HARFORD COUNTY
ILLICIT DISCHARGE
INSPECTION PROGRAM:
2013 SUMMARY REPORT

Prepared for

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ACRONYMS

DO	Dissolved Oxygen
GIS	Geographic Information System
GPS	Global Positioning System
HSI	Hotspot Site Investigation
IDP	Illicit Discharge Potential
MS4	Municipal Separate Storm Sewer System
MDE	Maryland Department of the Environment
N/A	Not Applicable
NAD	North American Datum
NPDES	National Pollutant Discharge Elimination System
SW	Stormwater

ABBREVIATIONS AND UNITS OF MEASURE

Cl	Chlorine
cm	Centimeter
Cu	Copper
l	Liter
mg	Milligram
mS	milliSiemens
NTU	Nephelometric Turbidity Unit
O_2	Oxygen
unk	Unknown

1.0 INTRODUCTION

On an annual basis, Harford County conducts inspections of Municipal Separate Storm Sewer System (MS4) outfalls and commercial/industrial facilities within its jurisdiction. Such inspections are a requirement of the County's National Pollutant Discharge Elimination System (NPDES) permit. They reflect the County's ongoing commitment to the identification and remedy of illicit discharges into the MS4 network and pollution sources from activities on commercial/industrial parcels.

Dry weather discharges are defined as any non-stormwater flow in the MS4 which may arise from one or more of the following causes (Brown et al. 2004):

- Inadvertent connection of sewage and septic flows;
- Washwater flows, such as residential gray water (laundry) discharges, water from commercial car washes, fleet washing, commercial laundries, and floor washing to shop drains;
- Liquid wastes such as oil, paint, and process water that enter the storm drain system;
- Tap (potable) water;
- Landscape irrigation; and
- Groundwater or spring water.

Illicit discharges are those dry weather flows that contain pollutants or pathogens. Water quality testing is used to distinguish illicit discharges (sewage/septic, washwater, tap water, and wastes) from cleaner discharges such as groundwater.

During late 2013 and early 2014, Harford County's consultant, Versar, Inc., investigated 105 outfall sites in various locations during dry weather in order to detect illicit discharges from normal stormwater runoff or discharges from other natural sources, such as groundwater. Screening consisted of field visits to selected outfalls within the Municipal Separate Storm Sewer System, physical inspections, and chemical tests (if the outfall was discharging during dry weather) to determine whether a dry weather discharge was contributing to elevated indicator levels or unacceptable values for water quality parameters. The County performed follow-up inspections of any improper discharges or illicit connections identified through the screening program.

Commercial/industrial parcels are potential pollutant "hotspots" because they offer a high probability of illicit discharges to the MS4. Illicit discharge may be a consequence of one or more of the following conditions (Wright et al. 2005):

- Outdoor material storage (e.g., unprotected storage of pesticides, solvents, bulk materials, or hazardous materials);

- Vehicle operations (e.g., outdoor maintenance, uncovered fueling operations);
- Uncovered storage of trash or presence of leaking dumpsters;
- Condition of the physical plant (e.g., connection of downspouts, condition of building(s), condition of pavement); and
- Landscape management (e.g., turf management status, presence of non-target irrigation), and condition of stormwater infrastructure (e.g., presence of stormwater controls, litter in gutters).

During March and April 2014, Versar field teams visited 50 commercial/industrial parcels to conduct visual surveys of storage, housekeeping, vehicle maintenance, physical plant maintenance, waste, and landscape management practices to determine whether a confirmed hotspot exists on the property. If an ongoing pollution problem was found, a follow-up investigation was made by the County to eliminate the pollution source. Additional measures that the County may take to raise awareness of stormwater pollution include public outreach and education.

This report documents the field results for Harford County's 2013 illicit discharge and commercial/industrial hotspot site inspection program. The following sections describe the site selection protocol, field inspection methods, and results of field inspection as well as source determination of confirmed pollution problems located within the MS4 or resulting from activities on commercial/industrial sites. Complete results are provided in a Microsoft Access database that accompanies this report.

2.0 METHODS

2.1 ILLICIT DISCHARGE DETECTION

2.1.1 IDDE Site Selection

Harford County completed a desktop analysis of illicit discharge potential based on criteria described in Brown et al. (2004). Normalized illicit discharge potential (IDP) scores were determined for all georeferenced outfalls in the County. The IDP scores were divided into three categories, with a coefficient range of 1-3, as detailed below:

1) Low IDP Risk - 1.0 to 1.66
2) Medium IDP Risk - 1.67 to 2.33
3) High IDP Risk - 2.34 to 3.00

Note that at present, no outfalls within the County's jurisdiction fall within the high IDP risk category.

Harford County provided Versar with the following information to assist in outfall screening field efforts:

- Programmatic Outfall Tracking Spreadsheet containing 2,923 georeferenced and prioritized (by IDP score) outfalls;
- Stormwater infrastructure GIS layer;
- Road centerline GIS layer; and
- Hydrology GIS layer.

From the prioritized outfall data in the tracking spreadsheet, 116 outfalls were selected by Versar for field screening in late 2013 and early 2014 to provide sufficient targeted outfalls to meet the required 100. The target outfalls satisfied the following criteria:

- Include 75% of the outfalls from the medium IDP risk class;
- Include 25% of the outfalls from the low IDP risk class;
- Include only outfalls coded in the GIS as system (SYS) or culvert with attached storm drain (C2) outfalls; exclude culverts (C1);
- Exclude outfalls that lie within the boundaries of the following incorporated municipalities: the Town of Bel Air, City of Havre de Grace, and City of Aberdeen;

- Exclude outfalls that are under the jurisdiction of the State Highway Administration (MS4);
  - These outfalls will be found on or connected to state or federal highways;
- Include 20% of previously inspected outfalls (15% from medium IDP risk class and 5% from low IDP risk class); and
- Prioritize sites from highest to lowest IDP score.

The spreadsheet of potential outfalls was sent to Harford County for approval prior to field investigations.

2.1.2 IDDE Field Screening Procedures

The 2013 selected outfall spreadsheet was converted to a geodatabase in ArcGIS. In ArcGIS, target outfalls for 2013 were highlighted and field maps were printed to assist field staff in locating the target outfalls. The 2013 sites, the outfall tracking geodatabases and other GIS layers were loaded into Trimble ProXT differential GPS unit so that field staff could a) locate the 2013 target outfalls and b) provide field staff with maps of MS4 infrastructure to assist in tracking down flowing water.

Electronic field data were downloaded daily and periodically checked against the list of 2013 target outfalls in the outfall tracking spreadsheet.

Field screening was conducted from October 2013 to February 2014. All sites were visited after at least a 24-hour dry weather period (i.e., a period of less than 0.10 inches of precipitation that would otherwise mask improper discharges), as required in the Dry Weather Screening Plan (Versar 2010). Dry weather screening activities included:

- Locating the outfall using County GPS coordinates (Appendix A) and recording the field GPS point of the outfall;
- Photographing the outfall;
- Inspecting the selected outfalls for physical evidence of dry weather flow;
- Performing water chemistry tests in the field if flow is present and performing cursory source tracking of suspected illicit discharge; and
- Re-inspecting and retesting all outfalls exhibiting flow the following day, if feasible.

Field teams chemically tested dry weather discharge from outfalls using Chemetrics colorimetric field test kits. Color was determined using a Lamotte color kit. Water quality parameters such as dissolved oxygen, pH, and specific conductivity were measured using a YSI or an In-situ Troll multiparameter sonde. Staff calibrated the YSI daily prior to performing field investigations. The In-situ sonde, which features an optical dissolved oxygen probe, was

calibrated less often, but at intervals not longer than manufacturer specifications. Instrument instructions and calibration procedures are detailed in Versar (2010).

At the end of each field day, GPS geodatabase files containing all screening data entered in the field using electronic datasheets (Appendix B) were uploaded to Versar's server. Field staff also uploaded digital photograph files from the field camera to Versar's server. Server electronic files were backed up daily according to Versar corporate safe data policy.

During screening, if an outfall was encountered in the field that was not included in the list and had not been previously screened, the outfall was screened and counted toward the overall target of 100 outfalls.

2.1.3 Discharge Classification

Detectable concentrations of one or more analytes were used to classify an illicit discharge. For example, the presence of chlorine can indicate either tap water leaking from a broken supply pipe or sewage. Source tracking and subsequent analyses can be used to define the discharge. The presence of residual chlorine and copper, low turbidity, but no odor can be used to classify the discharge as tap water. The presence of detergent, copper, and residual chlorine can be used to classify the discharge as wash water. Discharges with no residual chlorine, low conductivity and turbidity can be used to classify the discharge as groundwater infiltration.

The illicit discharge potential of field visited outfalls was classified using the following guideline:

1. **High Potential** to contain an illicit discharge;
   a. Samples that exceeded the thresholds for both residual chlorine & copper; or
   b. Samples that exceeded the thresholds for detergents
2. **Medium Potential** to contain an illicit discharge; Samples exceeding a single threshold for chlorine or copper.
3. **Low Potential** to contain an illicit discharge; Samples exceeding a threshold for a single parameter other than chlorine, copper, or detergents.

Results of screening tests were compared to the criteria presented in Table 2-1 to assist in identifying the possible source of a suspected improper discharge or illicit connection.

Table 2-1. Analytes, testing ranges, and action criteria for dry weather discharge screening in Harford County

Analyte	Effluent Type Indicated	Action Criterion	Minimum Detection Limit	Instrument Range	Kit or Probe
residual chlorine (Cl)	industrial, drinking water, sewage,	> 0.05 mg/l[a]	0.05 mg/l	0 to 5 mg/l	color comparator
color	sewage , washwater	> 20 color units	NA	NA	color kit
copper (Cu)	industrial	> 0.05 mg/l[a]	0.05 mg/l	0 to 10 mg/l	color comparator
phenols	dry cleaning	> 0.05 mg/l[a]	0.05 mg/l	0 to 12 mg/l	color comparator
turbidity	industrial, sewage, washwater	≥ 1000 NTU[b]	0 NTU	NA	sonde
surfactants (detergents)	sewage, washwater	> 0.25 mg/l (residential)[b]	0.15 mg/l	0.15 to 1 mg/l	single analyte meter
dissolved oxygen (DO)	sewage	NA	NA	NA	sonde
water temperature	sewage	> 23.9 C[c]	NA	NA	sonde
pH	industrial, washwater	≤ 5 (industrial)[a]	NA	0 to 14	sonde
conductivity	industrial	> 2 mS/cm^2 (industrial)[a]	NA	NA	sonde

[a] Exceedance criterion based on the test range of the field kit
[b] Brown et al. 2004
[c] Source: Baltimore County (2007)
NA: Not Applicable

2.2 COMMERCIAL AND INDUSTRIAL FACILITY INSPECTIONS

2.2.1 Facility Site Selection

The County provided a land use GIS layer that was used by Versar to identify commercial and industrial land use parcels. In general, the four-digit land use code (Table 2-2) in the GIS layer was used to narrow down the commercial and industrial parcels to a subset that was subjectively determined to have the highest pollution potential.

By County request, Versar restricted potential parcels to the vicinity of the following towns: Bel Air, Forest Hill, Churchville, and Aberdeen. The proposed target parcels were forwarded to Harford County for approval. Once approved, field maps of a scale to produce sufficient detail were prepared of the target parcels to enable field teams to distinguish features on aerials and to sketch areas of interest directly on the maps.

