







# Stormwater Management Facility Routine Maintenance Manual District 3 – Laurel Shop

Version 1.0





Stormwater and Drainage
Asset Management Program

#### TABLE OF CONTENTS

SEC	<u>PAGE NO</u>		
I.	Introduction1		
	How to Use This Manual1		
II.	Glossary1		
III.	Types of Stormwater Management Facilities		
	SWM Facility Routine Maintenance Categories		
	How to Identify Routine Maintenance Categories		
IV.	Routine Maintenance of SWM Facilities		
	Routine Maintenance Guidelines		
V.	Identifying and Solving Common Problems6		
	Erosion6		
	Sediment Accumulation		
	Lack of Vegetation		
	Excessive Vegetation		
	Damaged or Deteriorated Structure or Pipe		
	Unstable Embankment9		
	Undesirable Ponding Water9		
VI.	Mapping and Index Description10		

#### **APPENDICES**

- A. Routine Maintenance Guidelines
- B. Stormwater Management Facility Mapping
  - B-1 Overview Map
  - B-2 Tile Maps
  - B-3 Detail Maps
- C. Index of Stormwater Management Facilities

#### I. INTRODUCTION

The Maryland State Highway Administration (SHA) Highway Hydraulics Division (HHD) has established the Stormwater and Drainage Asset Management Program to guide the operation and remediation of the numerous permanent stormwater and drainage assets owned by SHA that convey and treat highway runoff. The program goal is to provide preventive care, and remedial solutions when problems are identified, for the stormwater and drainage infrastructure within the right-of-way. The program applies a life-cycle approach to its management of stormwater and drainage assets. Operations of these assets, especially routine maintenance, is a critical phase in this life-cycle. Routine maintenance is necessary to ensure that these assets function effectively, and to prevent the need for costly and time-consuming repairs and retrofits.



This Stormwater Management Facility Routine Maintenance Manual has been developed by HHD to aid and inform SHA maintenance personnel who work out of SHA maintenance shops to perform routine maintenance on stormwater and drainage assets. Of SHA's numerous assets, this manual specifically addresses the routine maintenance of stormwater management (SWM) facilities. SWM facilities are structural and non-structural practices designed to manage the volume, flow rate, and quality of stormwater runoff before that water enters natural waterways or groundwater. These SWM facilities play an important role in protecting Maryland's water and land resources.

This manual has been prepared specifically for the **District 3 Laurel Shop** (Shop). The manual serves two main purposes:

- 1. To define the location and type of all SWM facilities in the Shop area, and
- 2. To provide guidelines on recommended routine maintenance activities for these SWM facilities.

The following narrative identifies and describes the routine maintenance categories of SHA SWM facilities, recommended guidelines for routine maintenance of these facilities, and solutions for commonly-occurring minor maintenance issues. Routine Maintenance Guidelines are included in Appendix A of this manual. A map of each SWM facility in the Shop area is provided in Appendix B, and an index summarizing all of the SWM facilities is provided in Appendix C.

#### **How to Use This Manual**

Follow these steps to determine the maintenance requirements of a particular SWM facility:

- 1. **Identify the SWM facility number.** If the SWM facility number is unknown, use the overview map and tile maps in Appendix B to navigate to the SWM facility by its location. Both the tile maps and detail maps identify the SWM facility number.
- 2. **Identify the SWM facility routine maintenance category.** Using the Index of Stormwater Management Facilities in Appendix C, locate the identified SWM facility number in the table and read across the row to determine its routine maintenance category. Section III of this manual describes how SWM facilities are divided into routine maintenance categories.
- 3. **Follow the Routine Maintenance Guidelines applicable to the identified category.** Routine Maintenance Guidelines for SWM facilities can be found in Appendix A, along with sample schematics and photographs. Note that some routine maintenance categories, as described in Section III, either do not require routine maintenance by Shop maintenance personnel or should be maintained per SHA Turfgrass Management Guidelines.

#### II. GLOSSARY

The following terms are used within this manual to describe the components of SHA stormwater management facilities and their associated routine maintenance activities. Portions of this glossary were adapted from the "2000 Maryland Stormwater Design Manual" produced by the Maryland Department of the Environment, Water Management Administration.

**Aquatic Perimeter Planting** – Vegetation generally living within 15 feet from the edge of the permanent pool in Wet Ponds. Aquatic perimeter planting is not mowed as part of SWM facility routine maintenance.

**Basin** – A land feature that holds water, with slopes on all sides. A basin may be constructed by excavating a pit in the ground or by constructing a dam or fill embankment.

**Berm** – A mound or bank of earth, compacted and stabilized on an uninterrupted continuous slope, that is used as a barrier for water.

Check Dam – A small dam (typically 6" to 12" in height) constructed across a bio-swale or other linear SWM facility that holds water in order to give it time to soak into the ground. A check dam may be constructed out of earth, timber or concrete.

**Cleanout** – A capped vertical pipe (typically 6" dia. PVC) that extends from the underdrain of a Filtration Facility to above the ground surface. Cleanouts are only present if the Filtration Facility has an underdrain.

The cleanout allows the underdrain to be accessed from the surface in order to clean the underdrain. From the surface, a cleanout may appear identical to an observation well – the two can only be distinguished by removing the cap and investigating belowground to determine if the vertical pipe is connected to an underdrain.

**Concentrated Flow** – Stormwater runoff that accumulates or converges into well-defined channels.

 $\mathbf{Dam} - \mathbf{A}$  barrier against the flow of water intended to: confine or raise water for storage or diversion; slow the speed of runoff; reduce erosion potential; and/or encourage sediment to settle out of water.

**Dewatering Pipe** – A small pipe running from the bottom of a forebay to the main treatment area of a SWM facility in order to allow water in the forebay to drain out.

**Embankment** – The side slope areas of SWM facilities. There are two main types of embankments: fill embankments and cut embankments. Fill embankments are created by placing fill material above existing ground to hold water in the facility. Some fill embankments contain a buried structural component to add stability and prevent seepage. Cut embankments are the side slopes of a facility that was created by excavating below existing ground.

**End Structure** – Any structure located at the end of a pipe where the pipe is open to a ditch, stream, or other natural land feature (i.e. where the pipe daylights). Examples of end structures include end walls and flared end sections.

**Erosion** – The process of water wearing away the soil surface.

**Filter Bed** – The section of a Filtration Facility below the ground that contains filter media and the underdrain pipe, if present.

**Filter Media** – Layers of sand, organic matter, soil, gravel and/or other media in a Filtration Facility used to remove pollutants and sediment from water soaking into the ground. The filter media cleans water before it reaches a stream or other natural body of water.

**Filtration** – The separation or removal of pollutants and sediment from stormwater runoff as water moves downward through filter media.

**Footprint** – The general area of land covered by a SWM facility.

**Forebay** – Storage space where runoff enters a SWM facility at an inflow point. The forebay traps incoming sediment before it can accumulate in the main treatment area of a SWM facility. It is often separated from the main treatment area by an earthen or stone weir. The forebay may be designed to be dry or may be designed to have a permanent pool of water. A dry forebay may include a dewatering pipe.

**Herbaceous Vegetation** – Plants that have non-woody stems which die down to the soil level at the end of the growing season; excludes trees and shrubs.

**Infiltration** – The downward movement of water into the ground.

**Inflow/Outflow Protection** – A device or material (usually riprap, gabions or a concrete structure) placed at inflow and outflow points and used to protect the soil surface from erosion caused by concentrated flows.

**Inflow Point** – Any place where a concentrated flow of water enters a SWM facility. Examples of inflow points include pipes, end structures, curb openings, and ditches.

**Inlet** – A structure at ground level with an opening that intercepts water and directs it into a pipe. An inlet is typically a concrete structure with a metal grate covering the opening. An inlet may also be called a catch basin.

**Maintenance Access** – A permanent entrance or access way into a SWM facility that is stabilized and graded to allow vehicular access.

**Major Sediment Accumulation** – Sediment that has accumulated in a large enough quantity that mechanical equipment must be used to remove it.

**Minor Sediment Accumulation** – Accumulated sediment that can be easily removed with a shovel.

**Observation Well** – A capped vertical pipe (typically 6" dia. PVC) that extends from the bottom of a Filtration Facility's filter bed or an Infiltration Facility's stone reservoir to above the ground surface. Observation wells are not connected to other pipes. By removing the cap and looking in the observation well, an inspector is able to measure the level of water below the ground at any given time. From the surface, an observation well may appear identical to a cleanout – the two can only be distinguished by removing the cap and investigating belowground to determine if the vertical pipe is connected to an underdrain.

**Outfall** – The place where water leaves a pipe or ditch carrying water away from a SWM facility; located outside of the SWM facility footprint and downstream of an outflow point. An outfall is typically a ditch or stream.

**Outflow Point** – Any structure or place where a concentrated flow of water leaves a SWM facility; located within the SWM facility footprint. Examples of outflow points include riser structures, inlets, pipes, and weirs.

**Permanent Pool** – An area within a SWM facility that is intentionally designed to permanently hold some volume of water at all times. Generally, any water that is *not* in a permanent pool is supposed to soak into the ground within 72 hours after a storm. After a storm it may be difficult to determine in the field whether standing water is intended to be a permanent pool, so maintenance personnel may need to reference design plans to identify permanent pools.

**Pond Drain** – A small pipe that runs from the bottom of a SWM facility to the bottom of a riser structure. A pond drain can be used to dewater a SWM facility. In Wet Ponds, this opening in the riser may be intentionally sealed or blocked to maintain the permanent pool. Pond drains may be outfitted with locks or valves where they connect to the riser structure.

**Retrofit** – Changes made to an existing SWM facility in order to improve the overall function. Retrofits generally involve more design and permitting than typical maintenance activities. SWM facilities that are intended to be retrofitted or are undergoing retrofit may be excluded from routine maintenance activities.

**Riser Structure** – A vertical corrugated metal pipe or concrete box structure which extends above the bottom of a SWM facility. The riser structure is the main outflow point that allows water to flow out of the facility.

**Runoff** – Water from rain, snow or other precipitation that does not soak into the ground, but instead flows over the land surface.

**Sediment** – Solid material, such as soil particles, that is carried by (and eventually settles out of) water.

**Seepage** – The process of water moving through or emerging from a fill embankment. Seepage is a sign that the embankment may potentially be failing. This problem may be indicated by wet soil on the outside of a fill embankment. Any signs of seepage should be reported to HHD.

**Stone Reservoir** – The section of an Infiltration Facility below the ground that is filled with stone. The stone reservoir serves as short-term storage-space for water that has soaked into the facility, in order to hold that water until it can infiltrate into the ground below the stone reservoir.

**Stormwater Management (SWM) Facility** – A structural or non-structural practice designed to manage the volume, flow rate, and quality of stormwater runoff before that water enters natural waterways or groundwater. SWM facilities may be located belowground or at the land surface.

**SWM Facility Number** – A unique identification number assigned to a SWM facility by HHD for the purpose of tracking activities and functions associated with that facility.

**Toe (of Embankment)** – Typically where the embankment slope stops, levels out, or meets existing grade; generally the bottom of the slope. It may be difficult to determine in the field where the outer toe of a fill embankment is if the SWM facility is located on a slope, so maintenance personnel may need to reference design plans in order to determine this location.

**Trash Rack** – A metal grill, grate, or other device installed at the point where water flows into a riser structure, meant to prevent oversized debris from entering the structure.

**Underdrain** – A horizontal perforated or slotted pipe that lies at the bottom of a filter bed in a Filtration Facility. Most Filtration Facilities have underdrains. The underdrain allows water that has soaked all the way through the filter bed to flow to the outfall.

**Weir** – A barrier that holds ponded water until the water depth reaches the height of the barrier, at which point water then flows over the weir. Examples of weirs include a barrier between the forebay and the main treatment area of a SWM facility (resembling a small dam), a low point in the top of an embankment through which excess water flows away from the facility, or a wall that limits or controls the flow of water into a riser structure.

#### III. TYPES OF STORMWATER MANAGEMENT FACLITIES

As of 2015, the State Highway Administration (SHA) owns and maintains more than 3,600 permanent stormwater management (SWM) facilities throughout the state of Maryland, and this number is increasing each year. The **Laurel Shop** (Shop) area contains 260 SWM facilities, all of which must be routinely maintained in order to preserve their ability to perform effectively. These SWM facilities play an important role in managing both the quantity and quality of stormwater runoff entering Maryland's waterways. Title 4, Subtitle 2 of the Environment Article of the Annotated Code of Maryland states that "...the management of stormwater runoff is necessary to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding, all of which have adverse impacts on the water and land resources of Maryland."

As part of the Stormwater and Drainage Asset Management program, HHD has developed a geodatabase inventory that identifies all SHA infrastructure that captures, treats, and conveys stormwater runoff within SHA right-of-way. This geodatabase defines the location, facility number, and type of all SWM facilities owned by SHA in the state of Maryland. There are 46 different types of SWM facilities in the HHD geodatabase, all varying widely in design and function. Some SWM facilities are ponds, traditionally designed according to older guidelines. Many of the newer facilities are smaller in footprint, but greater in number, and are designed according to Environmental Site Design (ESD) guidelines. These newer ESD facility types are indicated below with "(ESD)".

#### **SWM Facility Routine Maintenance Categories**

There are three defining characteristics of SWM facilities relating to routine maintenance requirements: (1) how the SWM facilities function, (2) how they appear at the land surface, and (3) how they should be maintained. Based on these three characteristics, the 46 SHA SWM facility types have each been classified into one of seven routine maintenance categories. This manual provides routine maintenance guidelines for five of the seven categories (Categories 1-5). Routine maintenance of SWM facilities in the other two categories (Categories 6-7) is either not the responsibility of Shop maintenance personnel or is guided by SHA Turfgrass Management Guidelines. The routine maintenance categories are as follows:

- 1. **Dry Pond** A Dry Pond is a SWM facility that is designed to hold stormwater runoff, then release the runoff over a period of time. The purpose of a Dry Pond is to allow time for pollutants and sediment
  - to settle out of water, and to manage the volume of stormwater runoff in order to prevent floods. A Dry Pond generally appears to be a grass basin. It is not designed have a permanent pool of water, and therefore should not have standing water during dry weather conditions. Dry Ponds should be maintained by following the Dry Pond Routine Maintenance Guidelines in Appendix A. The category of Dry Pond includes the following SWM facility types:
    - Dry Pond
    - Dry Extended Detention Pond



- 2. Wet Pond Similar to a Dry Pond, a Wet Pond is a SWM facility that is designed to hold stormwater runoff, then release the runoff over a period of time, with the purpose of removing pollutants and sediment from water and providing flood protection. Unlike a Dry Pond, however, a Wet Pond is designed to permanently hold some volume of water at all times. A Wet Pond generally includes a grassed embankment and aquatic perimeter planting around a pool of water. Wet Ponds should be maintained by following the Wet Pond Routine Maintenance Guidelines in Appendix A. The category of Wet Pond includes the following SWM facility types:
  - Wet Pond
  - Shallow Marsh
  - Wet Extended Detention Pond
  - Micropool Extended Detention Pond
  - Wet Swale (ESD)
  - Pocket Pond
  - ED Shallow Wetland
  - Pond/Wetland System
  - Pocket Wetland
  - P-4 (Multiple Pond System)
  - W-1 (Shallow Wetland)



**Example Wet Pond** 

Note that wetland SWM facility types in this category are not considered jurisdictional wetlands or natural resources protected by the Maryland Department of the Environment (MDE). Wetland SWM facility types may be accessed and maintained without an MDE permit.

3. **Infiltration Facility** – An Infiltration Facility is a SWM facility that is designed to temporarily hold stormwater runoff while allowing the water to soak into the ground over time. The purpose of an Infiltration Facility is to reduce the amount of stormwater runoff flowing on top of the land surface by

redirecting that water into the ground. An Infiltration Facility may be in the form of a basin or a ditch. It may have a stone or grass bottom, and typically includes an observation well. Infiltration Facilities may also have stone reservoirs belowground. Infiltration Facilities should be maintained by following the Infiltration Facility Routine Maintenance Guidelines in Appendix A. The category of Infiltration Facility includes the following SWM facility types:

- Infiltration Trench
- Infiltration Basin
- Dry Well (*ESD*)



4. **Filtration Facility** – A Filtration Facility is a SWM facility that is designed to temporarily hold stormwater runoff above a filter bed. Over time, the water soaks through the filter media, which removes pollutants and sediment from the water. A Filtration Facility often includes an underdrain and cleanout(s) extending above the surface of the ground. The facility may be fully vegetated, or have only mulch on the bottom, or be landscaped with both vegetation and mulch. Filtration Facilities should be maintained by following the Filtration Facility Routine Maintenance Guidelines in

Appendix A. The category of Filtration Facility includes the following SWM facility types:

- Micro-Bioretention (ESD)
- Bioretention
- Surface Sand Filter
- Submerged Gravel Wetland (ESD)
- Rain Garden (ESD)
- Landscape Infiltration (ESD)
- Organic Filter
- Enhanced Filter (ESD)



**Example Filtration Facility** 

5. **Bio-swale** – A Bio-swale is a specific type of Filtration Facility that is located in a ditch with a 2 to 8 foot wide flat bottom. Like a Filtration Facility, the purpose of a Bio-swale is to remove pollutants from stormwater runoff. A Bio-swale generally includes check dams spaced evenly along the length of the facility. The check dams are intended to create ponding of water for a period of time while the

water soaks through the filter media. Note that Bio-swales are identified as a separate category from the Filtration Facility category because they make up a relatively large percentage of SHA SWM facilities. Bio-swales should be maintained by following the Bio-swale Routine Maintenance Guidelines in Appendix A. Dry swales are functionally and physically very similar to bio-swales and can be maintained the same way. The category of Bio-swale includes the following SWM facility types:

- Bio-swale (ESD)
- Dry Swale



- 6. **Turfgrass Maintenance** Some SWM facilities do not have visible features that distinguish them from other grassed areas that SHA maintenance personnel routinely mow and maintain. SHA maintenance personnel *are* responsible for the routine maintenance of these simple turfgrass SWM
  - facilities. However, guidelines for such routine maintenance are not provided in this manual. Instead, follow SHA Turfgrass Management Guidelines to maintain the following facility types:
    - Grass Swale (ESD)
    - Grass Channel Credit
    - Disconnection of Non-Rooftop Runoff (ESD)
    - Infiltration Berm (ESD)
    - Sheetflow to Conservation Areas (ESD)



**Example Turfgrass SWM Facility** 

7. **No Routine Maintenance** – Although the following SWM facility types may be mapped and included in the Index in this manual, SHA maintenance personnel are *not* responsible for their routine maintenance unless otherwise directed by HHD:

Underground Detention
 Underground Sand Filter
 Permeable Pavement (ESD)
 Porous Pavement
 Other Infiltration
 Other Filtering

Rainwater Harvesting (ESD)
 Other Open Channel System

Oil Grit Separator
 Stream Restoration
 Y-1

- Other

#### **How to Identify Routine Maintenance Categories**

The routine maintenance category that any SWM facility falls into can be identified as follows:

**Option A:** Given a known SWM facility number, the SWM facility type and routine maintenance category can be read from the Index of Stormwater Management Facilities in Appendix C.

**Option B:** Read the SWM facility type at the top right corner of a detail map in Appendix B. Then return to this section (pages 3 through 5) to determine which routine maintenance category the identified SWM facility type is listed under.

#### **IV. ROUTINE MAINTENANCE OF SWM FACILITIES**

There are four levels of stormwater management (SWM) facility maintenance: (1) routine, (2) minor, (3) major, and (4) retrofit. Effective routine maintenance of SWM facilities will typically ensure good function and pleasing aesthetics of the facilities, and can be essential in the minimization of minor and major maintenance needs over time. Failure of SWM facilities to perform as designed can negatively affect both SHA SWM permit compliance and achievement of Chesapeake Bay TMDL goals.

The SHA maintenance shops are generally responsible for routine maintenance of SWM facilities, and for repair or correction of any minor issues that occur. HHD is committed to providing the shops with support in these operational activities. When performing routine and minor maintenance activities, contact HHD if any questions or concerns are raised regarding SWM facilities or other stormwater and drainage assets.

Major maintenance issues and SWM facility retrofits are the responsibility of HHD. Consequently, any SWM facilities that are in need of major maintenance or are designated as retrofit facilities will not be the responsibility of the SHA shops while the repair or retrofit implementation is occurring. HHD will annually provide a list to the **Laurel Shop** (Shop) that clearly identifies all SHA SWM facilities in the Shop area, along with who is responsible for their maintenance. Note that the mapping provided in Appendix B may include SWM facilities that do not need to be routinely maintained by the Shop. Therefore, in order to effectively plan routine and minor maintenance to be completed by the Shop, this mapping should be used in conjunction with the annual list of facilities and personnel responsible for maintenance.

#### **Routine Maintenance Guidelines**

Routine Maintenance Guidelines for five SWM facility routine maintenance categories are provided in Appendix A of this manual. Each set of guidelines is accompanied by a sample schematic of a SWM facility type associated with that category, along with sample photographs of such facilities. For all five of these SWM facility routine maintenance categories, it is recommended that that routine maintenance of a facility be performed at least twice a year: once in the spring between March 15<sup>th</sup> and May 15<sup>th</sup> and once in the fall between September 15<sup>th</sup> and November 15<sup>th</sup>.

In order to simplify the routine maintenance requirements for maintenance personnel, mowing guidelines have been standardized for the five SWM facility routine maintenance categories (Categories 1-5). Herbaceous SWM facility vegetation, excluding aquatic perimeter planting, should be mowed to a height of 6-inches once each year in the fall. Facilities should be mowed using an articulated or side arm mower. Boom-axe, flail or rotary heads should be attached for proper mowing based on the type of vegetation being cut. Equivalent equipment, as available to the maintenance crew for safe mowing procedures, is acceptable.

In general, SWM facilities should be mowed according to the guidelines presented in this manual within the limits of 15 feet beyond the top of a cut embankment; 15 feet beyond the outer toe of a fill embankment; or the ditch bottom for a linear SWM facility located in a ditch. Refer to the SWM Facility Limits of Mowing in Appendix A for profiles of these mowing limits. Note that mowing according to this manual's

guidelines may be in addition to mowing according to other guidelines. For example, a Bio-swale should be mowed according to the Bio-Swale Routine Maintenance Guidelines within the limits of the flat ditch bottom, and should generally also be mowed according to SHA Turfgrass Management Guidelines outside of those limits along the ditch side slopes.

Other routine maintenance activities that should be performed each year include removing trash and debris, stabilizing eroded areas, and re-seeding sparsely vegetated areas. While performing this routine maintenance, maintenance personnel should also inspect the SWM facility to identify potential issues that may require minor or major maintenance. Check for deterioration or damage to any structures associated with the facility; soft spots, depressions, water seepage or any other signs of potential structural failure in the embankment; and/or a build-up of sediment. Identification of and responses to such issues are further explained in Section V of this manual.

Of the five SWM facility routine maintenance categories for which guidelines are provided in this manual, only Wet Ponds should have a permanent pool of water during dry weather conditions. Any SWM facility classified as one of the other four maintenance categories is not functioning properly if water remains in the facility more than 72 hours after a storm. Actions that maintenance personnel can perform to solve the issue of undesirable ponding water include clearing clogs or obstructions to outflow points, removing accumulated sediment and debris, and cleaning out the underdrain, if present. See Page 9 for further information. Regardless of whether the undesirable ponding water issue is solved, report any actions taken to remediate the issue and the results to HHD.

In order to function properly, Filtration and Infiltration Facilities depend on the infiltration of water into and through soil layers at specific rates, per the design of the SWM facility. When soil and/or filter media become compacted, the rate of infiltration through the media is reduced. Therefore, it is important to perform all maintenance activities on Filtration and Infiltration facilities (including Bio-swales) in a manner that prevents compaction of the facility bottom. Do not drive equipment over the bottoms of Infiltration facilities, Filtration facilities, or Bio-swales at any time. If compacted soil is ever observed in a Filtration or Infiltration facility, report the condition to HHD.

Do not perform maintenance on any portions of a SWM facility that contain saturated or wet soil at the surface. If saturated soils are observed, the routine maintenance activities for the affected areas should be rescheduled to occur when drier conditions are present, during the same season, if possible.

#### V. IDENTIFYING AND SOLVING COMMON PROBLEMS

While major issues with SWM facilities are the responsibility of, and should be reported to HHD, minor issues are typically handled by Shop maintenance personnel. The following pages define common issues that may be observed at SWM facilities, along with their solutions. Portions of this Section V were adapted from Chapter 7, "Best Management Practice Assessment Guidelines for Maintenance and Remediation," of the "Stormwater NPDES Program Standard Procedures Manual" produced by SHA.

#### Erosion

A common problem that occurs at many SWM facilities is erosion, often along an unstable ditch or embankment slope. When soils are not properly compacted during construction, or when vegetation does not establish properly along a slope or channel, erosion can occur. It is important to repair minor erosion immediately because bare soil that is exposed by erosion becomes even more susceptible to additional erosion, and thus minor erosion can quickly become a major problem.

Problem	Solution
Minor erosion	Fill the eroded area with Furnished Topsoil as necessary to
	restore the original ground surface. If the eroded area is adjacent
	to existing riprap, stabilize the repaired area with Class I Riprap.
	Else, re-seed the repaired area with SHA Turfgrass Seed Mix
	and install Type 'A' Soil Stabilization Matting.
Major erosion	Report to HHD.



#### **Sediment Accumulation**

Sediment is carried into SWM facilities with stormwater runoff, and as the water is held in the facility the sediment settles out of the water. Many SWM facilities have forebays to allow most of the sediment to settle out before the water reaches the main treatment area. Sediment can also accumulate in a SWM facility as a result of erosion upstream of the facility. Sediment accumulation in the main treatment area is a problem because it can slow infiltration of water into the ground, reduce the volume of water that can be stored in the facility, and/or clog outflow points. If identified, maintenance personnel should remove minor accumulated sediment from forebays, outfalls and other areas.

Problem	Solution
	Remove minor accumulated sediment with a shovel. If
Minor sediment accumulation	necessary, re-seed the affected area with SHA Turfgrass Seed
	Mix and install Type 'A' Soil Stabilization Matting.
Major sediment accumulation	Report to HHD.



#### **Lack of Vegetation**

Lack of vegetation is most commonly identified by areas of visible bare soil, and is a problem because it bare soil is vulnerable to erosion. While small areas of bare soil are not uncommon in the life-cycle of a SWM facility, large areas of bare soil may indicate that permanent or reoccurring conditions are not favorable for plant growth. In such cases, the condition should be reported to HHD so that HHD can assess the facility and determine whether there is an underlying issue causing the lack of vegetation.

Problem	Solution
Small area of bare soil	Re-seed the bare area with SHA Turfgrass Seed Mix and install
Sman area of bare son	Type 'A' Soil Stabilization Matting.
Large area of bare soil	Report to HHD.



#### **Excessive Vegetation**

The growth of excessive vegetation over time can adversely impact a SWM facility by blocking pipes, structures, and weirs or by growing into and interfering with the proper function of filter media. Excessive vegetation can also interfere with an inspector's ability to perform required periodic inspections of facilities and structures. In most cases, vegetation should be controlled by routine mowing of SWM facilities. However, if excessive vegetation is encountered it should be removed.

Problem	Solution
Excessive vegetation	Clear the vegetation with a weed trimmer.



#### **Damaged or Deteriorated Structure or Pipe**

Structures and pipes in SWM facilities are occasionally damaged by large debris, ice, soil settlement, or other conditions. These critical components of SWM facilities also deteriorate over time. It is important to maintain structures and pipes in good condition to ensure that water is collected and conveyed to the intended location. If maintenance personnel encounter a damaged or deteriorated structure or pipe, inform the Shop Resident Maintenance Engineer to determine how to repair the structure or pipe.

Problem	Solution
Damaged or deteriorated structure	Report to Resident Maintenance Engineer.
or pipe	Report to Resident Maintenance Engineer.



#### **Unstable Embankment**

The embankment of a SWM facility holds water in the facility. Failure of an embankment results in water leaving the facility in problematic ways and locations, and is an indication that the facility cannot manage stormwater runoff as intended. Unmanaged runoff can lead to downstream flooding. It is therefore important to identify signs of potential embankment failure, including soft spots or depressions in the embankment, as well as seepage of water through a fill embankment. Erosion and holes, such as animal burrows, could also contribute to embankment failure.

Problem	Solution
Animal burrows or other holes	Eliminate holes by filling them with soil.
Erosion	See Identifying and Solving Erosion on page 6.
Soft spots, depressions, seepage, or other problem.	Report to HHD.



#### **Undesirable Ponding Water**

For all routine maintenance categories except Wet Ponds, no ponding water should be visible in the facility 72 hours after a storm. Only a Wet Pond should have a permanent pool of water during dry weather conditions. Undesirable ponding water may indicate that outflow point(s) are clogged; accumulated sediment/debris or clogged/compacted filter media is reducing the rate of infiltration; or the underdrain of a Filtration Facility is blocked. Regardless of whether the issue of undesirable ponding water is solved, report the actions taken to remediate the issue and the results to HHD.

Problem	Solution
Outflow point(s) are clogged	Clear clogs in or obstructions to the outflow point(s).
Leaves/sediment/debris has	Remove minor leaf/sediment/debris buildup from the bottom of
accumulated on the facility bottom	the facility. Report major buildup to HHD.
Underdrain is blocked	Clean out the underdrain with a vacuum truck.
Filter media is clogged or	Papart to HUD
compacted, or other problem.	Report to HHD.



#### VI. MAPPING AND INDEX DESCRIPTION

To effectively maintain all of the SWM facilities in the **Laurel Shop** (Shop) area, Shop personnel must know the location and type of each facility. HHD has therefore developed maps of each of the existing SHA-owned SWM facilities in the Shop area, specifying the locations and types of the facilities. These maps are contained in Appendix B of this manual, and were prepared utilizing April 2015 geodatabase data. There are three types of maps provided:

- 1. An overview map of the entire Shop area, defining the limits of the Shop area within a reference grid.
- 2. Tile maps corresponding to the reference grid on the overview map, showing portions of the Shop area in greater detail. These tile maps show the general locations of the SWM facilities. Each SWM facility is labeled with a unique identification number.
- 3. One detail map for each SWM facility in the Shop area, defining the specific location and type of the facility, as well as the approximate layout of the facility.

The following information and features are displayed on the detail maps:

- The SWM facility number.
- The SWM facility type, corresponding to the facility types listed in Section III of this manual.
- The approximate facility footprint. A diamond or circle may be shown if the actual facility footprint was not available in the HHD geodatabase.
- SHA-owned pipes and drainage structures in the vicinity of the SWM facility, as defined in the HHD geodatabase. Structure numbers and pipe sizes and materials are labeled, if the information was available in the HHD geodatabase. Pipes are labeled as "UNK" if the pipe size and material was not available.
- The approximate SHA Right-of-Way line. This line is approximate and does not define ownership.
- Mile points along SHA-owned roads.
- Names of roadways in the immediate vicinity of the SWM facility, for location reference.
- The Shop boundary, if applicable.

Note that some detail maps show multiple SWM facilities, for cases where facilities are in close proximity to each other. In such cases, the SWM facility corresponding to the facility number and type written in the top right corner of the sheet is shown with a blue outline and red label, while other nearby facilities are shown with a yellow outline and gray label.

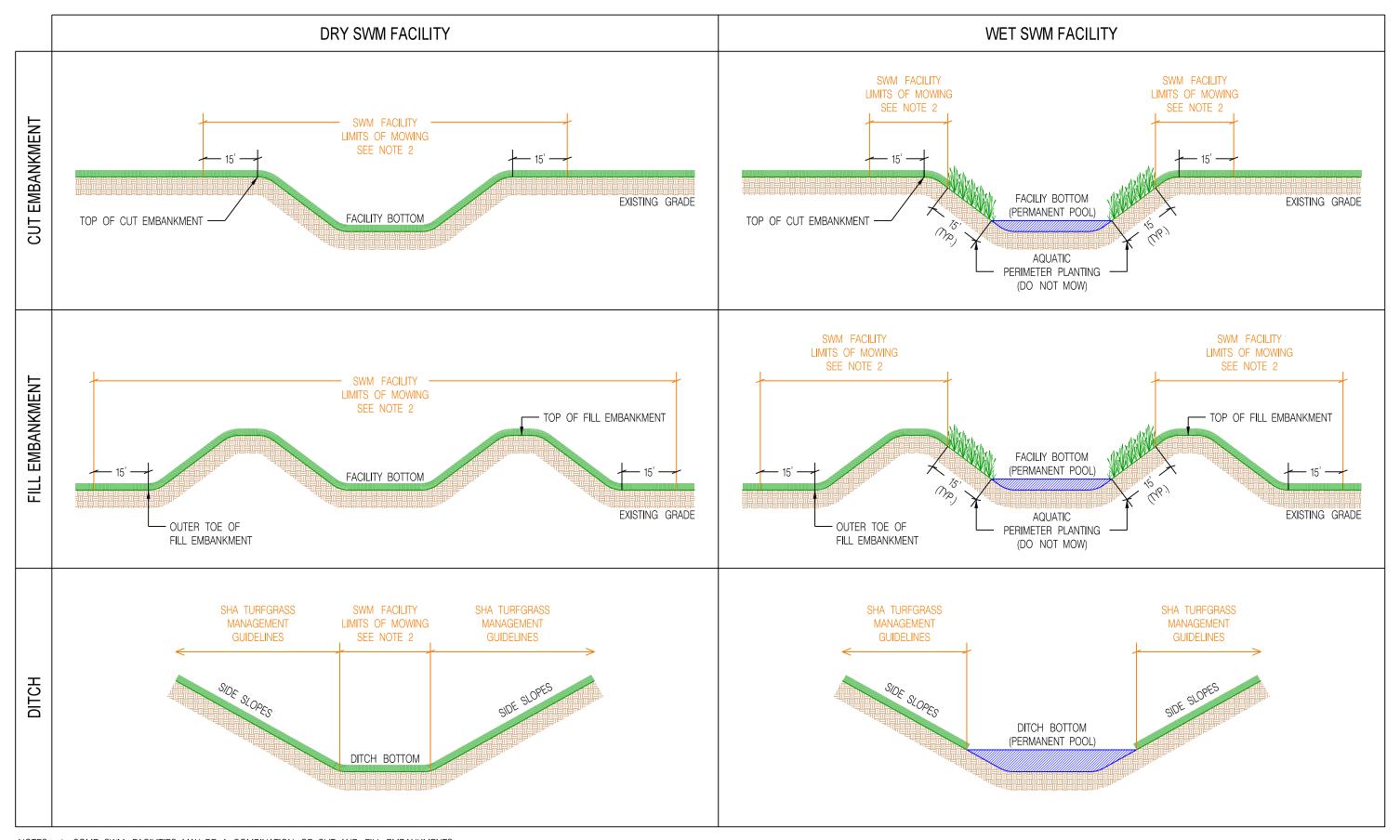
The locations and types of all of the SWM facilities in the Shop area have been summarized in the Index of Stormwater Management Facilities, found in Appendix C. This Index lists the SWM facility number, facility type, and routine maintenance category of all of the SWM facilities mapped in Appendix B, along with the number of the tile map that the SWM facility can be found on. This Index is presented in two forms: one sorted by SWM facility number, and one sorted by tile map.

This manual is a living document. Please provide comments and feedback to Kiona A. Leah at 410-545-8044 or at kleah@sha.state.md.us.

# APPENDIX A

**Routine Maintenance Guidelines** 

## **SWM Facility Limits of Mowing**



NOTES: 1. SOME SWM FACILITIES MAY BE A COMBINATION OF CUT AND FILL EMBANKMENTS.

<sup>2. &</sup>quot;SWM FACILITY LIMITS OF MOWING" ARE LIMITS OF MOWING ACCORDING TO GUIDELINES PRESENTED IN THIS STORMWATER MANAGEMENT FACILITY ROUTINE MAINTENANCE MANUAL. THERE MAY BE ADDITIONAL MOWING OUTSIDE OF THESE LIMITS ACCORDING TO OTHER GUIDELINES, SUCH AS SHA TURFGRASS MANAGEMENT GUIDELINES, WHERE APPLICABLE.

## **Dry Pond Routine Maintenance Guidelines**

#### **Maintaining Dry Ponds**

**Description and Purpose:** Aesthetic and structural maintenance of Dry Ponds.

**Scheduling:** Once each spring (March 15 – May 15) and fall (September 15 – November 15).

Team:	
Facility Maintenance Technician IV	1
Facility Maintenance Technician	3
Equipment:	
MOT/Safety Equipment	Α
Pick-Up Truck	В
Shovel	С
Weed Trimmer	D
Articulated or Side Arm Mower	Ε
Spreader	F
Material:	
Furnished Topsoil	G
SHA Turfgrass Seed Mix	Н
Type 'A' Soil Stabilization Matting	ı
Class I Riprap	J
• •	
Unit of Measure:	
Each Dry Pond	

#### Payment:

Maintaining Dry Ponds should be charged to Activity [TBD], with the approval of the Office of Highway Design – Highway Hydraulics Division (HHD). When inspecting/supporting the work of contractors, the Agency Code [TBD] should also be used.

#### Notes:

Follow guidelines for recommended personal protective equipment. Place signs and other safety devices in accordance with MUTCD and WZTC.

