane, Davidsonville, Anne Arundel County, Maryland. The 15.94-acre former Control site is located on 3789 Queen Anne Bridge Road, southwest of the intersection of Queen Anne Bridge Road and Wayson Road. It is now the Davidsonville Recreation Area. The 25.02-acre former Launch site is about ½ mile east of the former Control site at the end of Elmer F. Hagner Lane. The former Launch property is owned by the Anne Arundel County.

Site History

The Davidsonville site was a Nike anti-aircraft missile defense battery which operated between 1954 through the early 1970s. The missile defense system was developed and improved during the cold war. The batteries were deployed around the United States from the 1950s through the 1970s. Each battery was comprised of a radar control site and a missile firing site, usually separated by a distance of between ¼ – 1 mile.

Environmental Investigations and Actions

In 1987, Maryland conducted an investigation of the former Control site. Sampling and analysis of the on-site well and area residential wells for volatile organic compounds (VOCs) was included. No contamination was detected in the on-site well and 2µg/L of chlorobenzene was detected in a neighboring well. Follow-on sampling did not confirm this result.

Based on this information, the U.S. Environmental Protection Agency (EPA) gave the Control site No Further Remedial Action Planned (NFRAP) status in 1992. As part of an initiative to re-evaluate NFRAP sites, MDE conducted a Site Survey Initiative (SSI) in 1999. This SSI confirmed the previous conclusion that the site should be considered NFRAP under the Pre-Remedial Program.

In 1986, the U.S. Army Corps of Engineers (USACE) contracted for environmental studies of a number of former Nike missile bases, including the former Launch site. In the course of this investigation, three monitoring wells were installed and sampled, and soil and water samples were obtained. The results revealed that the groundwater contained metals below Maximum Contamination Levels (MCLs). Soil samples revealed petroleum hydrocarbons, tetrachloroethene, and lead at levels below EPA Risk Based Concentrations (RBCs).

The Maryland Department of the Environment (MDE) sampled the three on-site monitoring wells and the on-site water supply well in 1987, and had the samples analyzed for volatile organic compounds (VOCs). No VOCs were detected at that time.

In 1992, EPA contracted for a Site Inspection of the former Launch site, including sampling and analysis of groundwater from the monitoring wells. Analysis of the groundwater samples indicated the presence of tetrachloroethene, 1,1,1-trichloroethane, phenol, and arsenic at levels below MCLs. Polycyclic aromatic hydrocarbons and metals were also detected in the soil, surface water, and sediment at levels below RBCs.

Based on this information, EPA gave the site NFRAP status in 1992. MDE conducted an SSI in 1999. This SSI confirmed the previous conclusion of NFRAP status. In the 2007 – 2008 timeframe, the USACE conducted a project closeout for several former Nike sites in Maryland. For the Davidsonville Launch site, this included the disposal of seven rusting 55-gallon drums (which contained soil cuttings from monitoring well installation), closure of three monitoring wells (two were left in place for use by the U.S. Geological Survey), removal and disposal of 150 gallons of hydraulic fluid and the removal of about 3,600 liters of asbestos. While lead paint removal and abatement were conducted at the other Nike sites, it was not conducted at Davidsonville. In 2007, MDE notified the USACE that the limited nature of the lead paint removal and abatement could leave lead paint in place with the potential for leaching.

In August 2011, MDE collected four soil samples and one groundwater sample from the former Launch site. The soil sampling detected arsenic at a maximum concentration of 12.4 mg/kg, which exceeds the non-residential screening level of 1.9 mg/kg. No other metals or VOCs were detected in the soil samples above RBCs. In November 2013, an additional sampling event was conducted. Four surface soil samples were collected for analysis of semi-volatile organic compounds (SVOCs). Benzo(a)pyrene was detected in one of the four soil samples collected at 780 µg/kg, which exceeded the non-residential RBC of 390 µg/kg. No other SVOCs were detected in soil samples above non-residential risk based screening levels.