Table 2-2. Land use codes for selection of facilities for hot spot investigations

Land Use Code	Description
2110	Automobile sales or service establishment (towing)
2120	Gasoline service (includes associated convenience store)
2140	Consumer goods, other
2230	Scientific and technical services
3100	Manufacturing
3200	Warehouse and storage and distribution
4140	Truck and freight transportation services
7200	Machinery and heavy construction
7300	Special trade contractor (installation or repair services)
8500	Retail and industrial
8700	Other mixed uses
9600	Vacant (with building)
9700	Unimproved
9901	Outdoor storage for an adjacent property

2.2.2 Commercial and Industrial Facility Field Inspections

Versar field teams conducted hotspot site investigations (HSIs) at the target commercial / industrial parcels using methods set forth in Wright et al. (2005), and modified for Harford County. The HSIs were completed during March and April 2014. The field teams restricted their activities in evaluating parcels chosen from the desktop procedure outlined above, to what could be immediately observed from the vantage point of their vehicle (i.e., "windshield" surveys) or by performing a limited investigation on foot. For parcels containing fenced in equipment or vehicle storage areas, field teams drove through the nearby area and noted and photographed visible signs of any potential pollution problems. Field teams then parked nearby and completed HSI field data sheets. Frequently, staff announced themselves to property managers or employees and presented the letter of introduction provided by the County.

HSIs were conducted using the HSI field data sheet as a guide (Appendix C). Photo-documentation of the parcels was undertaken; any obvious pollution problems were photographed and the County was notified within two business days. Only "severe" and "confirmed" hotspots, as determined from field data sheets, were immediately reported to the County. Additionally, any waste oil tanks of 1,000 gallons and fuel oil tanks of 10,000 gallons are regulated by the Maryland Department of the Environment (MDE), and were noted if found. MDE has the right to require oil storage facilities of less than 10,000 gallons capacity to be diked if the facility is in a location likely to pollute the waters of the state.

Versar personnel completed HSI forms for each site, filling in circles to indicate potential sources of pollution at each site, and checking boxes to indicate observed pollution. The filled-in

circles and checked boxes were further tallied from the criteria observations on the HSI forms and sites were rated according to the following scale:

- Fewer than 5 circles and no boxes checked: Not a hotspot.
- 5 to 10 circles but no boxes checked: Potential hotspot.
- 10 to 15 circles and/or 1 box checked: Confirmed hotspot.
- Greater than 15 circles and/or 2 or more boxes checked: Severe hotspot.

3.0 RESULTS

3.1 OUTFALL INSPECTIONS

3.1.1 Summary of Screening Results

Field screening of Harford County MS4 outfalls was conducted October 30, 2013 to February 12, 2014. The results of IDDE dry weather screening activities are summarized in Table 3-1. Full screening data are contained in a Microsoft Access database that accompanies this report.

Table 3-1. Summary of Harford County dry weather IDDE screening results, 2013-2014

Watershed/ Subwatershed	Outfalls visited & screened	Outfalls Not Screened	Wet Outfalls Tested and Retested	Outfalls with Low Potential for Illicit Connection	Outfalls with Medium Potential for Illicit Connection	Outfalls with High Potential for Illicit Connection
Atkisson Reservoir	22	4	5	1 (color)	0	0
Bush River	7	2	2	1 (color) 1 (phenols and color)	0	0
Bynum Run	61	15	9	4 (color) 1 (phenols & color)	0	2 (detergents)
Deer Creek	3	0	0	0	0	0
Little Gunpowder Falls	1	0	1	0	0	1 (detergents)
Broad Creek	3	1	1	0	0	0
Swan Creek	3	0	2	0	0	1 (detergents)
Total	100	22	20	8	0	4

Of the 116 sites selected for investigation, 99 were visited by Versar field staff. Versar field staff also screened outfalls encountered in the field that were in the vicinity of a pre-selected outfall, but were not included in the selection list; 6 such outfalls were screened in 2013. Of the 105 investigated sites, 103 were previously documented by the County, and 2 new outfalls were found and screened. Five of the investigated sites did not contain an outfall (Table 3-2). Screening was halted before all 116 pre-selected outfalls were investigated because the required number of outfall screenings (100) had been satisfied. Of the 100 outfalls screened, 20 were found to be flowing and were therefore tested and retested. Appendix D contains maps showing the locations of the 105 investigated sites.

Table 3-2. Outfalls not screened

Outfall ID	Coordinates (NAD83 State Plane feet)		Comments
	Northing	Easting	
OF002776	678118.35	1510579.88	Not investigated
OF000057	684185.25	1499511.60	Not investigated
OF000381	682447.08	1502994.08	Not investigated
OF000669	691429.30	1488177.88	Not investigated
OF000682	695034.89	1492846.82	Not investigated
OF001125	694533.79	1485719.36	Not investigated
OF001162	689247.55	1487981.70	Not investigated
OF001309	690390.88	1501363.95	Not investigated
OF001315	688688.01	1513501.08	Not investigated
OF001604	678576.64	1500742.72	Not investigated
OF001618	678168.28	1503035.94	Not investigated
OF001630	678070.03	1505285.70	Not investigated
OF001639	678215.45	1506420.24	Not investigated
OF001705	673442.81	1503659.82	Not investigated
OF002689	695255.26	1491169.35	Not investigated
OF002692	695777.13	1490972.08	Not investigated
OF002702	691689.09	1483520.62	Not investigated
OF000705	745198.98	1496520.05	Investigated, but not found
OF001220	695445.64	1494225.82	Investigated, but not found
OF001696	675876.22	1502210.18	Investigated, but not found
OF002467	639062.62	1512459.58	Investigated, but not found
OF002779	678105.08	1510604.20	Investigated, but not found

Field staff also performed a cursory source tracking of flowing outfalls using GPS and maps of the storm drain infrastructure. Of 20 flowing sources tracked, no discrete sources were found that would indicate a problem. In many cases, the source of the flowing water was assumed to be groundwater or snow melt. The remaining 80 outfalls were found upon field inspection to be dry. The 17 selected outfalls that were not investigated, and the five outfalls that were not found are listed in Table 3-2.

Eight of the flowing outfalls had zero of the measured water quality parameters exceed their corresponding water quality criterion during both the initial and retest of discharge. Eight of the 20 outfalls were found to have low potential for illicit discharges due to phenols and/or color exceeding thresholds. Four outfalls (OF001609, OF001697, OF001764, and OF002190) were found to have a high potential for illicit discharge due to detergent results exceeding the threshold level on at least one test. All four high-potential outfalls were reported to the County shortly after their retests. No screened outfalls met the criteria for inclusion in the medium potential category.

The chemical results for the sites with water quality results exceeding low-potential criteria (on initial test and/or upon retest) are given in Table 3-3. Test results for outfalls found

to have a high potential for illicit connection are provided in Table 3-4. Secondary indicators of possible illicit discharges are also provided.

Table 3-3. Initial and retest field screening results for outfalls with a low potential for illicit connection. Only values exceeding thresholds during either the initial test or retest as detailed in Table 2-1 are shown here and in tables below.

Date of Test	**Test Description**	**Residual Chlorine** (mg/l)	**Copper** (mg/l)	**Detergents** (mg/l)	**Color** (color units)	**Conductivity** mS/cm^2	**Phenol** (mg/l)
Friends Community Park (Outfall OF000015)							
• Suds/bubbles present • Oil sheen present							
10/30/2013	Initial				**70**		**0**
10/31/2013	Retest				**30**		**0.10**
1504 Aviemore Place (Outfall OF000093)							
12/03/2013	Initial				**30**		
12/04/2013	Retest				20		
Edgewood Rd. and Old Edgewood Rd. (Outfall OF000402)							
01/31/2014	Initial				**70**		
02/11/2014	Retest				**25**		
944 Glenangus Dr. (Outfall OF000638)							
01/13/2014	Initial				**30**		
01/17/2014	Retest				**55**		
454 Red Pump Rd. (Outfall OF001208)							
11/22/2013	Initial				**25**		
11/25/2013	Retest				20		
Rte. 22 and Churchville Rd. (Outfall OF001369)							
• Cloudy Water							
10/30/2013	Initial				**70**		**0.10**
10/31/2013	Retest				5		0.05
1603 Rolling Rd. (Outfall OF001717)							
• Suds/bubbles present							
12/18/2013	Initial				**65**		
12/19/2013	Retest				**60**		
311 Rolling Knoll Rd. (Outfall OF001718)							
12/18/2013	Initial				**45**		
12/19/2013	Retest				15		

Bold = Exceeds water quality criterion

Table 3-4. Initial and retest field screening results for outfalls with a high potential for illicit connection.

Date of Test	Test Description	Residual Chlorine (mg/l)	Copper (mg/l)	Detergents (mg/l)	Color (color units)	Conductivity mS/cm^2	Phenol (mg/l)
4 Carolina Ave. (Outfall OF001609)							
12/31/2013	Initial			**0.65**			
01/02/2014	Retest			**0.35**			
115 Briarcliff Rd. (Outfall OF001697)							
12/31/2013	Initial			**0.75**			
01/02/2014	Retest			**0.50**			
45 Telestar Way (Outfall OF001764)							
• Algal growth • Sewage odor							
01/17/2014	Initial			0.15	20		
01/28/2014	Retest			**0.65**	**25**		
Old Mountain Rd. and Orsburn Lane (Outfall OF002190)							
• High conductivity from road salt							
02/11/2014	Initial			0.25	**35**	**2.330**	
02/12/2014	Retest			**0.35**	**25**	**2.739**	

Bold = Exceeds water quality criterion

3.1.2 Outfalls Requiring Maintenance

A total of 24 outfalls (or areas surrounding or downstream) were identified as requiring maintenance. The maintenance issues requiring attention are listed in Table 3-5. Examples of maintenance needs included blocked pipes, damaged pipes, and rusted pipes.