Do not perform maintenance on portions of the facility with saturated soil

Spring	g Maintenance Work Method:	Equip./ Material
1.	Install MOT devices.	(A)
2.	Remove trash, leaves, and debris from the pond, trash rack, and other structure(s).	(B, C)
3.	Check for deterioration or damage to structure(s). Notify Resident Maintenance Engineer if repair work is needed.	
4.	Check for clogs and clear vegetation obstructing the structure(s).	(D)
5.	Remove accumulated sediment from the facility.	(B, C)
6.	Check each side of the embankment, if present. Eliminate any animal burrows/holes by filling them with soil. Report any soft spots, depressions, or water seepage to HHD.	(C, G)
7.	Haul removed trash, debris, vegetation, and sediment to designated disposal area.	(B)
8.	Remove MOT devices.	

#### **Fall Maintenance Work Method:**

1.	Install MOT devices.	(A)
2.	Remove trash, leaves, and debris from the	(B, C)
2	pond, trash rack, and other structure(s).	(5, 5)
3.	Mow herbaceous vegetation within the SWM facility limits of mowing to a height of	(D, E)
	6-inches.	
4.	Seed sparsely vegetated areas and install	(F, H, I)
	matting.	
5.	Fill eroded areas with topsoil as necessary to	(C, F, G
	restore the original ground. Stabilize eroded	H, I, J)
	areas adjacent to existing riprap with riprap.	
	Else, seed and install matting.	
6.	Haul removed trash, leaves, and debris to	(B)
	designated disposal area.	

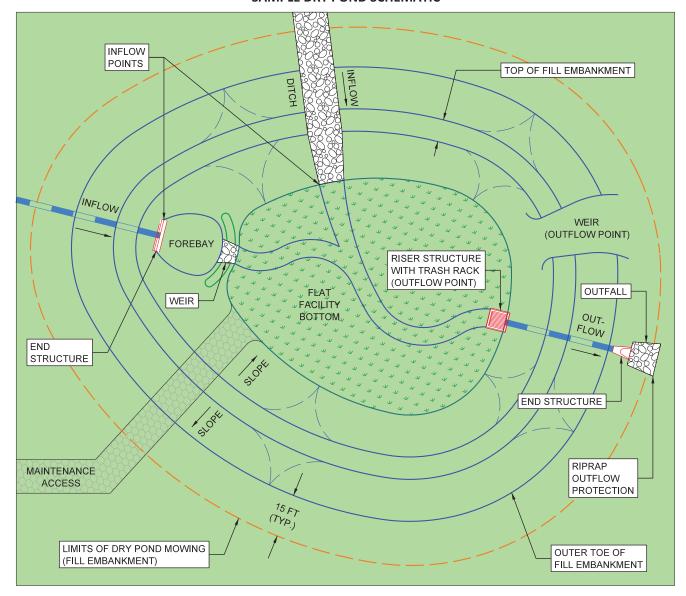
#### **Troubleshooting:**

7. Remove MOT devices.

If water is still ponding in the facility 72 hours after a storm, determine the cause and resolve in the following order:

- 1. Check for clogs and clear any obstructions to the outflow point(s).
- 2. Report to HHD.

#### SAMPLE DRY POND SCHEMATIC



#### **SAMPLE DRY POND PHOTOS**





## **Wet Pond Routine Maintenance Guidelines**

Equip./

#### **Maintaining Wet Ponds**

**Description and Purpose:** Aesthetic and structural maintenance of Wet Ponds.

**Scheduling:** Once each spring (March 15 – May 15) and fall (September 15 – November 15).

Team: Facility Maintenance Technician IV Facility Maintenance Technician	1
Equipment: MOT/Safety Equipment Pick-Up Truck	A B
Shovel Weed Trimmer	C
Articulated or Side Arm Mower Spreader	E F
<b>Material:</b> Furnished Topsoil	G
SHA Turfgrass Seed Mix	Н
Type 'A' Soil Stabilization Matting Class I Riprap	J
Unit of Measure: Each Wet Pond	

#### Payment:

Maintaining Wet Ponds should be charged to Activity [TBD], with the approval of the Office of Highway Design – Highway Hydraulics Division (HHD). When inspecting/supporting the work of contractors, the Agency Code [TBD] should also be used.

#### Notes:

Follow guidelines for recommended personal protective equipment. Place signs and other safety devices in accordance with MUTCD and WZTC.

Do not perform maintenance on portions of the facility with saturated soil

		Lquip./
Spring	g Maintenance Work Method:	Material
1.	Install MOT devices.	(A)
2.	Remove trash, leaves, and debris from the pond, trash rack, and other structure(s).	(B, C)
3.	Check for deterioration or damage to structure(s). Notify Resident Maintenance	
	Engineer if repair work is needed.	
4.	Check for clogs and clear vegetation obstructing the structure(s).	(D)
5.	Remove accumulated sediment from the facility.	(B, C)
6.	Check each side of the embankment, if present. Eliminate any animal burrows/holes by filling them with soil. Report any soft spots, depressions, or water seepage to HHD.	(C, G)
7.	Haul removed trash, debris, vegetation, and sediment to designated disposal area.	(B)
8.	Remove MOT devices.	

#### **Fall Maintenance Work Method:**

1.	Install MOT devices.	(A)
2.	Remove trash, leaves, and debris from the	(B, C)
	pond, trash rack, and other structure(s).	
3.	Mow herbaceous vegetation within the	(D, E)
	SWM facility limits of mowing to a height of	
	6-inches.	
4.	Seed sparsely vegetated areas and install	(F, H, I)
	matting.	
5.	Fill eroded areas with topsoil as necessary to	(C, F, G
	restore the original ground. Stabilize eroded	H, I, J)
	areas adjacent to existing riprap with riprap.	
	Else, seed and install matting.	
6.	Haul removed trash, leaves, and debris to	(B)
	designated disposal area.	

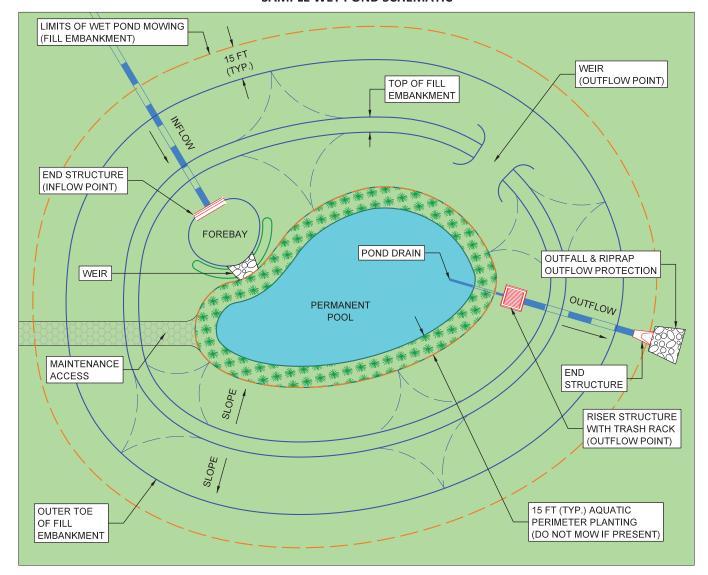
#### **Troubleshooting:**

If the Wet Pond is dry and has no standing water, determine the cause and resolve in the following order:

- 1. Check that the pond drain opening in the riser is completely sealed.
- 2. Report to HHD.

7. Remove MOT devices.

#### SAMPLE WET POND SCHEMATIC



#### **SAMPLE WET POND PHOTOS**





## **Infiltration Facility Routine Maintenance Guidelines**

#### **Maintaining Infiltration Facilities**

Description and Purpose: Aesthetic and structural maintenance of Infiltration Facilities.

Scheduling: Once each spring (March 15 – May 15) and fall (September 15 – November 15).

Team:		
Facility Maintenance Technician IV	1	Spring Maintenance Wo
Facility Maintenance Technician	3	1. Install MOT device
		2. Remove trash, lea
Equipment:		facility and associ
MOT/Safety Equipment	Α	3. Replenish stone, i
Pick-Up Truck	В	4. Check for deterio
Shovel	С	structure(s). Notif
Weed Trimmer	D	Engineer if repair
Articulated or Side Arm Mower	Е	<ol><li>Check for clogs ar</li></ol>
Spreader	F	obstructing the st
		6. Replace any broke
Material:		well caps.
No. 2 Stone or Class 0 Riprap	G	7. Remove accumula
Screw Caps Sizes 4 and 6	Н	facility.
Furnished Topsoil	1	8. Check each side of
SHA Turfgrass Seed Mix	J	present. Eliminate
Type 'A' Soil Stabilization Matting	K	by filling them wi
Class I Riprap	L	spots, depression
		HHD.
Unit of Measure:		9. Haul removed tra
Each Infiltration Facility		sediment to desig
		10. Remove MOT dev

## Payment:

Maintaining Infiltration Facilities should be charged to Activity [TBD], with the approval of the Office of Highway Design – Highway Hydraulics Division (HHD). When inspecting/supporting the work of contractors, the Agency Code [TBD] should also be used.

#### Notes:

Follow guidelines for recommended personal protective equipment. Place signs and other safety devices in accordance with MUTCD and WZTC.

Perform all maintenance activities in a manner to prevent compaction of the facility bottom. Do not drive on the facility bottom. Report observed compaction to HHD.

Do not perform maintenance on portions of the facility with saturated soil.

Spring	g Maintenance Work Method: Install MOT devices.	Equip./ Material (A)
2.	Remove trash, leaves, and debris from the	(B, C)
	facility and associated structure(s).	(-, -,
3.	Replenish stone, if necessary.	(G)
4.	Check for deterioration or damage to	. ,
	structure(s). Notify Resident Maintenance	
	Engineer if repair work is needed.	
5.	Check for clogs and clear vegetation	(D)
	obstructing the structure(s).	
6.	Replace any broken/missing observation	(H)
	well caps.	
7.	Remove accumulated sediment from the	(B, C)
	facility.	
8.	Check each side of the embankment, if	(C, I)
	present. Eliminate any animal burrows/holes	
	by filling them with soil. Report any soft	
	spots, depressions, or water seepage to	
0	HHD.	(D)
9.	Haul removed trash, debris, vegetation, and	(B)
10	sediment to designated disposal area.	
10.	Remove MOT devices.	
Fall M	laintenance Work Method:	
1.	Install MOT devices.	(A)
2.	Remove trash, leaves, and debris from the	(B, C)
	facility and associated structure(s).	
3.	Mow herbaceous vegetation within the	(D, E)
	SWM facility limits of mowing to a height of	
	6-inches.	
4.	Seed sparsely vegetated areas and install	(F, J, K)
	matting.	
5.	Fill eroded areas with topsoil as necessary to	(C, F, I,
	restore the original ground. Stabilize eroded	J, K, L)
	the contract of the contract o	

#### **Troubleshooting:**

3. Report to HHD.

If water is still ponding in the facility 72 hours after a storm, determine the cause and resolve in the following order:

1. Check for clogs and clear any obstructions to the outflow point(s).

2. Remove leaf/sediment/debris buildup from the bottom of the facility.

(B, C)

areas adjacent to existing riprap with riprap.

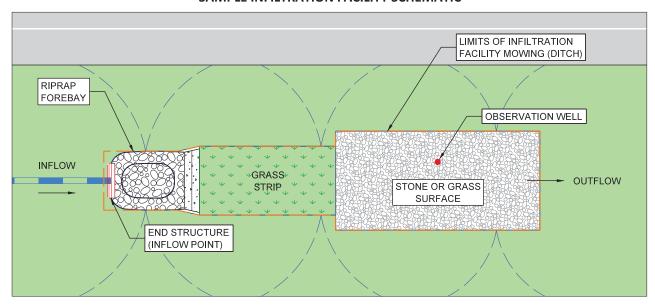
(B)

6. Haul removed trash, leaves, and debris to

Else, seed and install matting.

designated disposal area.7. Remove MOT devices.

#### SAMPLE INFILTRATION FACILITY SCHEMATIC



#### SAMPLE INFILTRATION FACILITY PHOTOS









## **Filtration Facility Routine Maintenance Guidelines**

#### **Maintaining Filtration Facilities**

**Description and Purpose:** Aesthetic and structural maintenance of Filtration Facilities. **Scheduling:** Once each spring (March 15 – May 15) and fall (September 15 – November 15).

	-		o and an (september 25 more)	
Team:				Equip./
Facility Maintenance Technician IV	1	pring Maintenand	ce Work Method:	Material
Facility Maintenance Technician	3	<ol> <li>Install MOT</li> </ol>	devices.	(A)
		2. Remove tras	sh, leaves, and debris from the	(B, C)
Equipment:		facility and a	associated structure(s).	
MOT/Safety Equipment	Α	3. Replenish m	ulch, if present.	(C, H)
Pick-Up Truck	В	4. Check for de	eterioration or damage to	
Shovel	С	structure(s).	. Notify Resident Maintenance	
Weed Trimmer	D	Engineer if r	epair work is needed.	
Articulated or Side Arm Mower	Ε	5. Check for clo	ogs and clear vegetation	(D)
Spreader	F	obstructing	the structure(s).	
Vacuum Truck	G	6. Replace any	broken/missing cleanout caps.	(1)
		7. Remove acc	umulated sediment from the	(B, C)
Material:		facility.		
Shredded Hardwood Mulch	Н	8. Check each	side of the embankment, if	(C, J)
Screw Caps Sizes 4 and 6	1	present. Elir	minate any animal burrows/holes	
Furnished Topsoil	J	by filling the	em with soil. Report any soft	
SHA Turfgrass Seed Mix	K	spots, depre	essions, or water seepage to	
Type 'A' Soil Stabilization Matting	L	HHD.		
Class I Riprap	M	9. Haul remove	ed trash, debris, vegetation, and	(B)
		sediment to	designated disposal area.	
Unit of Measure:		10. Remove MC	OT devices.	
Each Filtration Facility				
		all Maintenance \	Work Method:	
Payment:		<ol> <li>Install MOT</li> </ol>	devices.	(A)

**Maintaining Filtration Facilities** should be charged to Activity [TBD], with the approval of the Office of Highway Design – Highway Hydraulics Division (HHD). When inspecting/supporting the work of contractors, the Agency Code [TBD] should also be used.

#### Notes:

Follow guidelines for recommended personal protective equipment. Place signs and other safety devices in accordance with MUTCD and WZTC.

Perform all maintenance activities in a manner to prevent compaction of the filter bed. Do not drive on the filter bed. Report observed compaction to HHD.

Do not perform maintenance on portions of the facility with saturated soil.

Ι.	ilistali MOT devices.	(~)
2.	Remove trash, leaves, and debris from the	(B, C)
	facility and associated structure(s).	
3.	Mow herbaceous vegetation within the	(D, E)
	SWM facility limits of mowing to a height of	
	6-inches.	
4.	Seed sparsely vegetated areas and install	(F, K, L)
	matting.	
5.	Fill eroded areas with topsoil as necessary to	(C, F, J,
	restore the original ground. Stabilize eroded	K, L, M)
	areas adjacent to existing riprap with riprap.	

Else, seed and install matting. 6. Haul removed trash, leaves, and debris to designated disposal area.

(B)

(B, C)

(G)

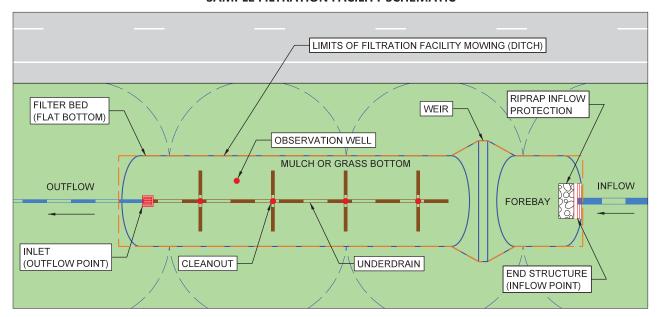
7. Remove MOT devices.

#### **Troubleshooting:**

If water is still ponding in the facility 72 hours after a storm, determine the cause and resolve in the following order:

- 1. Check for clogs and clear any obstructions to the outflow point(s).
- 2. Remove leaf/sediment/debris buildup from the bottom of the facility.
- 3. Check for and clear underdrain obstructions.
- 4. Report to HHD.

#### SAMPLE FILTRATION FACILITY SCHEMATIC



#### **SAMPLE FILTRATION FACILITY PHOTOS**









### **Bio-Swale Routine Maintenance Guidelines**

Equip./

#### **Maintaining Bio-Swales**

Description and Purpose: Aesthetic and structural maintenance of Bio-swales.

Scheduling: Once each spring (March 15 – May 15) and fall (September 15 – November 15).

<b>Team:</b> Facility Maintenance Technician IV Facility Maintenance Technician	1
racility Maintenance reclinician	3
Equipment: MOT/Safety Equipment Pick-Up Truck Shovel Weed Trimmer Articulated or Side Arm Mower Spreader Vacuum Truck	A B C D E F G
Material:	
Screw Caps Sizes 4 and 6	Н
SHA Turfgrass Seed Mix	1
Type 'A' Soil Stabilization Matting	J
Furnished Topsoil	K
Class I Riprap	L
Unit of Managemen	

#### Unit of Measure:

Each Bio-swale

#### Payment:

Maintaining Bio-swales should be charged to Activity [TBD], with the approval of the Office of Highway Design – Highway Hydraulics Division (HHD). When inspecting/supporting the work of contractors, the Agency Code [TBD] should also be used.

#### Notes:

Follow guidelines for recommended personal protective equipment. Place signs and other safety devices in accordance with MUTCD and WZTC.

Perform all maintenance activities in a manner to prevent compaction of the filter bed. Do not drive on the filter bed. Report observed compaction to HHD.

Do not perform maintenance on portions of the facility with saturated soil.

Spring	Material	
1.	Install MOT devices.	(A)
2.	Remove trash, leaves, and debris from the	(B, C)
	facility and associated structure(s).	
3.	Check for deterioration or damage to	
	structure(s). Notify Resident Maintenance	
	Engineer if repair work is needed.	
4.	Check for clogs and clear vegetation	(D)
	obstructing the structure(s).	
5.	Replace any broken/missing cleanout caps.	(H)
6.	Remove accumulated sediment from the	(B, C)
	facility.	
7.	Haul removed trash, debris, vegetation, and	(B)
	sediment to designated disposal area.	
8.	Remove MOT devices.	

#### **Fall Maintenance Work Method:**

1.	Install MOT devices.	(A)
2.	Remove trash, leaves, and debris from the	(B, C)
	facility and associated structure(s).	
3.	Mow herbaceous vegetation within the	(D, E)
	SWM facility limits of mowing to a height of	
	6-inches.	
4.	Seed sparsely vegetated areas and install	(F, I, J)
	matting.	
5.	Fill eroded areas with topsoil as necessary to	(C, F, I,
	restore the original ground. Stabilize eroded	J, K, L)
	areas adjacent to existing riprap with riprap.	
	Else, seed and install matting.	
6.	Haul removed trash, leaves, and debris to	(B)
	designated disposal area.	

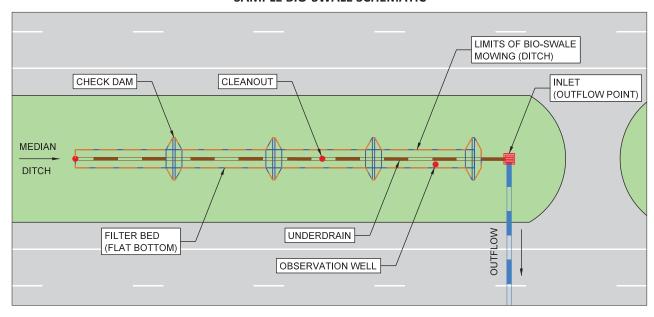
#### **Troubleshooting:**

7. Remove MOT devices.

If water is still ponding in the facility 72 hours after a storm, determine the cause and resolve in the following order:

- 1. Check for clogs and clear any obstructions to the outflow point(s).
- 2. Remove leaf/sediment/debris buildup from (B, C) the bottom of the facility.
- 3. Check for and clear underdrain obstructions. (G)
- 4. Report to HHD.

#### **SAMPLE BIO-SWALE SCHEMATIC**



#### **SAMPLE BIO-SWALE PHOTOS**





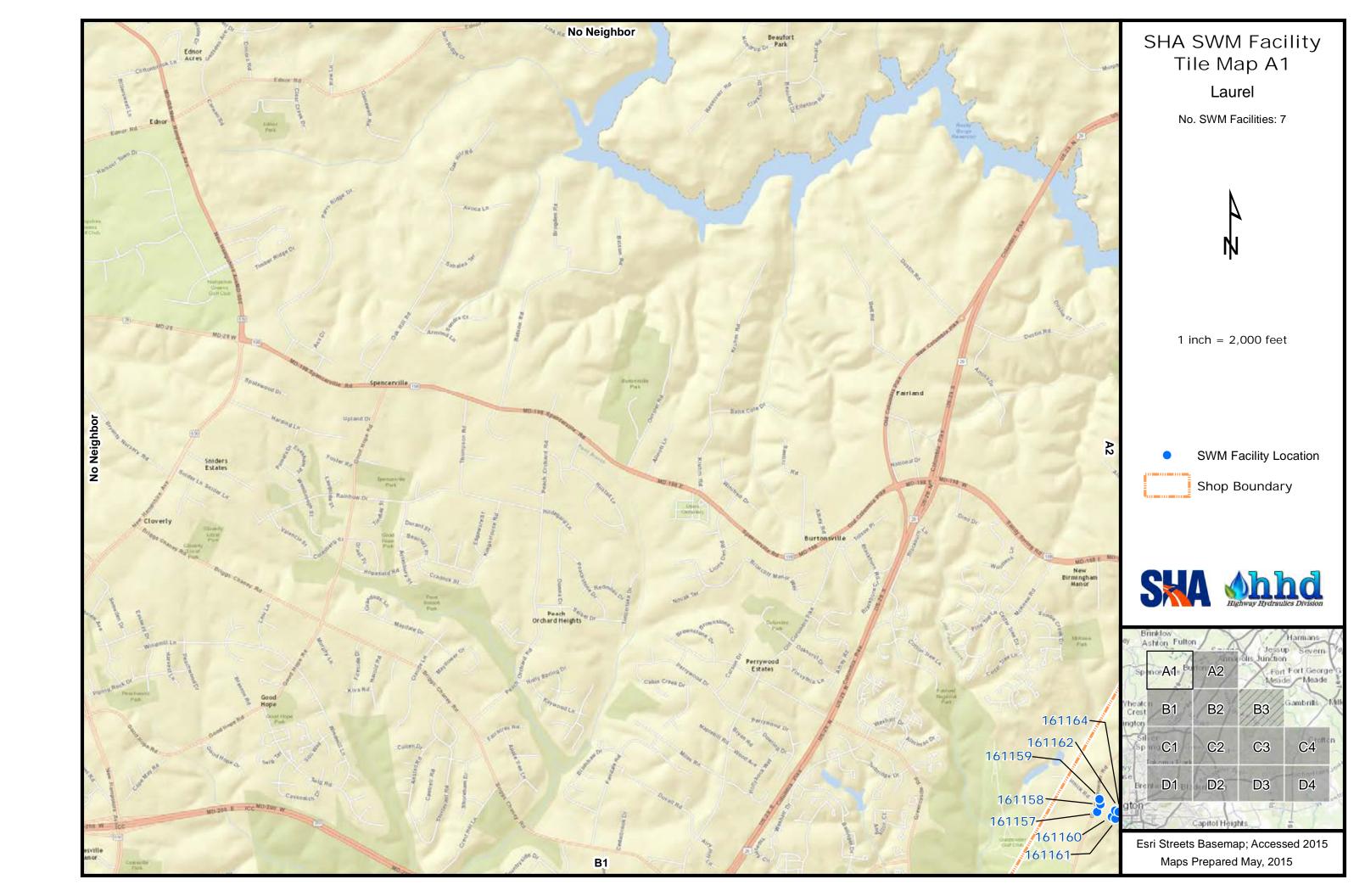


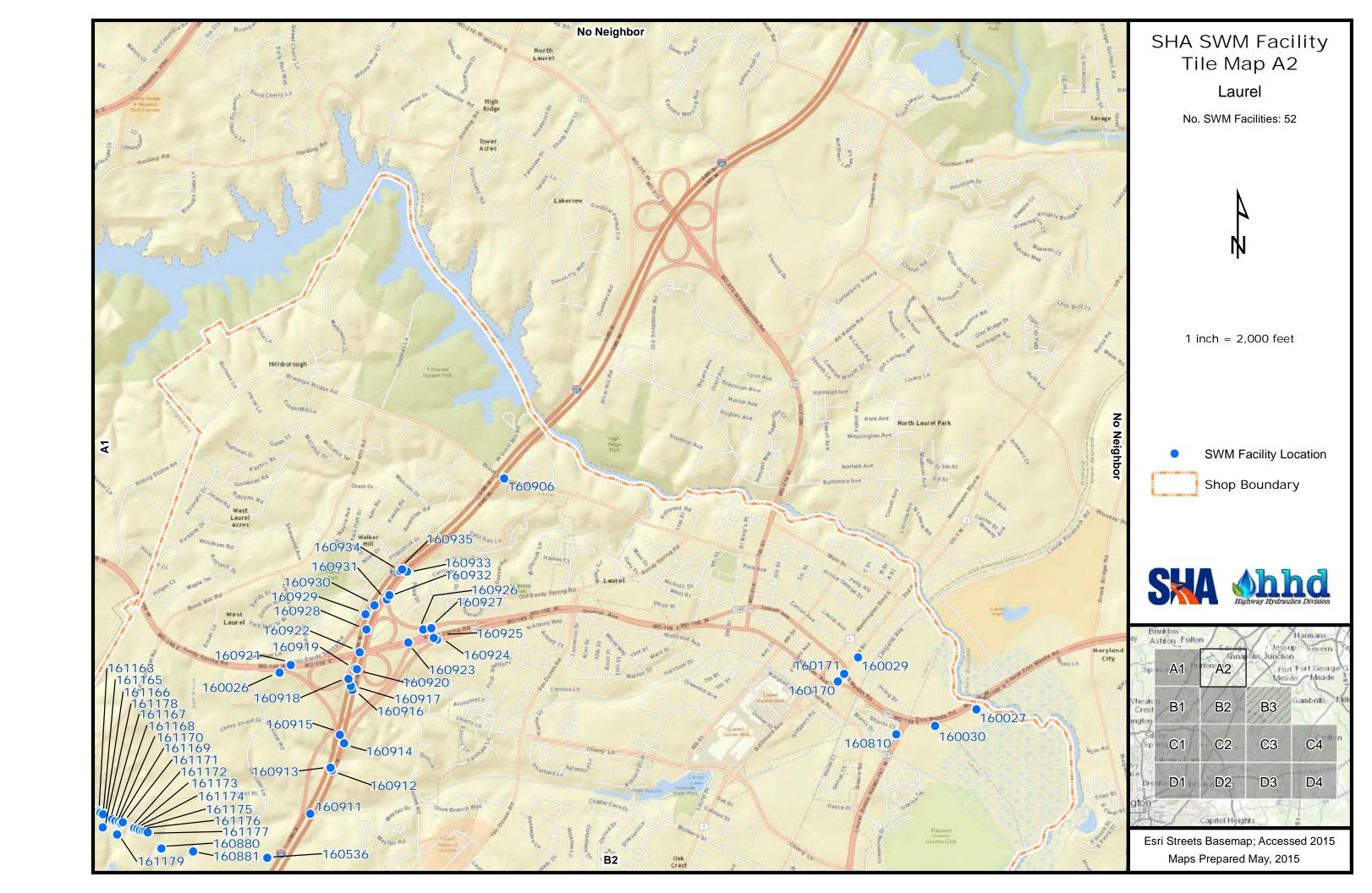


## APPENDIX B

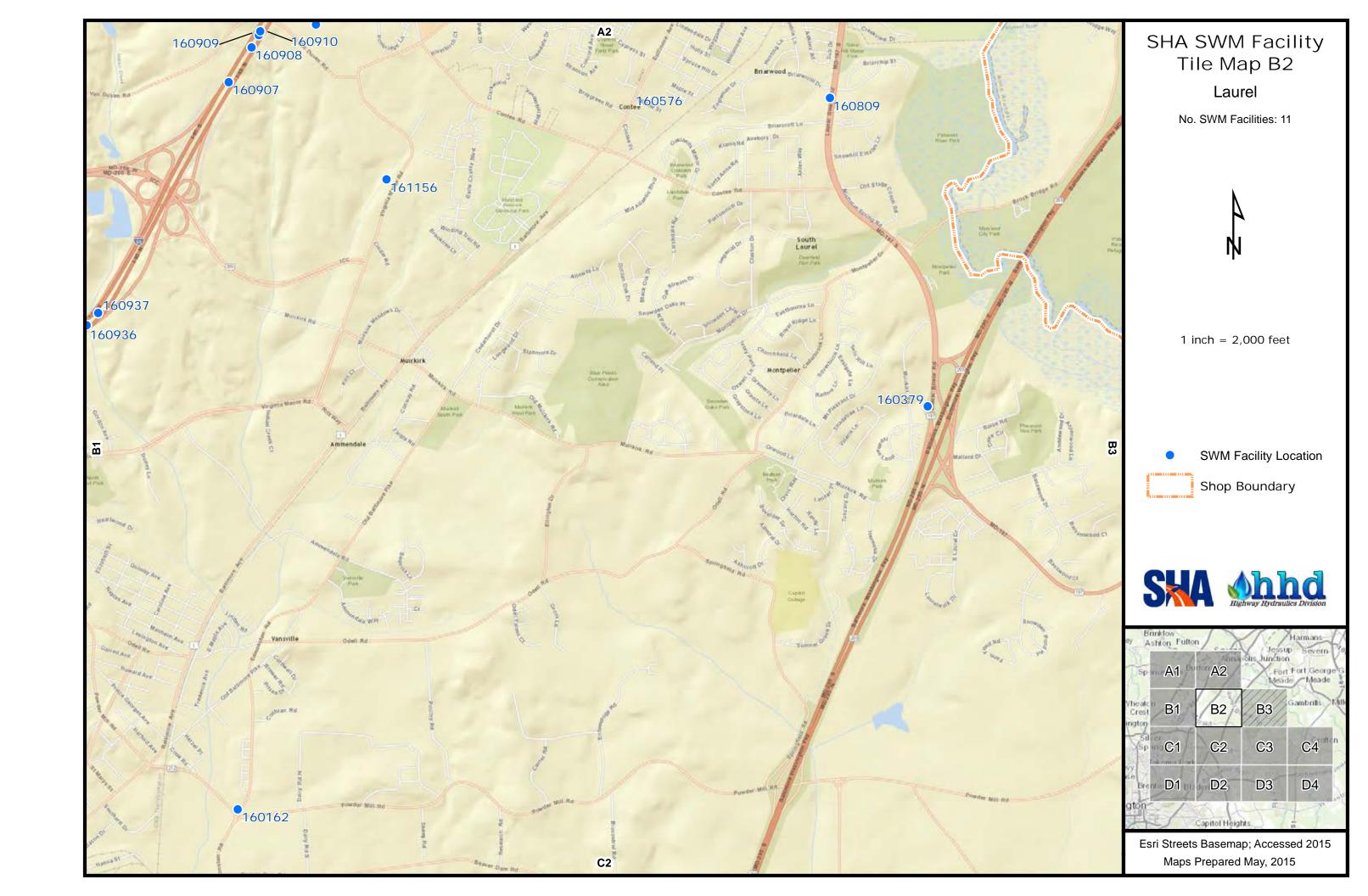
**Stormwater Management Facility Mapping** 