A follow up site inspection was completed by the Air and Radiation Management Administration in August 2013. Screening for radiation was completed using a RadEye B20-ER and an ICX Radiation Identifier 2. Two former Nike silos, a water catchment basin and an agricultural shed were screened. No radiation readings above background equivalent were noted. The interior and exterior of the silos and shed were screened.

Current Status/Planned or Potential Future Action

There are no further actions planned for this site.

FORT GEORGE G. MEADE (MD-67)
Anne Arundel County
(National Priorities List Site)

Site Location

Fort George G. Meade encompasses 13,596 acres in Anne Arundel County. This total includes the active facility (4,596 acres) and a large portion of the facility closed under Base Realignment and Closure (BRAC) legislation (9,000 acres). The active facility is located about 12 miles southwest of Baltimore, and the BRAC portion is immediately south of the active facility. An AMTRAK line borders the facility on the southeast; Route 175 lies to the northeast, Route 295 to the northwest and the Patuxent River to the south.

Site History

The facility began operation in 1917 as Camp Meade, a 4,000-acre WWI training facility. Training activities included infantry combat operations and a mustard agent training area. The U.S. Army Tank School operated at the facility from 1918 to 1932. The facility was renamed Fort George G. Meade in 1928. In 1941, the facility was expanded to 13,596 acres to accommodate the additional training requirements of WWII. The Army continued to operate maneuver training areas and firing ranges until 1988, when these areas were included in 9,000 acres identified for base closure under BRAC. Of the 9,000 acres, 8,100 were transferred to the Department of the Interior (DOI) and incorporated into the Patuxent Environmental Science Center. The Army retains 900 acres of the BRAC parcel, which includes the 366-acre Tipton Airfield. The Army began leasing the Tipton Airfield parcel to Anne Arundel County in 1998, and officially transferred the property to Anne Arundel County on November 1, 1999.

In order to address the unexploded ordnance (UXO) hazards associated with the former range areas on the DOI parcel, the Army conducted UXO surveys of the property in 1991-92. These surveys evaluated the site using a statistical grid system. The top six inches of soil were actually cleared of ordnance. The U.S. Environmental Protection Agency (EPA), Maryland Department of the Environment (MDE) and the Army are continuing to discuss ordnance clearance issues.

Because of interest in the Tipton Airfield parcel, the Army contracted for another ordnance clearance action to address the 366-acre Tipton parcel. This clearance action excluded the airfield structures and three suspected disposal areas (Inactive Landfills [ILF] 1, 2 and 3), which resulted in a total of 277 acres cleared under this action. The Tipton ordnance removal action was conducted from October 1995 to April 1997. UXO were removed to a depth of four feet during this action.

The MDE and the EPA have been working with the Army to address environmental concerns since 1993. At that time, the Base Closure Team, consisting of the Army, EPA and MDE, was formed to address the environmental concerns associated with the BRAC portion of the facility. In February 1998, the BRAC team began formal partnering, along with the Corps of Engineers, in order to improve the decision-making process for the ongoing investigations and cleanup actions. This partnering effort has been successful and all parties plan to continue the process.

The EPA listed the facility on the National Priorities List (NPL) on July 27, 1998. Based upon the Army's conclusion that all actions necessary to protect human health and the environment have been conducted for the Tipton parcel, the EPA removed the Tipton parcel from the Fort Meade NPL listing on November 1, 1999.

Environmental Investigations

The 1982 Installation Assessment of Fort George G. Meade identified several waste generating operations at the facility including munitions degreasing, metal plating, photograph processing, vehicle maintenance, dry cleaning, pesticide handling, and a sewage treatment plant and sludge lagoon. The 1989 Enhanced Preliminary Assessment Report and 1990 Preliminary Assessment Report identified several additional areas including fire training areas, incinerators, landfills, dumps, hazardous waste storage areas, a salvage yard (DRMO), underground storage tanks, medical facilities and laboratories, and an explosive ordnance disposal (open burn/open detonation) area.