Table 3-5. Maintenance problems identified during outfall screening

Outfall ID	Maintenance Issue
OF000032	Bottom of pipe rusted
OF000042	Pipe deformed
OF000359	Chunks of concrete falling from end wall, which is actually a pipe crossing
OF000418	Flared end rusting
OF000637	Flared end piece deformed and holding water
OF000638	Part of flared end rusted away
OF000719	RCP is cracking
OF001120	Steel deck rusted through
OF001121	Pipe 50% full of sediment
OF001567	Pipe is smashed and submerged
OF001641	Pipe is rusting

Table 3-5. (Continued)

Outfall ID	Maintenance Issue
OF001654	Yard waste dumped above outfall
OF001660	Nearly blocked with sediment
OF001697	End wall cracked and becoming displaced
OF001700	End wall detached from structure
OF001706	Clogged with sticks and leaf litter
OF001707	Concrete deck undercut and cracking
OF001715	Stream bank erosion has destabilized outfall and caused partial collapse
OF001717	End wall for outfall is breaking off
OF001764	Flared end piece is detached
OF001770	Chunk of pipe missing from top
OF002190	Bottom of end wall breaking up
OF002469	Almost completely blocked with concrete
OF002822	Outfall covered by landscaping trimmings and leaves

3.2 COMMERCIAL AND INDUSTRIAL FACILITY INSPECTIONS

Facility inspections were conducted by Versar field teams from March 21, 2014 to April 23, 2014. Ten of the 50 parcels were found not to be hotspots (Table 3-6). A total of 33 parcels were found to be "potential" hotspots (Table 3-7). The remaining seven parcels were graded as "confirmed" hotspots (Table 3-8). Two of the confirmed hotspot parcels are owned by the same company (Maryland Portable Concrete). The business located at 522 Underwood Lane (Barlow Well Drilling) was found to be a confirmed hotspot and was reported to the County on March 26, 2014. The business located at 1467 Rock Spring Rd. (Sunoco Gas Station) was found to be a confirmed hotspot and was reported to the County on April 26, 2014. The businesses located at 1540 S Philadelphia Blvd. (Maryland Portable Concrete), 1426 S. Philadelphia Rd. (H.S. Auto), and 3480 Churchville Rd. (Central Cycle and Flaming Dragon Tattoo) were found to be confirmed hotspots and were reported to the County on April, 24, 2014. The business located at 803 Baltimore Pike (Car and Truck Auction of MD) was found to be a confirmed hotspot and was reported to the County on April 28, 2014. The businesses located at 3480 Churchville Rd. and 1426 S. Philadelphia Rd. exhibited evidence of active pollution problems.

A list of completed facility inspection results and pollution sources identified appears in Tables 3-6 through 3-8. An "X" appearing within these tables denotes a potential source of pollution noted within a specific hotspot category (e.g. Vehicle Operations). A bold "X" denotes observed pollution noted within a specific hotspot category. Appendix E contains maps that show the location of sites inspected in 2013 and in previous years.

Table 3-6. Inspection results for facilities found to be not a hotspot

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
2062747	1219 S. Philadelphia Blvd.	Aberdeen	Chesapeake Motors	4/17/2014	X			X		X	Approximately 12 vehicles stored outside.
2063727	Spesutia Rd. and S. Philadelphia Blvd.	Aberdeen	Mobile home storage	4/23/2014	X		X			X	Mobile homes and a few vehicles stored on site.
3030431	12 East Jarrettsville Rd.	Forest Hill	Multiple Houses and Businesses	3/24/2014	X	X		X		X	Trash stored outdoors on grassy area.
3034992	Bynum Rd.	Forest Hill	Single building on abandoned parcel	3/26/2014		X		X		X	Concrete and gravel stored on asphalt outside.
3036502	124 Industry Ln.	Forest Hill	Unimproved Lot	3/21/2014		X					Some gravel and asphalt piles in grassy area.
3058719	805 Baltimore Pike	Bel Air	Auto Auction repair garage sublot	4/9/2014	X			X			Approximately 100 vehicles stored and repaired outdoors.
3069214	727 Baltimore Pike	Bel Air	Section of Bel Air Auto Auction Parking lot	4/9/2014	X			X			Approximately 20 vehicles stored on lot.
3181871	124 Industry Ln.	Forest Hill	Multiple Businesses	3/21/2014		X	X	X			Dumpster located near storm drain.
3190072	23 East Jarrettsville Rd.	Forest Hill	Nadias Place	3/24/2014	X	X	X	X			Overflowing dumpsters on site.
3371514	135 Industry Ln.	Forest Hill	Unimproved Lot	3/21/2014				X			Just a paved lot is present

Table 3-7. Inspection results for facilities found to be a potential hotspot

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
2041979	1545 S. Philadelphia Blvd.	Aberdeen	Auto Smart Sales and Service	4/17/2014	X	X	X				Approximately 50 vehicles repaired, washed, and stored outside.
2041987	1318 Loflin Rd.	Aberdeen	Riverside Automotive	4/17/2014	X	X		X		X	Approximately 30 vehicles stored and repaired outside.
2055112	1319 S. Philadelphia Blvd.	Aberdeen	B&T Services Towing and RV Repair	4/17/2014	X	X	X	X		X	Approximately 40 vehicles stored, repaired, and maintained outside.
2057395	1318 S Philadelphia Blvd.	Aberdeen	Boarded Business	4/17/2014	X		X	X		X	A lot of trash dumped in overgrown area.
2057409	1316 S. Philadelphia Blvd.	Aberdeen	Holzhauseers Auto Service	4/17/2014	X	X		X			55 gallons drums and car parts stored outside.
2057948	1205 S. Philadelphia Blvd.	Aberdeen	Forty Liquors	4/17/2014		X		X		X	Propane cylinders stored outside.
2059967	1239 S. Philadelphia Blvd	Aberdeen	Norms Auto Sales	4/23/2014	X	X		X		X	Approximately 10 vehicles stored outside.
2059975	1239 S. Philadelphia Blvd	Aberdeen	Storage from business adjacent to Norms Auto	4/23/2014	X	X	X	X		X	Dumpster staining on site.
2060361	1321 Loflin Rd.	Aberdeen	Cars for Less	4/17/2014	X		X	X			Outside washing of vehicles, but runoff flows to SW pond.
2062062	1233 S. Philadelphia Blvd	Aberdeen	Carriers Auto and Truck Repair	4/23/2014	X	X		X			Approximately 40 vehicles stored, maintained and repaired outside.
2064448	1526 S. Philadelphia Blvd	Aberdeen	Horne Concrete	4/16/2014	X			X		X	Approximately 5 vehicles stored outdoors.
2065150	1219 Old Philadelphia Rd.	Aberdeen	River City Truck Tire	4/17/2014	X	X	X	X			Approximately 6 trucks and 20 trailers stored, maintained and repaired outside.
2067854	1542 S. Philadelphia Rd.	Aberdeen	Maryland Portable Concrete	4/16/2014	X	X	X	X			Outdoor vehicle washing, but SW pond treats site runoff
2072467	1239 S. Philadelphia Blvd	Aberdeen	Norms Salvage Yard	4/23/2014	X	X		X		X	Approximately 200 vehicles stored outside.

Table 3-7. (Continued)

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Storm-water Infra-structure	Notes
2074605	1540 S. Philadelphia Blvd	Aberdeen	Maryland Portable Concrete parking lot	4/16/2014	X	X	X	X			Approximately 20 vehicles stored and washed outside.
3028305	1114 Bel Air Rd.	Bel Air	House with Detached Garage	4/2/2014	X	X	X	X		X	Uncovered fueling areas on site.
3029956	728 Bel Air Rd	Bel Air	Bel Air Auto Auction	4/2/2014	X	X	X	X		X	Approximately 10 vehicles stored on lot.
3035026	505 Granary Rd.	Forest Hill	Meyers and Son	3/26/2014	X	X	X	X			Approximately 5 vehicles stored outside.
3037681	731 Baltimore Pike	Bel Air	Harford Rental	4/3/2014	X	X		X		X	Approximately 30 vehicles stored and fueled on site. Parking lot is in bad condition.
3043576	2403 Rocks Rd.	Forest Hill	Forest Hill Car Care	3/24/2014	X	X	X	X		X	Minor staining around cars stored outdoors.
3045242	3485 Churchville Rd	Aberdeen	Adams Jeep	4/14/2014	X	X	X	X		X	Approximately 70 vehicles stored outdoors.
3050742	732 Baltimore Pike	Bel Air	BSC Bel Air Auto Auction and CR Imaging	4/3/2014	X	X		X		X	Approximately 15 vehicles stored on site.
3054470	722 Baltimore Pike	Bel Air	Village Automotive	4/2/2014	X	X	X	X		X	Evidence of outdoor car washing, sudsy water. 55 gallon drums present outdoors.
3061922	500 East Bynum Rd.	Forest Hill	Multiple Businesses	3/26/2014	X	X	X	X		X	Retrofit opportunity in grassy area along west side of property.
3065782	3045 Churchville Rd.	Churchville	Churchville Auto Body	4/14/2014	X	X	X	X		X	Approximately 20 vehicles stored outside. 55 gallon drum stored outside.
3065855	202 Calvary Rd.	Churchville	Mehindra Tractors	4/14/2014	X	X	X	X	X	X	Large unmarked liquid tanks stored outside.

Table 3-7. (Continued)

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Storm-water Infra-structure	Notes
3066959	2839 Churchville Rd.	Churchville	Churchville Automotive Diagnostic Center	4/14/2014	X	X		X		X	Approximately 20 vehicles stored outside. 55 gallon drum and car parts stored outside.
3145220	709 Bel Air Rd.	Bel Air	Wawa	4/2/2014	X		X	X	X		Overflowing dumpsters on site.
3179338	320 Bynum	Forest Hill	BSR Automotive Truck Equipment	3/26/2014	X	X	X	X		X	Approximately 10 vehicles stored and repaired outside.
3190110	809 Baltimore Pike	Bel Air	Auto Auction repair garage	4/9/2014	X	X		X		X	Approximately 10 vehicles stored and repaired outdoors.
3194388	1613 Robin Circle	Forest Hill	Multiple Businesses	3/26/2014	X	X	X	X		X	Granite counter-tops stored outside.
3253783	119 Industry Ln.	Forest Hill	Bull Steel	3/21/2014		X		X		X	Some rusting visible near outdoor storage area.
3351513	322 Bynum Rd.	Forest Hill	Humpty Dumpsters	4/2/2014	X	X	X	X		X	A large amount of solid and liquid material stored in grassy area.

Table 3-8. Inspection results for facilities found to be a confirmed hotspot

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
2064456	1530 S. Philadelphia Blvd.	Aberdeen	Maryland Portable Concrete fueling area	4/16/2014	X	X		X		X	New fueling tanks do not have secondary containment and are close to inlets.
2068192	1528 S. Philadelphia Blvd.	Aberdeen	Maryland Portable Concrete storage area	4/16/2014	X	X	X	X		X	Concrete rubble sitting next to stream.
2087847	1426 S. Philadelphia Rd.	Aberdeen	H.S. Auto	4/16/2014	X	X	**X**	X		X	A lot of trash sitting next to stream, and falling into stream
3027414	1467 Rock Spring Rd.	Bel Air	Sunoco Gas Station	4/2/2014	X	X	X	X		X	A few vehicles stored outdoors; propane tanks and oil drum stored on impervious surface and close to storm drain.
3028712	522 Underwood Ln.	Bel Air	Barlow Well Drilling	3/24/2014	X	X	X	X	X	X	Numerous liquid containers stored on impervious surface.
3058727	803 Baltimore Pike	Bel Air	Car and Truck Auction of Maryland	4/9/2014	X	X	X	X			Wash water flowing into storm drain. Gas cans scattered around site.
3059634	3480 Churchville Rd	Aberdeen	Central Cycle and Flaming Dragon Tattoo	4/14/2014	**X**	X	X	X		X	Uncovered outdoor fueling area present and showing signs of spillage.

Note: Bold "X" denotes observed pollution

4.0 CONCLUSIONS

During 2013, Harford County selected 116 outfall locations for investigation to comply with the Illicit Discharge Monitoring Program and meet NPDES permit requirements. Successful screening of 100 outfalls during 2013-2014 field investigations yielded four outfalls with a high potential for illicit connection based on the dry weather screening protocols. Source tracking, however, did not identify a probable source for any of these outfalls outside of flow from snow melt and groundwater. A total of 20 outfalls had dry weather flows and were tested for water quality indicators. Inspections identified maintenance needs at 24 of the 100 outfalls.