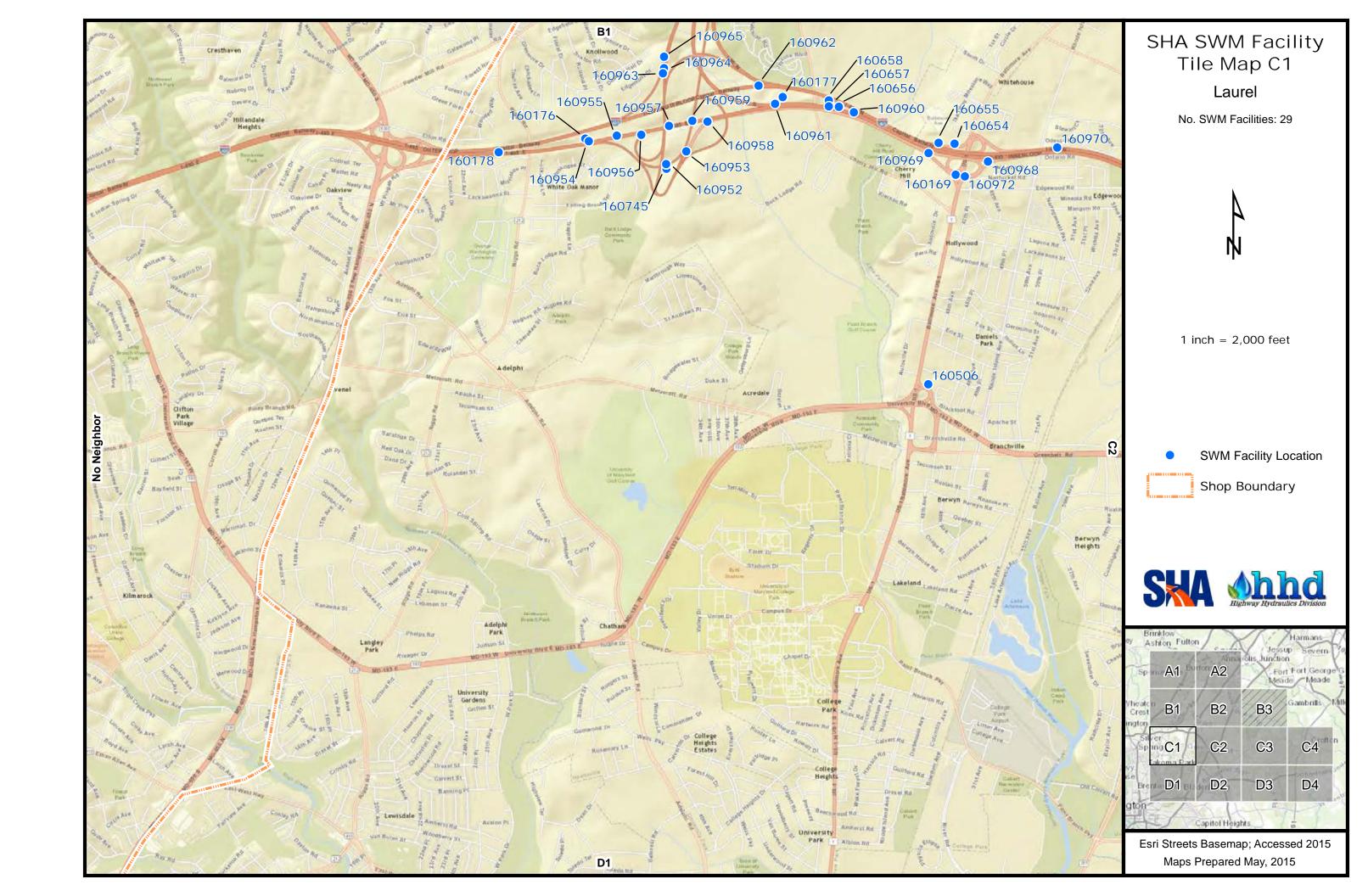


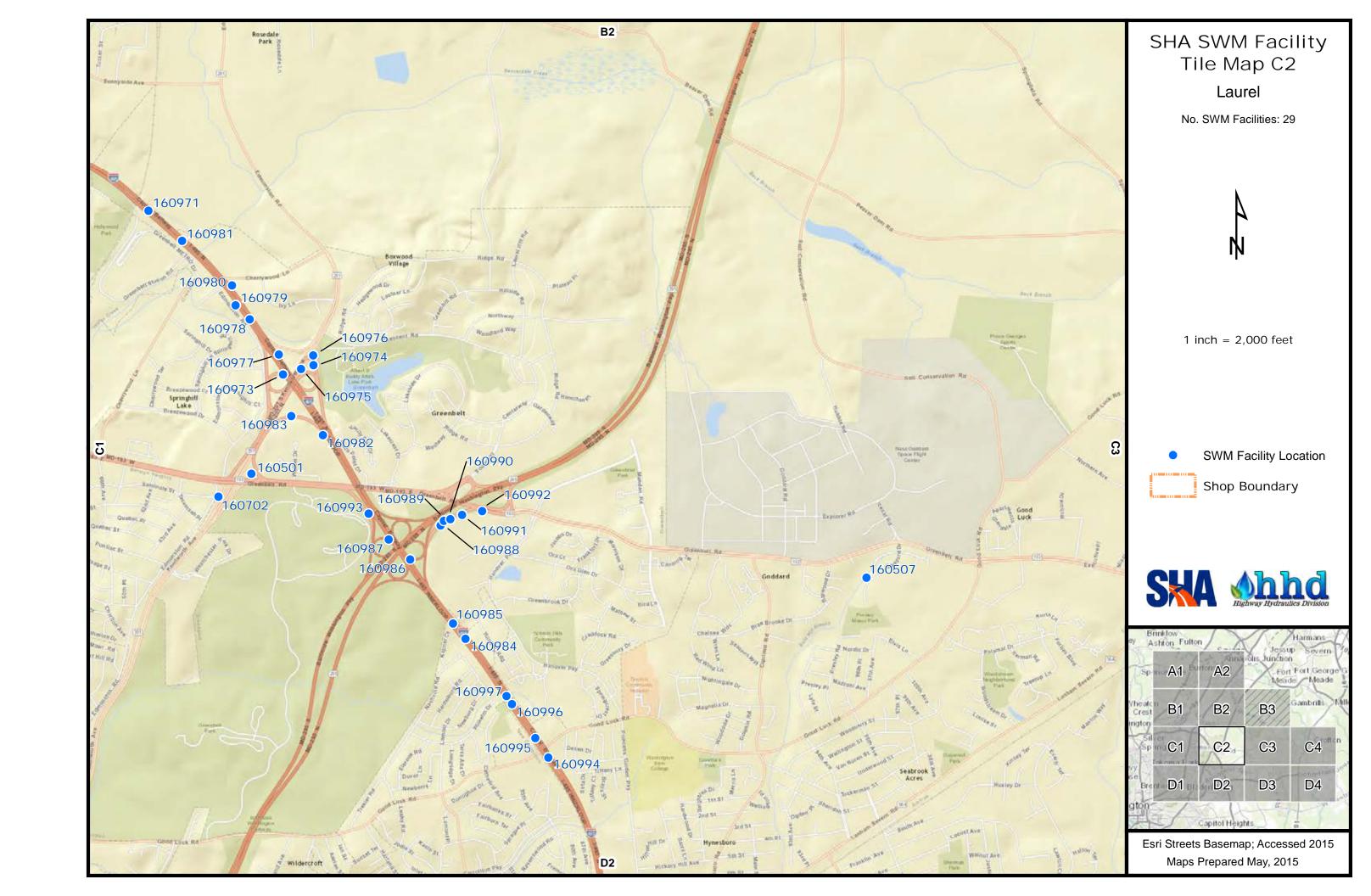


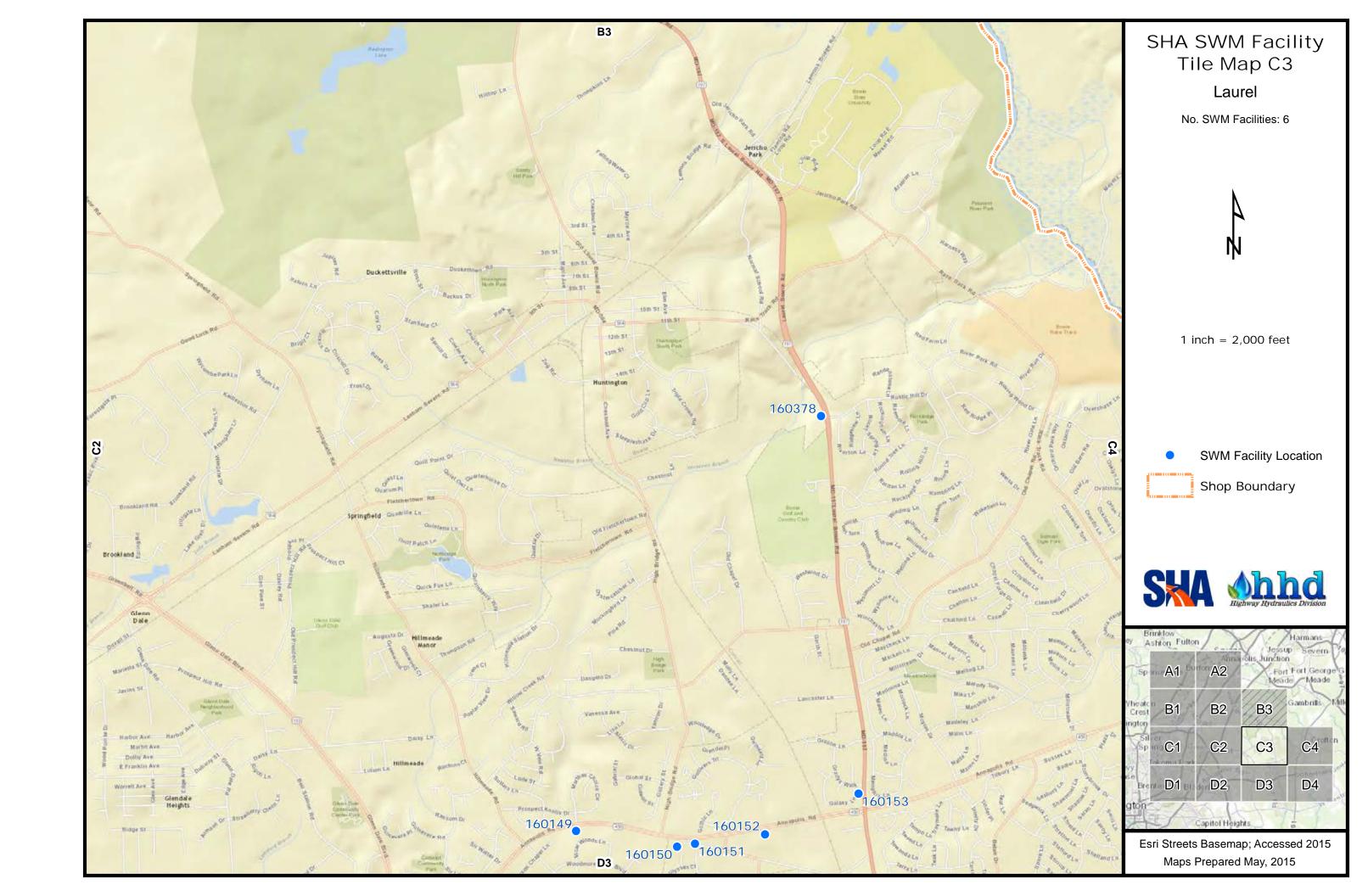


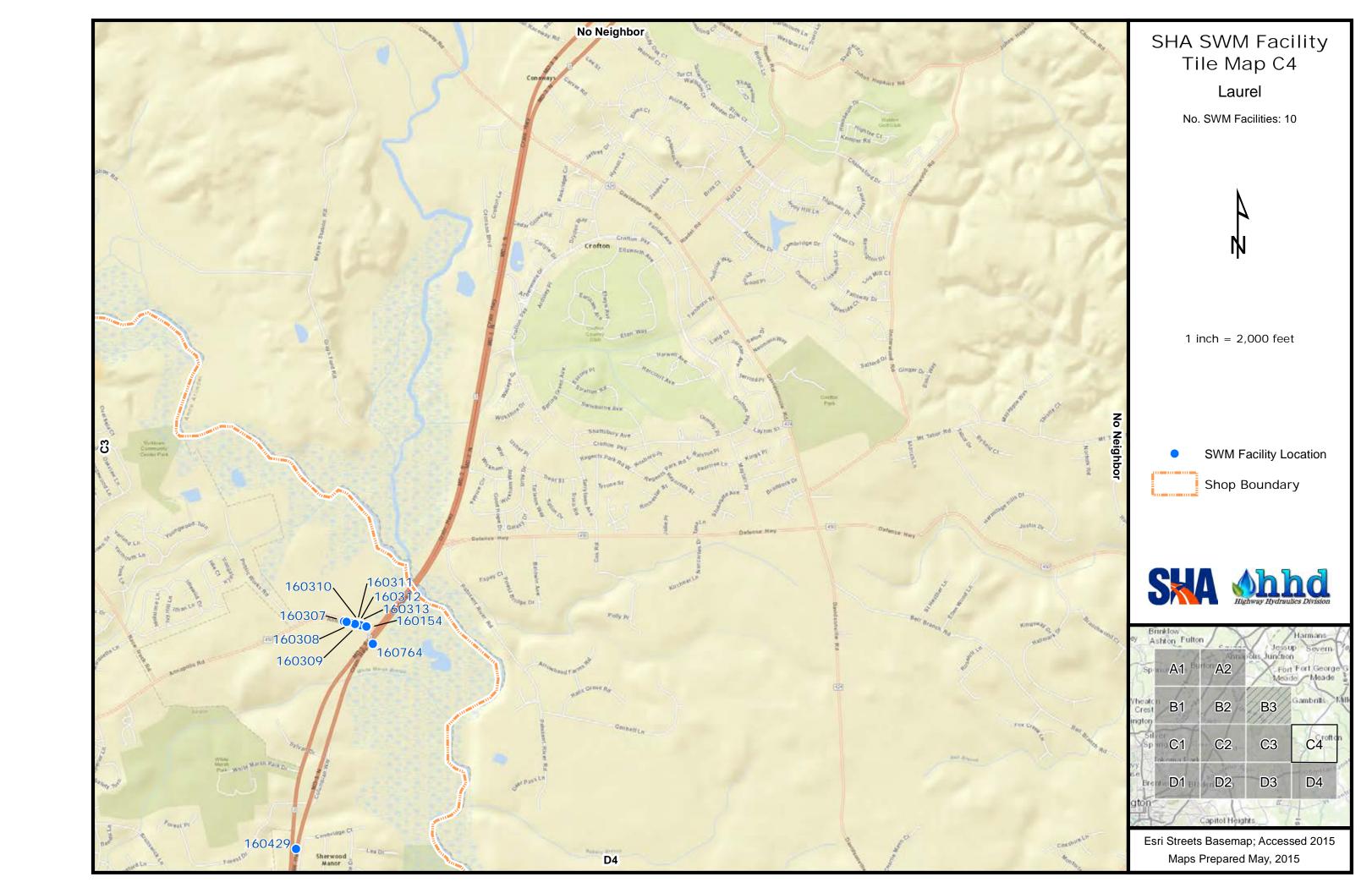


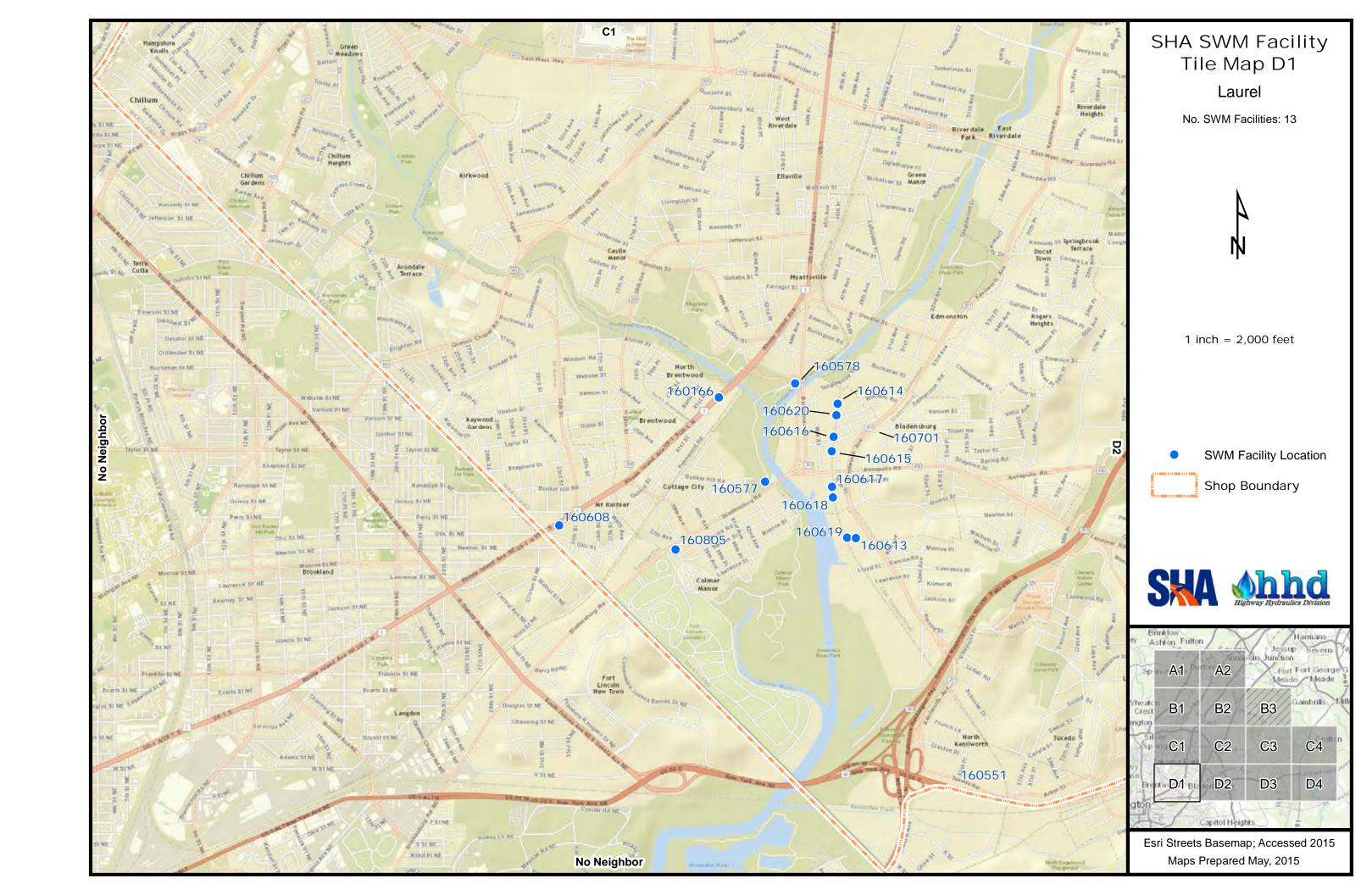


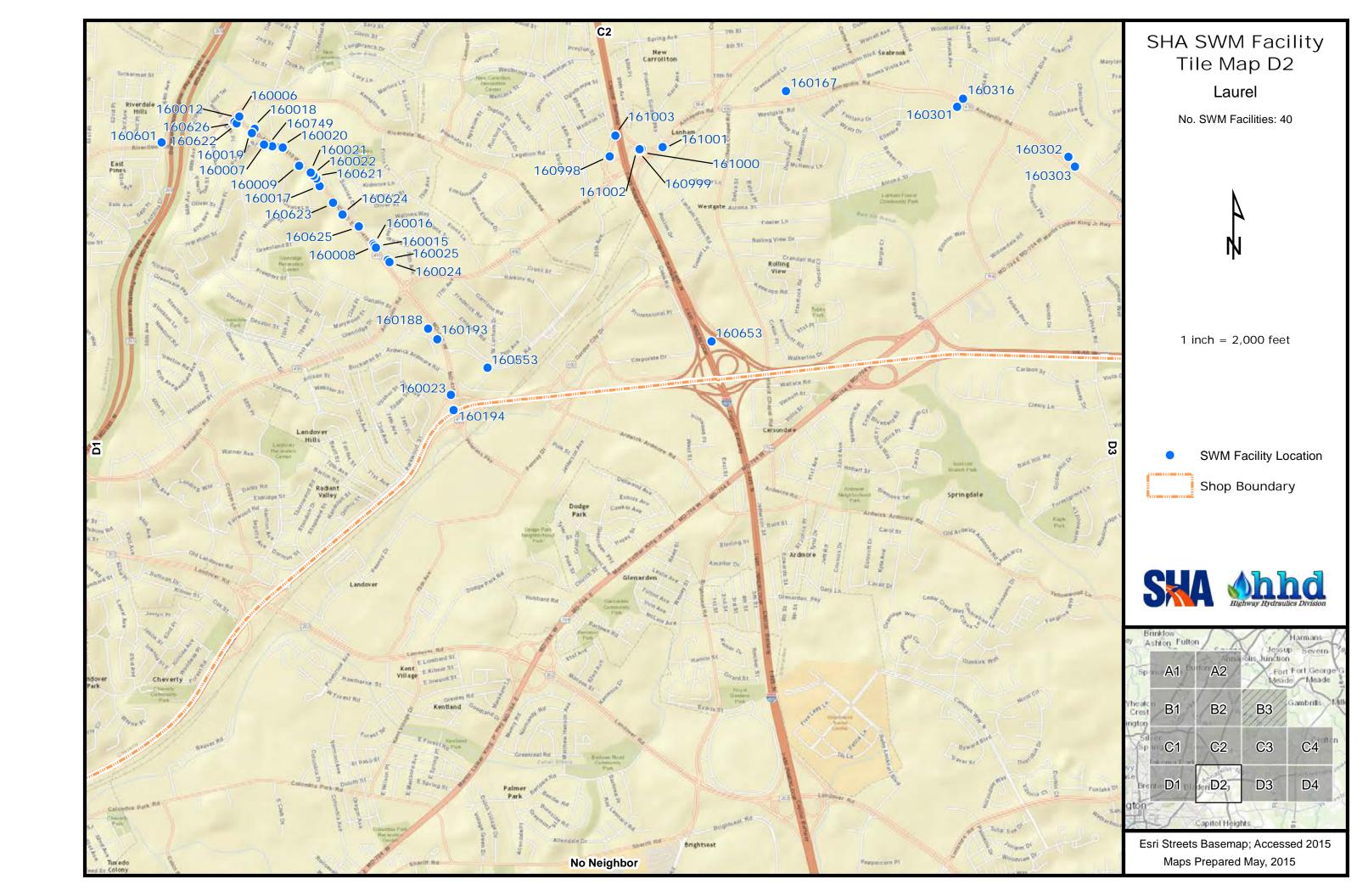


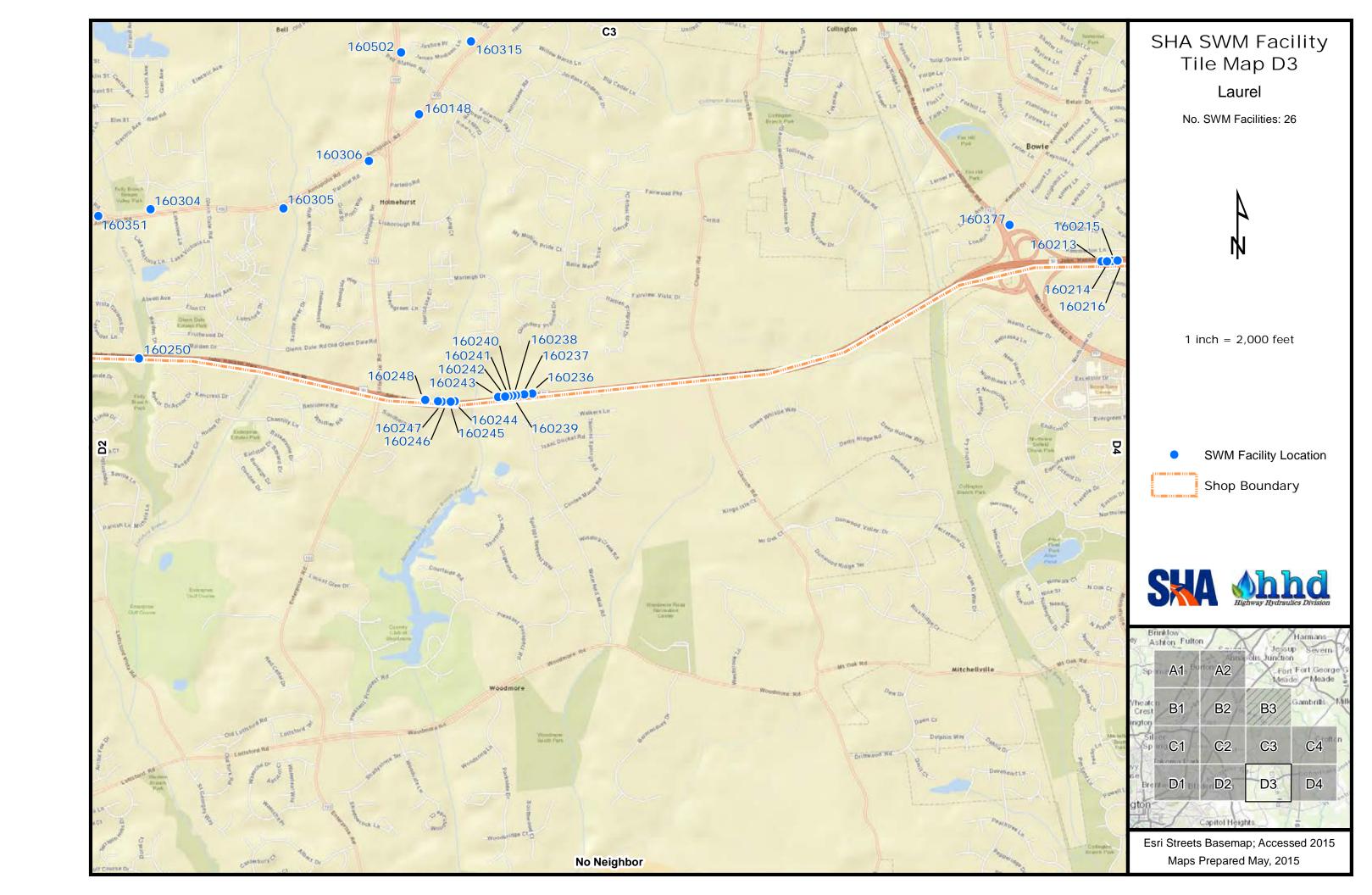


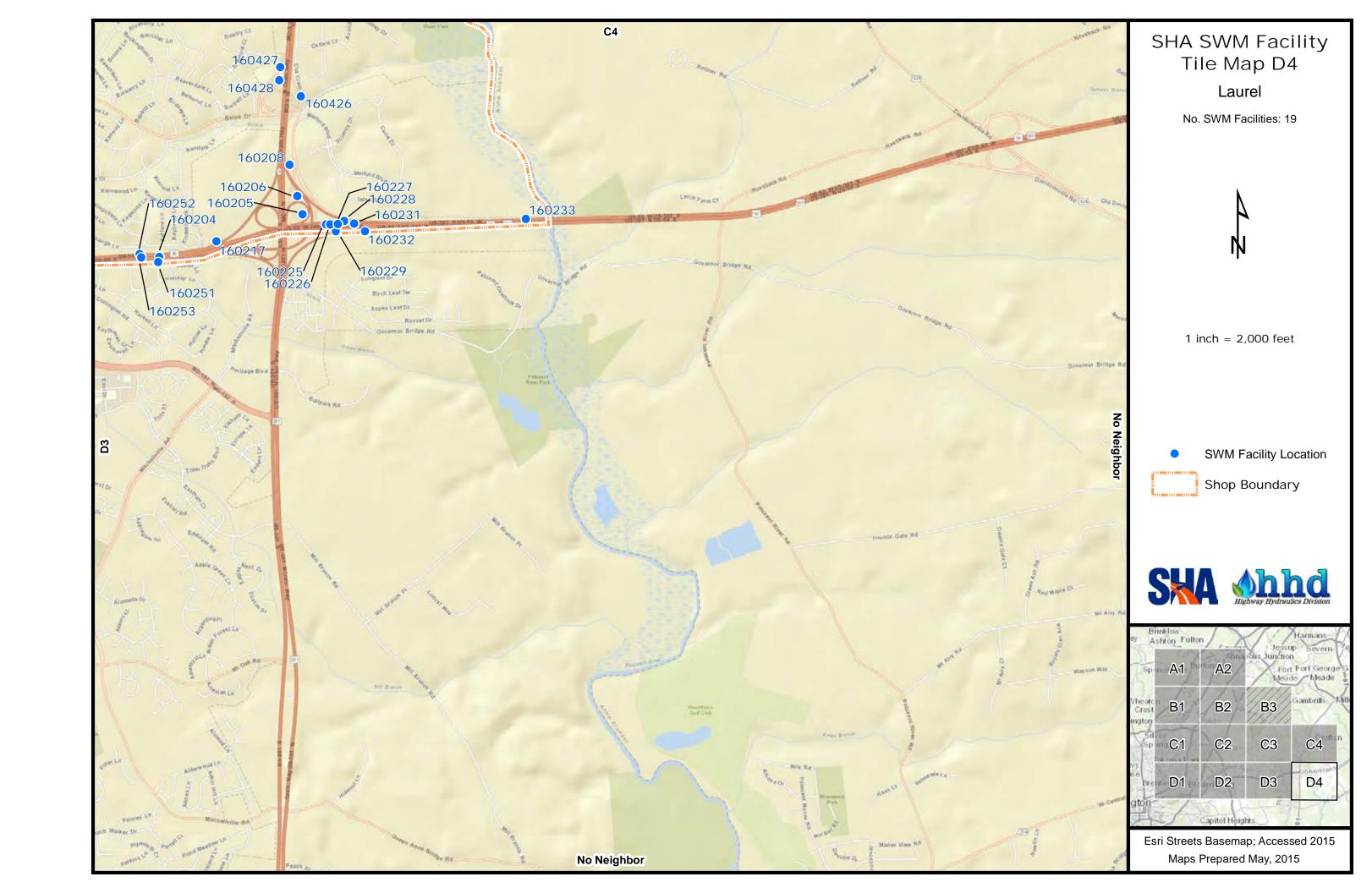


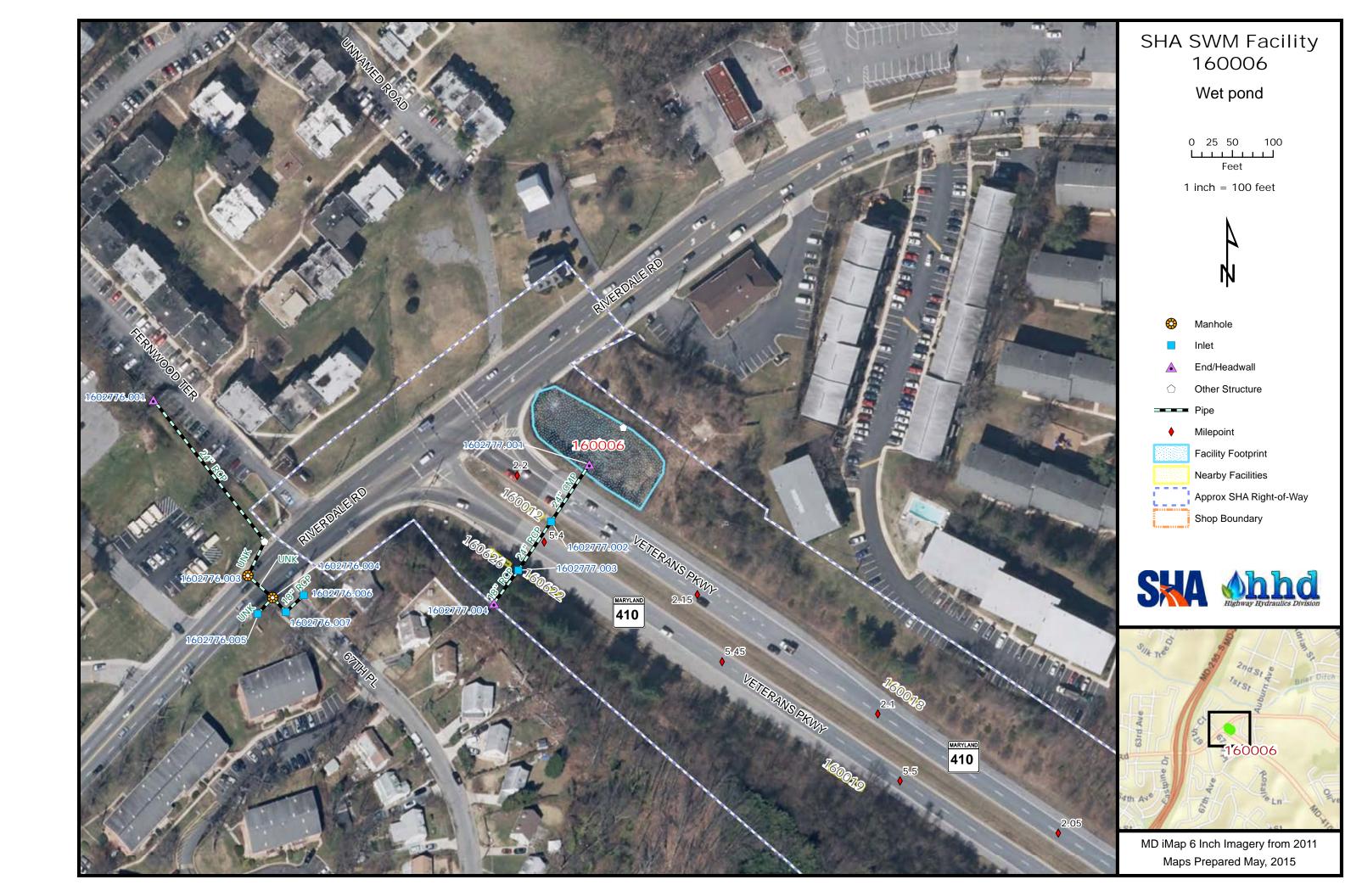






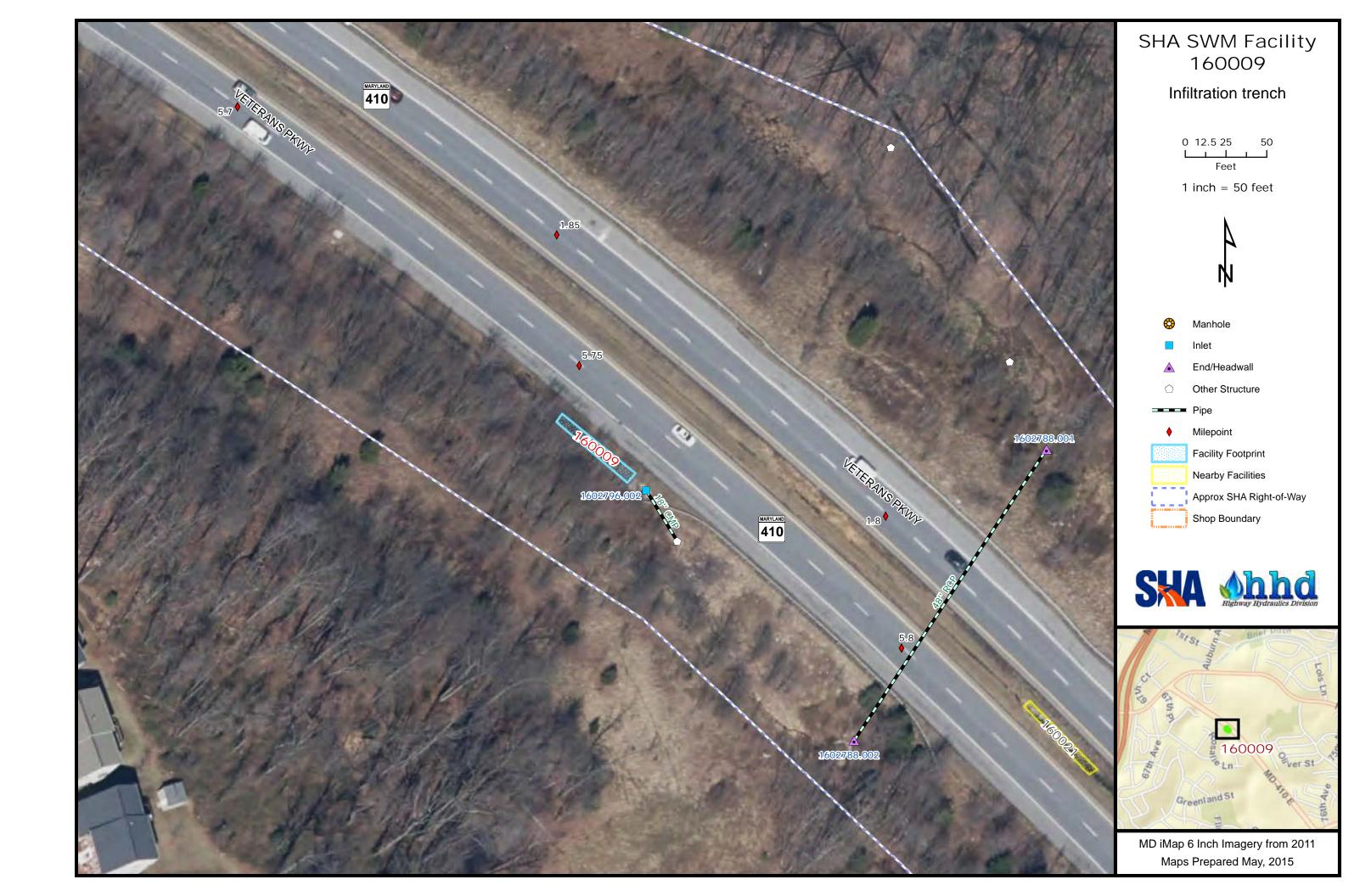