The environmental conditions at some of the areas identified above have been evaluated. The 1992 Site Inspection Study addressed several areas on the BRAC parcel including four former landfills, a fire training area, a helicopter hanger area, an ordnance demolition area, and the DRMO, which is part of the 900 acres retained by the Army. A 1993 Site Inspection Addendum further looked at these areas and at Soldiers Lake. The 1992 Remedial Investigation Report (RI) and 1993 RI Addendum addressed the Active Sanitary Landfill, which is operated under a solid waste permit and the Clean Fill Dump.

The Army conducted an RI of four areas of concern on the BRAC property: ILF 1, ILF 2, ILF 3, which are on the Tipton parcel and the Clean Fill Dump located in the interior of the DOI parcel. The RI, which was completed in 1998, determined that potential risks to human health and the environment for the Tipton parcel are within the acceptable range established by the EPA. The RI did identify potential concerns at the Clean Fill Dump. Subsequent evaluation identified that no further action was required in light of the existing restrictions on access to the groundwater at the site, and a Record of Decision (ROD) documenting this determination was signed by the Army and EPA in 2000.

The Army submitted a Finding of Suitability to transfer for the Tipton Airfield parcel in 1999. This document adequately identified the environmental and UXO concerns at the Tipton Airfield parcel. The MDE accepted that finding in October 1999.

Until January 1999, the MDE's Hazardous Waste Program and the EPA provided oversight for the investigations of groundwater contamination at the DRMO and the Post Laundry Facility. In January 1999, the oversight of these investigations was transferred to the EPA and the MDE's Environmental Restoration and Redevelopment Program. A Remedial Investigation (RI) was published March 2002. MDE has reviewed the findings of the RI and is currently working with the Army to determine an appropriate course of action for the site. A groundwater solvent plume is migrating from the DRMO parcel in a southeasterly direction toward DOI property. Plans to address environmental impacts associated with the Post Laundry Facility are under development.

Work also began on the Remedial Investigation for the Ordnance Disposal Area (ODA) in 2000. MDE reviewed the Focused Feasibility Study and other associated documents proposing action at the ODA site. A Proposed Plan for the ODA parcel has been reviewed. Publication of a Record of Decision will follow the review and public comment period.

Assessment of numerous other solid waste management units (SWMUs) continued throughout 2002. These SWMUs are identified as areas where contaminants may have been released to the environment. The assessment effort consists of historical interviews with former employees, an evaluation of historical site usage, accompanied by limited data collection. It is expected that many of the SWMUs will be recommended for no further action, while a small percentage will require additional investigation and potential future action.

To date, one significant SWMU has been retained for further evaluation. The former furniture stripping facility at the base has been identified as the source of localized groundwater contamination. The plume contains mixed solvents that were historically used in stripping operations. A pipe and sump immediately adjacent to the buildings were found to contain evidence of solvent storage and discharge to the subsurface. The furniture stripping facility will undergo complete evaluation from assessment to formal decision (ROD).

Current Status

The Army is finalizing the proposed plan for the ODA. A Soil Background Concentration Report for the entire base is also under development. Assessment of SWMUs will continue. Action at the DRMO parcel and the Post Laundry Facility will also proceed according to the CERCLA process. The Army will continue their efforts to identify the source of groundwater contamination found north of the sanitary landfill. Solvent contamination has been detected, but not attributed to historical Army activities. Groundwater contamination in this area will be investigated as a Remedial Investigation effort.

In early February 2003, the Army informed the Department that a previously unknown disposal area was unearthed during construction activities for a new housing development. The waste area comprises approximately 5.5 acres adjacent to existing residential housing and the Manor View Elementary School. In consultation with the MDE and the EPA, the Army is developing a remedial investigation workplan.