Harford County conducted hotspot investigations at 50 commercial and industrial facilities in the Bel Air, Forest Hill, Churchville and Aberdeen communities within the permit jurisdiction. Seven confirmed hotspots were identified, and two of the investigated parcels showed signs of active pollution.

5.0 REFERENCES

Baltimore County. 2007. National Pollutant Discharge Elimination System (NPDES) Annual Report. Section 5 - Illicit Connections Program. Baltimore County, Maryland.

Brown, E., D. Caraco, and R. Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center for Watershed Protection, Ellicott City, MD. October.

Versar, Inc. 2010. Harford County Illicit Discharge Monitoring Program: Site Selection, Screening, and Quality Assurance Protocols. Prepared by Versar, Inc. for Harford County Department of Public Works, Division of Highways and Water Resources, Bel Air, MD. November.

Wright, T., C. Swann, K. Cappiella, and T. Schueler. 2005. Unified Subwatershed and Site Reconnaissance: A User's Manual, Version 2.0. Center for Watershed Protection, Ellicott City, MD. February.

APPENDIX A

OUTFALLS SCREENED DURING 2013-2014

Table A-1. Harford County dry outfalls screened, 2013-2014

Outfall ID	Initial Inspection Date	Coordinates (NAD83 State Plane feet)		Outfall ID	Initial Inspection Date	Coordinates (NAD83 State Plane feet)	
		Northing	Easting			Northing	Easting
OF000026	11/15/2013	693034.46	1484782.11	OF001631	12/4/2013	678717.40	1506000.39
OF000035	11/15/2013	689688.30	1485499.06	OF001632	12/4/2013	678766.19	1505337.77
OF000036	11/15/2013	691819.78	1483890.73	OF001633	12/4/2013	679807.74	1505219.47
OF000042	11/22/2013	686010.17	1486296.37	OF001636	12/3/2013	679394.07	1506831.19
OF000406	11/15/2013	692328.51	1486894.32	OF001637	12/3/2013	679063.01	1506532.28
OF000407	11/15/2013	692310.81	1486912.91	OF001641	12/4/2013	678058.88	1507091.86
OF000418	11/22/2013	691214.29	1486958.01	OF001647	12/4/2013	678588.16	1507654.45
OF000421	2/12/2014	697527.94	1489071.58	OF001660	12/4/2013	679815.00	1508961.52
OF000422	2/12/2014	698070.92	1490155.49	OF001663	12/4/2013	678705.50	1508803.84
OF000507	2/11/2014	735913.56	1495361.69	OF001668	2/11/2014	673069.89	1493452.85
OF000637	1/13/2014	674351.70	1507998.86	OF001694	12/31/2013	675667.87	1501170.94
OF000639	1/13/2014	674949.13	1508108.55	OF001700	12/31/2013	673324.58	1502582.06
OF000640	1/13/2014	675215.07	1507550.28	OF001706	12/18/2013	673146.32	1503554.64
OF000653	1/13/2014	670340.57	1506238.76	OF001707	12/18/2013	676084.63	1504109.38
OF000674	11/21/2013	691523.42	1486061.19	OF001709	12/19/2013	674427.39	1504330.84
OF000677	11/15/2013	692407.58	1484540.87	OF001711	12/19/2013	674236.28	1504573.05
OF000683	2/12/2014	695908.21	1492212.69	OF001712	12/18/2013	673698.95	1504554.08
OF000719	2/11/2014	736755.00	1494446.18	OF001713	12/18/2013	673881.69	1505504.57
OF001120	10/30/2013	694474.58	1484726.91	OF001714	12/18/2013	673461.68	1505368.67
OF001121	10/30/2013	694510.27	1484810.71	OF001715	12/19/2013	674383.32	1505235.86
OF001153	11/15/2013	691169.21	1484202.94	OF001716	12/18/2013	674610.99	1505430.36
OF001227	2/12/2014	693224.43	1493659.88	OF001725	12/3/2013	680929.41	1507495.92
OF001341	11/14/2013	688099.93	1516344.24	OF001735	12/3/2013	680162.05	1507229.52
OF001344	11/14/2013	686680.99	1516486.99	OF001736s	12/4/2013	679468.74	1509066.16
OF001531	2/11/2014	675365.37	1491669.44	OF001736w	12/4/2013	679482.74	1509059.65
OF001555	2/12/2014	683165.58	1500956.88	OF001770	1/17/2014	678567.32	1554058.06
OF001567	12/3/2013	682917.93	1502625.07	OF001859	1/2/2014	671207.75	1505323.49
OF001579	12/3/2013	683508.19	1506201.23	OF001947	1/2/2014	670872.32	1505106.64
OF001580	12/3/2013	680143.32	1506275.03	OF001988	1/2/2014	671579.68	1505712.81
OF001584	12/3/2013	681101.01	1507625.48	OF002302	1/28/2014	659834.41	1537212.56
OF001585	12/3/2013	681349.99	1507815.47	OF002459	1/31/2014	637376.14	1510419.68
OF001598	11/25/2013	677495.70	1499265.66	OF002469	1/31/2014	639548.60	1514592.84
OF001599	11/25/2013	678450.07	1499631.32	OF002551	11/15/2013	692584.76	1486911.38
OF001608	12/31/2013	676986.05	1501516.71	OF002651	11/15/2013	692424.66	1487036.28
OF001610	12/19/2013	676145.28	1501946.83	OF002656	12/3/2013	683653.65	1507703.00
OF001611	12/19/2013	676116.55	1501925.46	OF002690	2/12/2014	695432.11	1491186.38
OF001622	11/25/2013	678649.54	1504611.26	OF002691	10/30/2013	695561.39	1491376.06
OF001623	12/18/2013	678960.62	1504860.41	OF002777	12/4/2013	677277.04	1509883.75
OF001624	12/18/2013	678944.24	1504888.97	OF002814	2/12/2014	696896.35	1490862.99
OF001625	12/18/2013	677715.29	1504934.92	OF002822	1/2/2014	670499.52	1500624.47

Table A-2. Harford County wet outfalls screened, 2013-2014

Outfall ID	Initial Inspection Date	Coordinates (NAD83 State Plane feet)		Outfall ID	Initial Inspection Date	Coordinates (NAD83 State Plane feet)	
		Northing	Easting			Northing	Easting
OF000402	1/31/2014	1512447.66	638052.62	OF001764	1/17/2014	1554769.07	681059.31
OF002190	2/11/2014	1492984.59	653513.53	OF000093	12/3/2013	1508141.39	681669.32
OF000638	1/13/2014	1508078.78	674241.33	OF001208	11/22/2013	1487190.22	686561.65
OF001718	12/18/2013	1506589.97	674262.74	OF001369	10/30/2013	1513530.64	688887.99
OF001717	12/18/2013	1505439.96	674574.51	OF000032	11/15/2013	1485549.26	689469.07
OF001697	12/31/2013	1502721.54	674850.88	OF000034	11/21/2013	1485662.70	689711.50
OF000106	1/13/2014	1507586.52	675423.26	OFn112113a	11/21/2013	1486139.00	691434.44
OF001609	12/31/2013	1501911.80	676691.69	OF000675	11/21/2013	1486074.91	691535.70
OF001597	11/25/2013	1499794.78	677185.29	OF000015	10/30/2013	1486110.53	698682.23
OF000359	1/28/2014	1554430.39	680514.79	OF000747	2/11/2014	1502636.23	729779.84

Table A-3. Harford County outfalls not found, 2013-2014

Outfall ID	Initial Inspection Date	Coordinates (NAD83 State Plane feet)		Outfall ID	Initial Inspection Date	Coordinates (NAD83 State Plane feet)	
		Northing	Easting			Northing	Easting
OF000705	2/11/2014	745200.92	1496520.85	OF002467	1/31/2014	639070.26	1512464.10
OF001220	10/30/2013	695473.53	1494196.05	OF002779	12/4/2013	678105.08	1510604.20
OF001696	12/31/2013	675882.33	1502204.15				

APPENDIX B

DATA SHEETS
FOR DRY WEATHER SCREENING

ILLICIT DISCHARGE INSPECTION FORM
HARFORD COUNTY, MARYLAND
(PAGE 1 OF 2)

Outfall ID:		**Watershed Name:**	
Initial Assessment			
Date:		Time:	
Inspectors:		Date of Last Rain:	
Air Temperature (^{o}C):		Rainfall Amount (in.):	
Is flow observed?	Yes No	*(if present, complete page 2 and a follow-up assessment)*	
Outfall Description			
Type:		Height:	
Shape:		Width:	
Material:		Additional components *(circle applicable)*:	end wall wing walls flared end
			concrete deck pipes manhole
Outfall Location			
GPS northing:		General land use *(circle one)*:	Rural Residential Urban
GPS easting:		Maryland Dept. of Planning land use designation *(circle one)*:	11 - Low Density 12 - Medium Density
GPS unit:			13 - High Density 14 - Commercial
			15 - Industrial 16 - Institutional
Photo ID's:			18 - Urban Open Space
		Nearby address / intersection / utility pole:	
Structural Conditions	*(circle one)*		
	None	Moderate	Severe
Recommend referral for repair:	Yes	No	
Other comments:			
Other Outfall Conditions	*(circle one)*		
	None	Moderate	Severe
Erosion at outfall:			
Outfall submergence (in):			
Other comments:			
Vegetative Condition Below Outfall	*(circle one)*		
	Normal growth (natural environment)	Excessive growth	Inhibited growth
Other comments:			
Deposits / Stains / Algal Growth	*(circle applicable)*		
	None	Oily	Excessive algal growth
	Sediment	Other (describe below)	Excessive bacterial growth
Other comments:			
Field Notes / Visual Observances			

ILLICIT DISCHARGE INSPECTION FORM
HARFORD COUNTY, MARYLAND
(PAGE 2 OF 2)