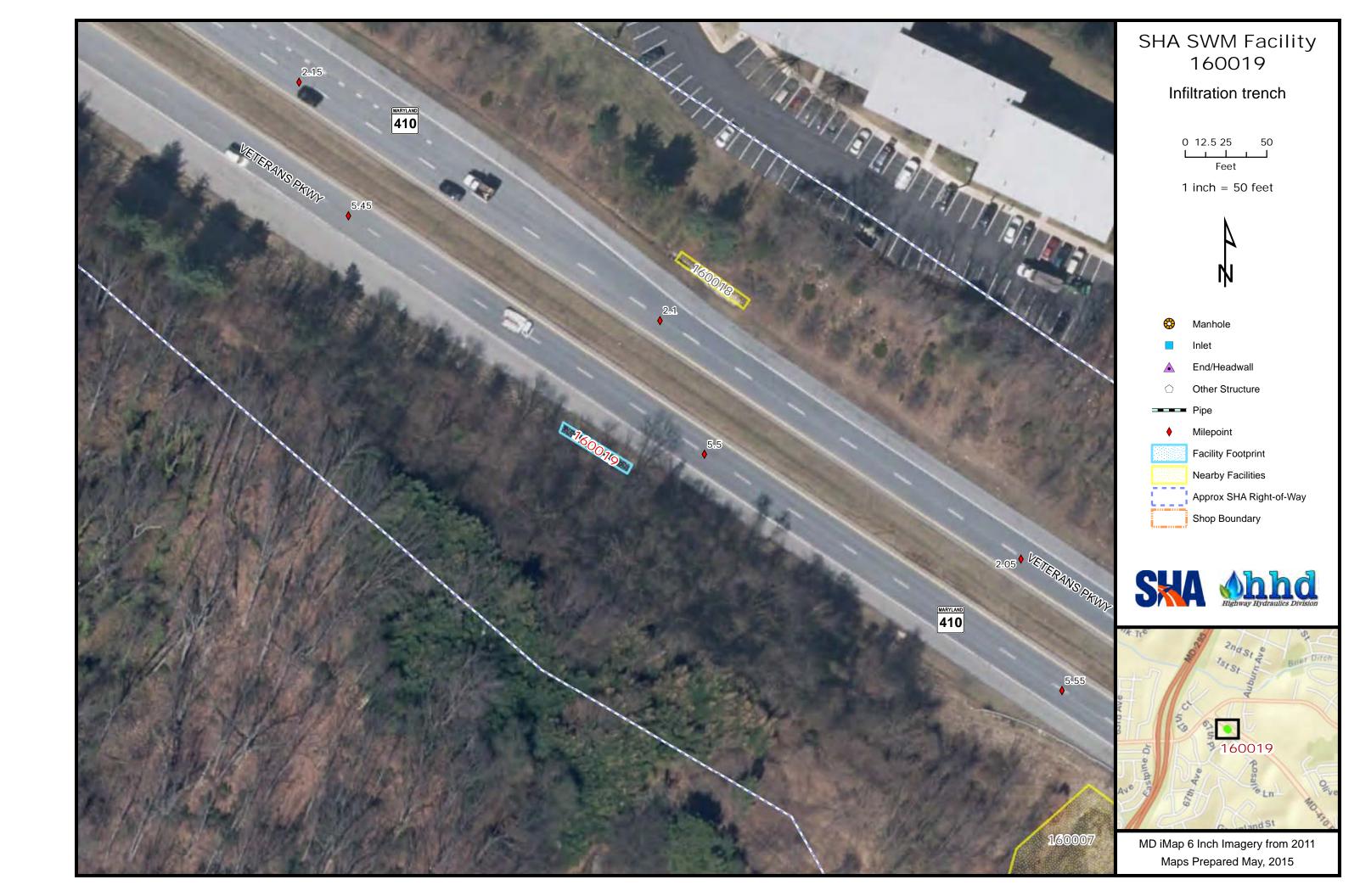






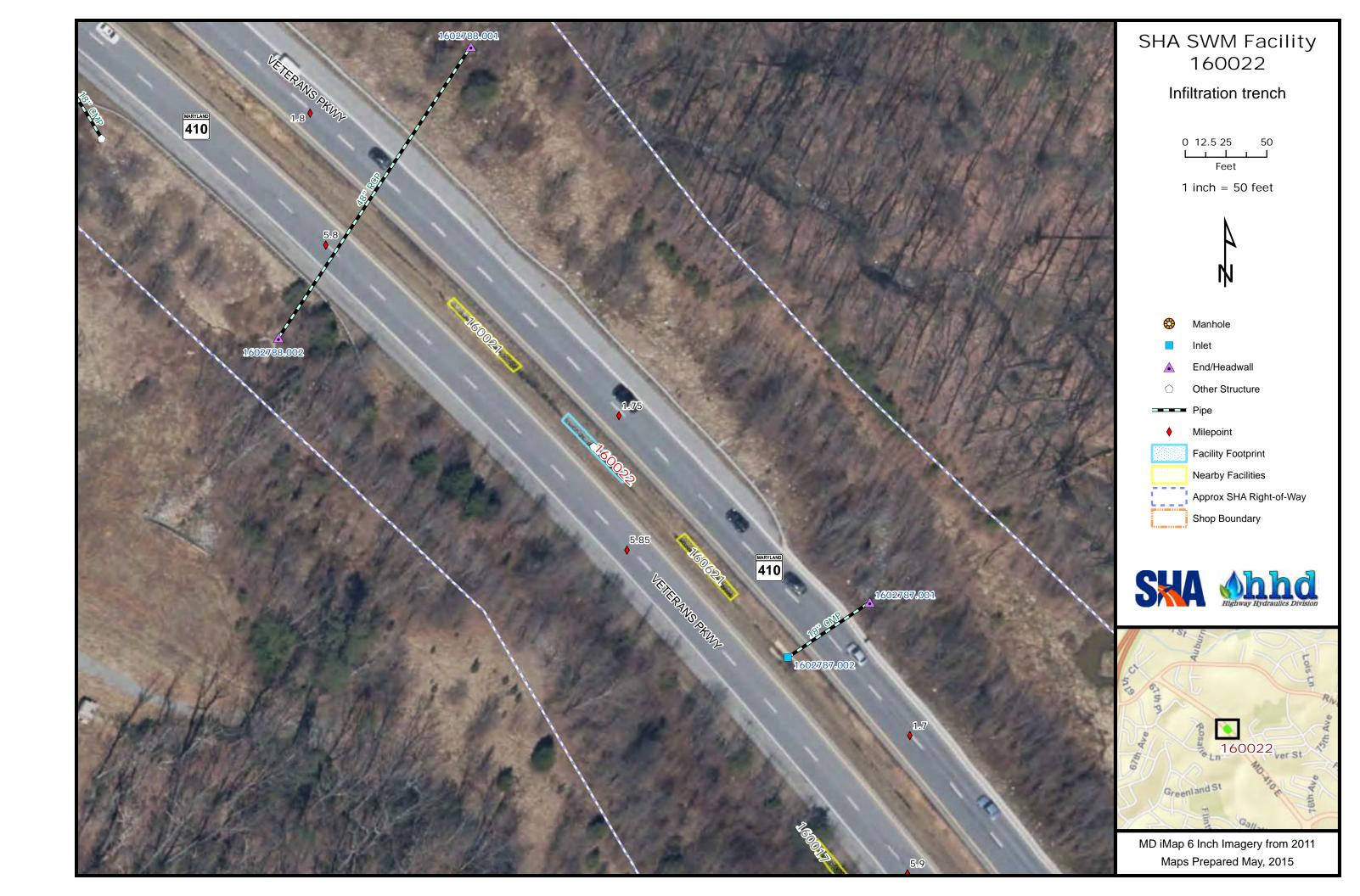




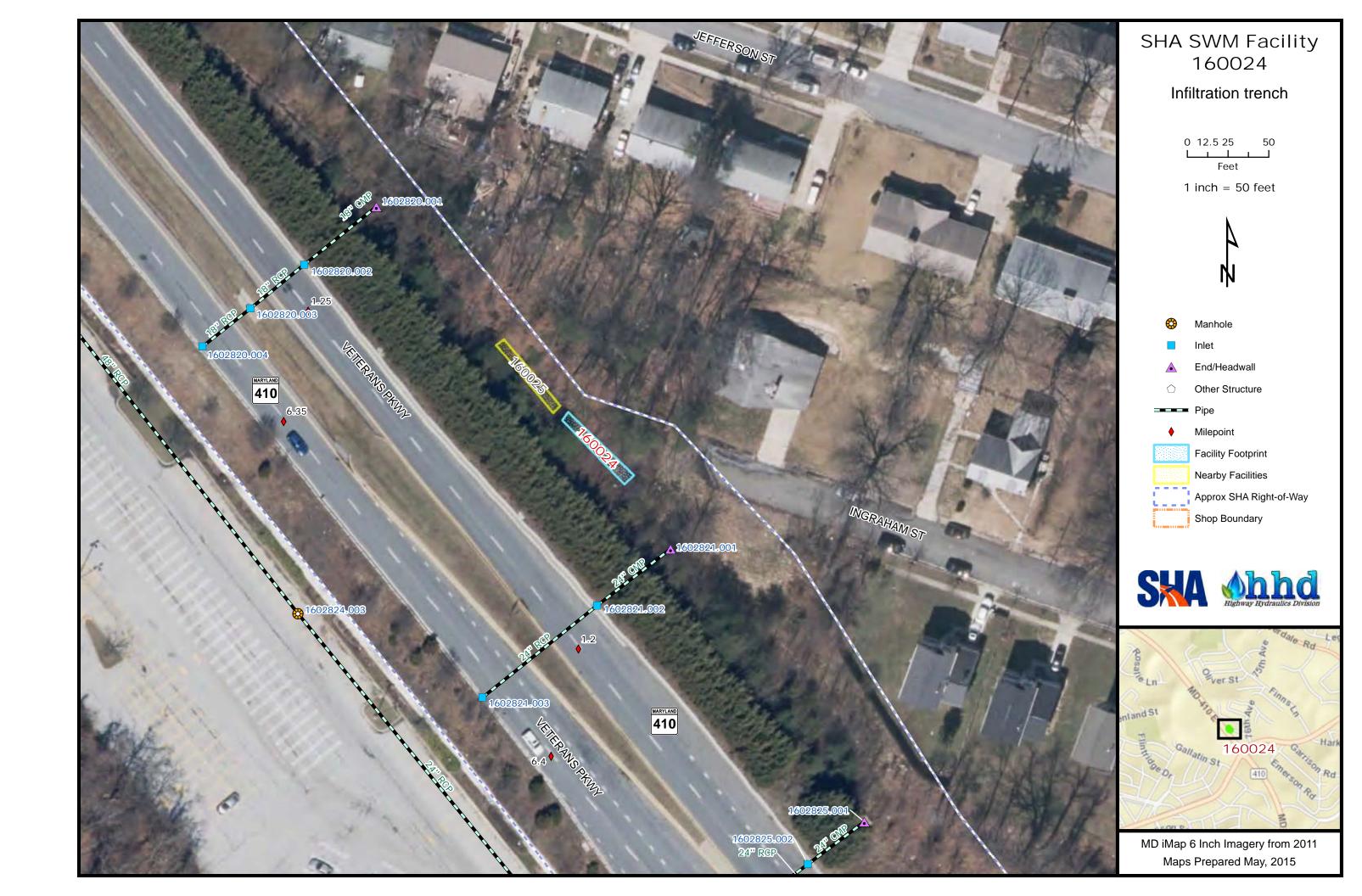


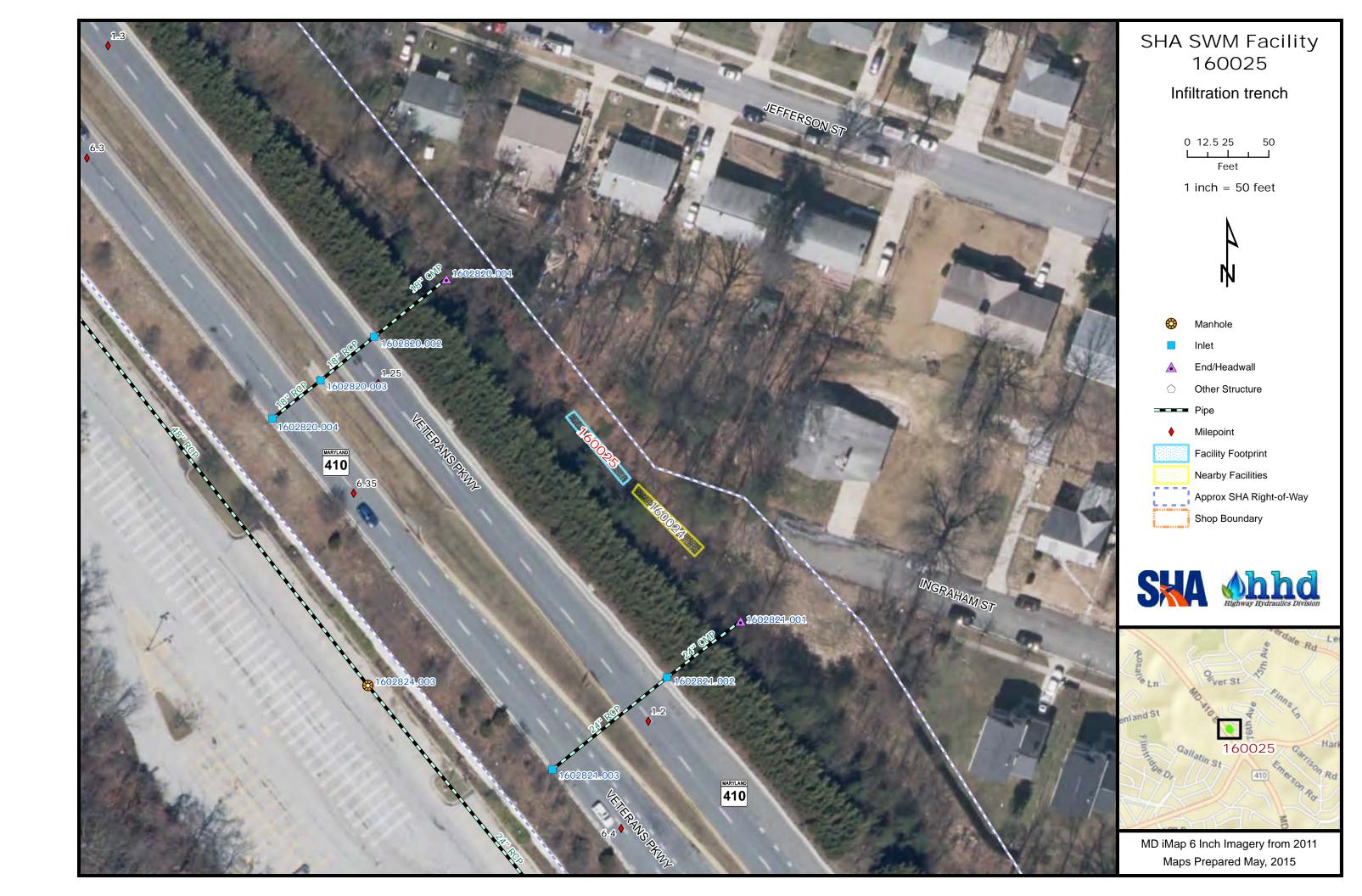






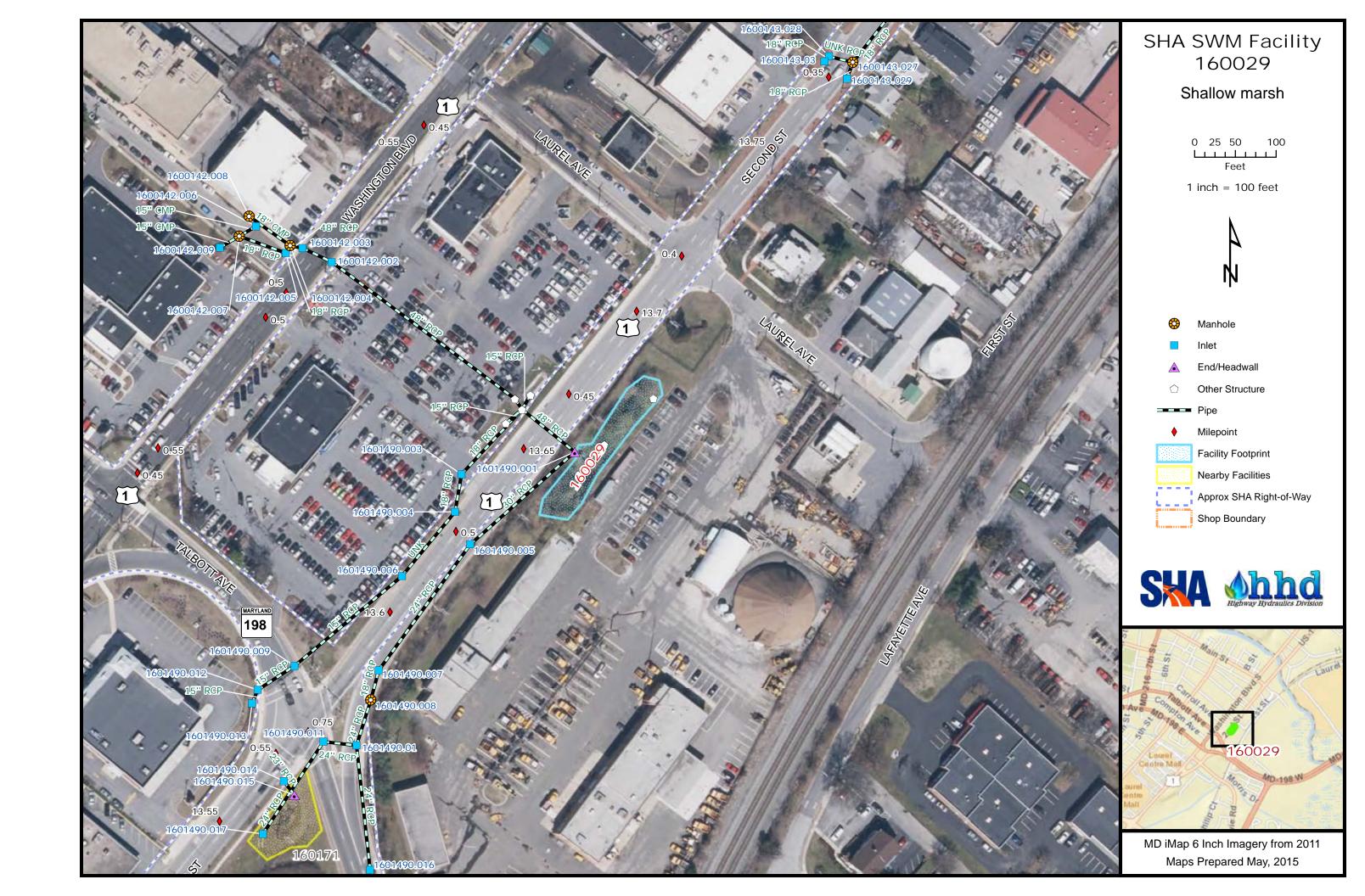


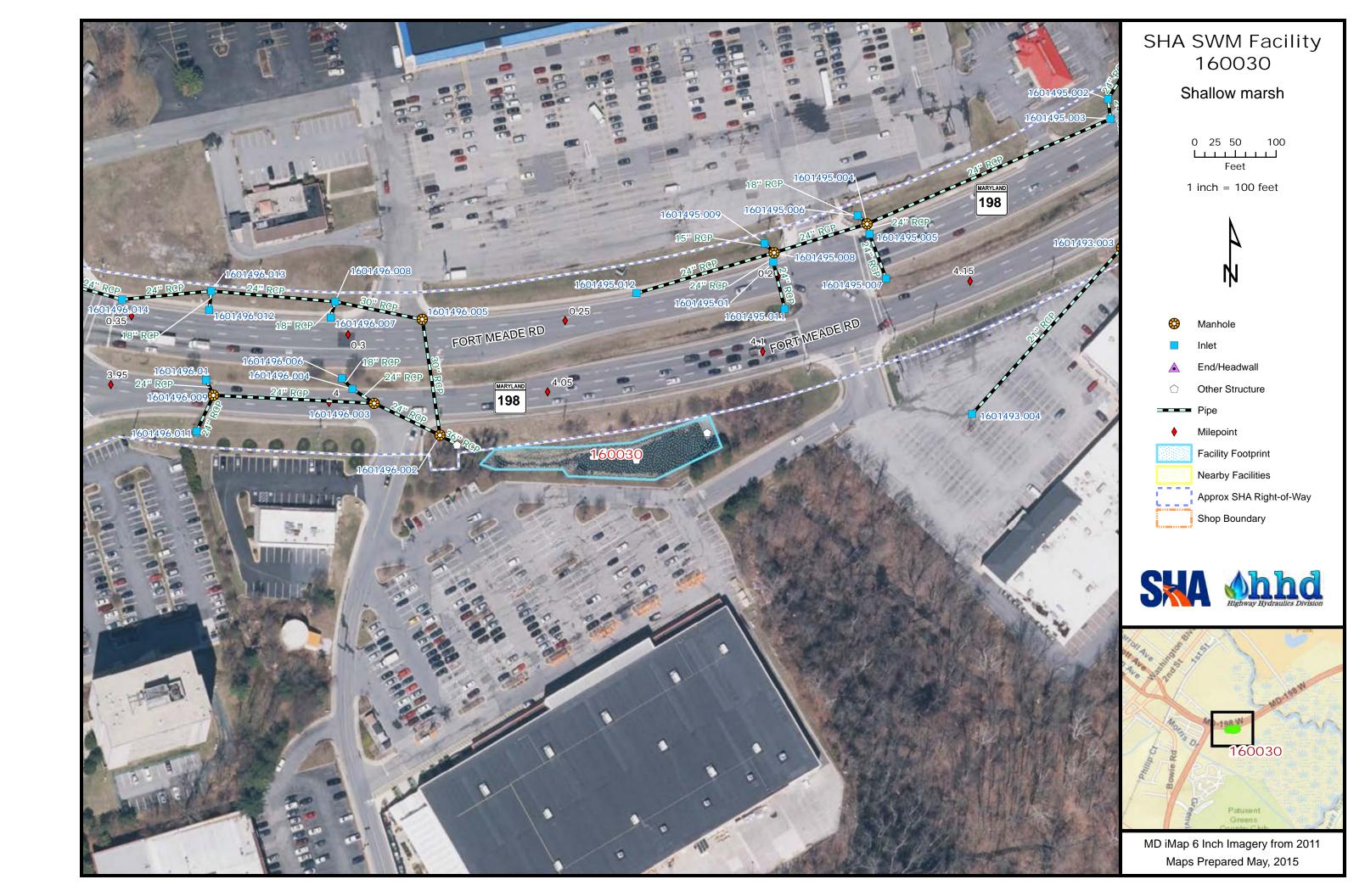










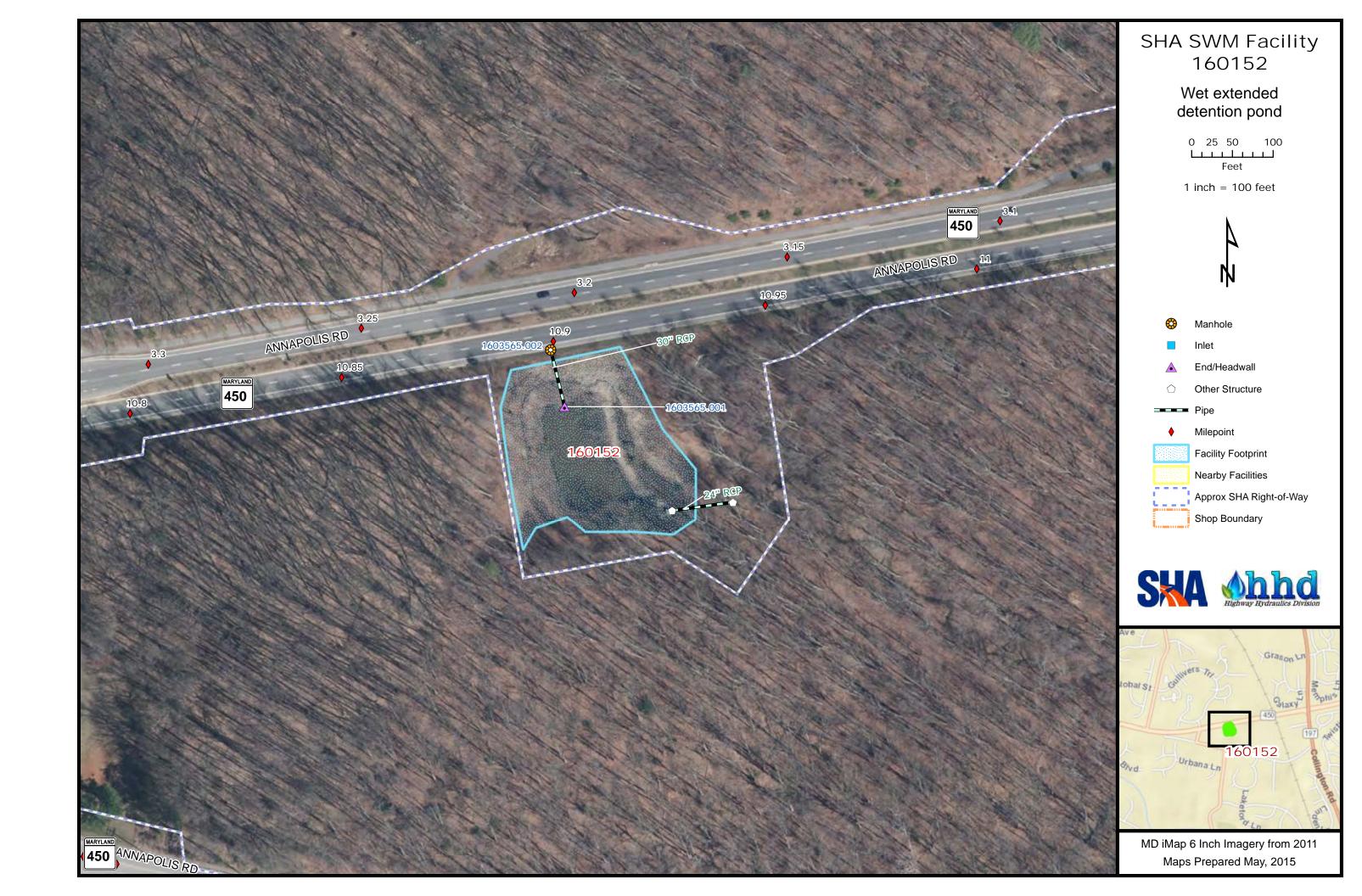


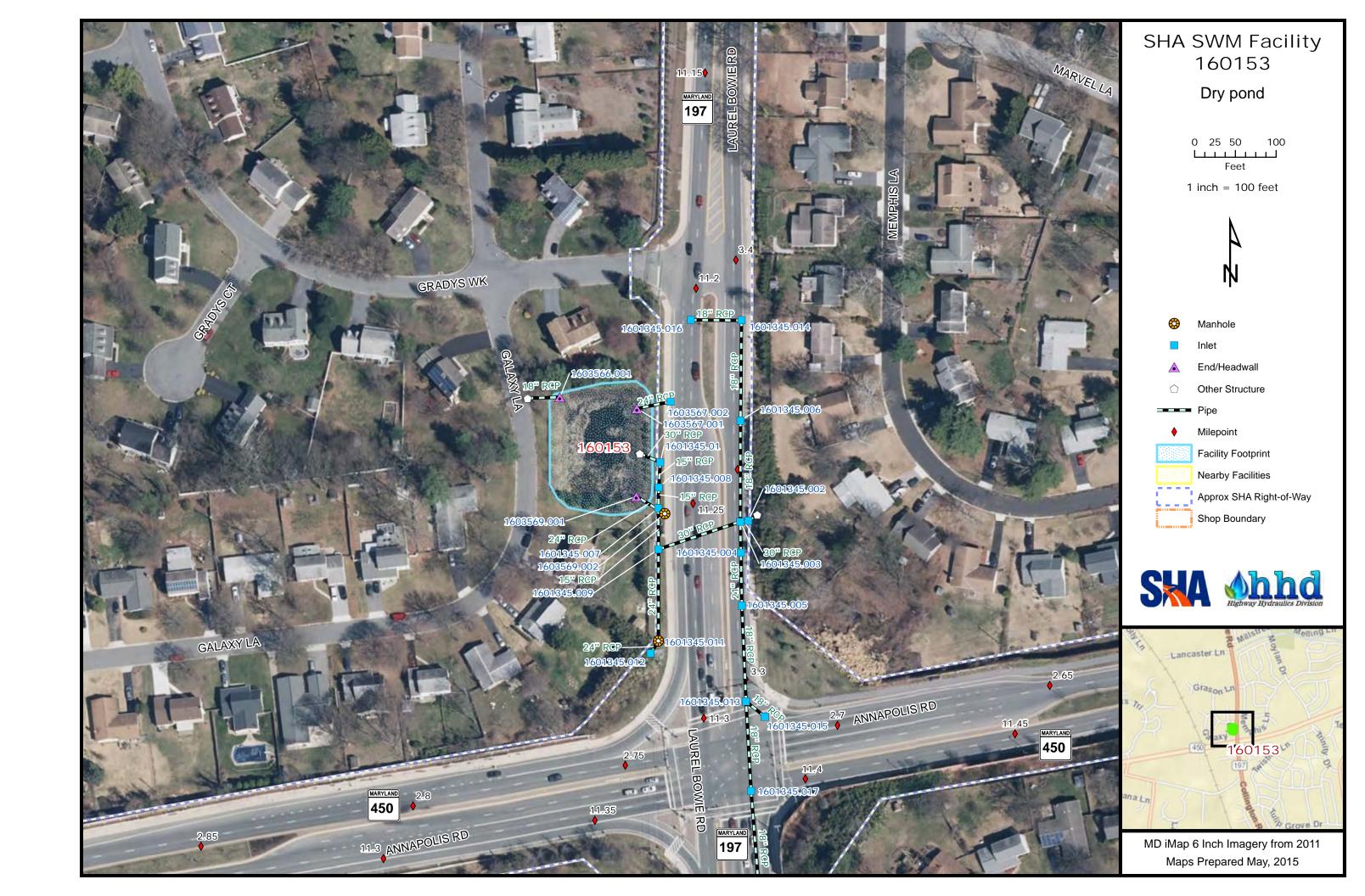








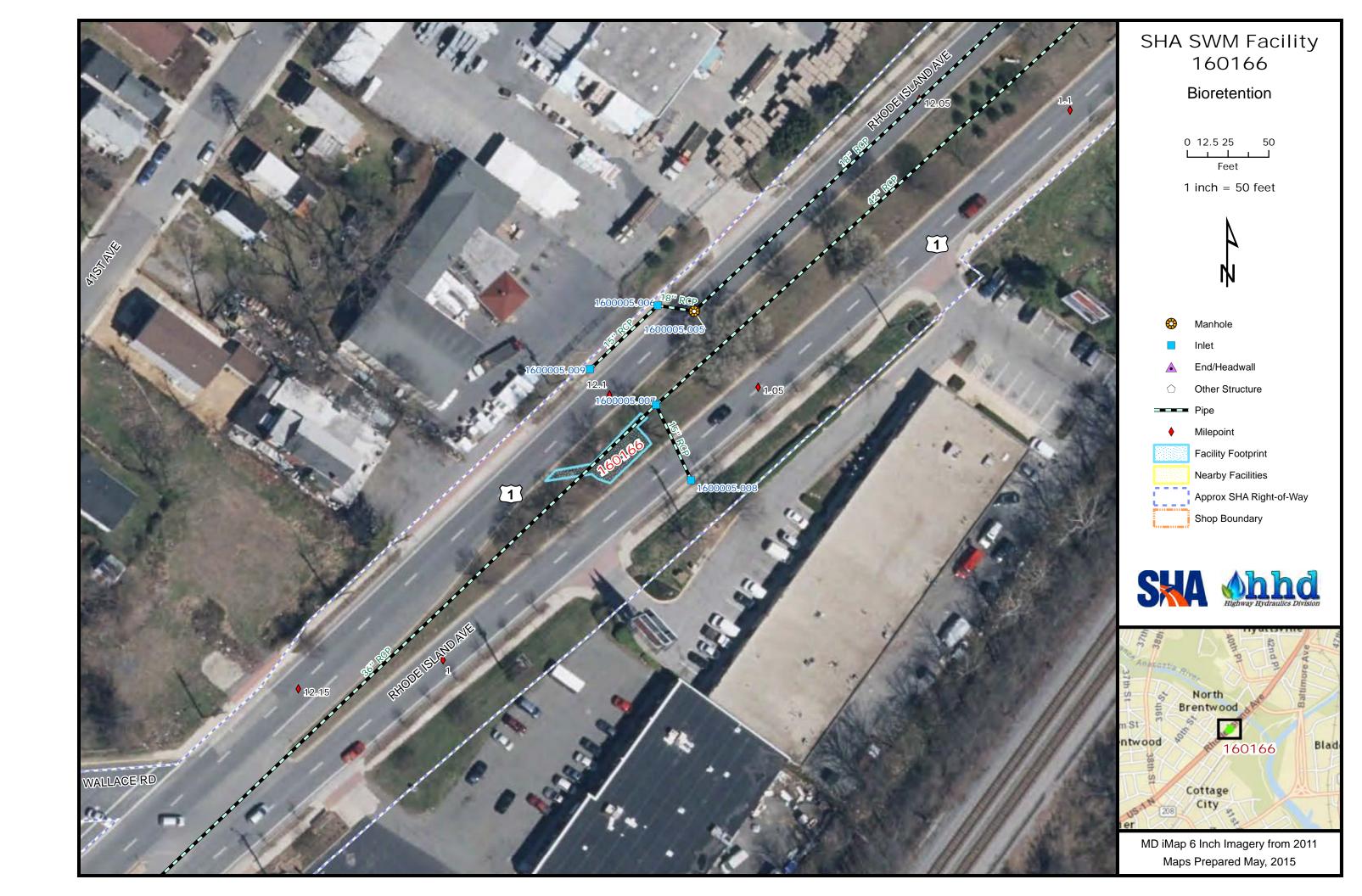




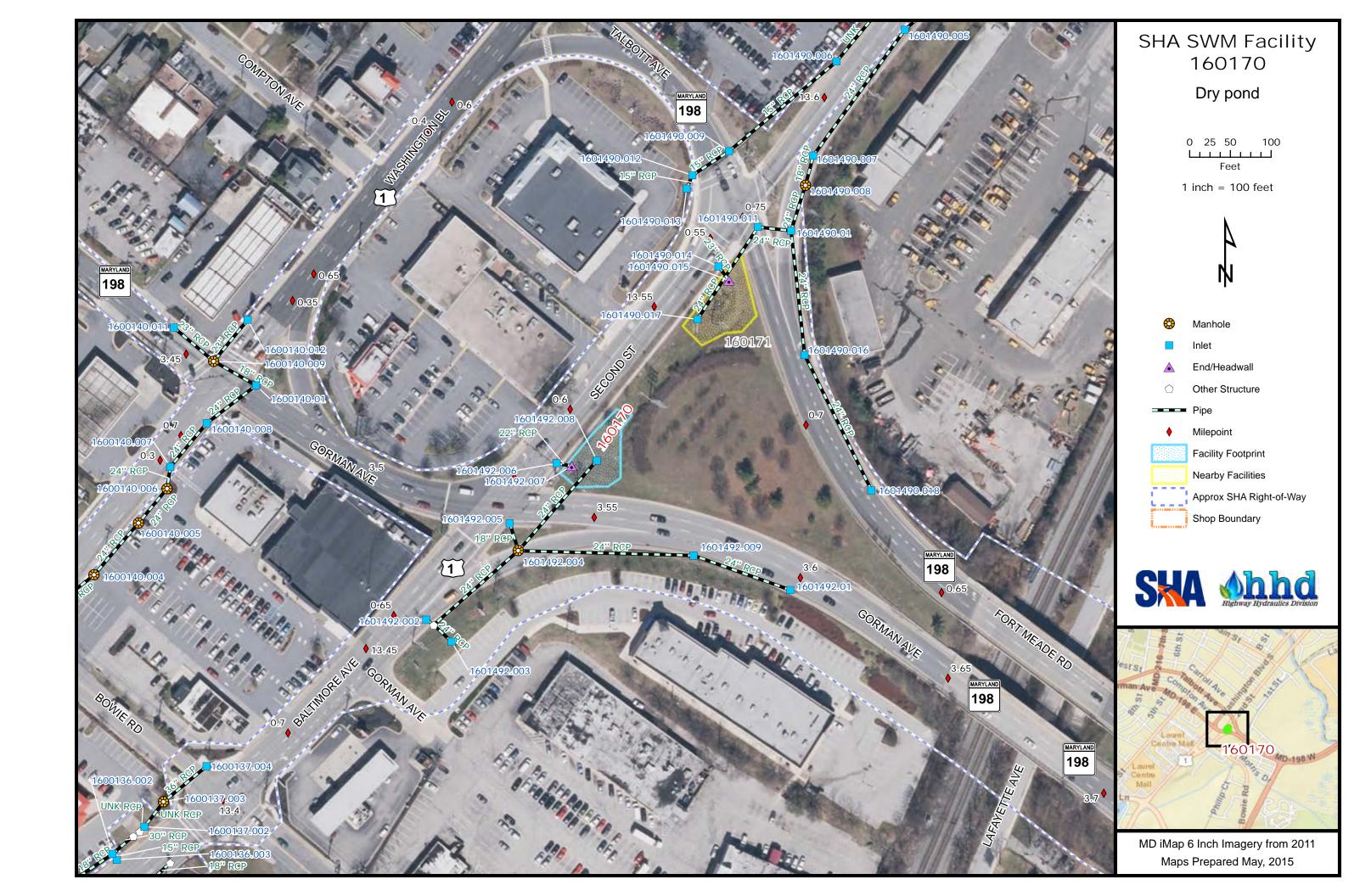


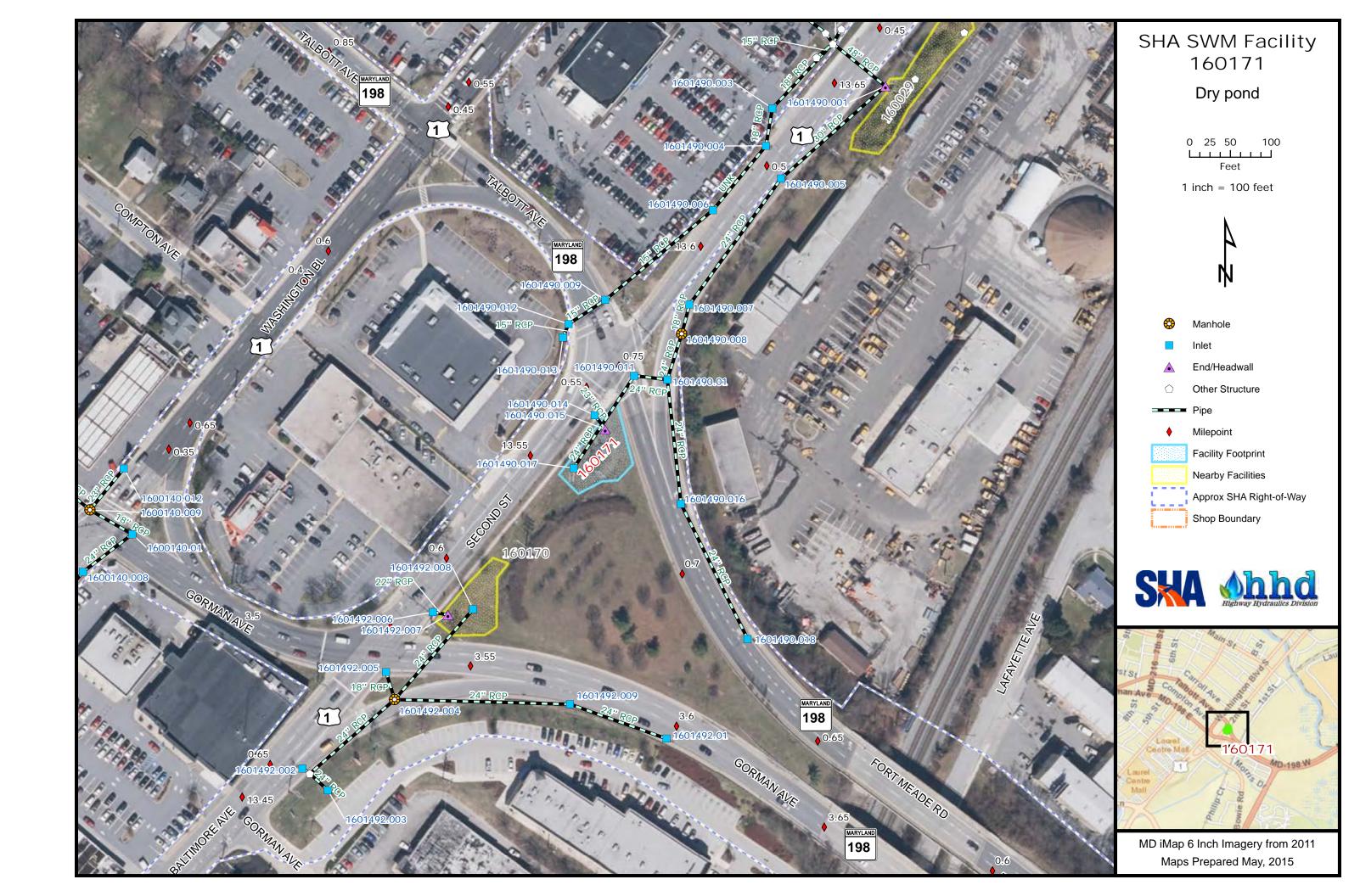