Future Activities

The investigations of the remainder of the BRAC parcel and the active portion of Fort Meade are ongoing. The results of this effort will be summarized in the Site Management Plan.

Facility Contacts

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Mark Stevens	U.S. Environmental Protection Agency	(215) 814-3353
Kim Gross	U.S. Army Corps of Engineers	(410) 962-6753
Jeff Thornburg	Fort Meade Directorate of Public Works	(301) 677-9365

Site Repositories

Provinces Public Library
2624 Annapolis Road
Severn, MD 21144
410-222-6280

Directorate of Public Works
Attn: ANME-PWE, Building 239
2 ½Street and Ross Road
Fort Meade, MD 20755
410-962-7677

Department of the Environment

Facts About...

MARYLAND CITY PLAZA SHOPPING CENTER (VOLUNTARY CLEANUP PROGRAM)

Site Location

This 14.17-acre property is located at 3401 to 3495 (odd numbers only) Fort Meade Road in a commercial and residential part of Laurel, Anne Arundel County, Maryland 20724. The closest surface water body is an unnamed stream located one-quarter mile northeast of the property that discharges into the Little Patuxent River. The site is located within a groundwater use area. Public water and sanitary sewer services are supplied to the property by the Anne Arundel County Department of Public Works.

Site History

Prior to the construction of the shopping center in 1977, the area was developed with single-family homes. In March 1982, the present owners, Combined Properties Limited Partnership, acquired the property. Additional tenant spaces were constructed in 1989 and 1990. Demolition and remodeling of the fire-damaged grocery store was completed in March 2004.

Currently, it is a 177,000-square-foot at-grade commercial shopping center which consists of strip shopping center buildings and multiple paved parking areas. The shopping center is occupied by multiple commercial tenants and a Shoppers Food Warehouse store. The Maryland City Valet, a former dry cleaning facility on the property, occupied tenant spaces 3449 and 3461. The most recent dry cleaning operation, Kim's Cleaners, occupied tenant space 3461 until 2001. A beauty salon currently occupies this tenant space.

Environmental Investigations and Actions

Two Phase I Environmental Site Assessments (ESAs) were completed in 1994 and 1996, respectively. The disposal of tetrachloroethene (PCE) at the Maryland City Valet facility was identified as a potential recognized environmental condition for the property. In September 2001, the on-site dry cleaning machine and associated PCE wastes were removed from tenant space 3461. A March 2004 Phase I ESA identified PCE as a contaminant of concern due to its use at the former dry cleaning facility. A subsurface investigation was conducted in April 2004. Soil and groundwater samples were collected and analyzed for volatile organic compounds. PCE and its degradation products were detected in groundwater samples at levels exceeding the Maryland Department of the Environment's cleanup standards, but soils contaminated with PCE did not exceed the cleanup standards. Additional subsurface investigations performed at the property in 2004 indicated that the groundwater contamination plume did not impact off-site properties. Indoor air monitoring and sub-slab soil gas monitoring at tenant space 3461 were completed in August 2005.

Current Status

In August 2004, Maryland City Plaza Limited Partnership submitted a Voluntary Cleanup Program application for the property seeking a No Further Requirements Determination (NFRD) as a responsible person. The NFRD issued on February 7, 2007, authorized use of the property for commercial/industrial purposes, imposed a groundwater use prohibition, required groundwater characterization prior to disposal, and use of a vapor barrier or additional subsurface testing for new building construction.

Contact

For additional information, please contact the Land Restoration Program at (410) 537-3493.

Last Update: April 2008

Facts About...