Outfall ID:		**Watershed Name:**	
Initial Assessment		**Follow-up Assessment** *(typically within 24 hours)*	
(Same as information from Page 1 of 2)		*(Do not complete if no flow is observed)*	
Date:		Date:	
Time:		Time:	
Inspectors:		Inspectors:	
Date of Last Rain:		Date of Last Rain:	
Rainfall Amount (in.):		Rainfall Amount (in.):	
Air Temperature (^{0}C):		Air Temperature (^{0}C):	
Dry-Weather Flow Information			
Estimated Flow rate: Trickle Moderate Substantial			
Measureable Flow rate (cfs or liters/min): *(Q = area X velocity in ft per second)*		Measurable Flow rate (cfs): *(Q = area X velocity in ft per second)*	
Flow depth (inches):		Flow depth (inches):	
Water Quality - Visual and Smell Indicators			
Water color:	clear brown gray green yellow red	Water color:	clear brown gray green yellow red
	Other:		Other:
Clarity / turbidity:	clear cloudy opaque	Clarity / turbidity:	clear cloudy opaque
	Other:		Other:
Floatables:	none oil sheen trash toilet paper fecal matter	Floatables:	none oil sheen trash toilet paper fecal matter
	Other debris:		Other debris:
Detergents / surfactants:	none suds/bubbles	Detergents / surfactants:	none suds/bubbles
	Color:		Color:
Odor:	none sewage chlorine oil/gas rancid-sour sulfur/rotten eggs	Odor:	none sewage chlorine oil/gas rancid-sour sulfur/rotten eggs
	Other:		Other:
Field Measurements			
Parameter (Units / Detection Limit)	***Measured Value:***	***Parameter (Units / Detection Limit)***	***Measured Value:***
(Lamotte meter)		*(Lamotte meter)*	
Turbidity (0-400 FTU / 0):		Turbidity (0-400 FTU / 0):	
Color (0-1000 color units / 0):		Color (0-1000 color units / 0):	
Phenols (0.00-6.00 ppm / 0):		Phenols (0.00-6.00 ppm / 0):	
Copper (0-6.00 ppm / 0):		Copper (0-6.00 ppm / 0):	
Detergents/surfactants (0.5-8.0 ppm / 0.5):		Detergents/surfactants (0.5-8.0 ppm / 0.5):	
Residual chlorine (0.00-4.00 ppm / 0):		Residual chlorine (0.00-4.00 ppm / 0):	
(Oakton meter)		*(Oakton meter)*	
DO (0.01-15.0 mg/L / 0.01):		DO (0.01-15.0 mg/L / 0.01):	
Temperature, H_20 (0-50° Celsius / 0.1):		Temperature, H_20 (0-50° Celsius / 0.1):	
pH (0.01-15.00 pH units / 0.01):		pH (0.01-15.00 pH units / 0.01):	
(YSI meter)		*(YSI meter)*	
Conductivity (uS/cm/10^6):		Conductivity (uS/cm/10^6):	
Additional Field Notes / Visual Observances			

HARFORD COUNTY, MD – DRY WEATHER DISCHARGE TRACK DOWN

Subwatershed:	Outfall ID:
Date (MM/DD/ YY): __ __ / __ __ / 20 __ __	Track Down Method: ☐ Move up trunk ☐ Split trunk
Investigators:	***New Branch Series, Starting with Junction:***
ADC Map Page/Grid: __ __ / __ __ __	Structure ID:
	Structure Type: __ __

	Structure ID	Structure Type M – Manhole CI - Curb Inlet YD- Yard Drain Other:	Time Visited	Flow (Y/N)	Analyte: _____ Concentration (Units: _____)	Analyte: _____ Concentration (Units: _____)	Comments (If junction, fill out new sheet for each branch of network)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

Stormdrain Network: Plan View Diagram (for Split Trunk or New Branch Series)

Suspected Outfall Source:	☐ Trace Lost ☐ Unknown Parcel ID Number: _____
Suspected Source Type:	☐ Tap Water ☐ Sewage ☐ Wash Water ☐ Industrial ☐ Unknown
Comment on Suspected Source:	

APPENDIX C

DATA SHEETS
FOR FACILITY INSPECTIONS

Hotspot Site Investigation **HSI**

WATERSHED:	**SUBWATERSHED:**	**UNIQUE SITE ID:**	
DATE: ___/___/_____	**ASSESSED BY:**	**CAMERA ID:**	**PIC#:**
MAP GRID:	**LAT** ___°_____'_____" **LONG** ___°_____'____"		**LMK #**

A. SITE DATA AND BASIC CLASSIFICATION

Name and Address: _____

_____

_____

SIC code (if available): _____

NPDES Status: ☐ Regulated ☐ Unregulated ☐ Unknown

Category: ☐ Commercial ☐ Industrial ☐ Institutional ☐ Municipal ☐ Transport-Related

Miscellaneous ☐ Golf Course ☐ Marina ☐ Animal Facility

Basic Description of Operation: _____

	INDEX*
B. VEHICLE OPERATIONS ☐ **N/A** *(Skip to part C)*	**Observed Pollution Source?** ☐
B1. Types of vehicles: ☐ Fleet vehicles ☐ School buses ☐ Other: _____	
B2. Approximate number of vehicles: _____	
B3. Vehicle activities *(circle all that apply)*: Maintained Repaired Recycled Fueled Washed Stored	○
B4. Are vehicles stored and/or repaired outside? ☐ Y ☐ N ☐ Can't Tell Are these vehicles lacking runoff diversion methods? ☐ Y ☐ N ☐ Can't Tell	○
B5. Is there evidence of spills/leakage from vehicles? ☐ Y ☐ N ☐ Can't Tell	○
B6. Are uncovered outdoor fueling areas present? ☐ Y ☐ N ☐ Can't Tell	○
B7. Are fueling areas directly connected to storm drains? ☐ Y ☐ N ☐ Can't Tell	○
B8. Are vehicles washed outdoors? ☐ Y ☐ N ☐ Can't Tell Does the area where vehicles are washed discharge to the storm drain? ☐ Y ☐ N ☐ Can't Tell	○
C. OUTDOOR MATERIALS ☐ **N/A** *(Skip to part D)*	**Observed Pollution Source?** ☐
C1. Are loading/unloading operations present? ☐ Y ☐ N ☐ Can't Tell If yes, are they uncovered *and* draining towards a storm drain inlet? ☐ Y ☐ N ☐ Can't Tell	○
C2. Are materials stored outside? ☐ Y ☐ N ☐ Can't Tell If yes, are they ☐ Liquid ☐ Solid Description: _____ Where are they stored? ☐ grass/dirt area ☐ concrete/asphalt ☐ bermed area	○
C3. Is the storage area directly or indirectly connected to storm drain (circle one)? ☐ Y ☐ N ☐ Can't Tell	○
C4. Is staining or discoloration around the area visible? ☐ Y ☐ N ☐ Can't Tell	○
C5. Does outdoor storage area lack a cover? ☐ Y ☐ N ☐ Can't Tell	○
C6. Are liquid materials stored *without* secondary containment? ☐ Y ☐ N ☐ Can't Tell	○
C7. Are storage containers missing labels or in poor condition (rusting)? ☐ Y ☐ N ☐ Can't Tell	○
D. WASTE MANAGEMENT ☐ **N/A** *(Skip to part E)*	**Observed Pollution Source?** ☐
D1. Type of waste *(check all that apply)*: ☐ Garbage ☐ Construction materials ☐ Hazardous materials	○
D2. Dumpster condition (*check all that apply)*: ☐ No cover/Lid is open ☐ Damaged/poor condition ☐ Leaking or evidence of leakage (stains on ground) ☐ Overflowing	○
D3. Is the dumpster located near a storm drain inlet? ☐ Y ☐ N ☐ Can't Tell If yes, are runoff diversion methods (berms, curbs) lacking? ☐ Y ☐ N ☐ Can't Tell	○
E. PHYSICAL PLANT ☐ **N/A** *(Skip to part F)*	**Observed Pollution Source?** ☐
E1. Building: Approximate age: _____ yrs. Condition of surfaces: ☐ Clean ☐ Stained ☐ Dirty ☐ Damaged Evidence that maintenance results in discharge to storm drains (staining/discoloration)? ☐ Y ☐ N ☐ Don't know	○ ○

*Index: ○ denotes potential pollution source; ☐ denotes confirmed polluter (evidence was seen)

Hotspot Site Investigation **HSI**

E2. Parking Lot: Approximate age _____ yrs. Condition: ☐ Clean ☐ Stained ☐ Dirty ☐ Breaking up Surface material ☐ Paved/Concrete ☐ Gravel ☐ Permeable ☐ Don't know	○
E3. Do downspouts discharge to impervious surface? ☐ Y ☐ N ☐ Don't know ☐ None visible Are downspouts directly connected to storm drains? ☐ Y ☐ N ☐ Don't know	○
E4. Evidence of poor cleaning practices for construction activities (stains leading to storm drain)? ☐ Y ☐ N ☐ Can't Tell	○
F. TURF/LANDSCAPING AREAS ☐ **N/A** *(skip to part G)*	**Observed Pollution Source?**
F1. % of site with: Forest canopy ____% Turf grass _____ % Landscaping ____% Bare Soil ____%	○
F2. Rate the turf management status: ☐ High ☐ Medium ☐ Low	○
F3. Evidence of permanent irrigation or "non-target" irrigation ☐ Y ☐ N ☐ Can't Tell	○
F4. Do landscaped areas drain to the storm drain system? ☐ Y ☐ N ☐ Can't Tell	○
F5. Do landscape plants accumulate organic matter (leaves, grass clippings) on adjacent impervious surface? ☐ Y ☐ N ☐ Can't Tell	○
G. STORM WATER INFRASTRUCTURE ☐ **N/A** *(skip to part H)*	**Observed Pollution Source?**
G1. Are storm water treatment practices present? ☐ Y ☐ N ☐ Unknown If yes, please describe: _____	○
G2. Are private storm drains located at the facility? ☐ Y ☐ N ☐ Unknown Is trash present in gutters leading to storm drains? If so, complete the index below.	○

Index Rating for Accumulation in Gutters

	Clean				Filthy
Sediment	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Organic material	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Litter	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

G3. Catch basin inspection – Record SSD Unique Site ID here: _____ Condition: ☐ Dirty ☐ Clean

H. INITIAL HOTSPOT STATUS - INDEX RESULTS

☐ Not a hotspot (fewer than 5 circles and no boxes checked) ☐ Potential hotspot (5 to 10 circles but no boxes checked)
☐ Confirmed hotspot (10 to 15 circles and/or 1 box checked) ☐ Severe hotspot (>15 circles and/or 2 or more boxes checked)

Follow-up Action:
- ☐ Refer for immediate enforcement
- ☐ Suggest follow-up on-site inspection
- ☐ Test for illicit discharge
- ☐ Include in future education effort
- ☐ Check to see if hotspot is an NPDES non-filer
- ☐ Onsite non-residential retrofit
- ☐ Pervious area restoration; complete PAA sheet and record Unique Site ID here: _____
- ☐ Schedule a review of storm water pollution prevention plan

Notes:

APPENDIX D

MAPS OF OUTFALLS SCREENED DURING 2013-2014

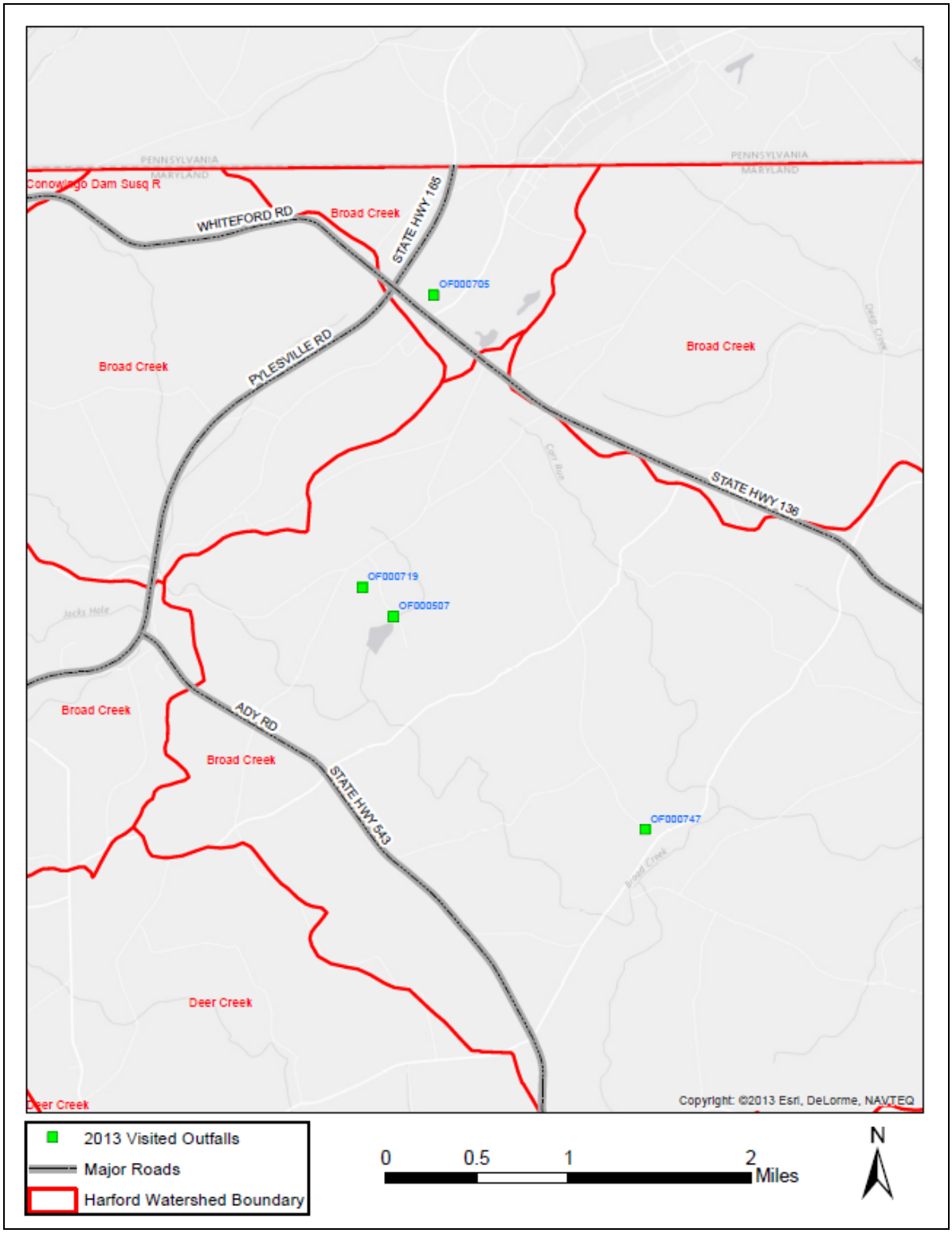

Figure D-1. Map of outfalls visited and screened in the Whiteford area, 2013-2014

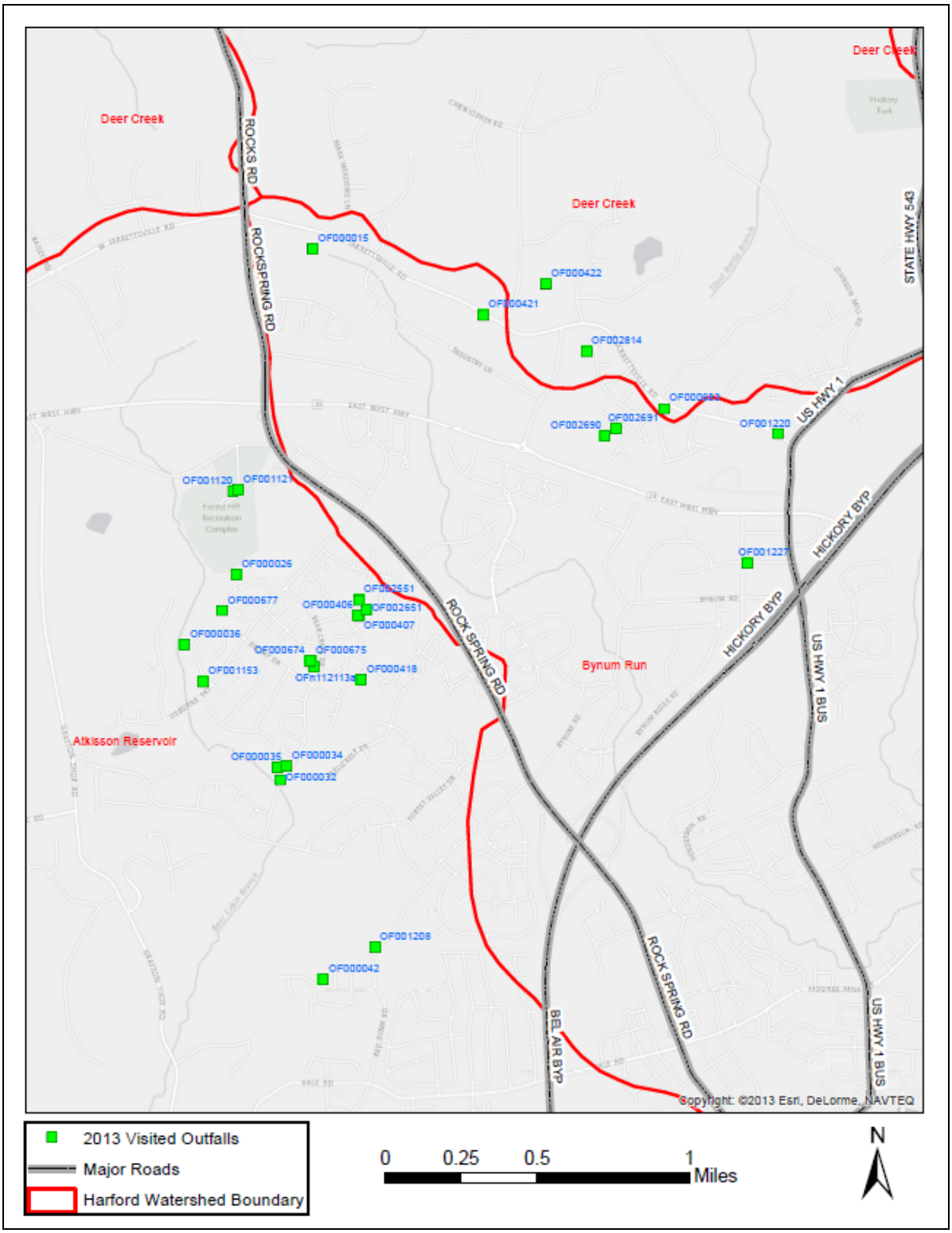

Figure D-2. Map of outfalls visited and screened in the Forest Hill area, 2013-2014