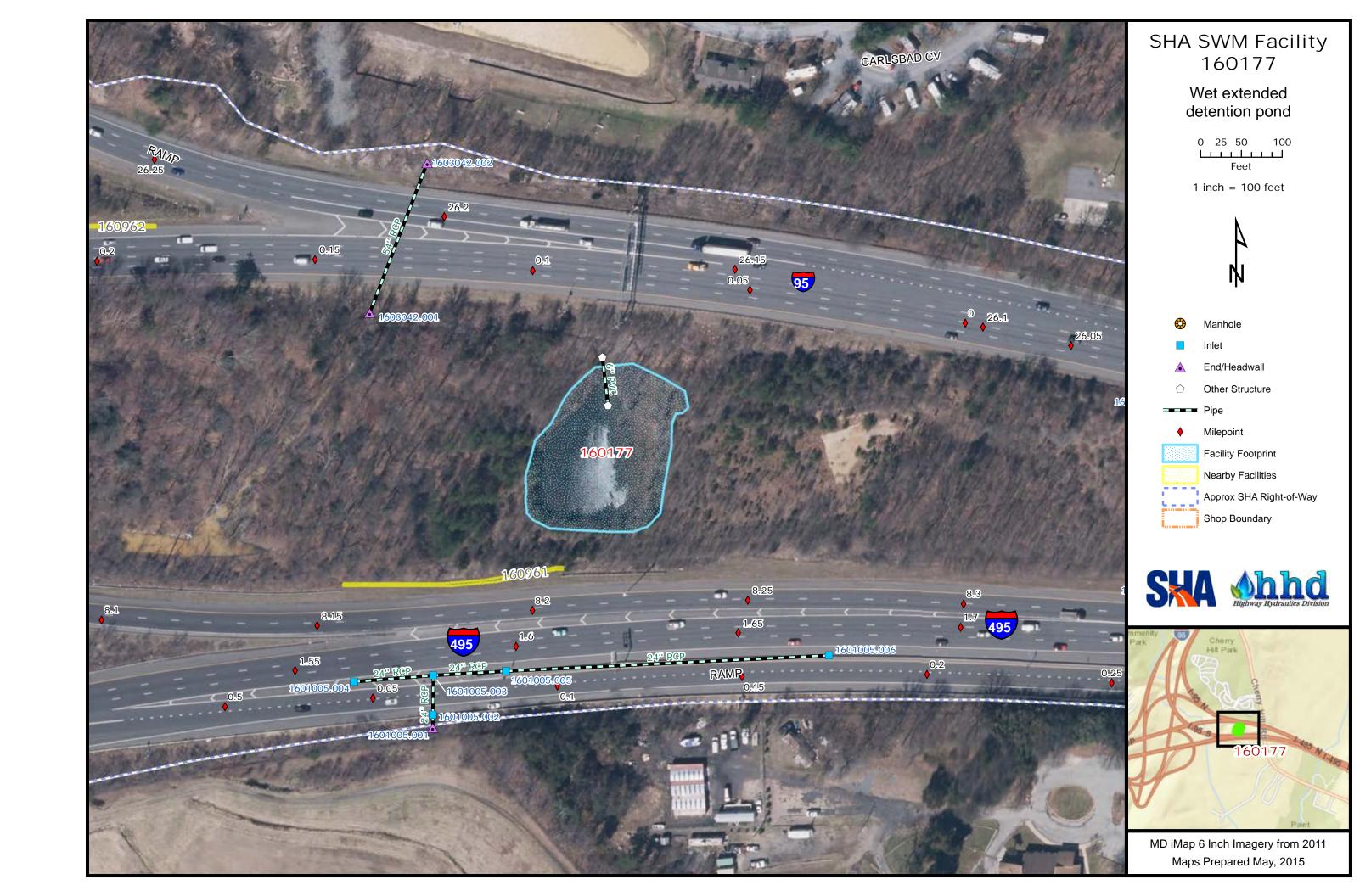


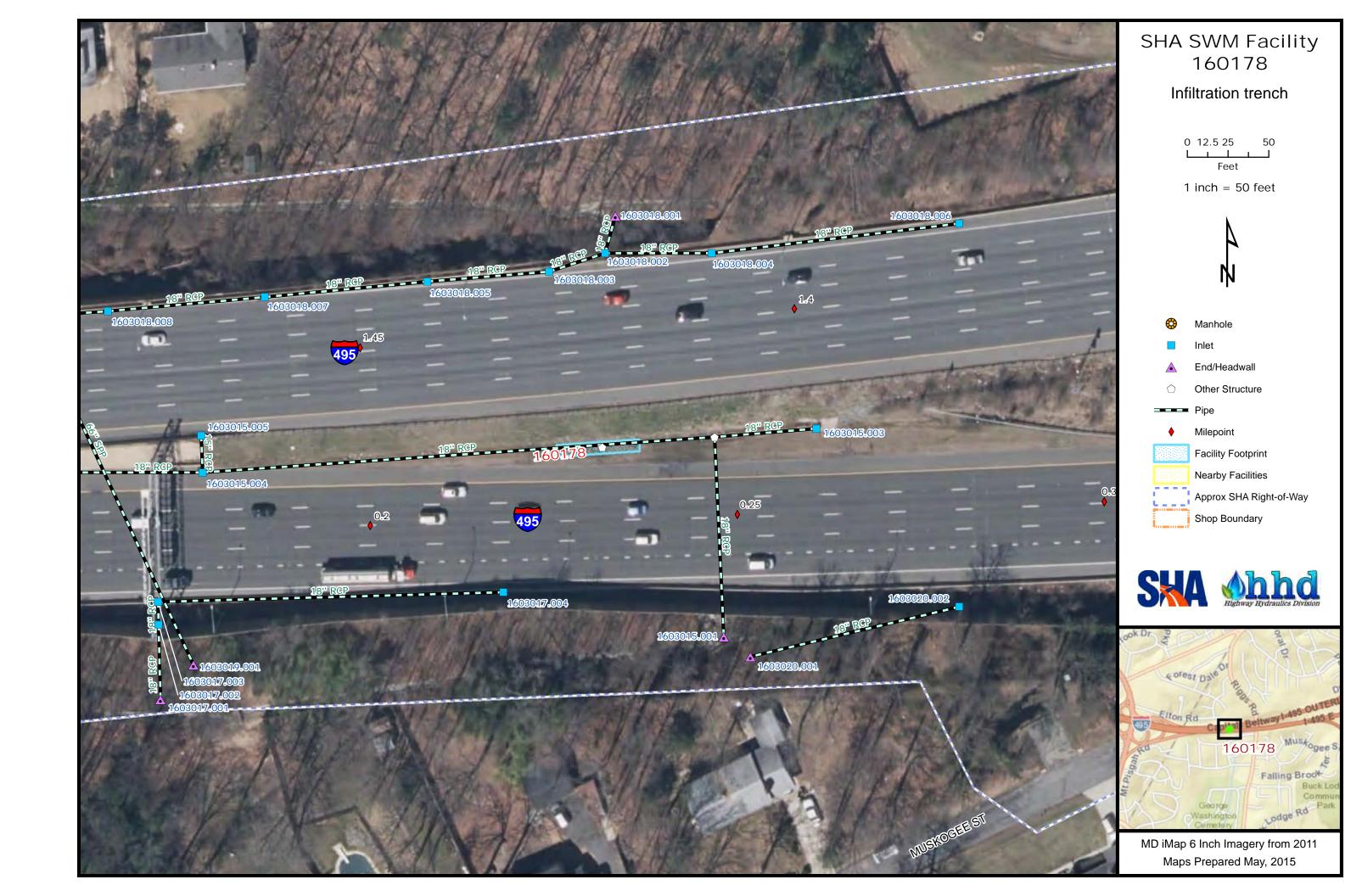


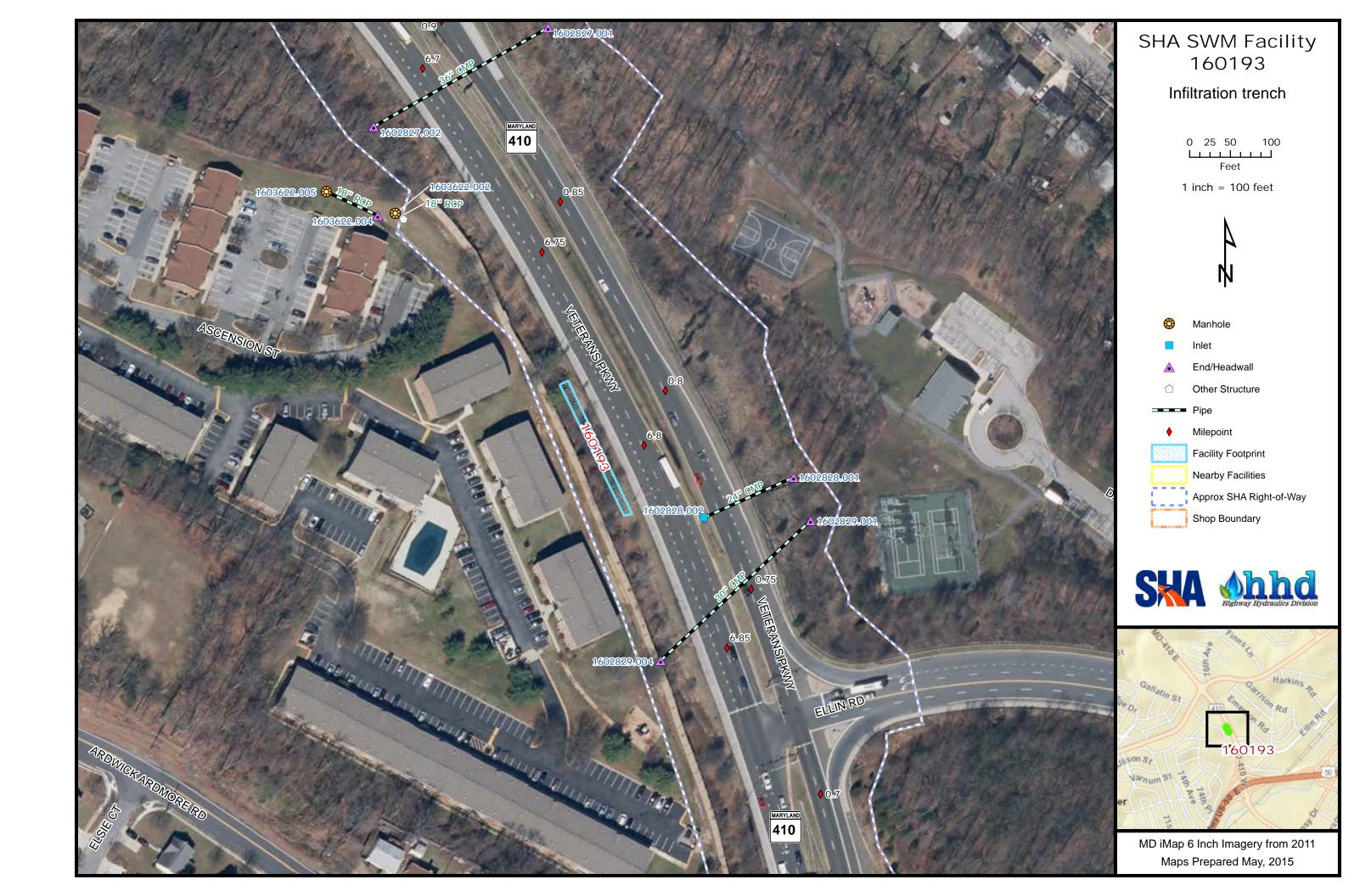


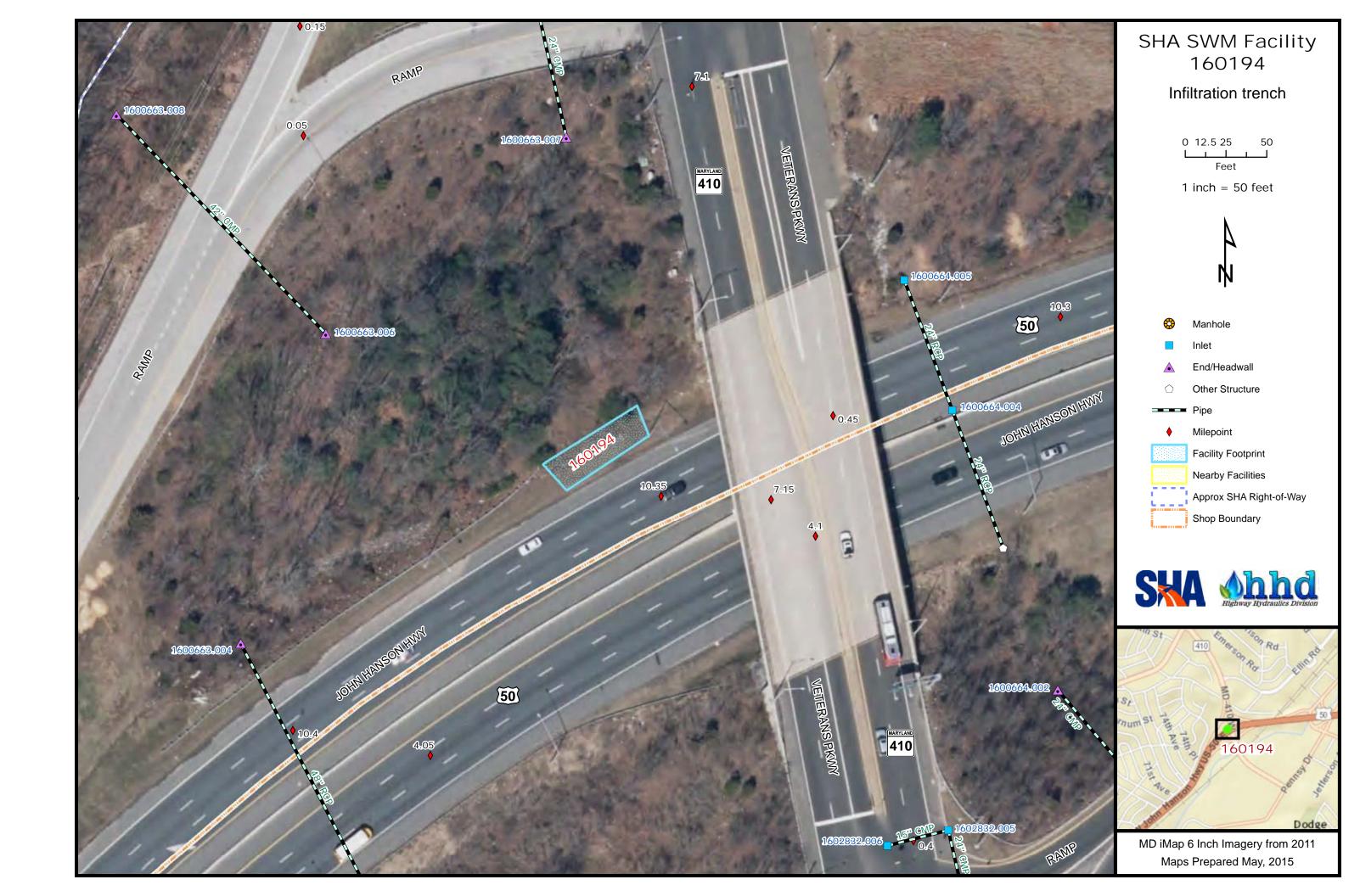




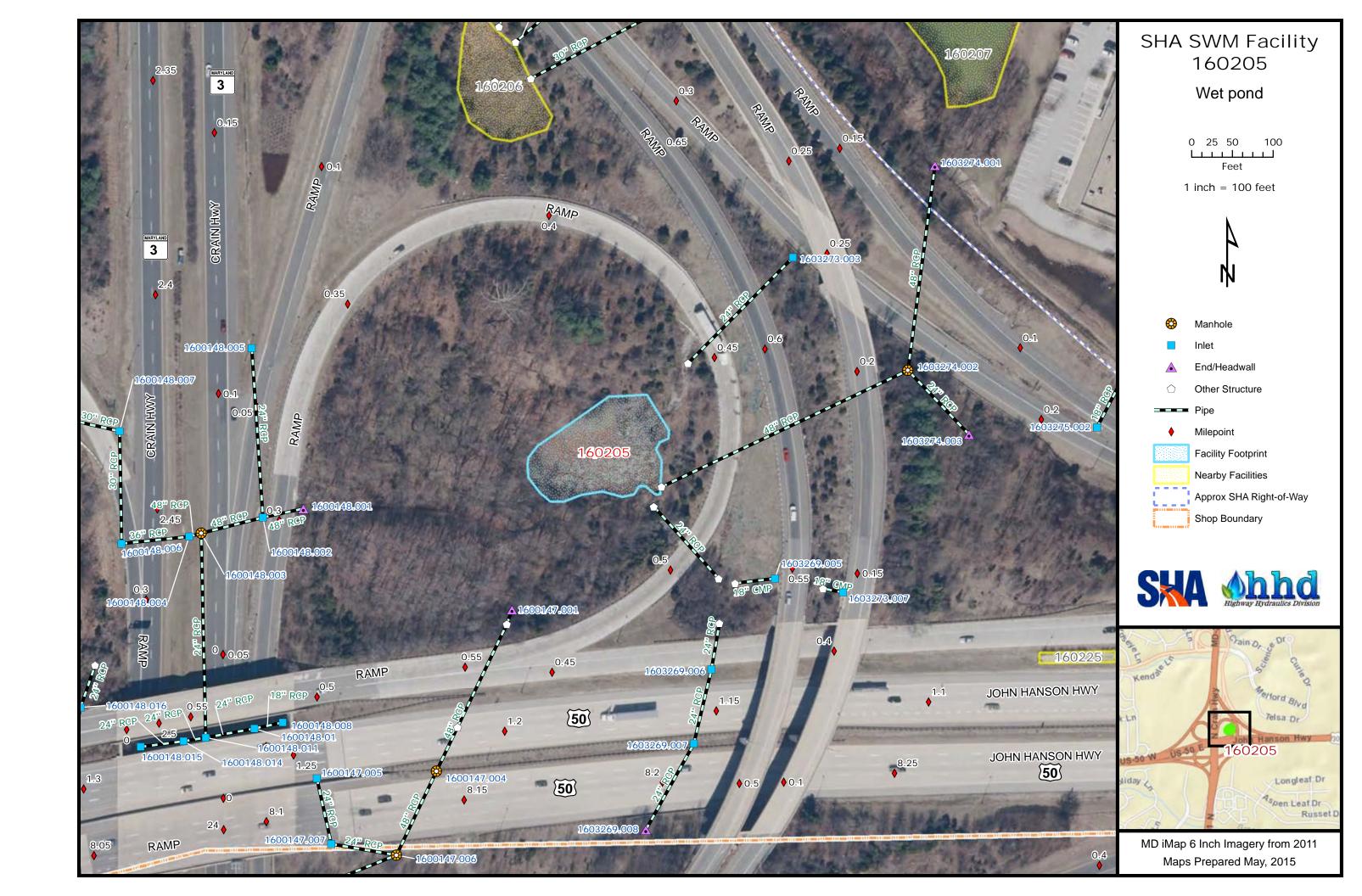


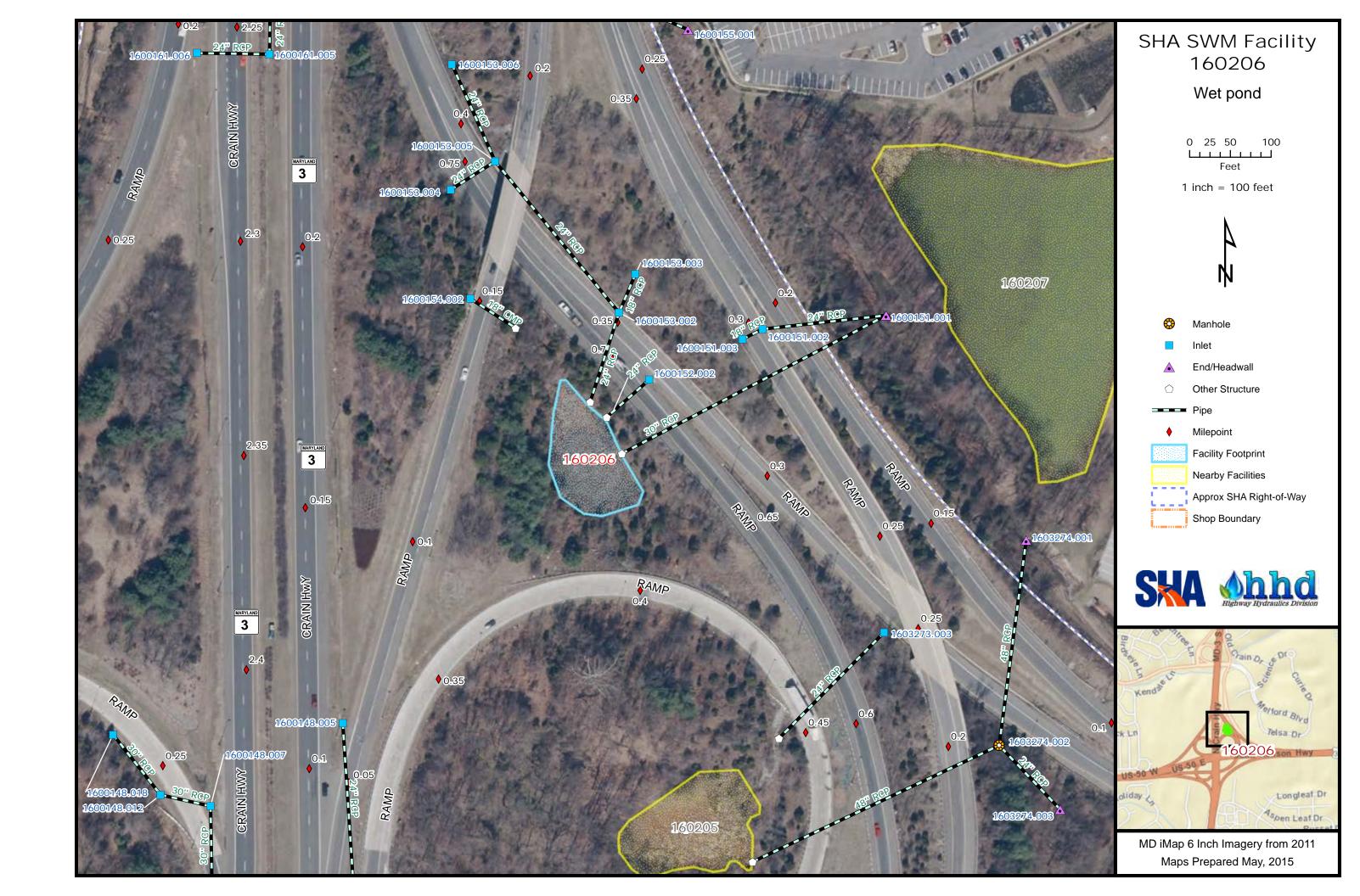




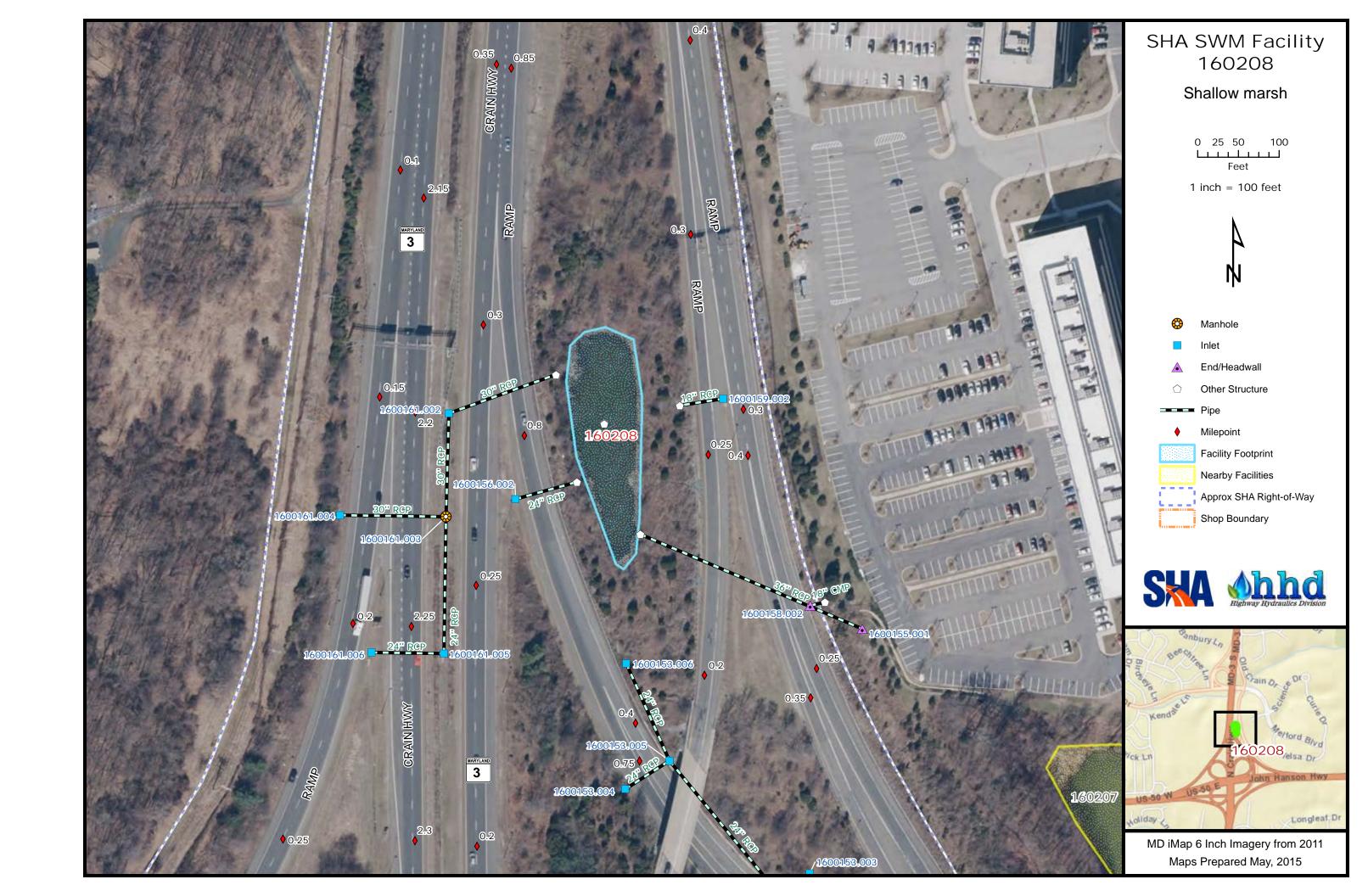








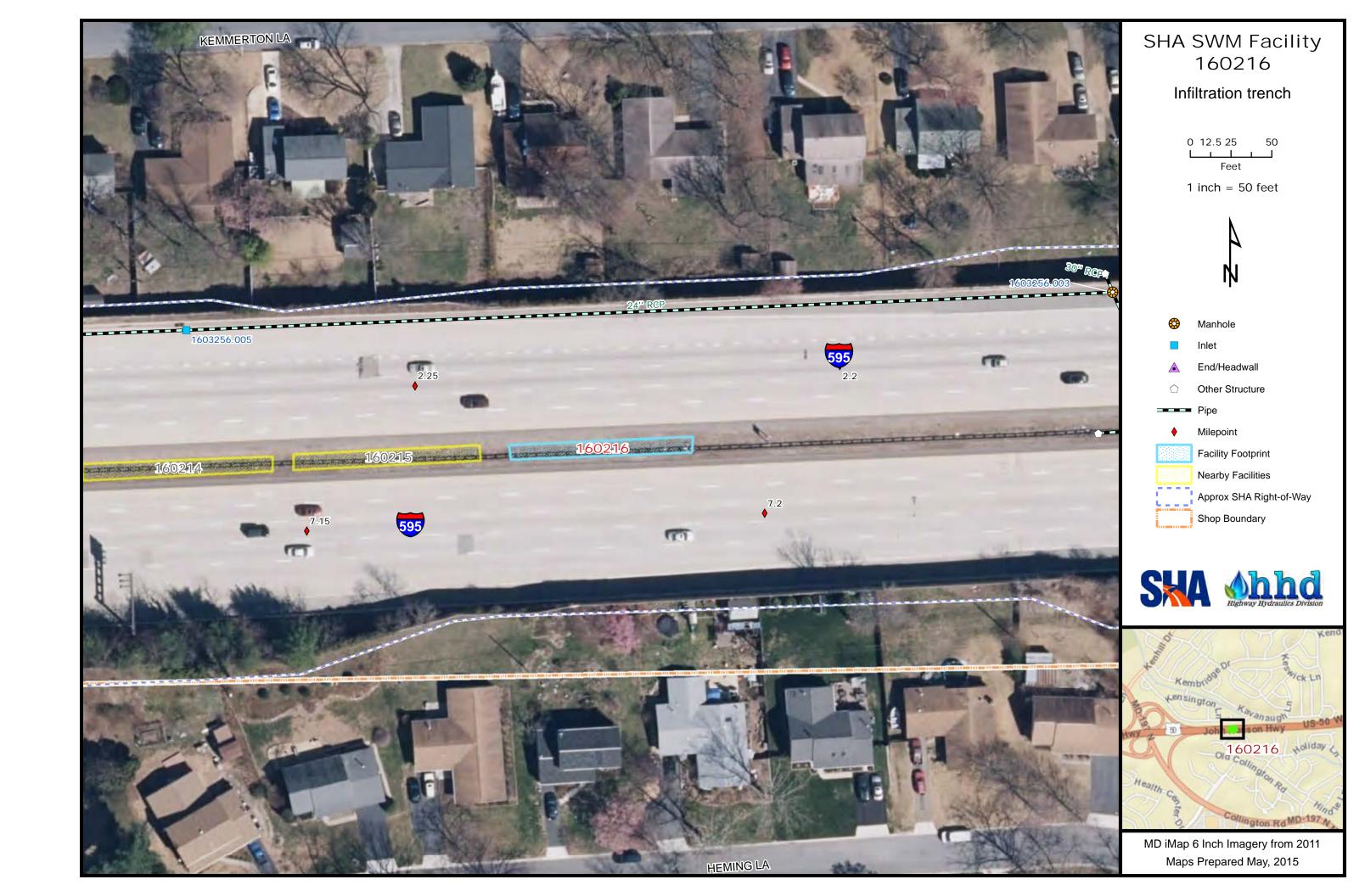








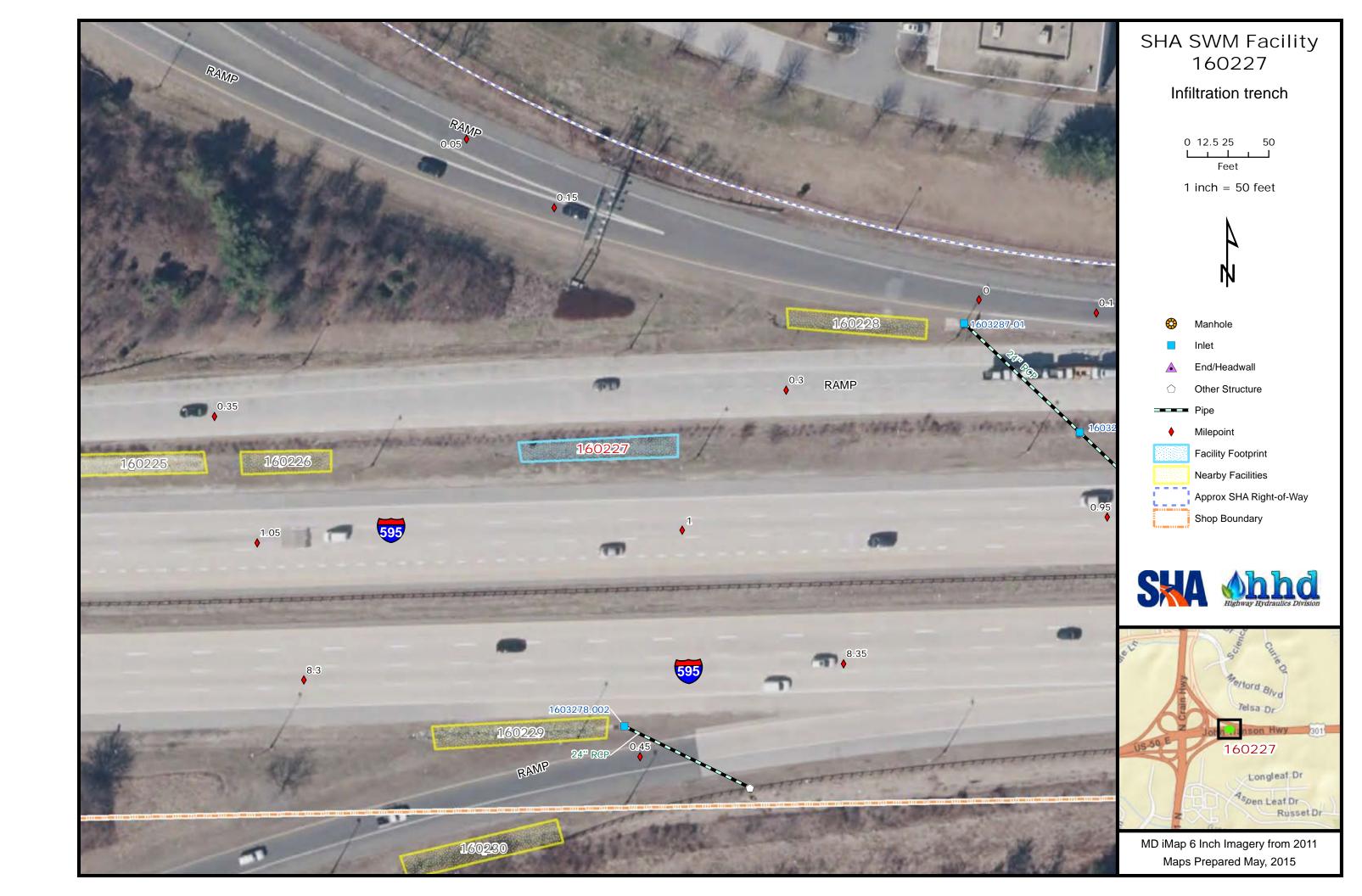




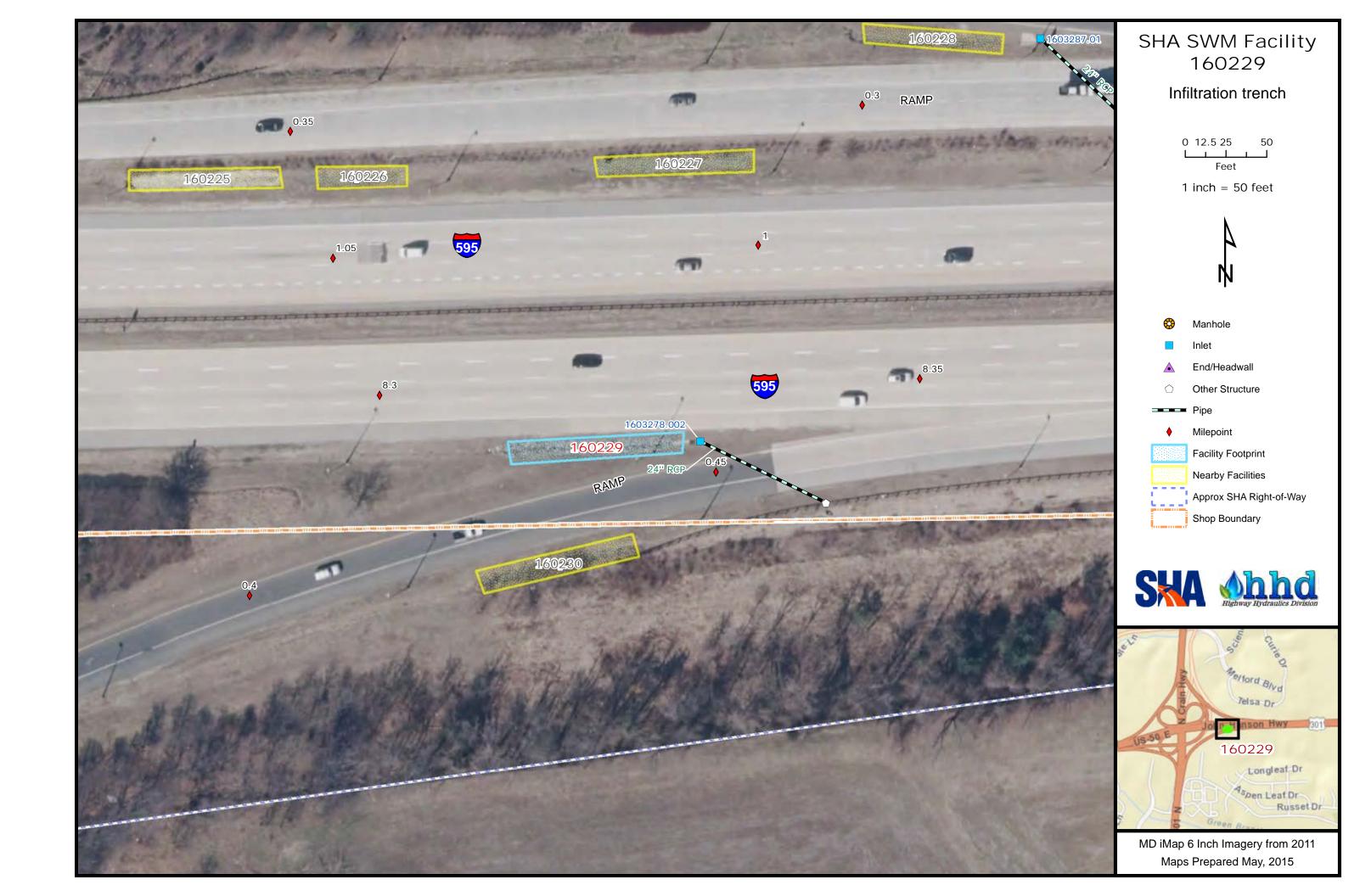