Department of the Environment

1177 PATUXENT ROAD PROPERTY
LOT 1, FLOODPLAIN A & B
(Voluntary Cleanup Program)

Site Description

This 35.51-acre property, located at 1177 Patuxent Road, is on the northeast side of Patuxent Road in a rural section near Odenton, Anne Arundel County, Maryland. The majority of the site is vacant vegetated land and floodplain. The remains of a few concrete buildings and other structures (radio tower) are present in the central and southeastern portions of the property. Piles of sand and gravel are located throughout the site, as well as small areas of nuisance dumping containing tires, old metal equipment, asphalt and concrete debris. An area of debris including hoppers, truck and car parts and other metal items is concentrated on the northwestern portion of the site in an area formerly know as "Dumpsite B." A one-story residential rental property is located on the southwest corner of the site and is currently occupied. The rental property is served by a potable well that is approximately 175 feet deep. A small manmade pond is located near the residence.

A 1,000-foot long surface water impoundment is located at the northeast corner of the site and adjoins a small tributary stream that flows along the eastern boundary of the site and into the Little Patuxent River. Domestic wells and public water supply wells were identified within one-half mile of the property. The potable water wells in the vicinity of the site range from approximately 20 to 202 feet deep. Municipal water and sewer service are not available for the site and vicinity.

Site History

Historical research indicates the property was used for sand and gravel surface mining, asphalt production, and asphalt truck maintenance and cleaning from at least the early 1930s to the early 1970s. Routine burial and release of concrete, asphalt, and vehicle maintenance fluids to on-site surface waters is believed to have taken place during that period. Trichloroethene (TCE) was also reportedly used routinely in the northeastern portion of the site to clean asphalt-coated trucks and equipment. The cleaning operations were reportedly performed outdoors on unpaved ground. After site operations ceased in the early 1970s, the property was used as a refuse disposal area. In the 1980s, a variety of construction debris, refuse, and industrial wastes were reportedly disposed in trenches on the site by a curbing contractor who was leasing the property. In 1995, approximately three hundred 55-gallon drums were found buried near the northeast corner of the site. Some of the drums were found to contain petroleum products, asphalt, and industrial solvents, and a number of the drums appeared to be leaking. In 1996, all of the drums were removed from the site and properly disposed. In 1996, two underground storage tanks were removed from the site (one 10,000 gallon gasoline and one 10,000 gallon diesel) under the direction of the Maryland Department of the Environment's Oil Control Program.

Environmental Investigations

Environmental investigations have been conducted at the site since 1990. Soil and ground water samples were collected at the site in 1995, 1996, 1997, 1998, 2005 and 2006. Results from monitoring well sampling conducted during 2005 and 2006 indicated levels of vinyl chloride and cis-1,2-dichloroethene above the drinking water standard in the shallow ground water. Samples collected in 2006 indicated elevated levels of arsenic in surface and subsurface soils at the site. Elevated levels of petroleum constituents were detected in subsurface soils in the vicinity of the former 1,000-gallon gasoline tank near the former maintenance building.

Additional soil and groundwater samples as requested by the Department on February 9, 2006, were collected during April, 2006. Monitoring well MW-8 was resampled to confirm the reduction in concentrations of constituents of chlorinated solvents previously detected. The additional sampling indicated that the levels of chlorinated solvents previously detected during the initial investigation had significantly decreased. Groundwater samples obtained from potable wells installed at the 1177 Patuxent Road site and two adjacent properties did not indicate the presence of chlorinated solvents or petroleum products.

Voluntary Cleanup Program (VCP) Status

A prospective purchaser of the 1177 Patuxent Road property submitted a Voluntary Cleanup Program (VCP) application to the Department in September 1997. On December 17, 1997, the Department accepted the site into the VCP and the application was subsequently withdrawn from the VCP in February 2001. On November 8, 2005, PAX, LLC submitted an application as a responsible person seeking a Certificate of Completion for future commercial use of the property. On August 16, 2006, a No Further Requirements Determination was issued for the property with a restriction on the use of the shallow groundwater aquifer and requiring the installation of a vapor barrier or additional testing prior to any new construction on the property.

Contact:

For additional information, please contact the Land Restoration Program at (410) 537-3493.

Last Update: September 29, 2008