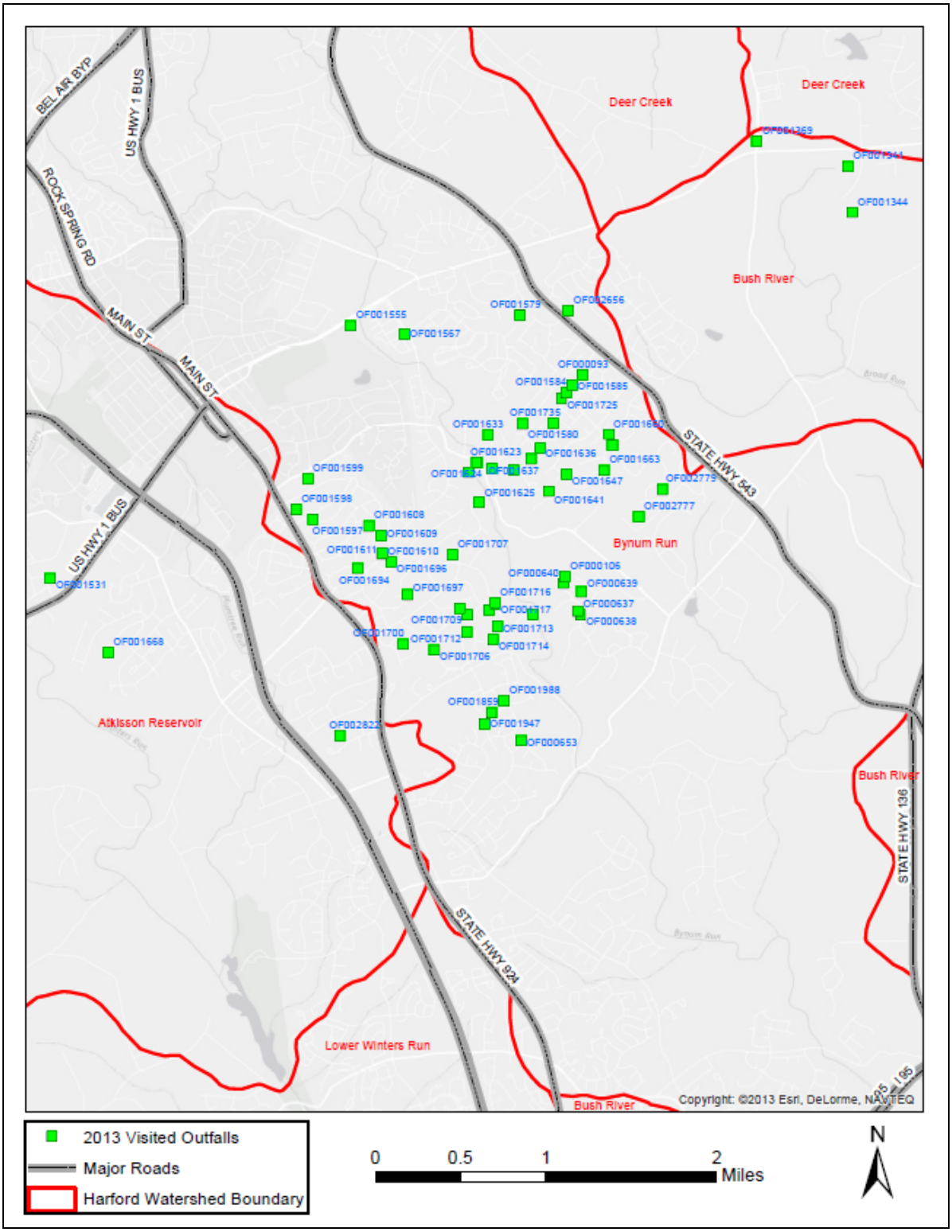

Figure D-3. Map of outfalls visited and screened in the Bel Air area, 2013-2014

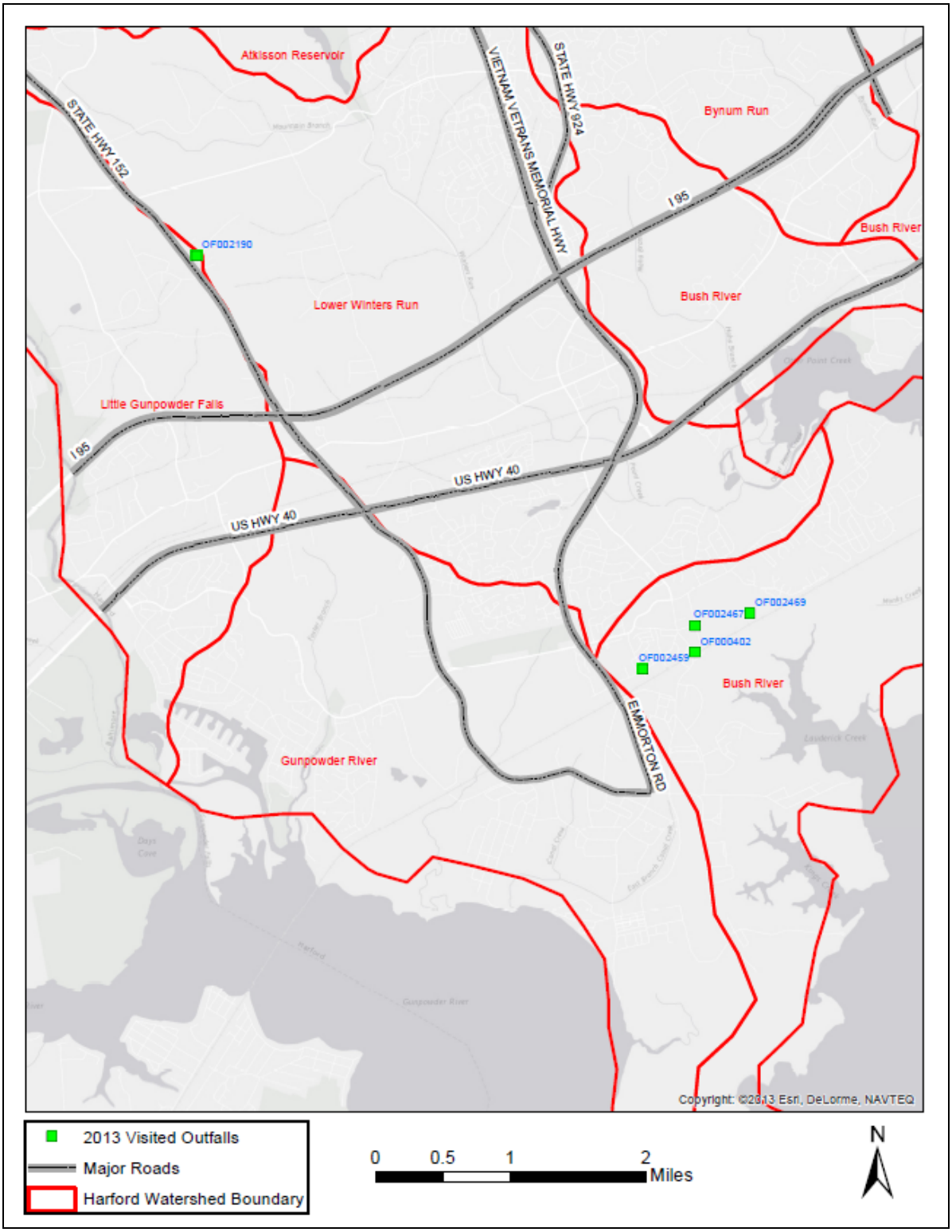

Figure D-4. Map of outfalls visited and screened in the Edgewood area, 2013-2014

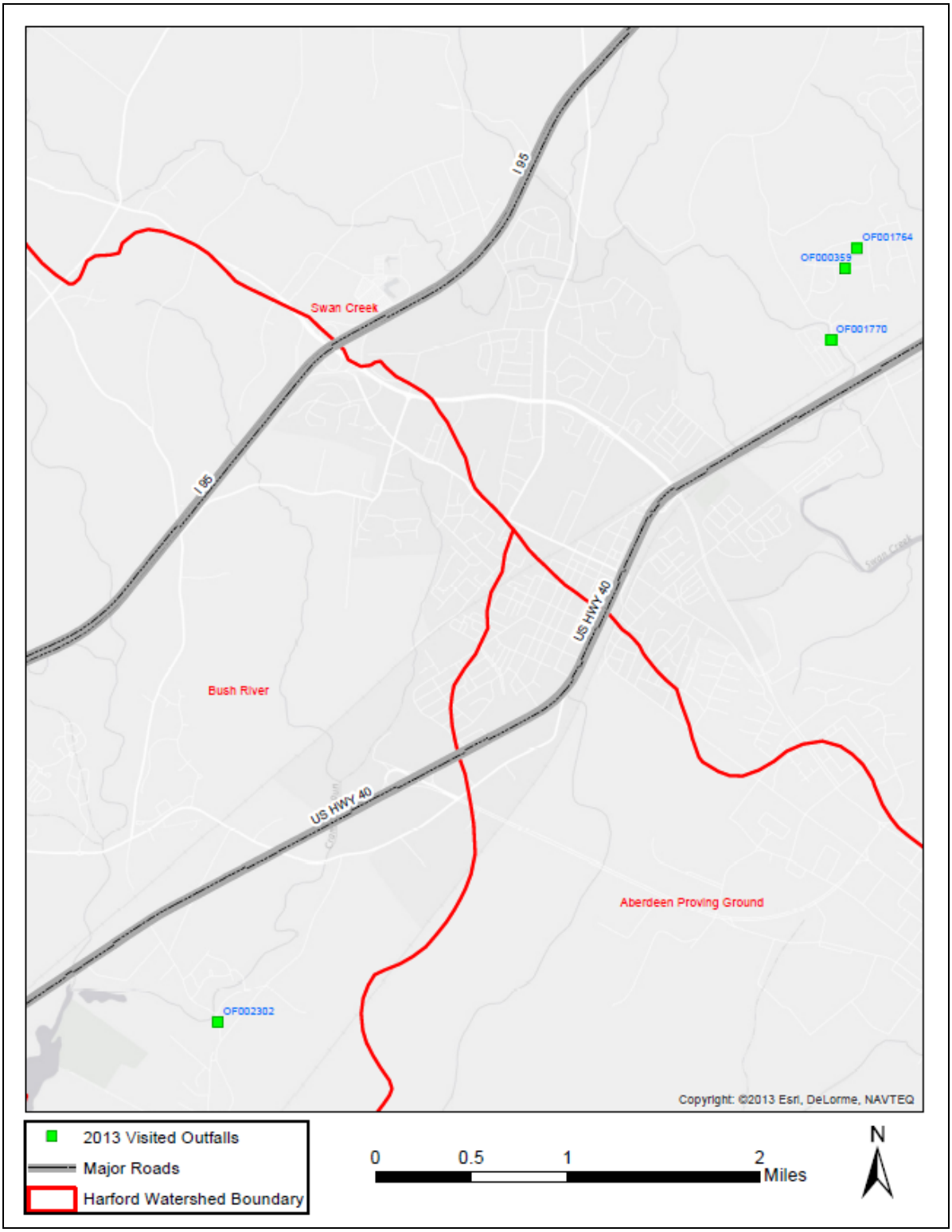

Figure D-5. Map of outfalls visited and screened in the Aberdeen area, 2013-2014

APPENDIX E

MAPS OF FACILITIES INSPECTED DURING 2013-2014

Sites Inspected 2013

Previously Inspected Sites

0 0.25 0.5 1 Miles

N

Figure E-1. Sites inspected in Forest Hill area (West), 2013-2014