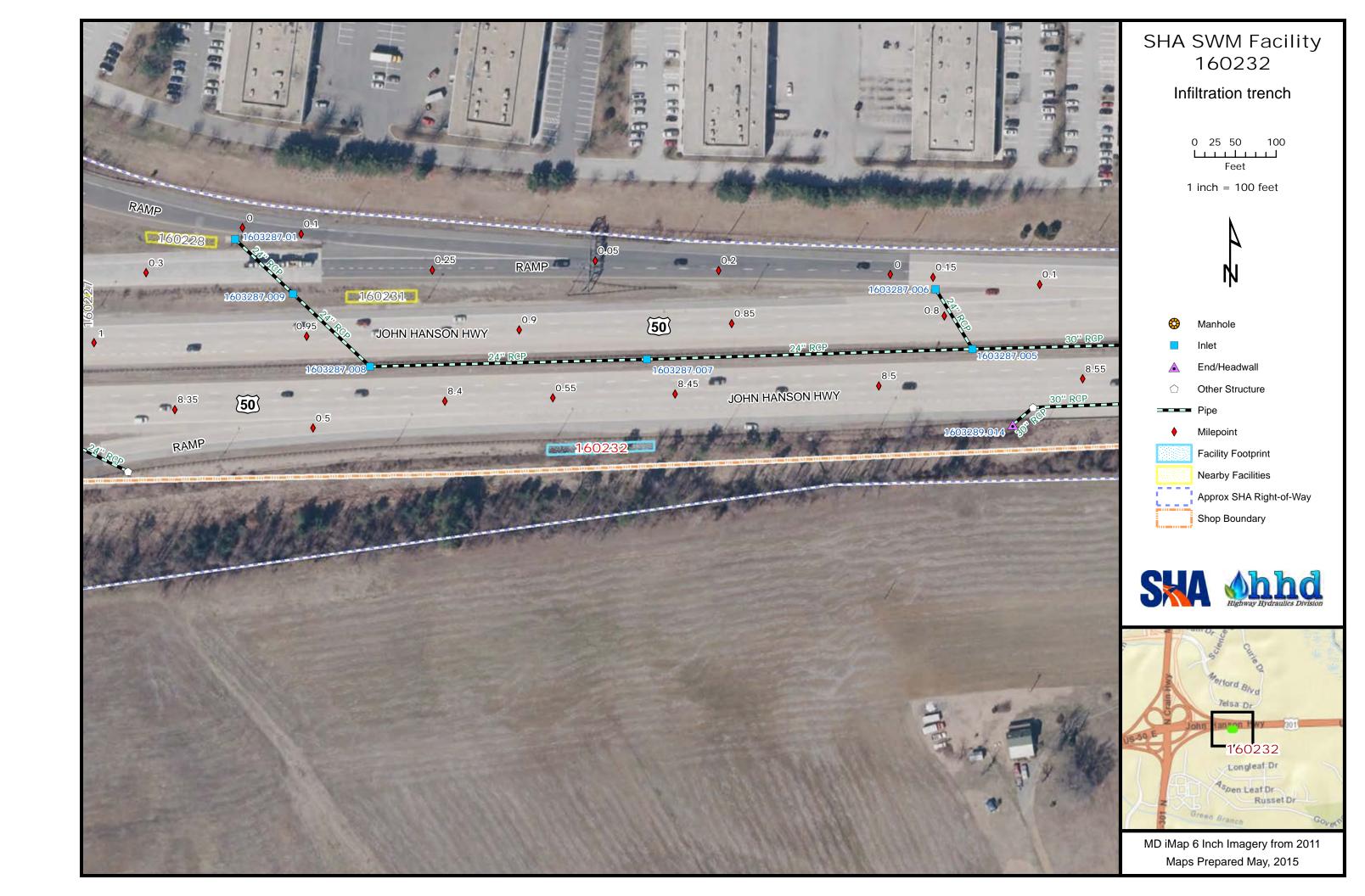




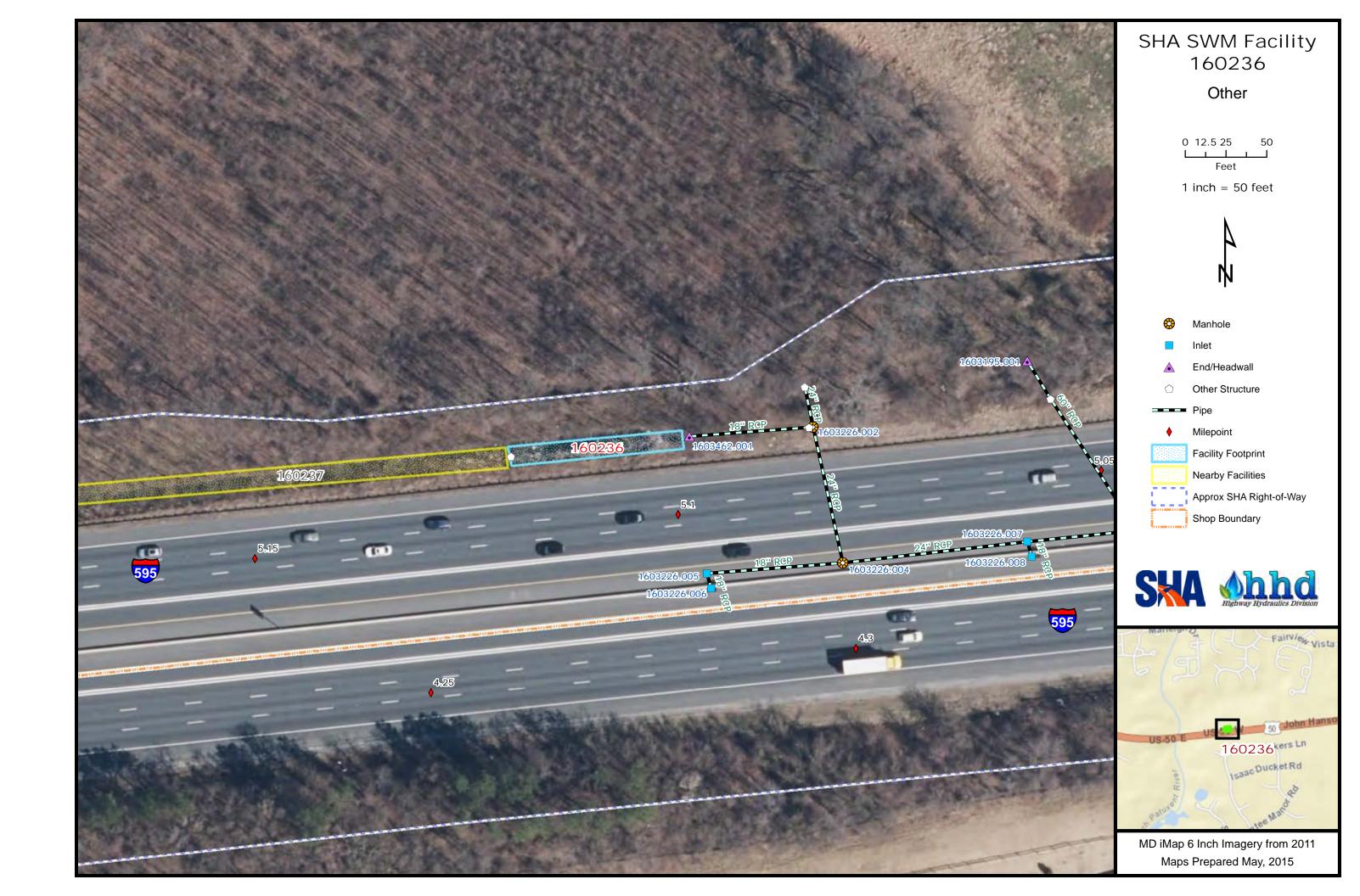






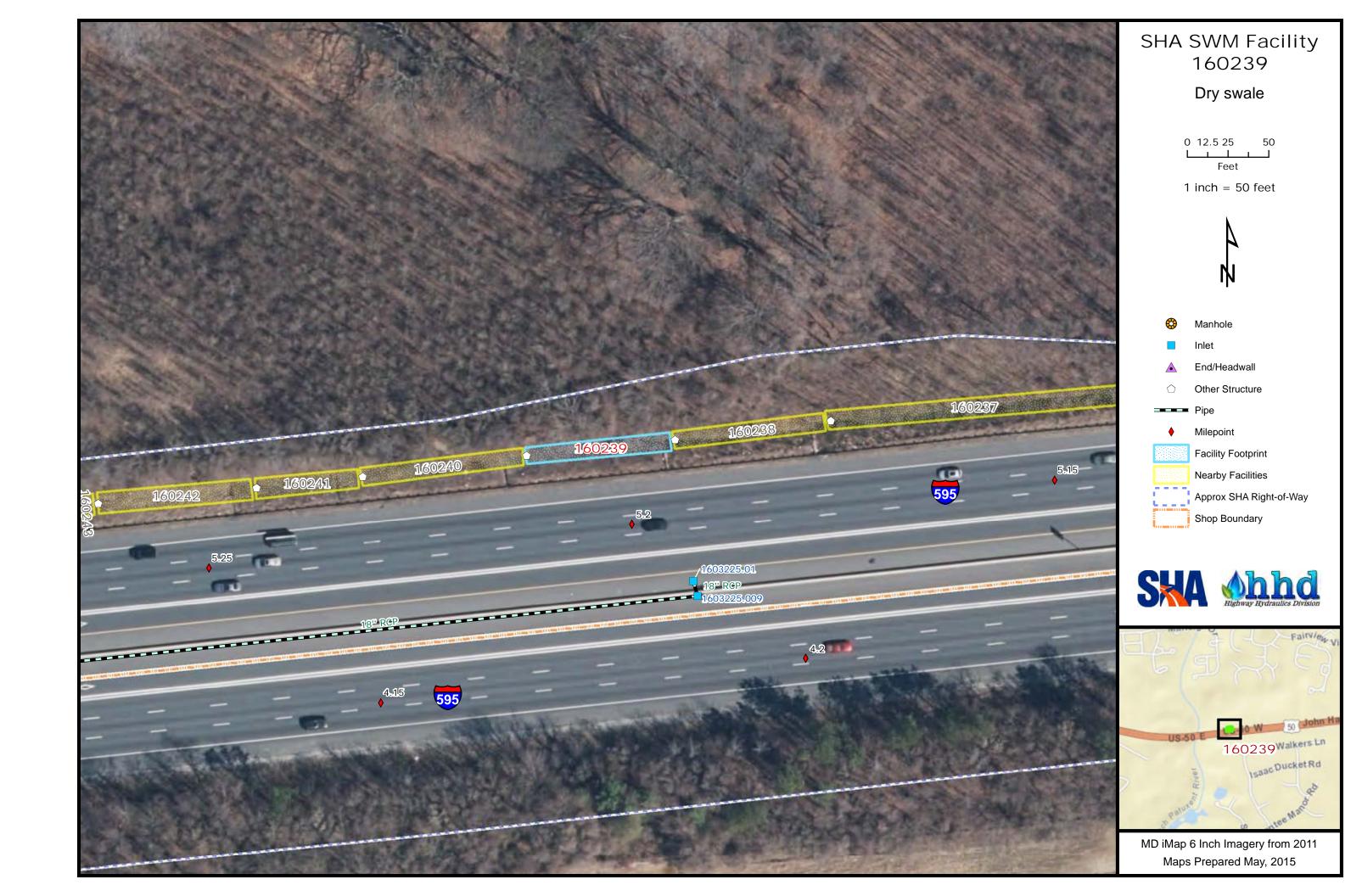


























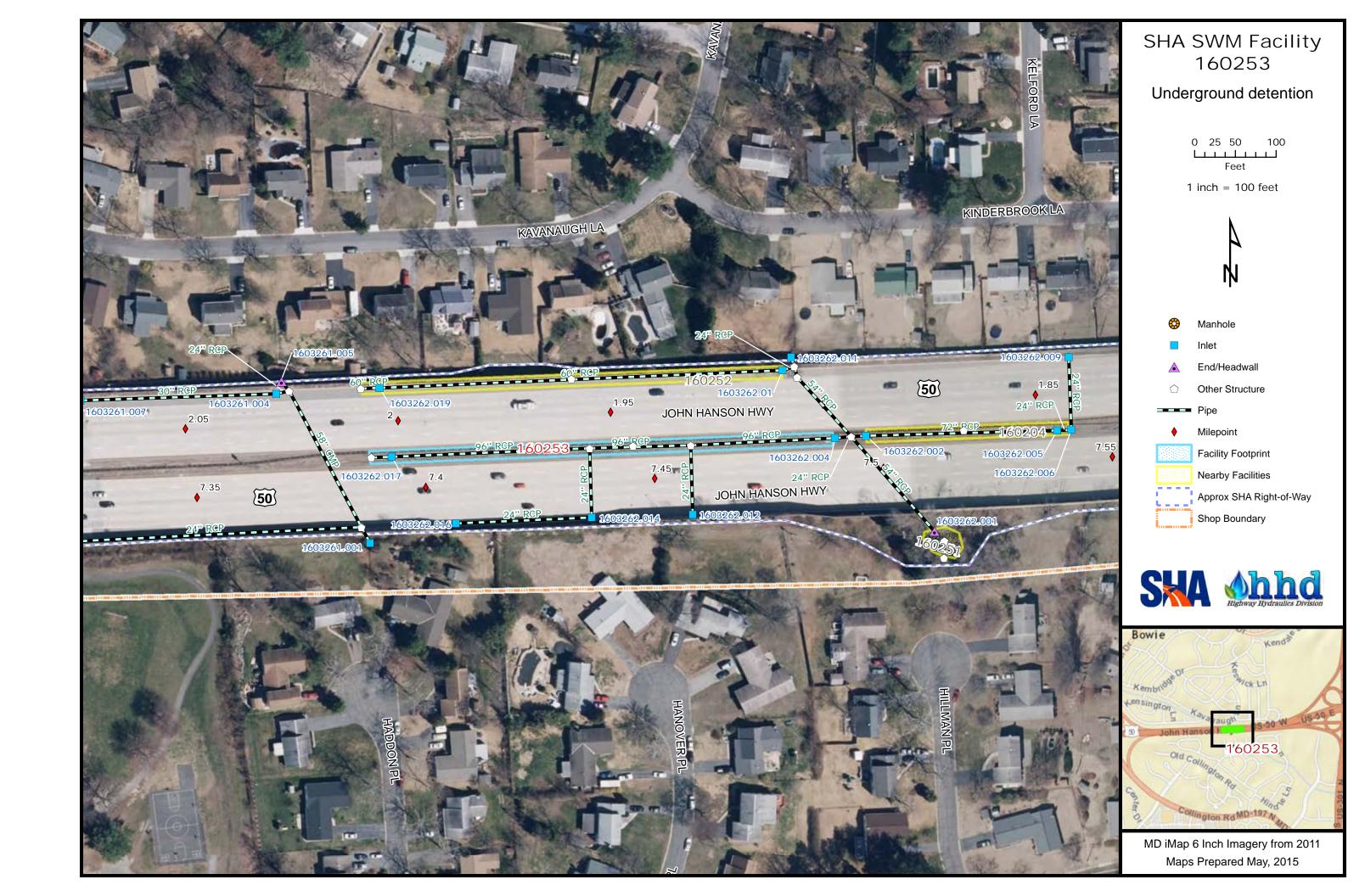


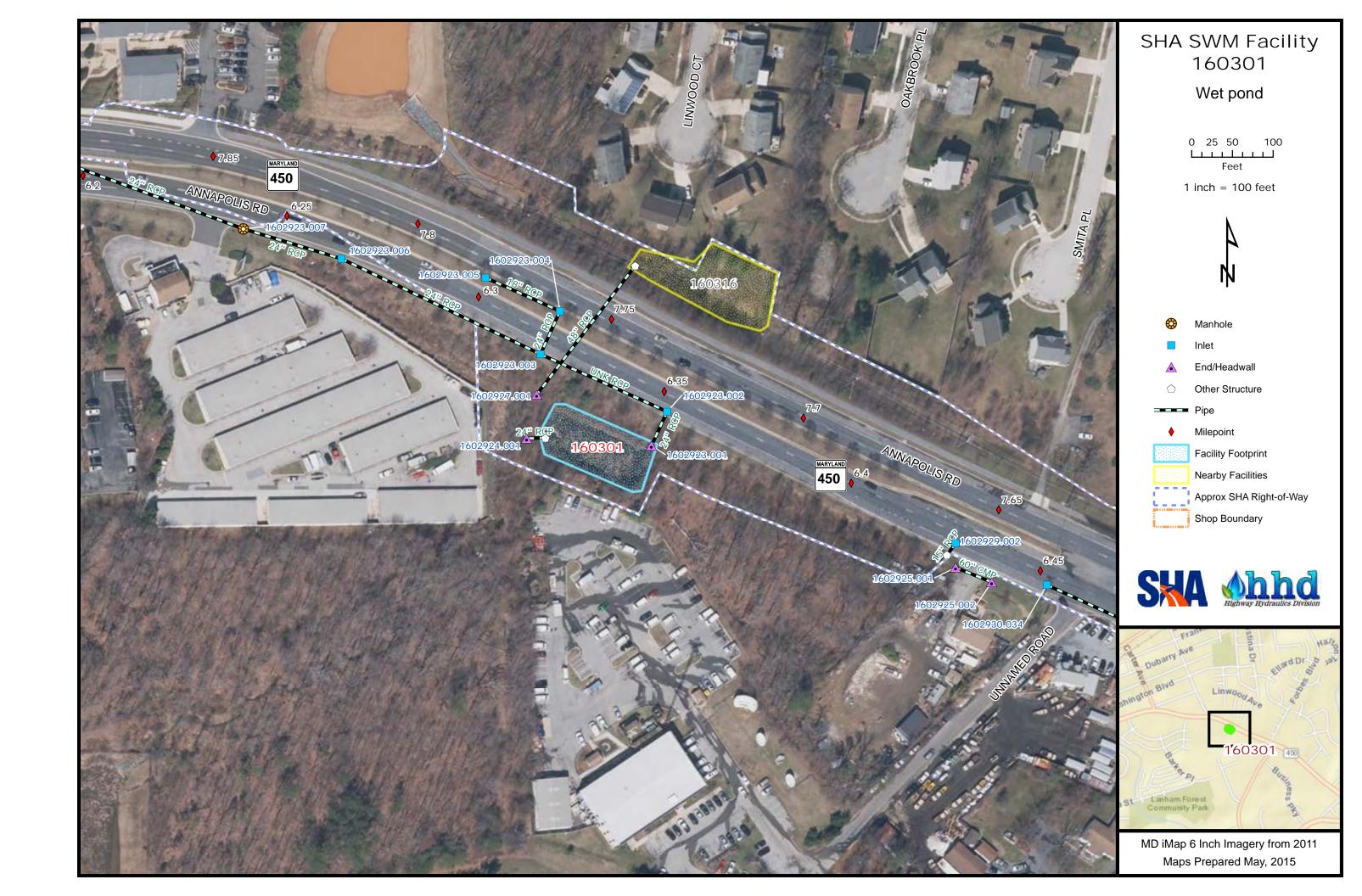


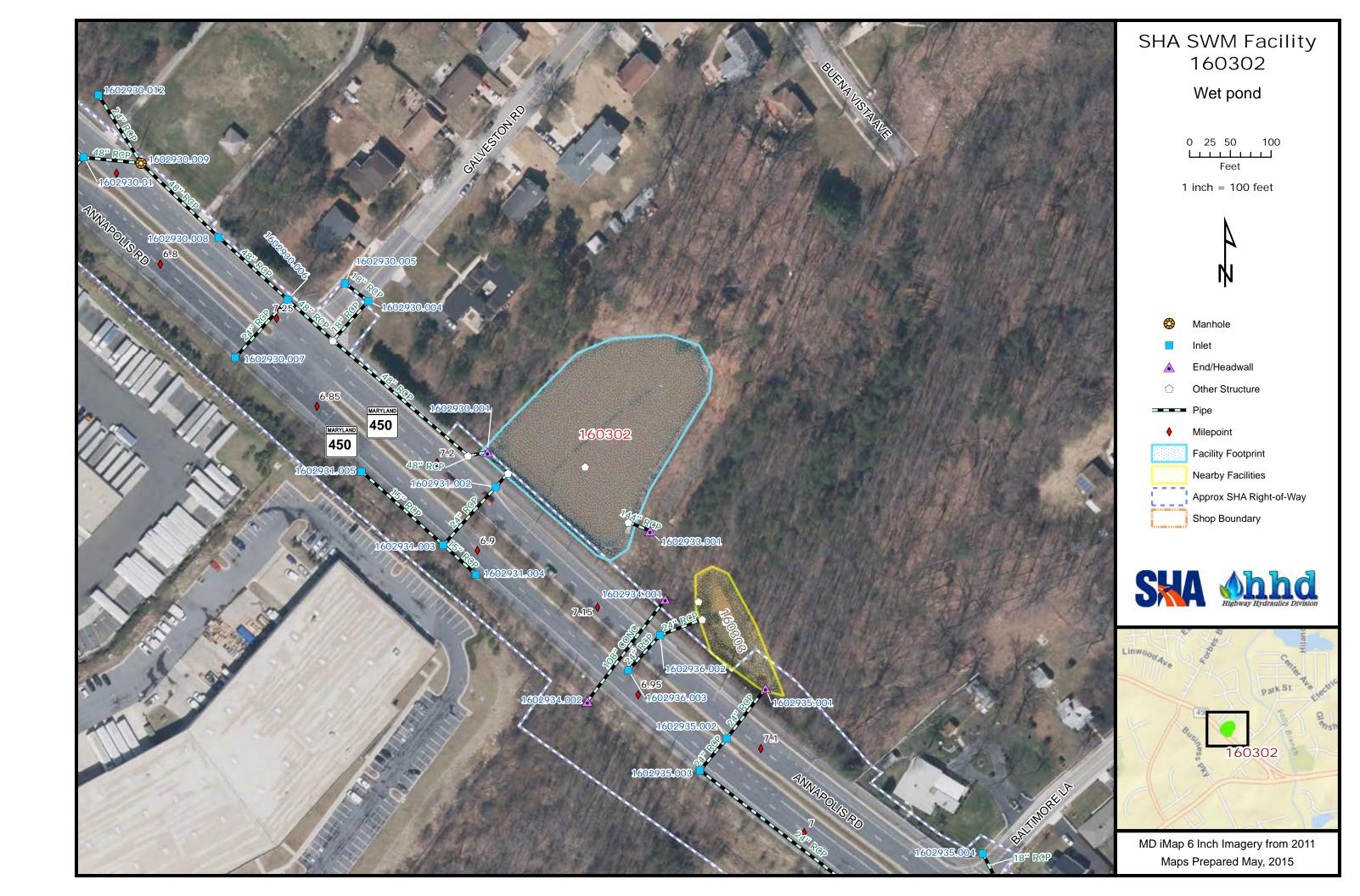


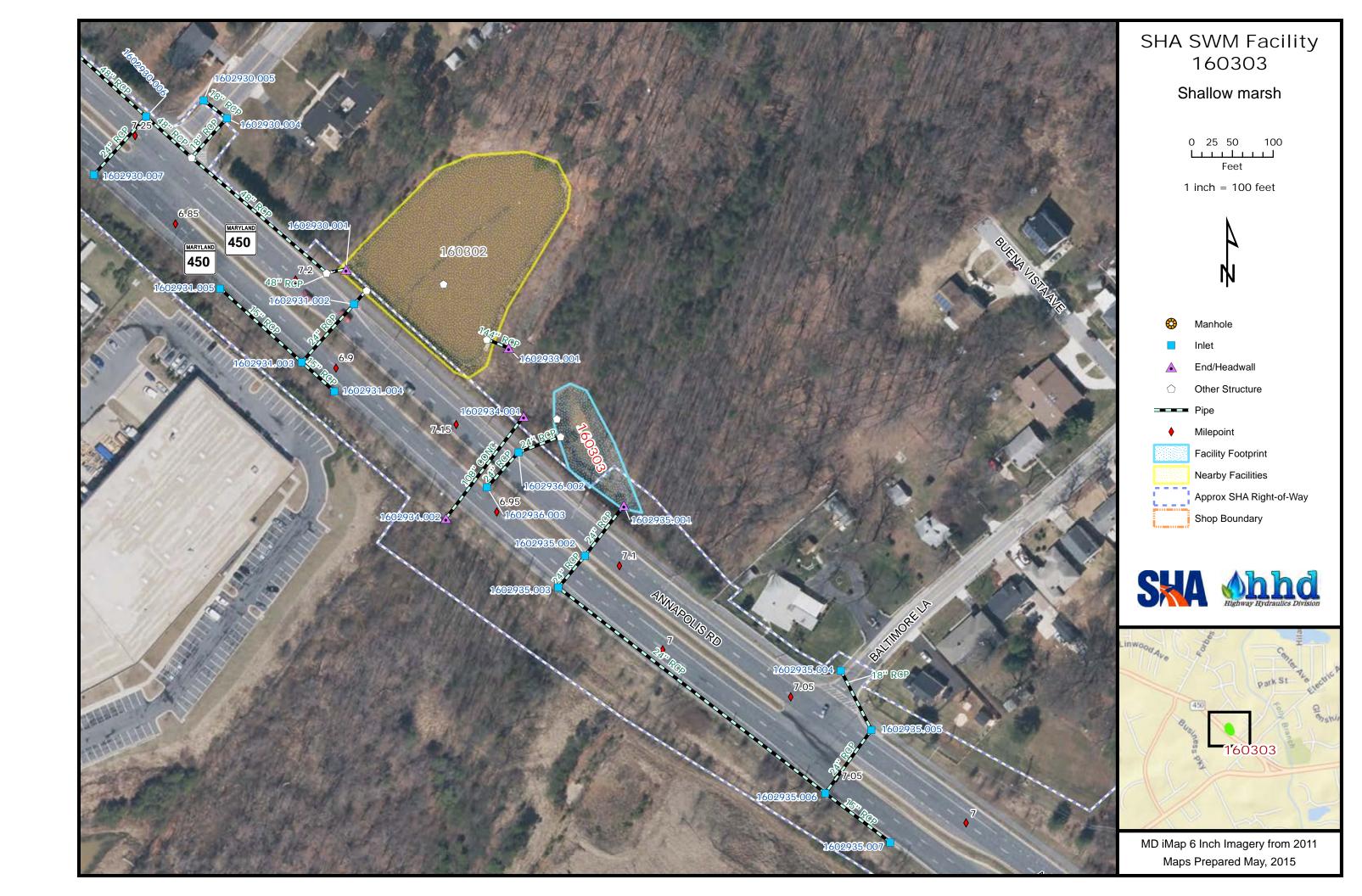








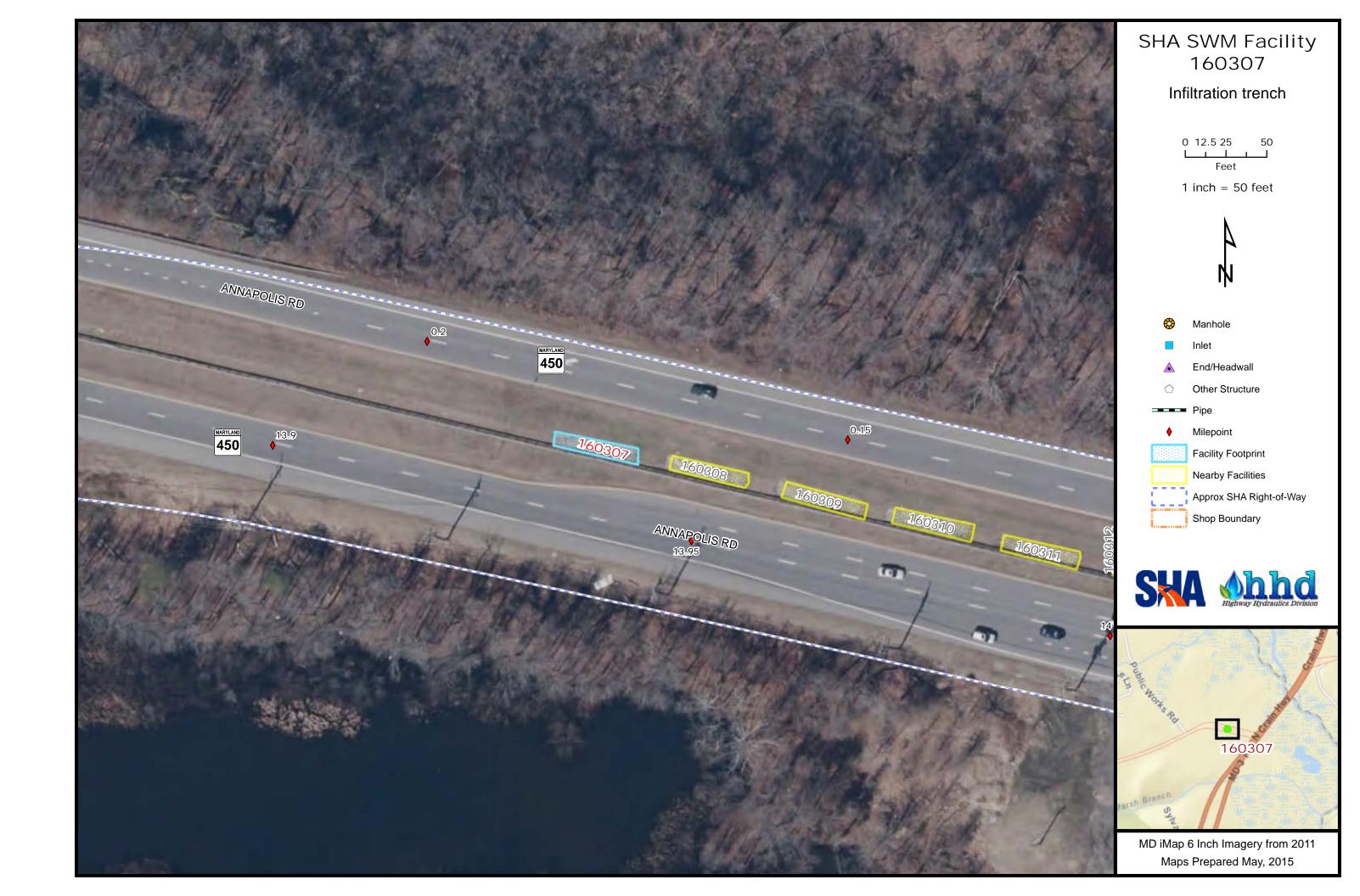
















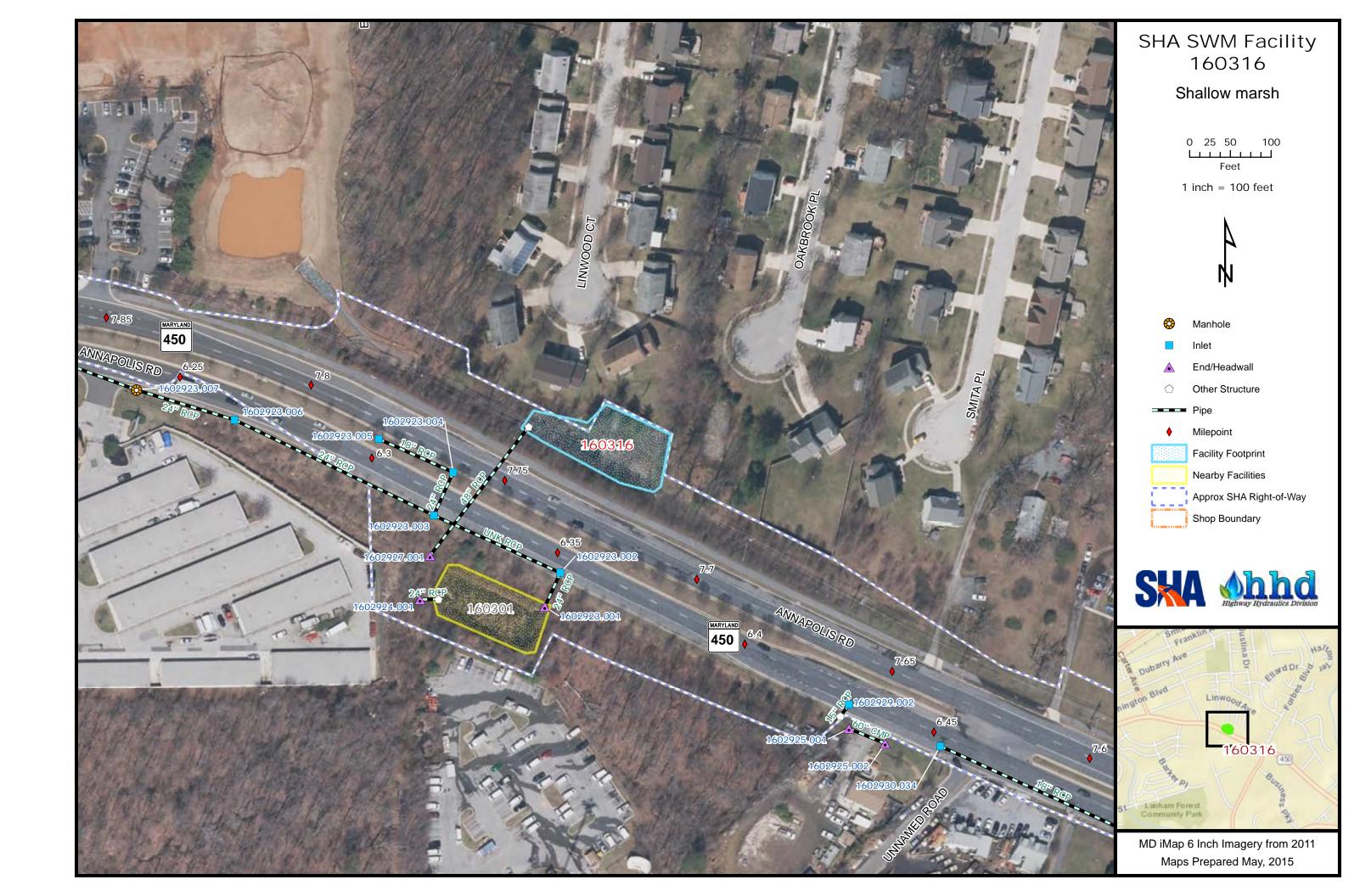


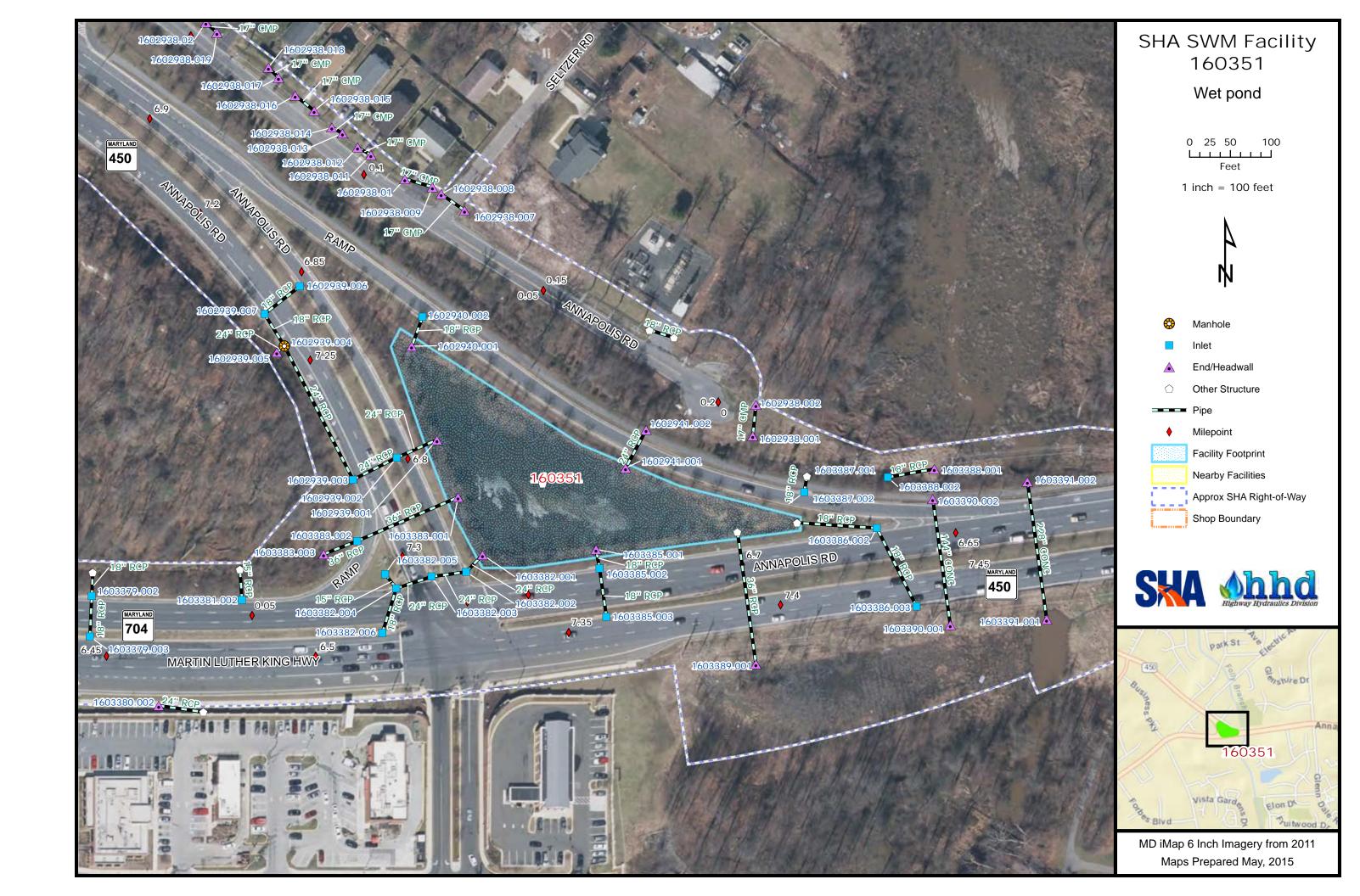


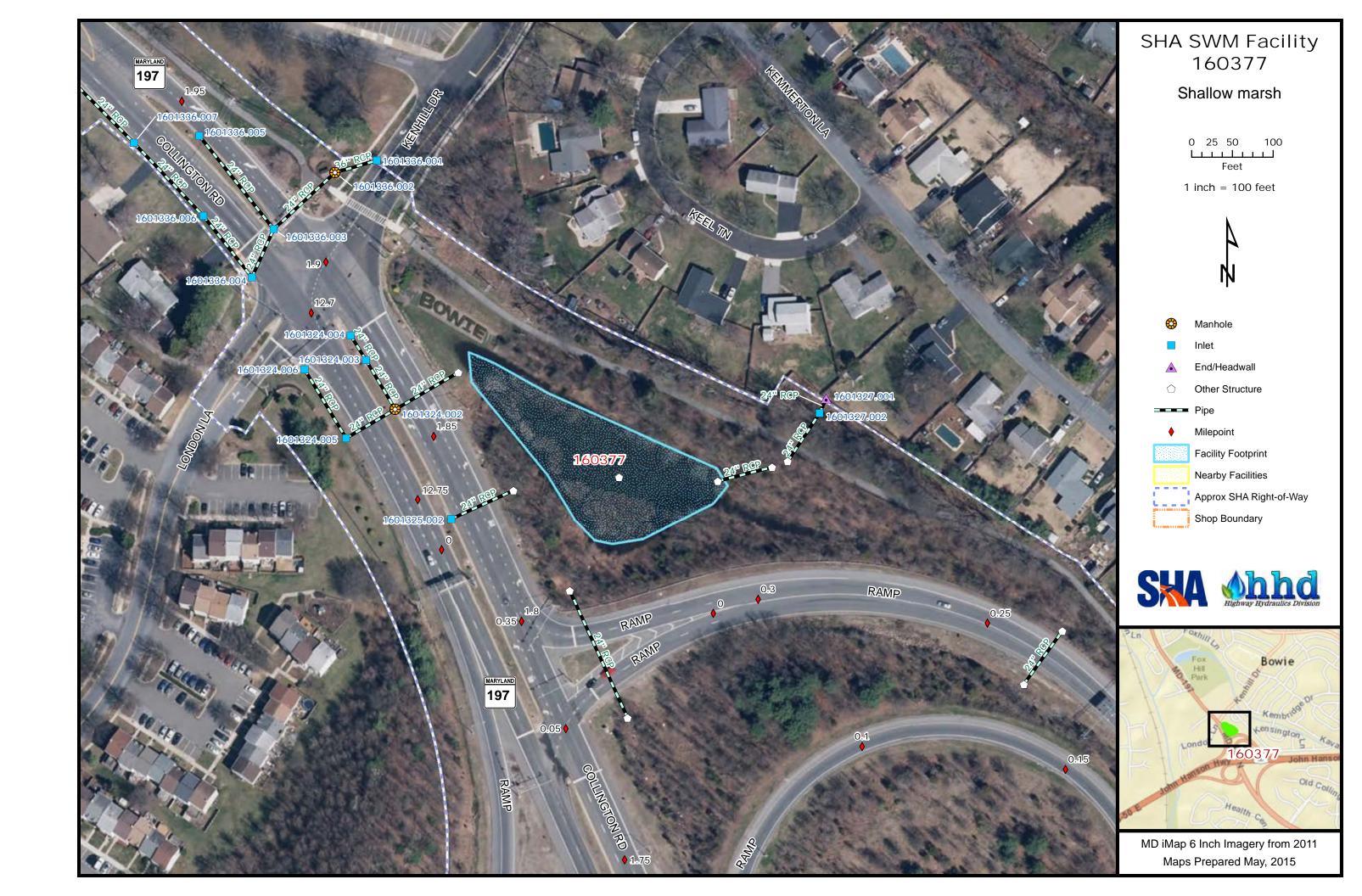








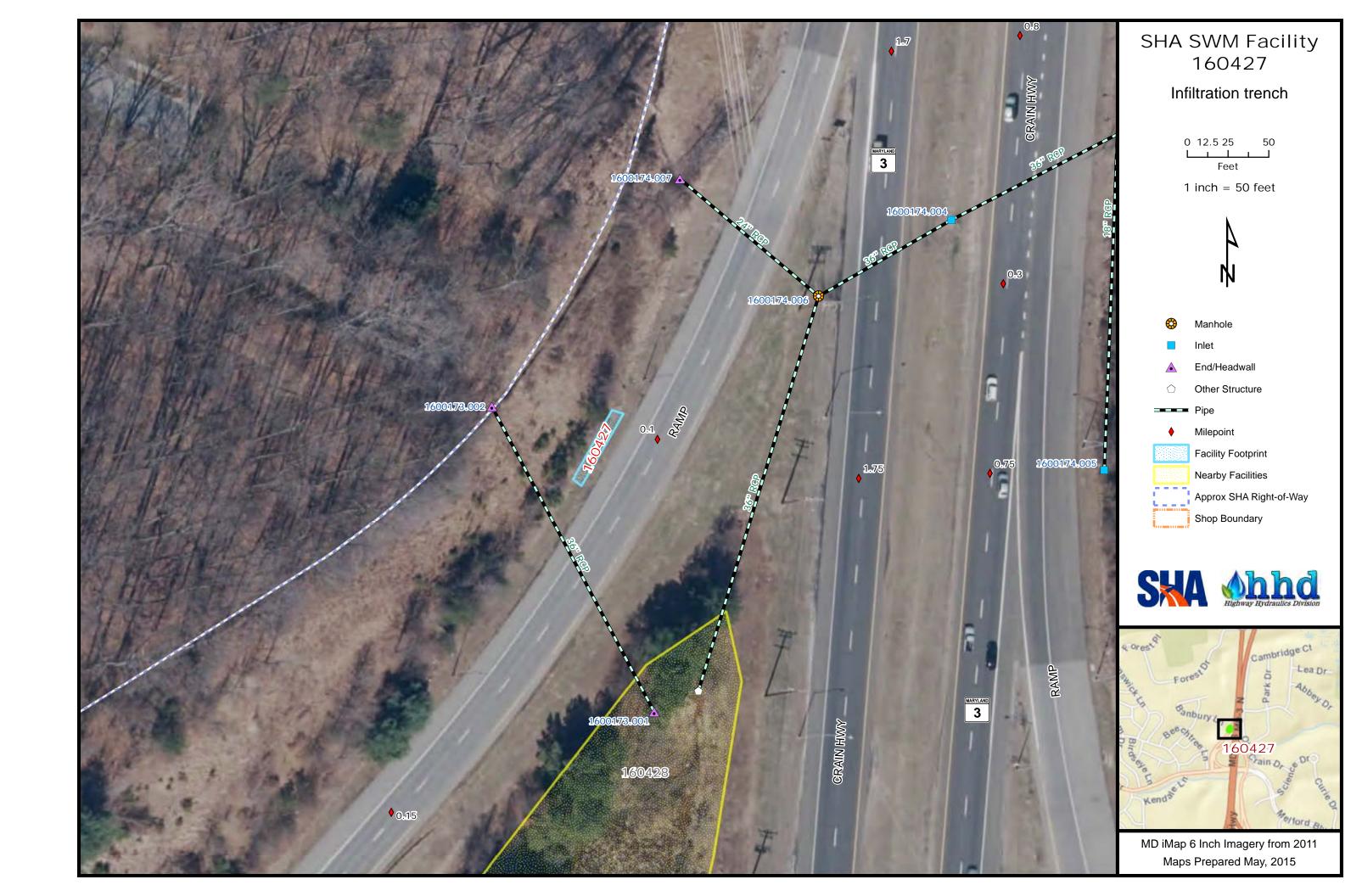


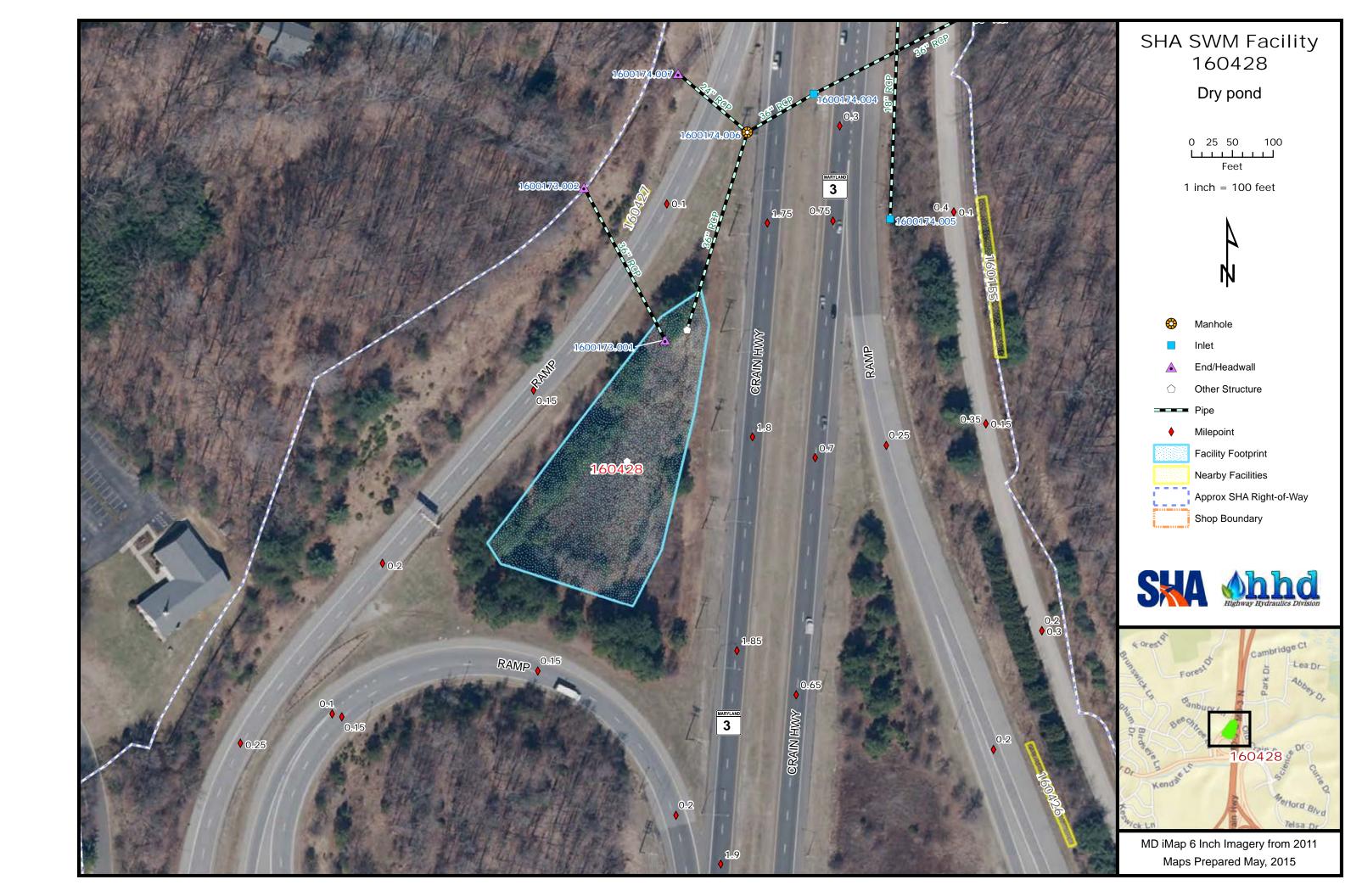




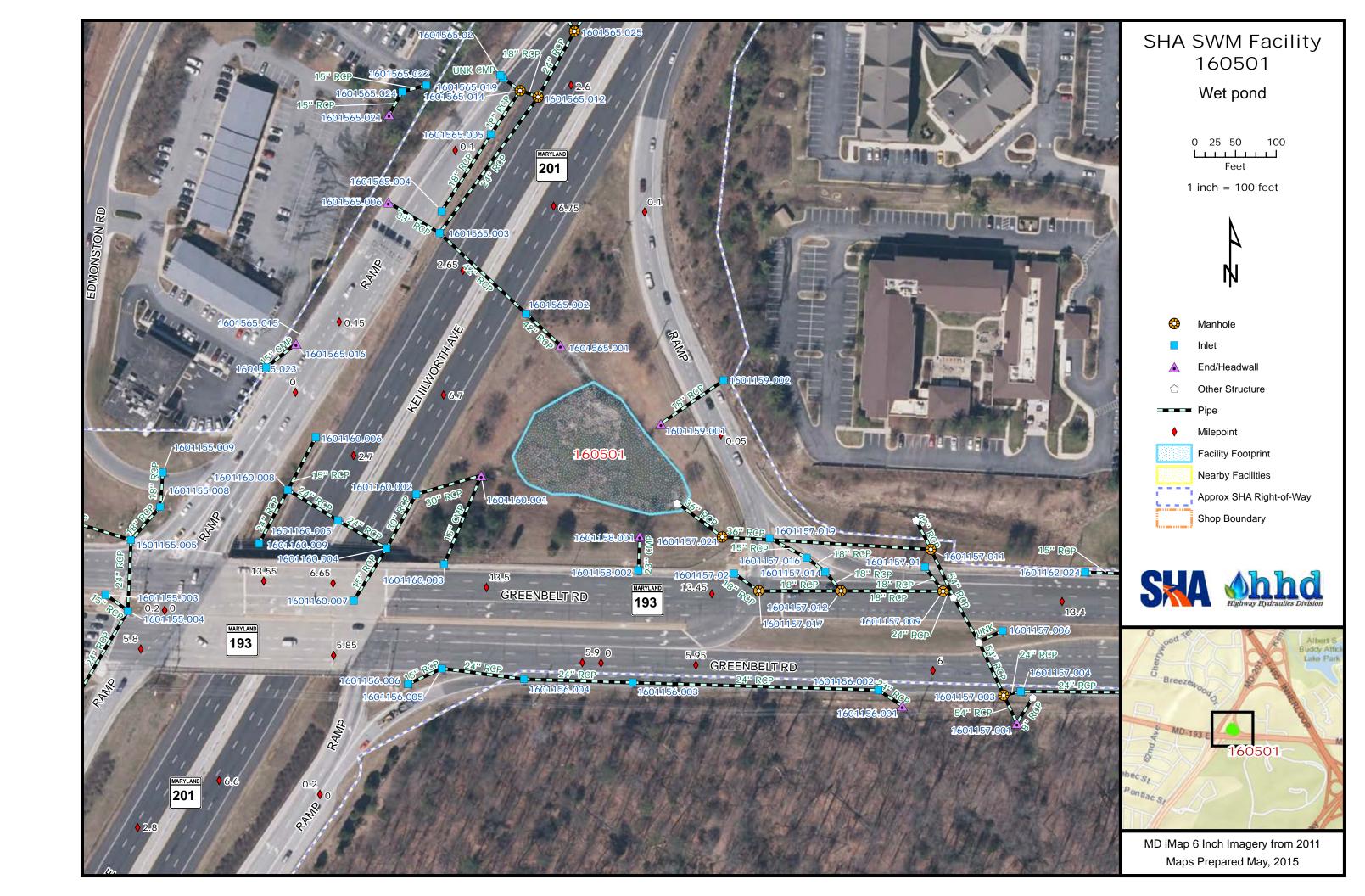








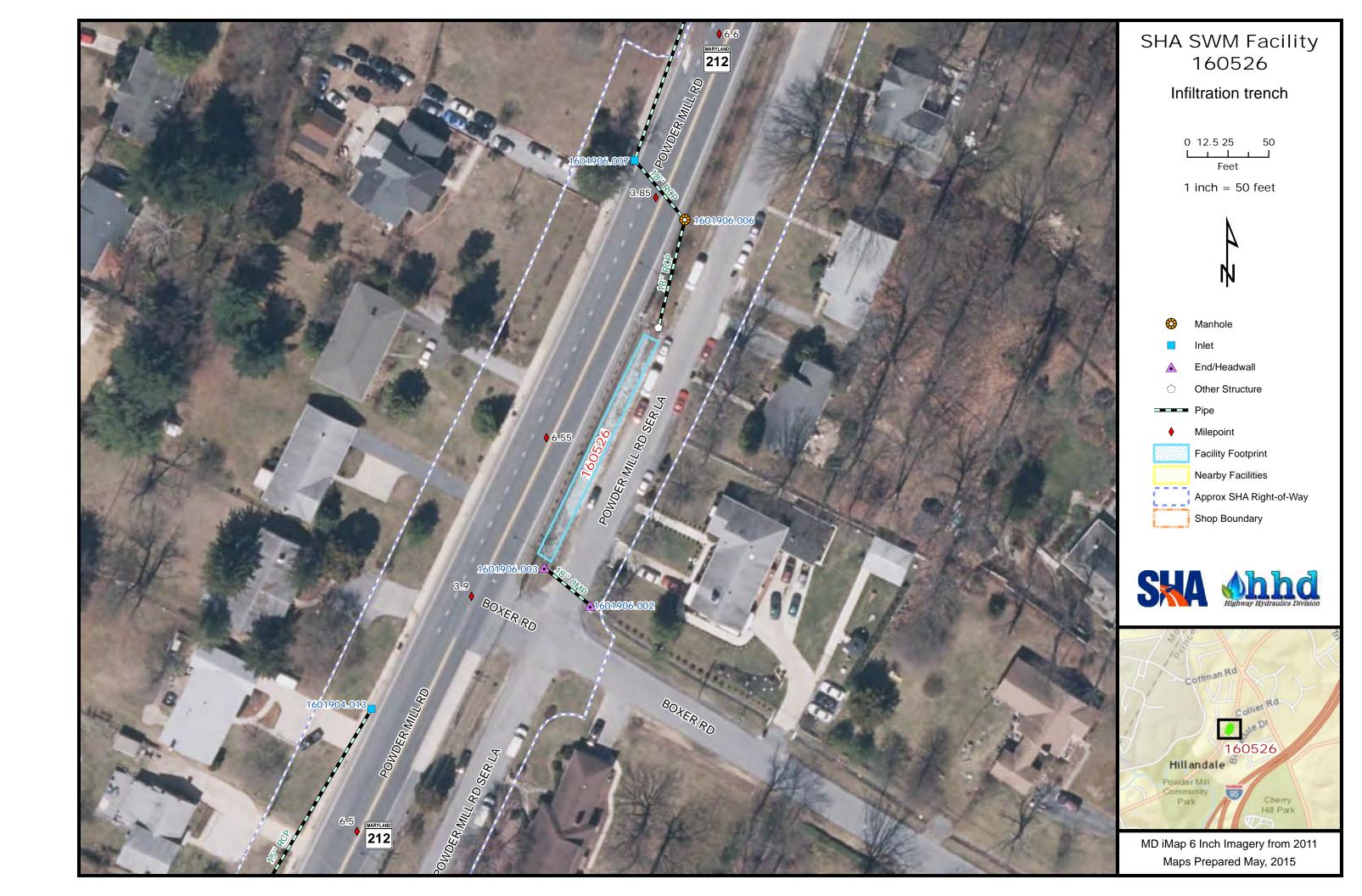




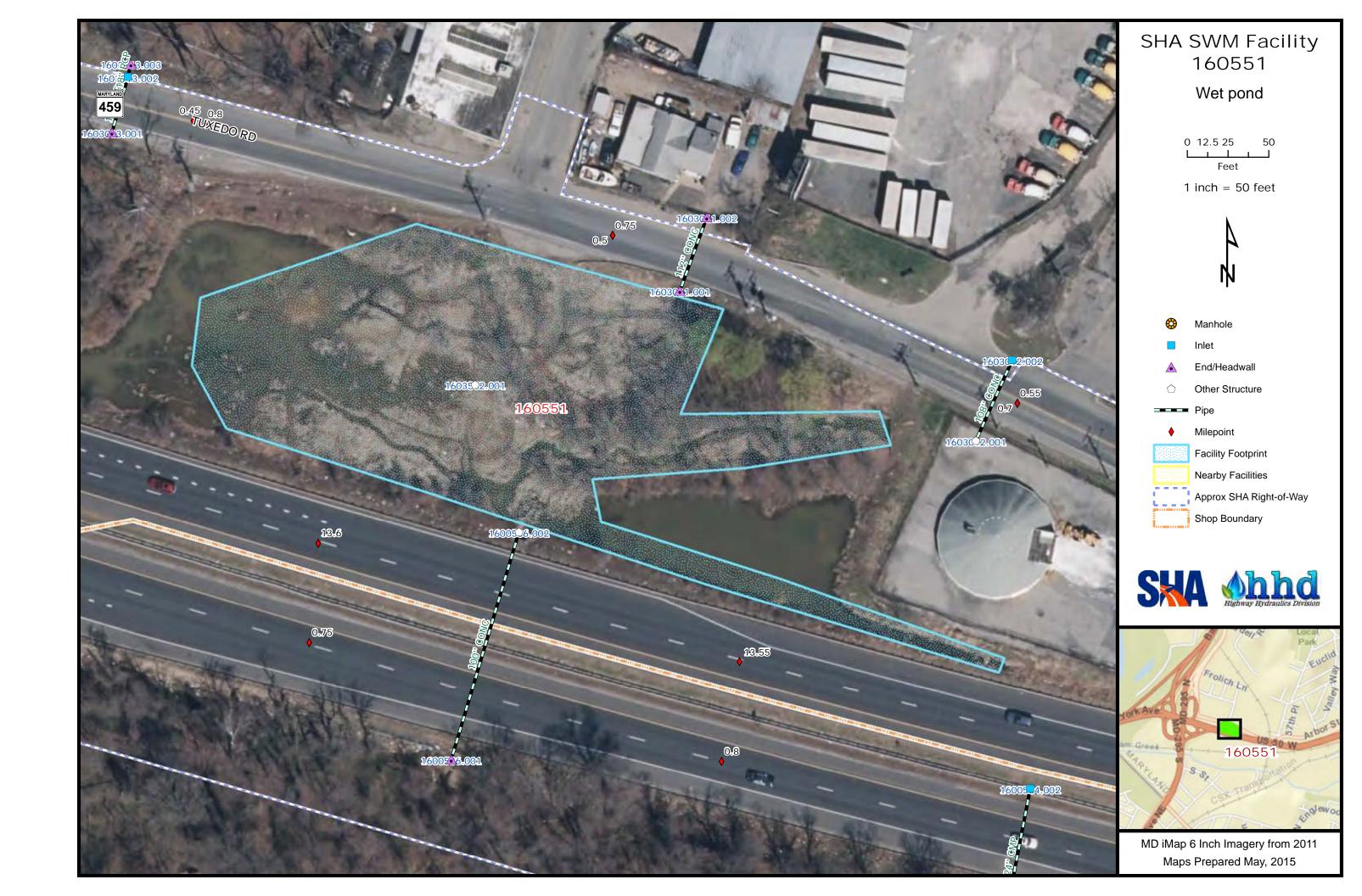


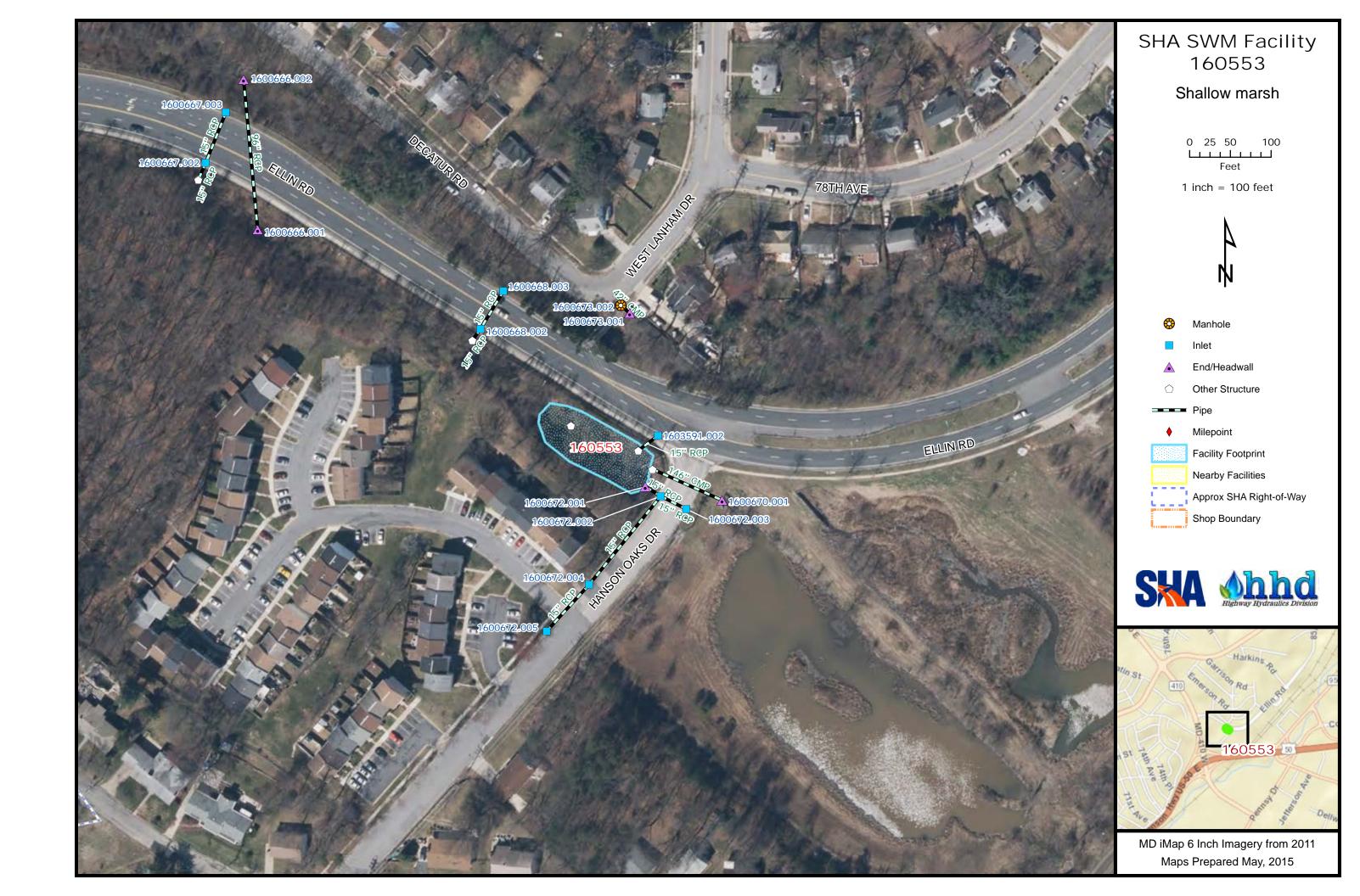


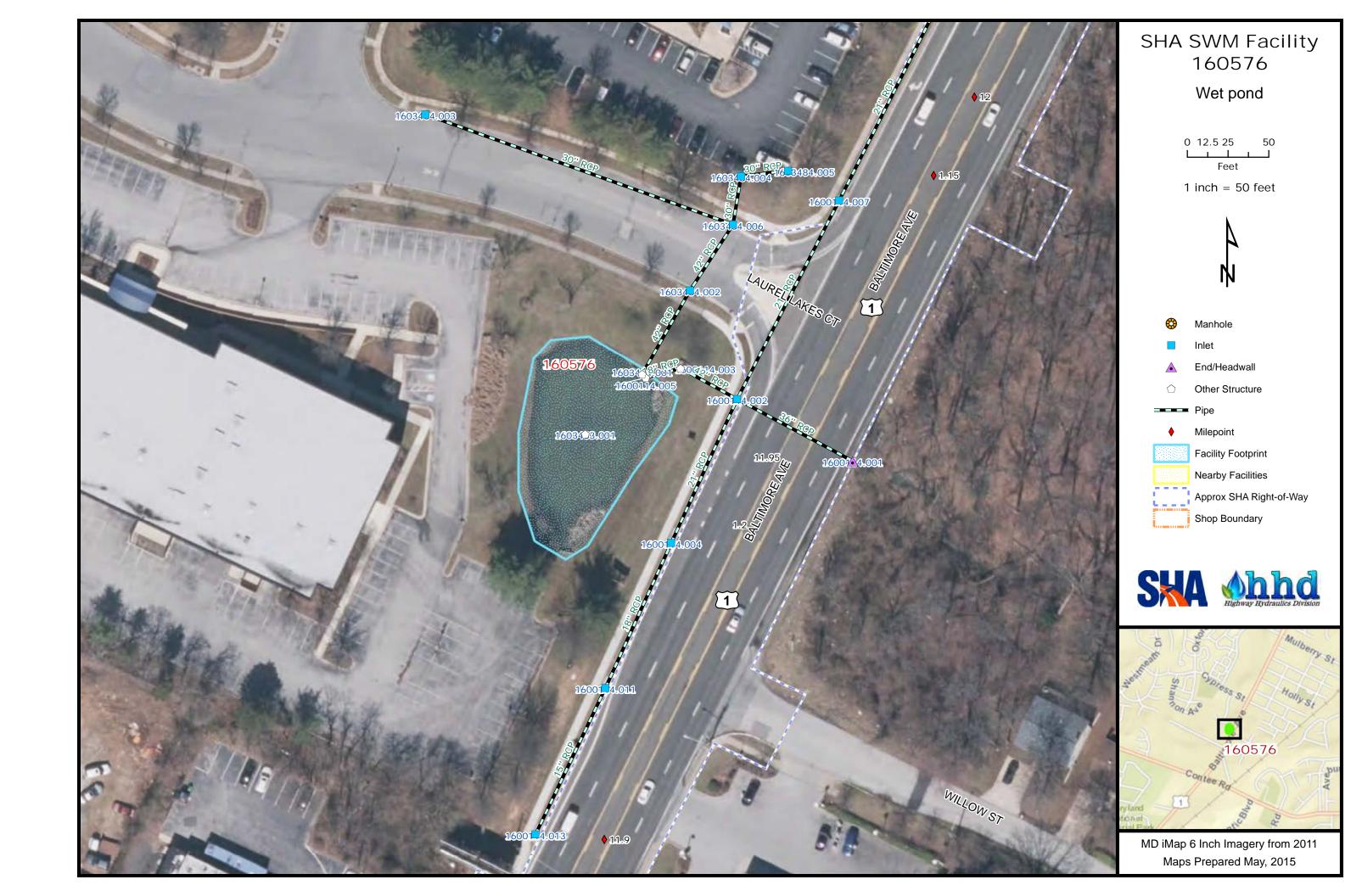


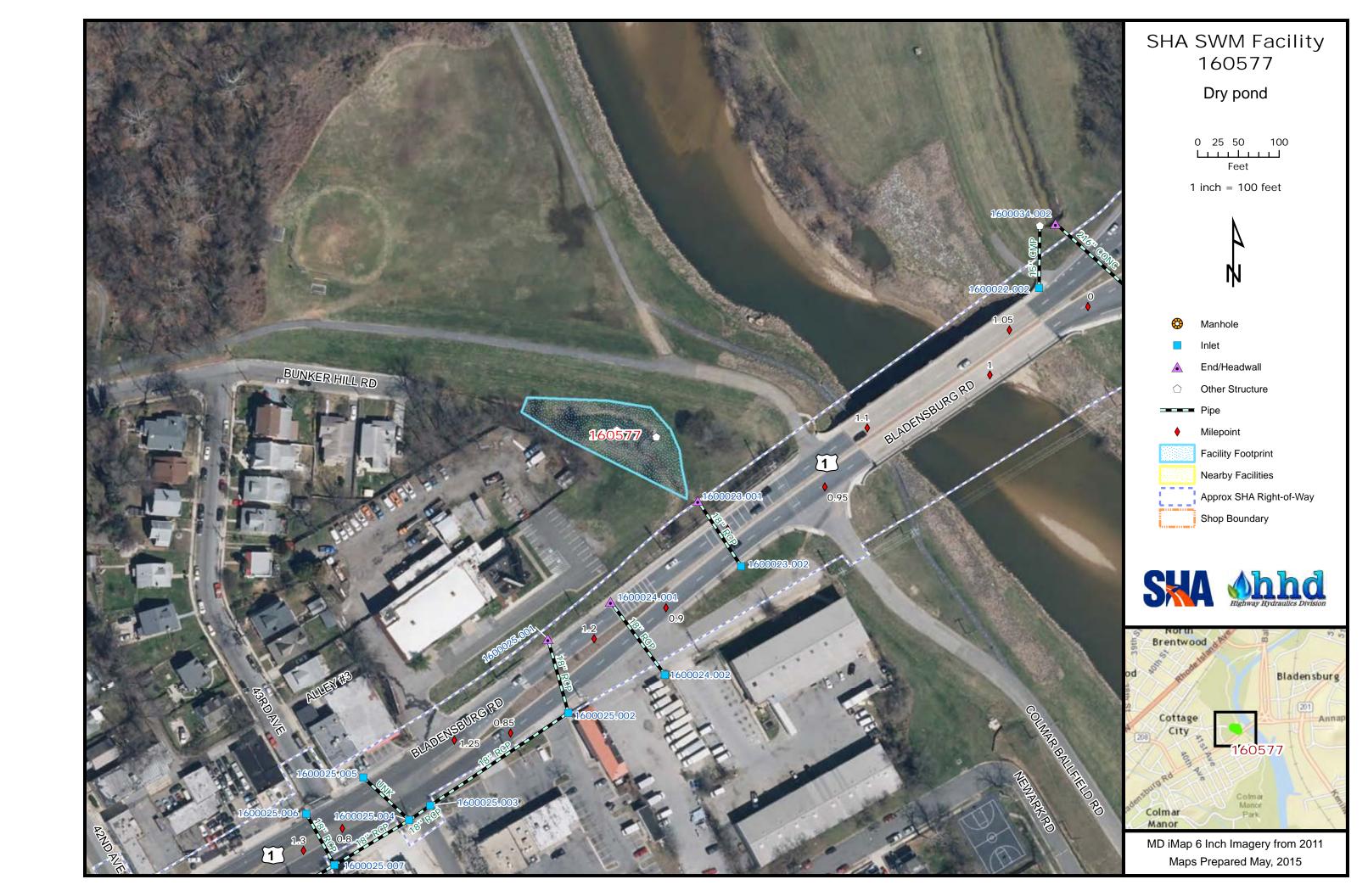


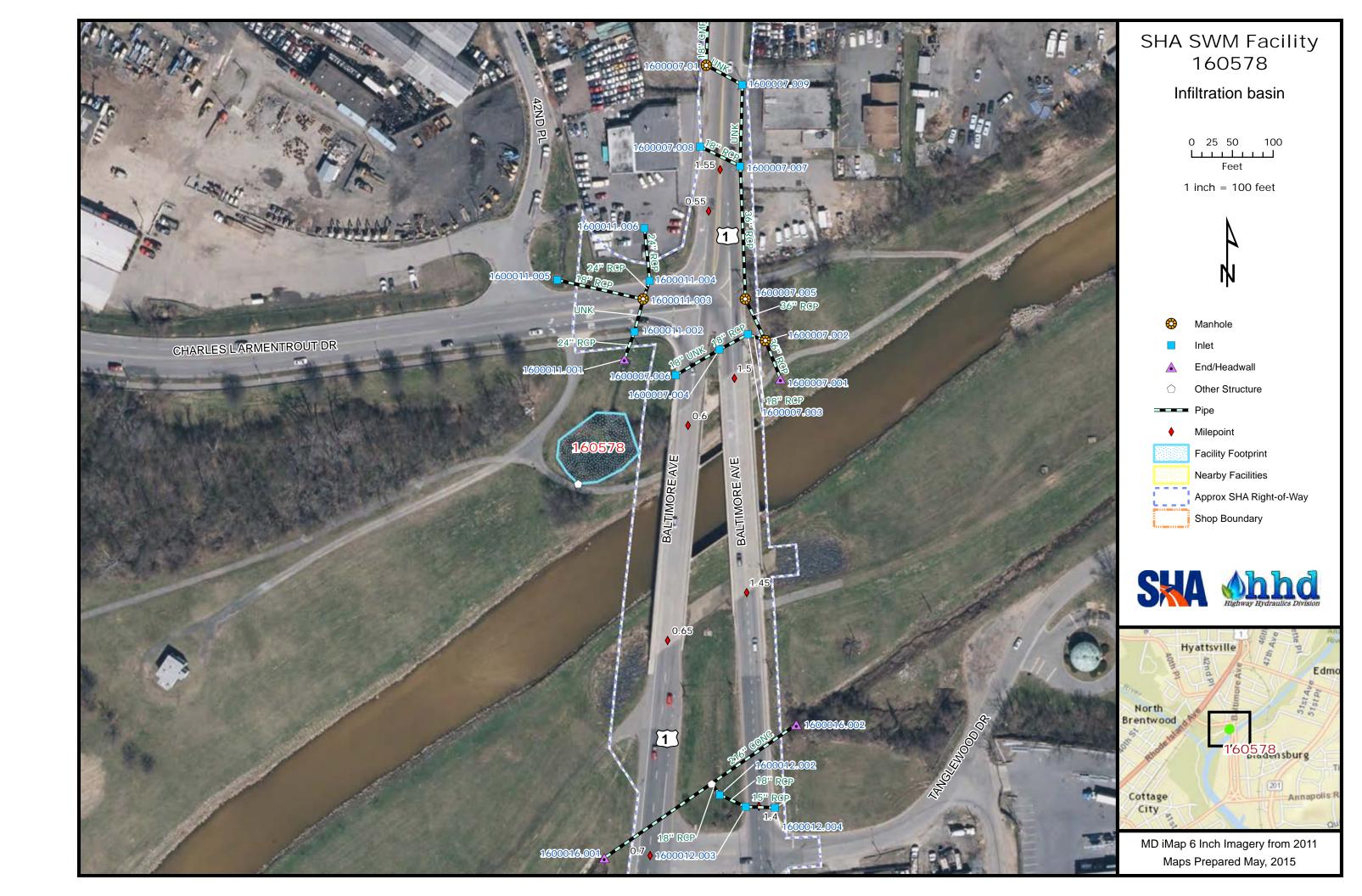