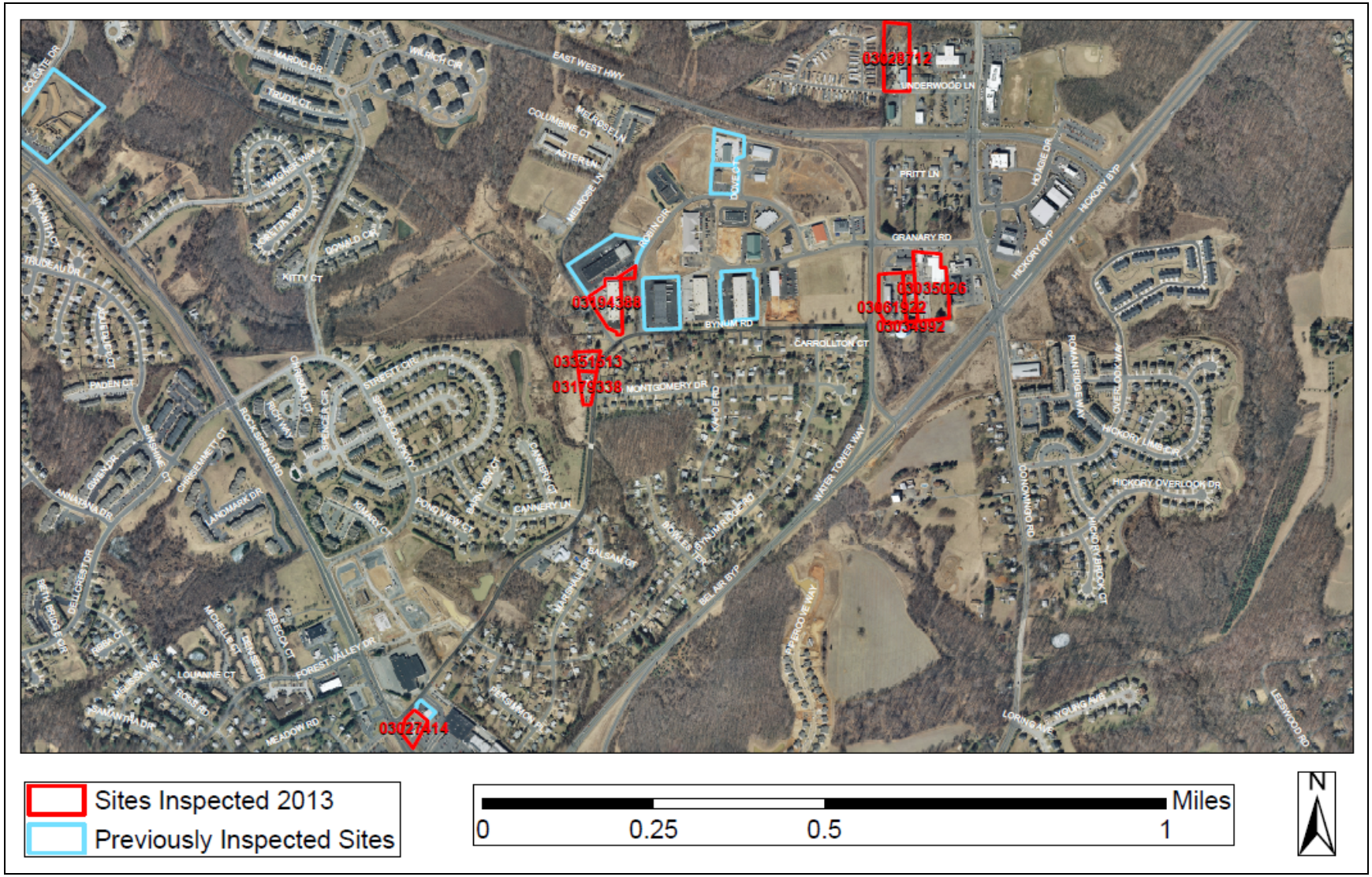

Figure E-2. Sites inspected in Forest Hill area (Middle), 2013-2014

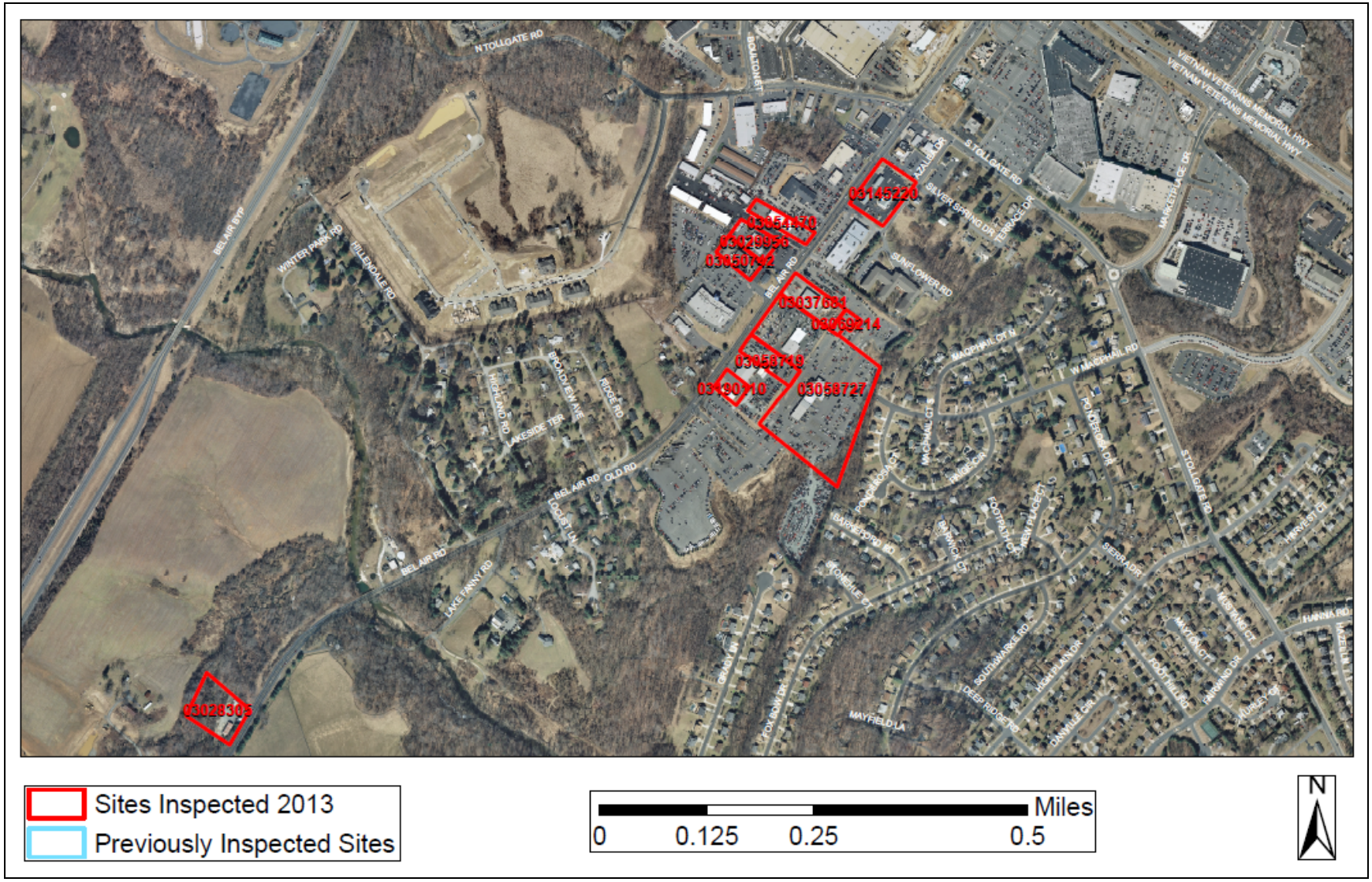

Figure E-3. Sites inspected in Bel Air area, 2013-2014

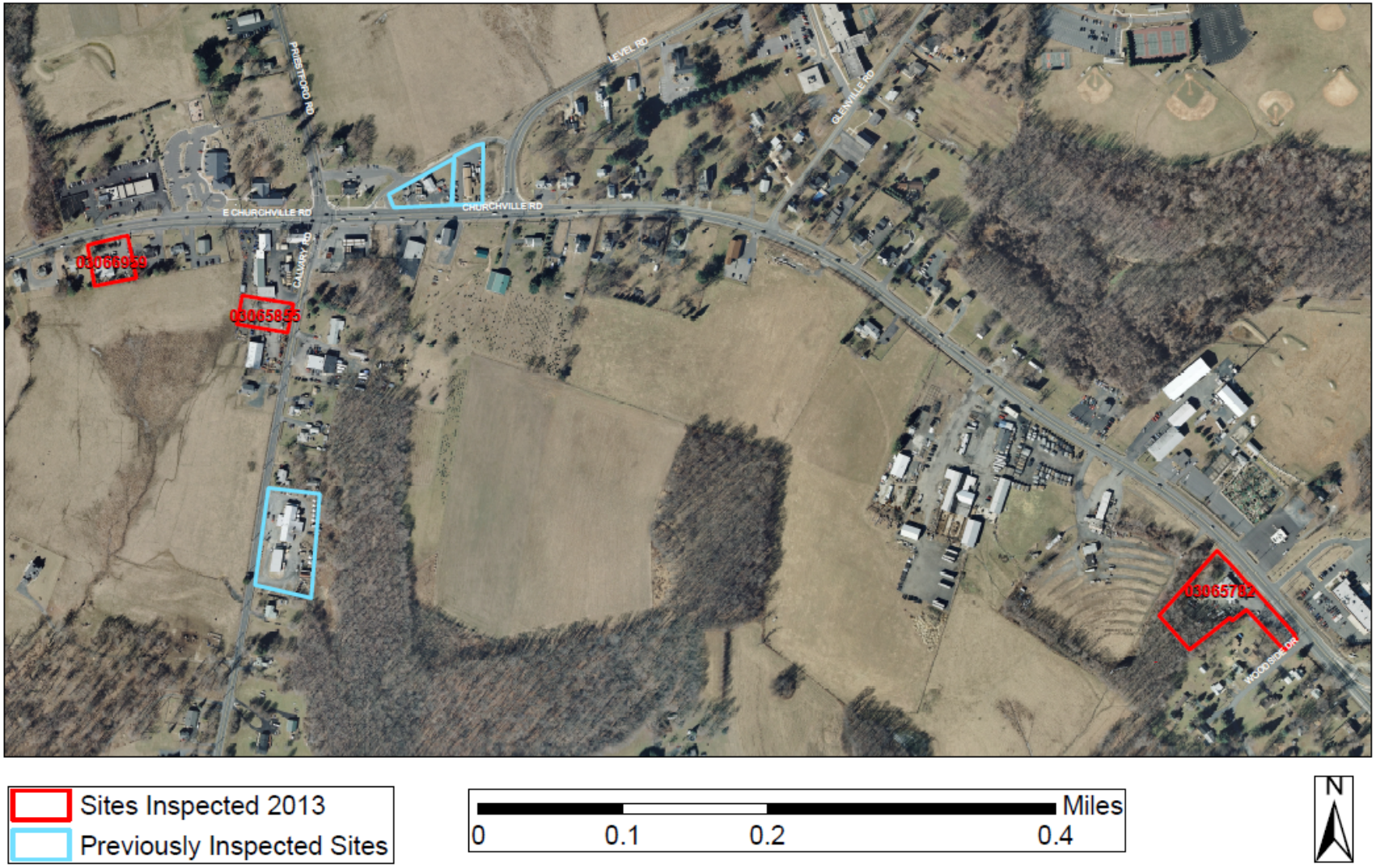

Figure E-4. Sites inspected in Churchville area, 2013-2014

Sites Inspected 2013
Previously Inspected Sites

0 0.1 0.2 0.4 Miles

N

Figure E-5. Sites inspected in Aberdeen area (North), 2013-2014

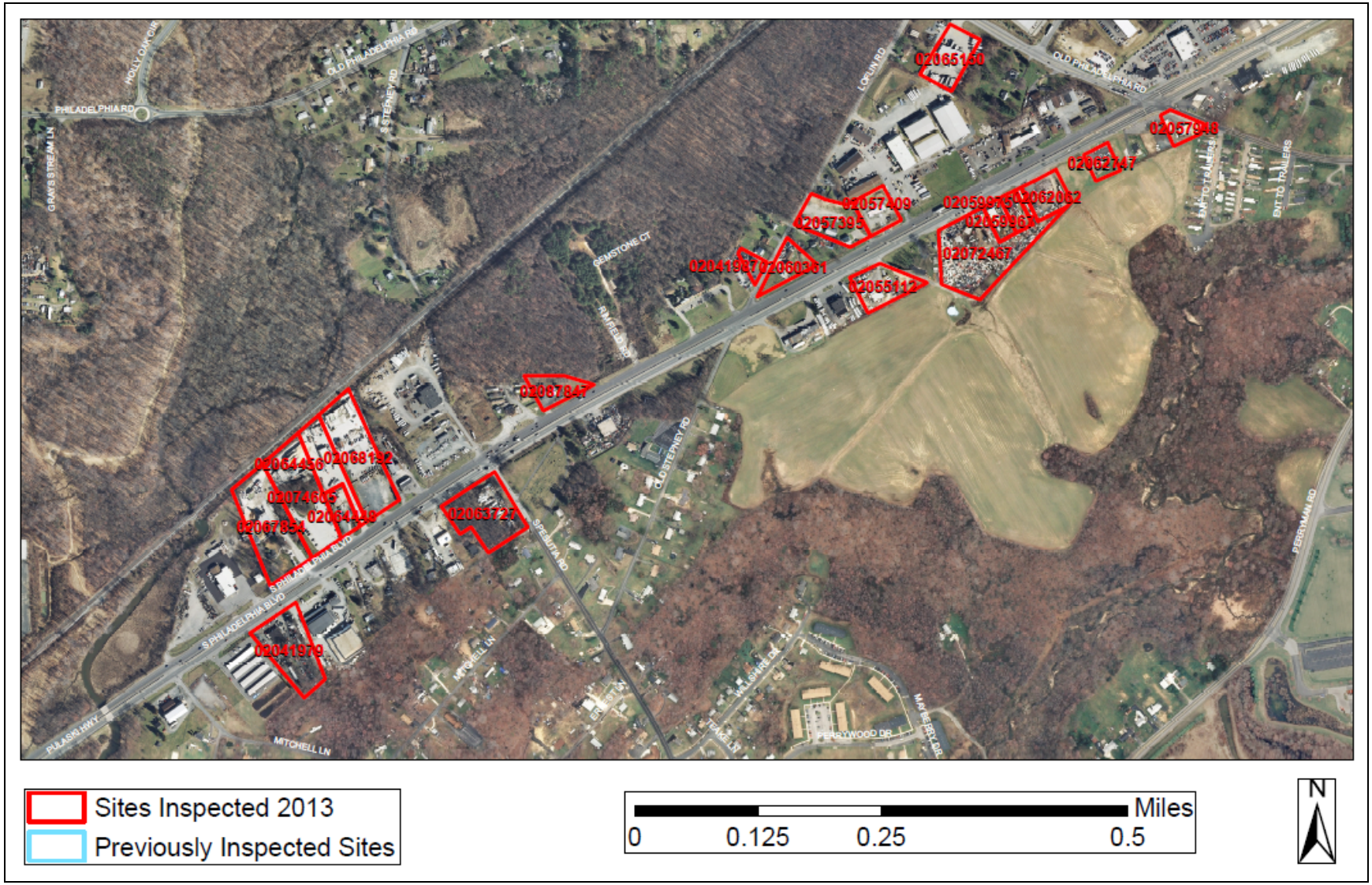

Figure E-6. Sites inspected in Aberdeen area (Middle), 2013-2014