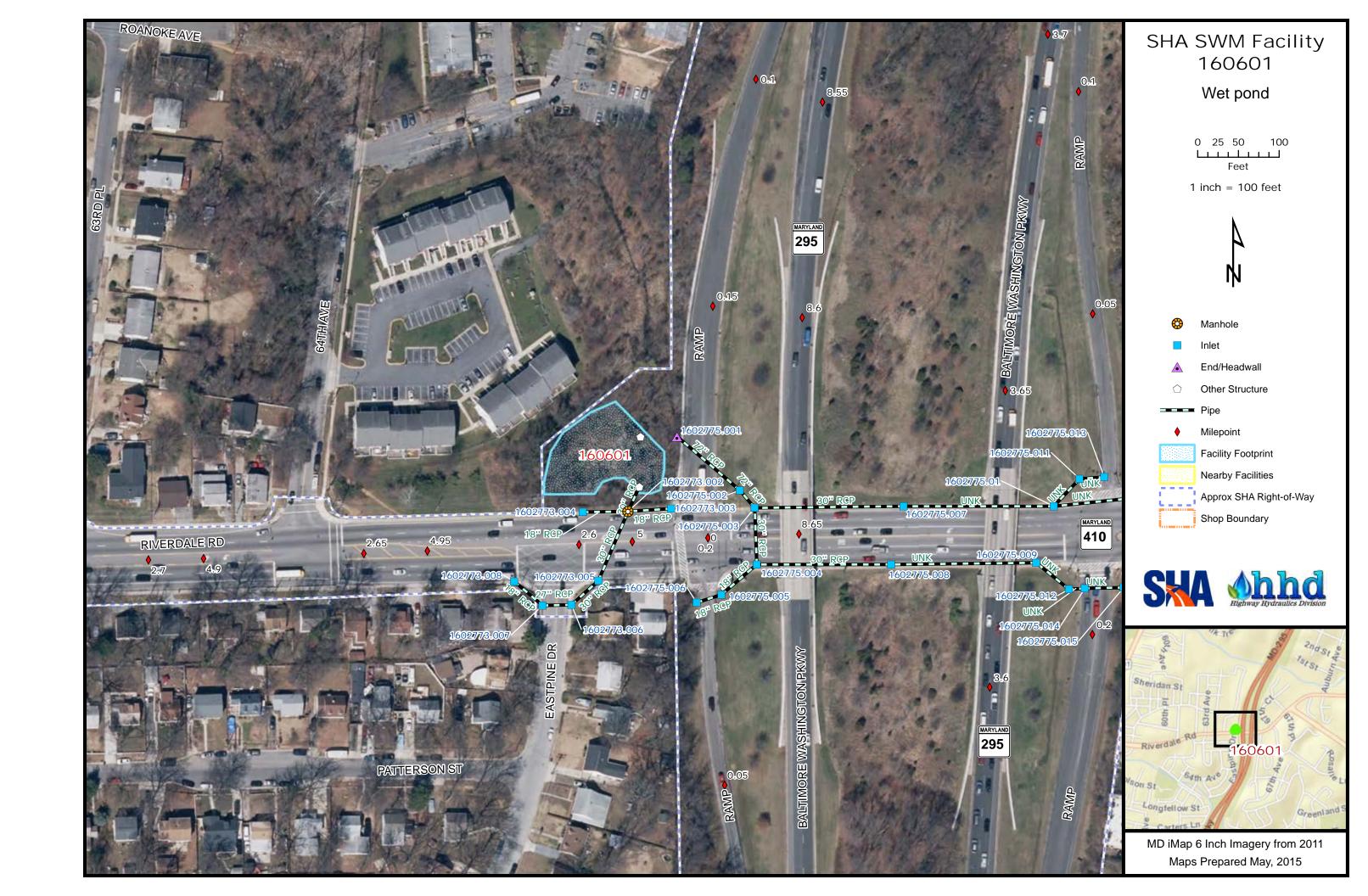




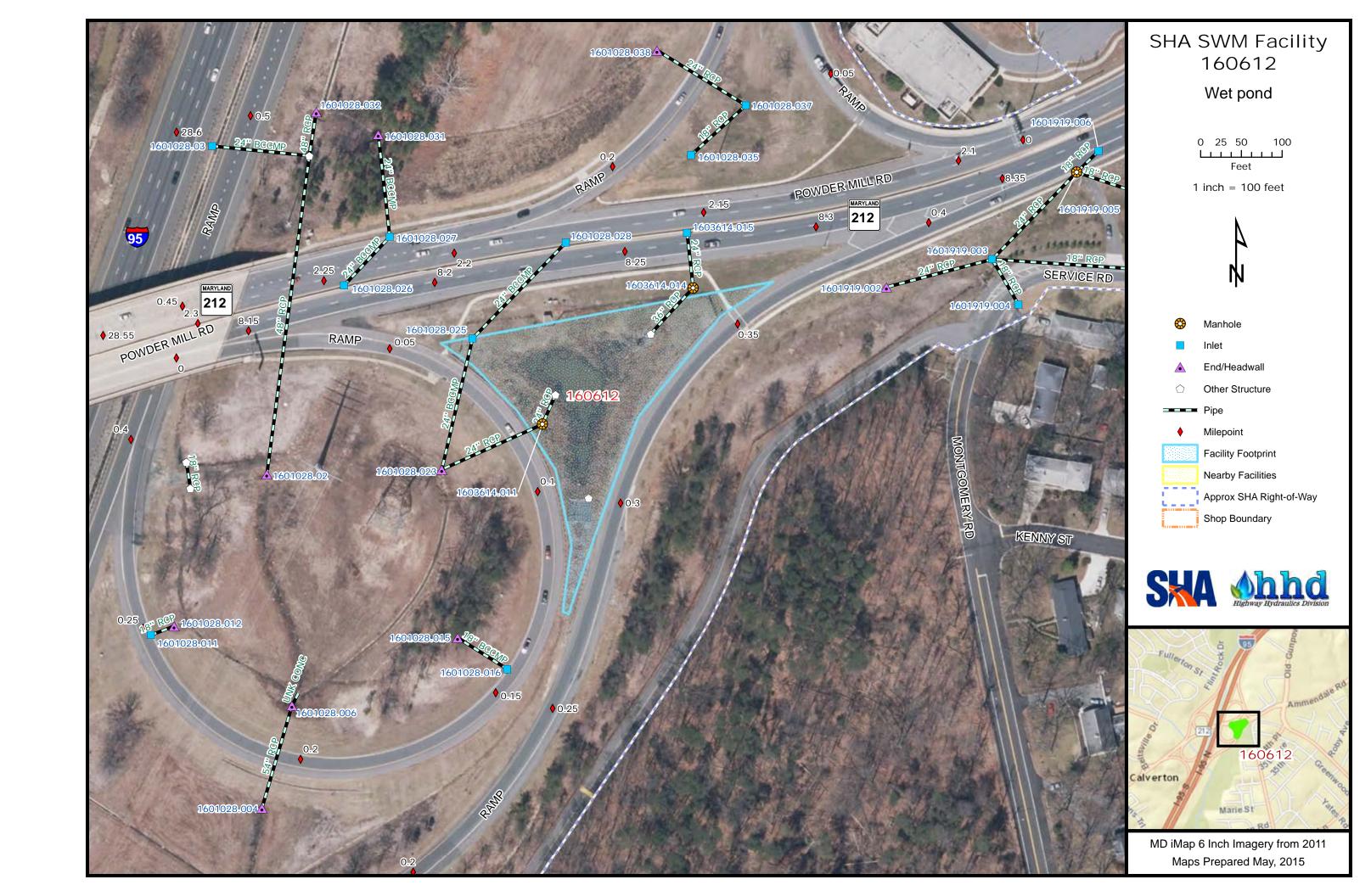


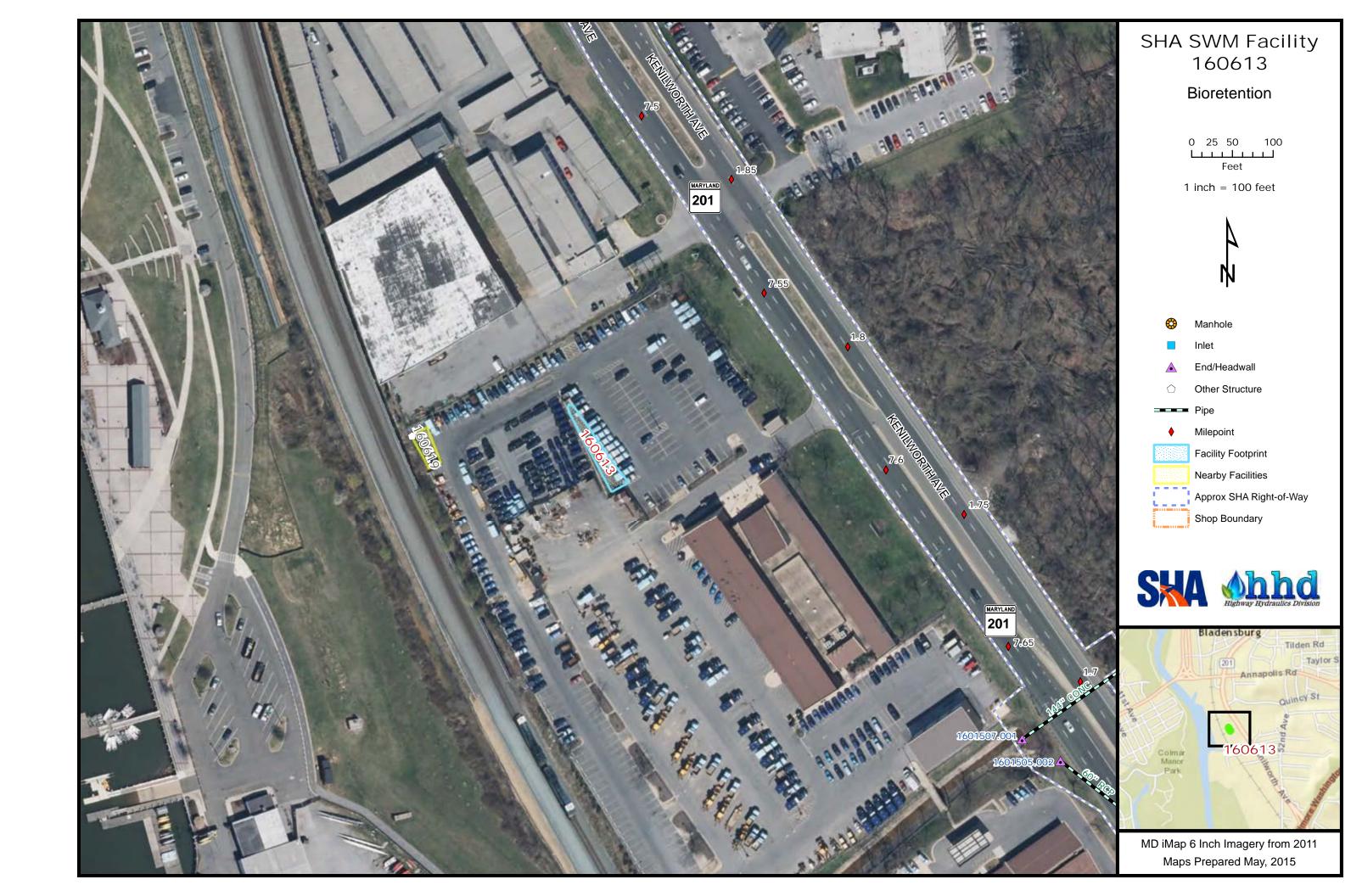




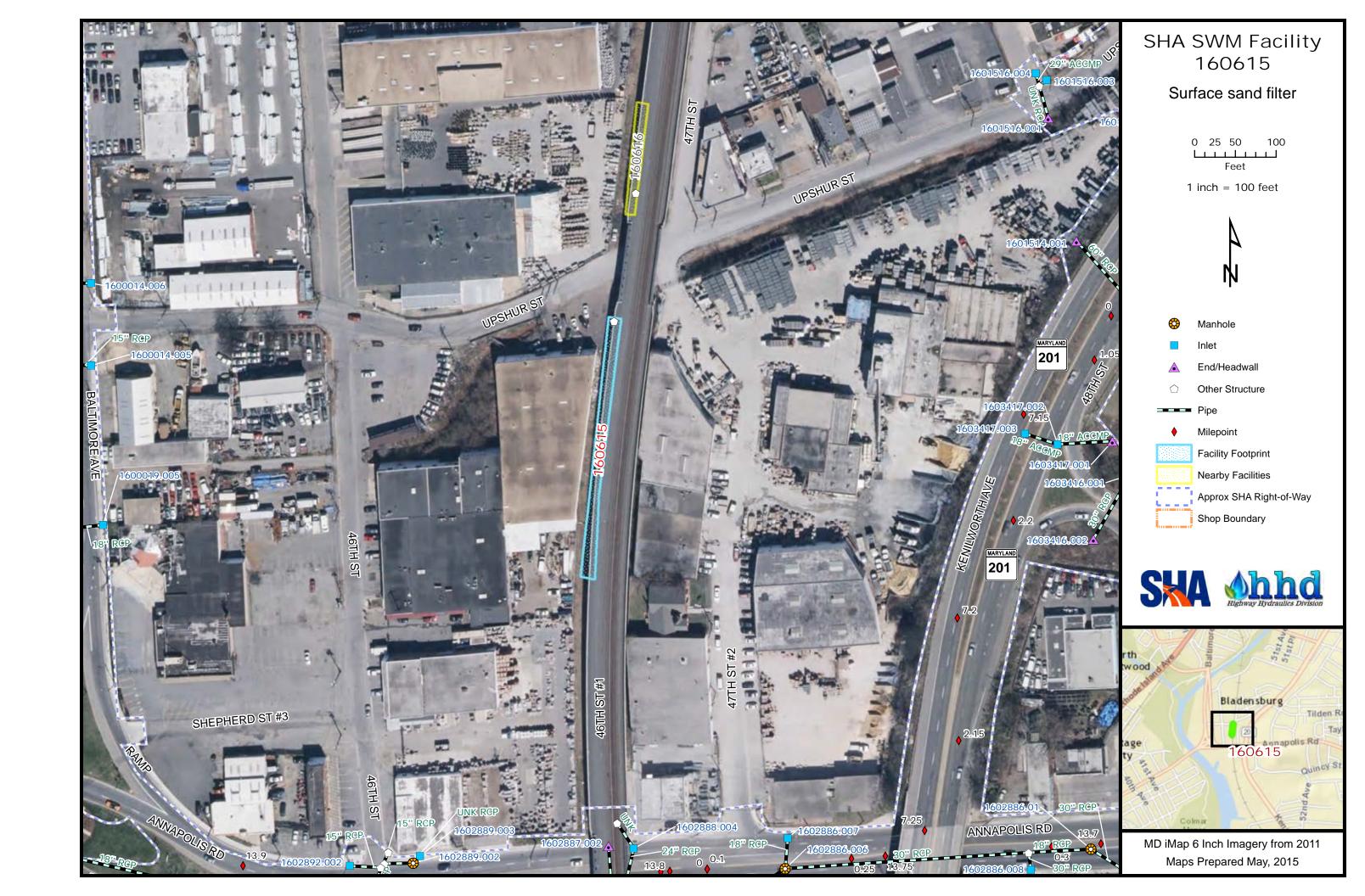








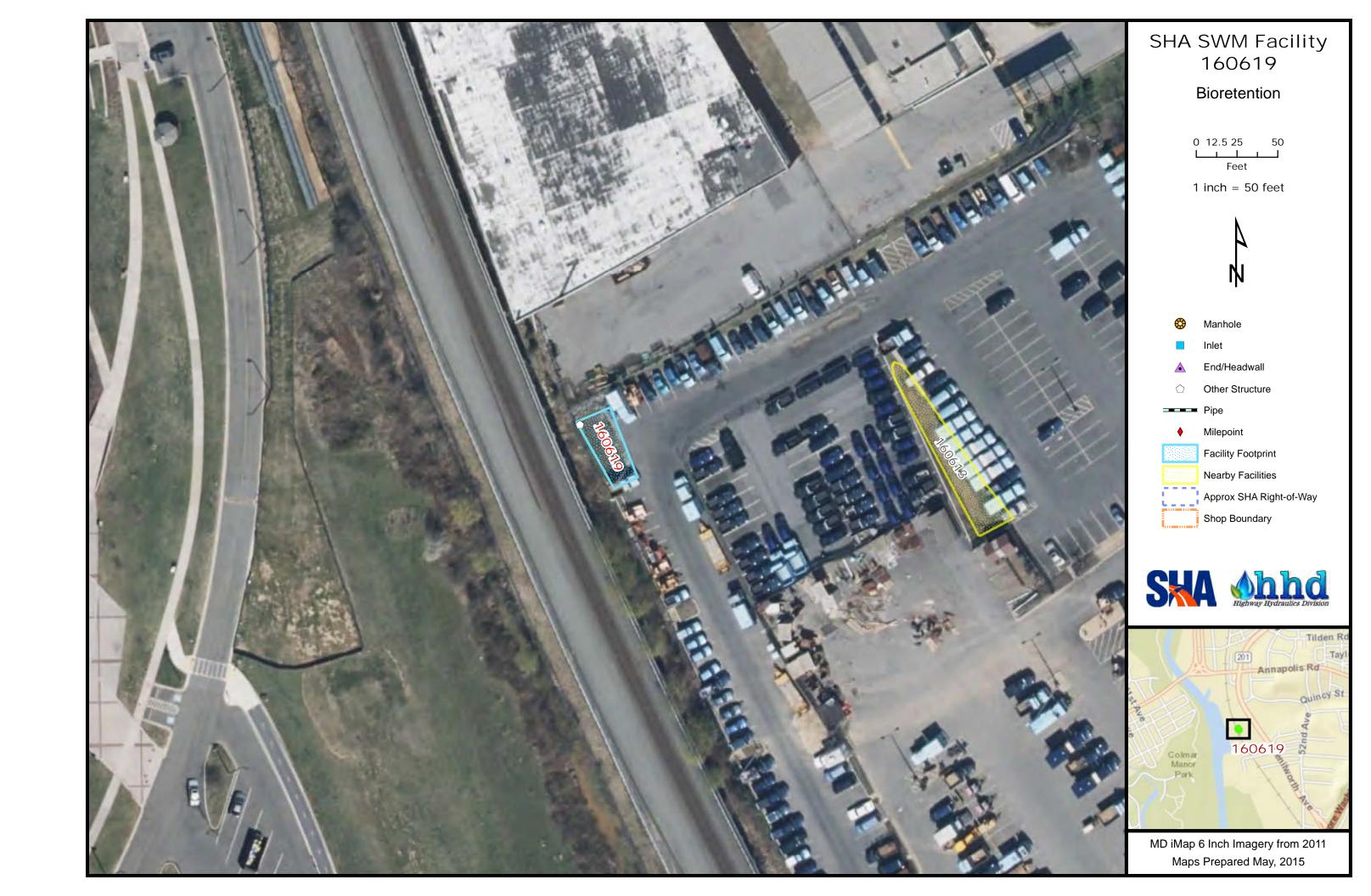


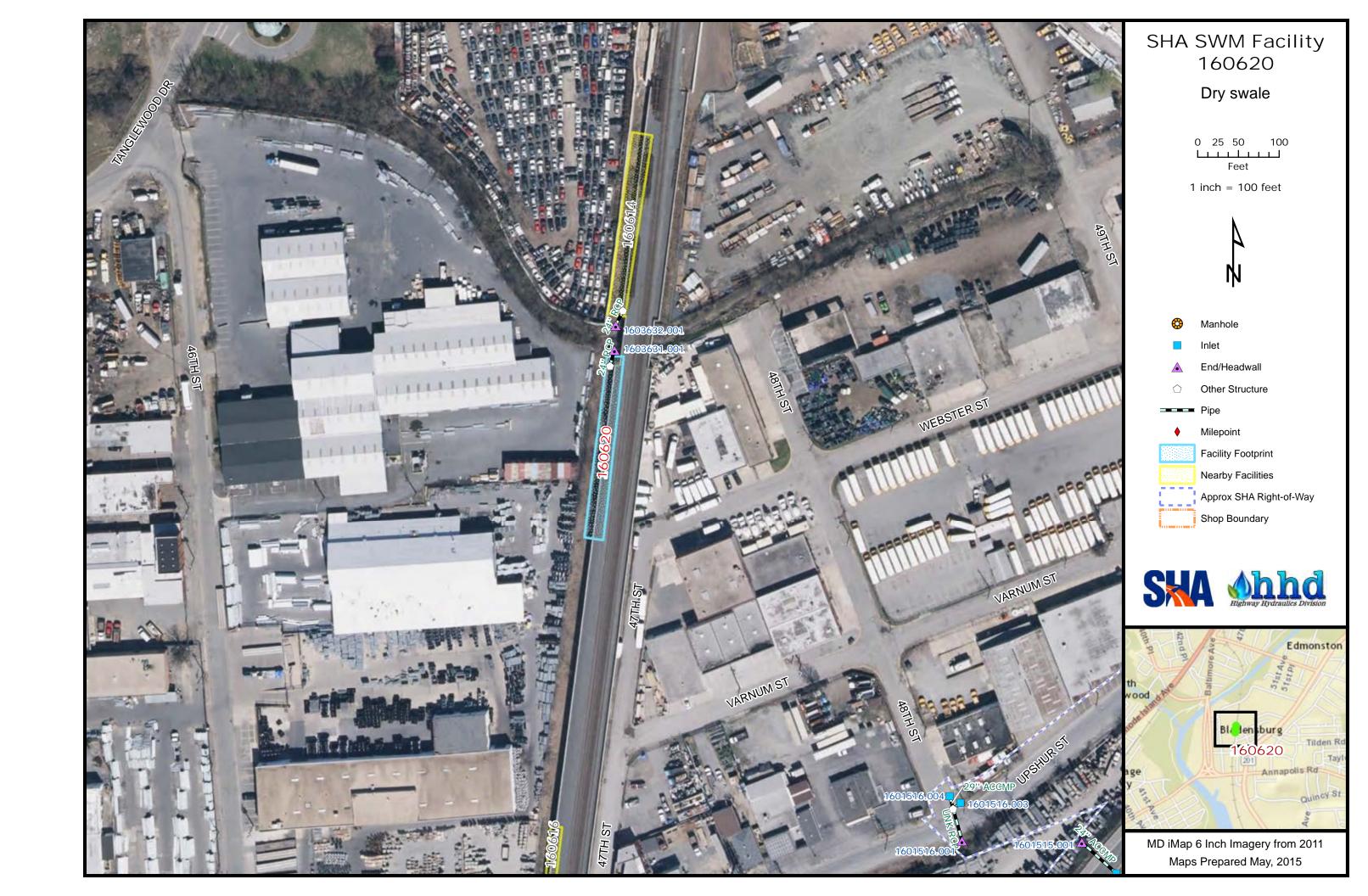














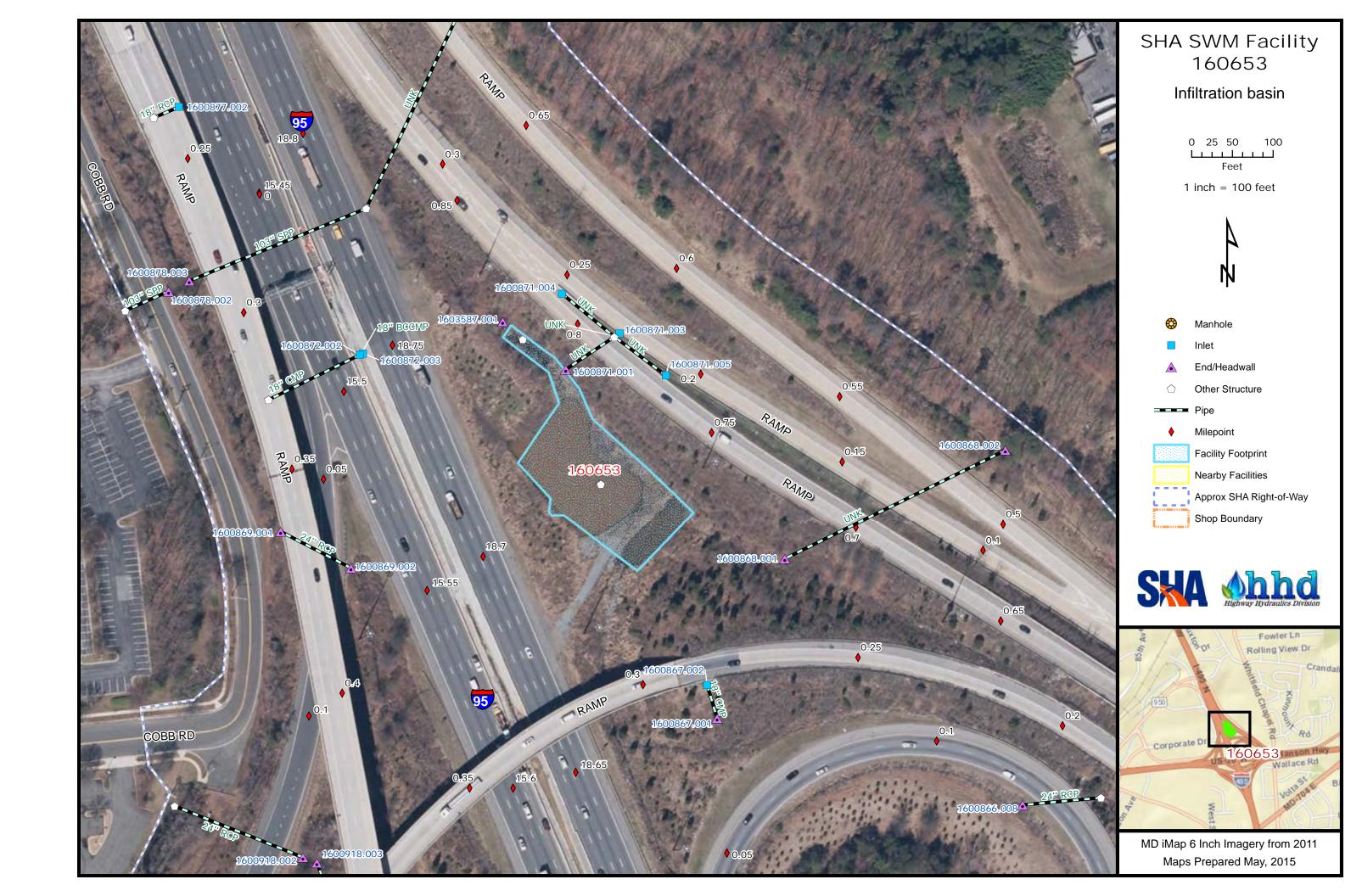


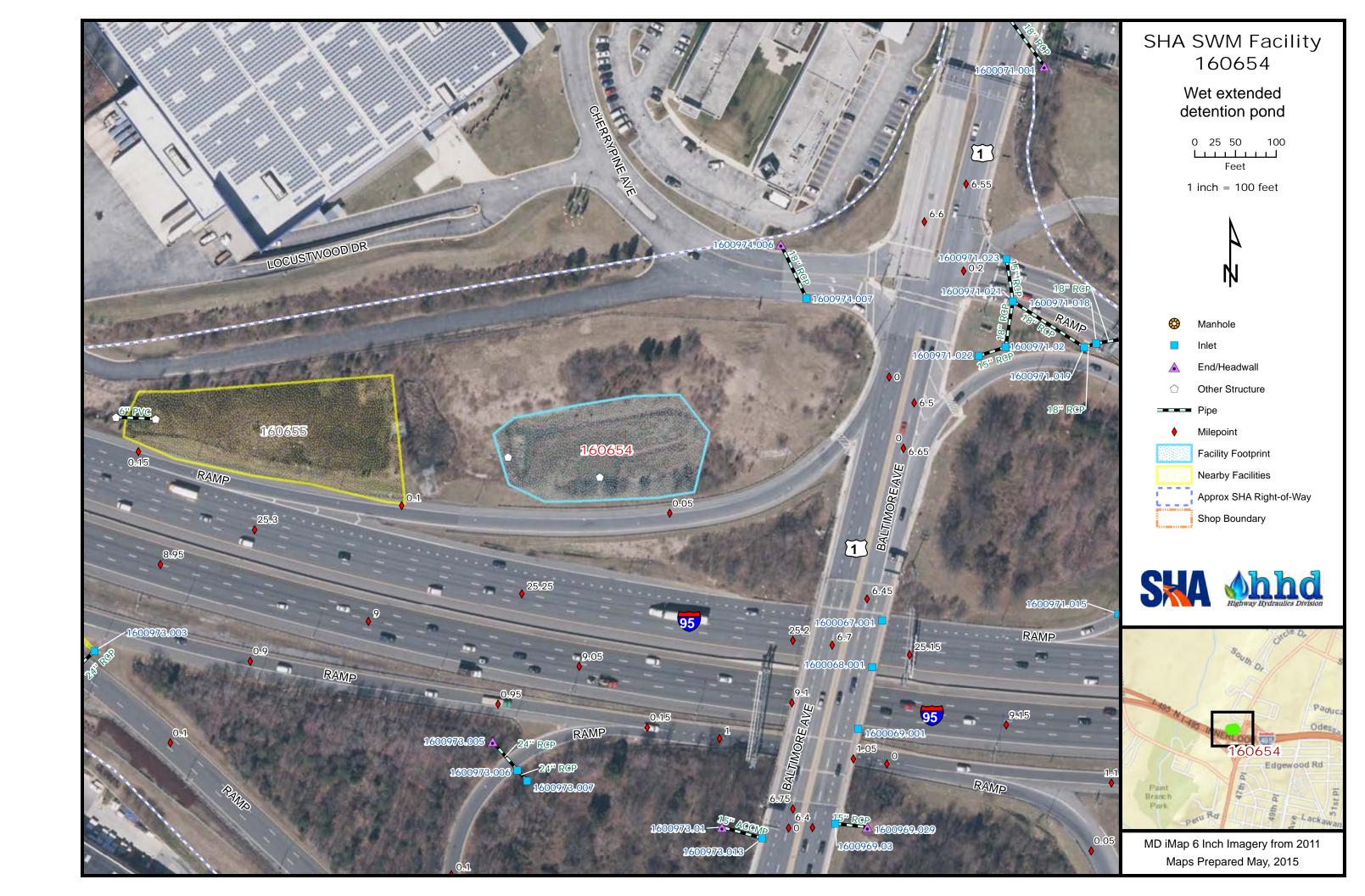






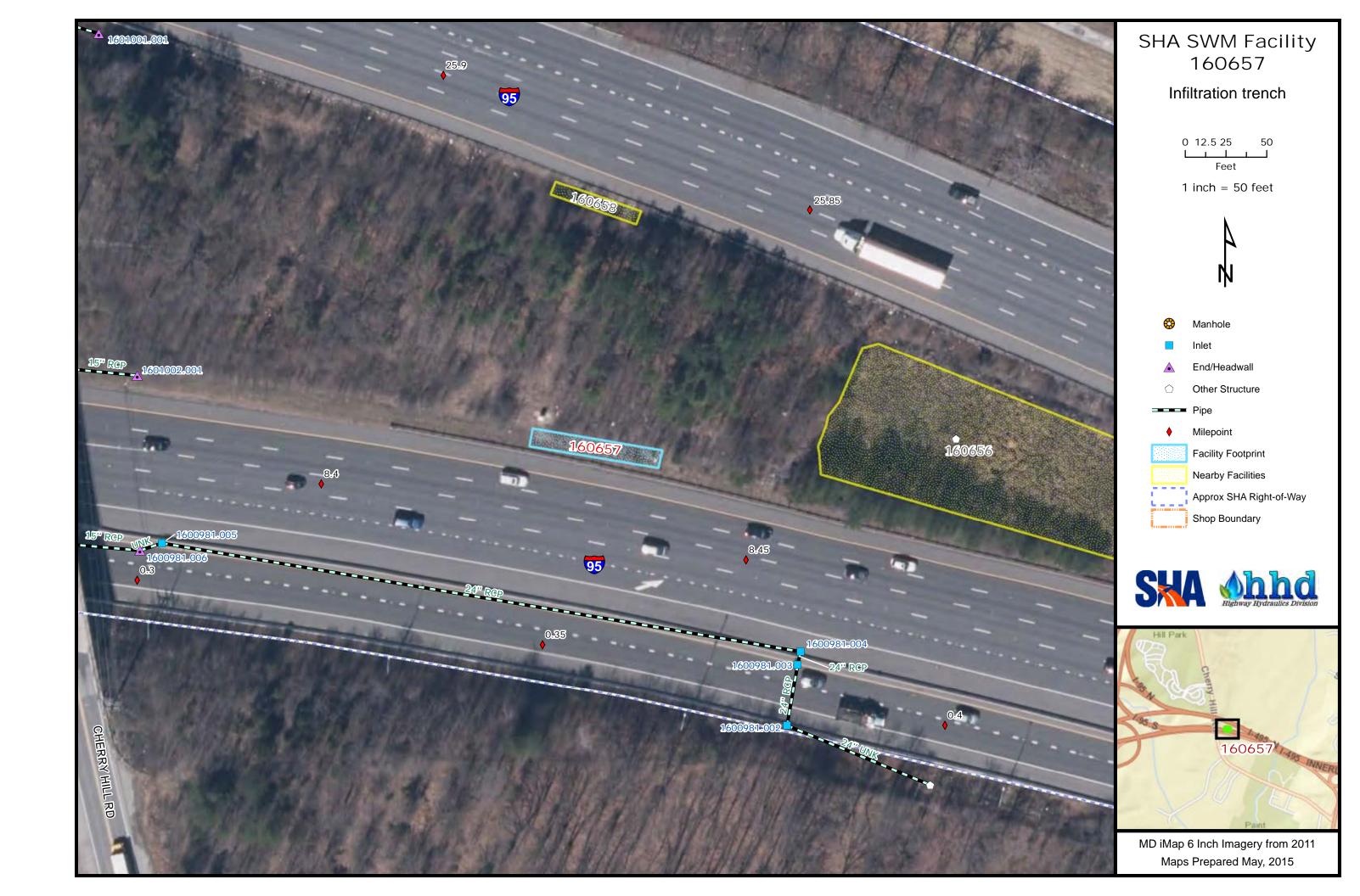


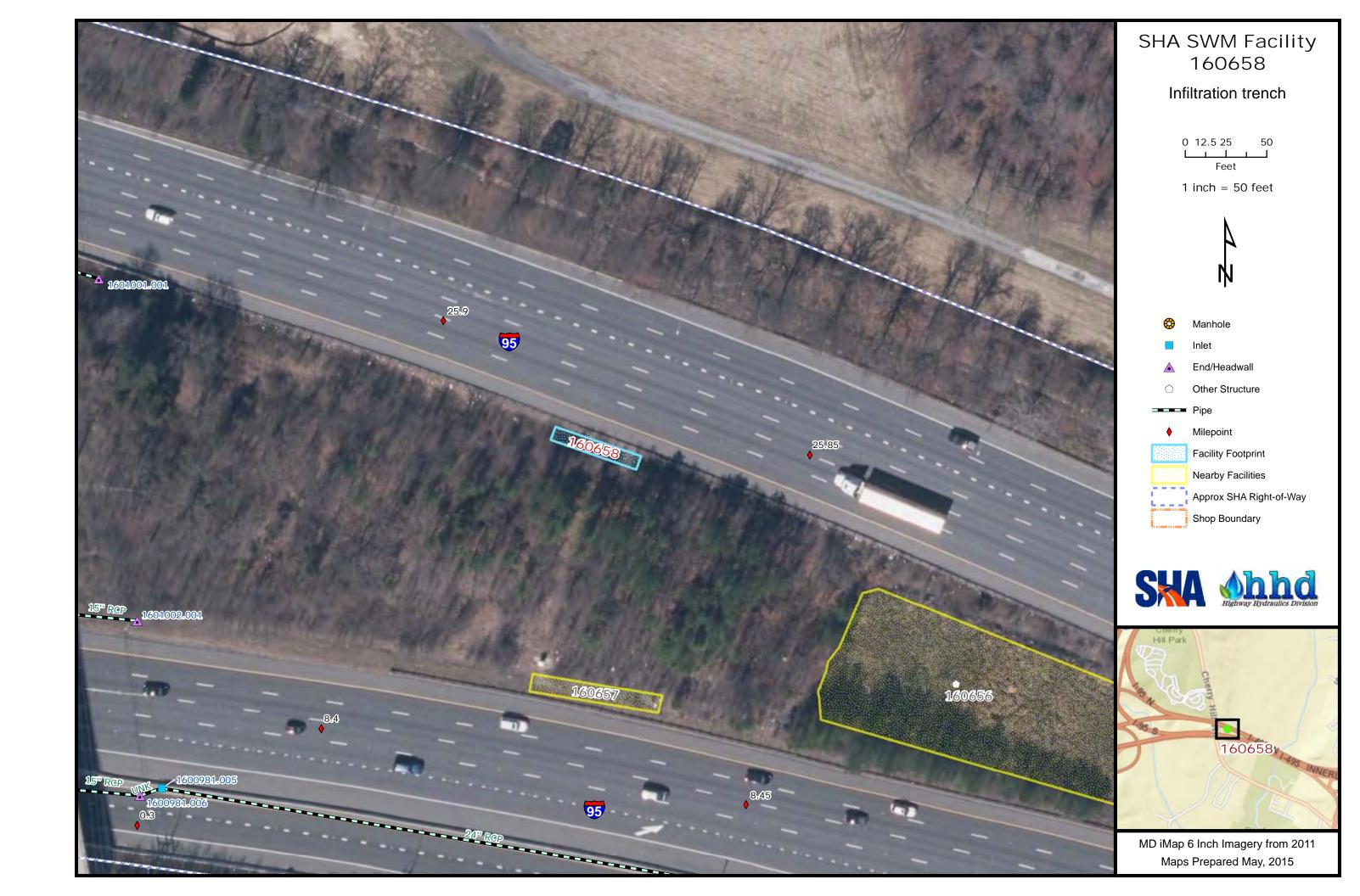




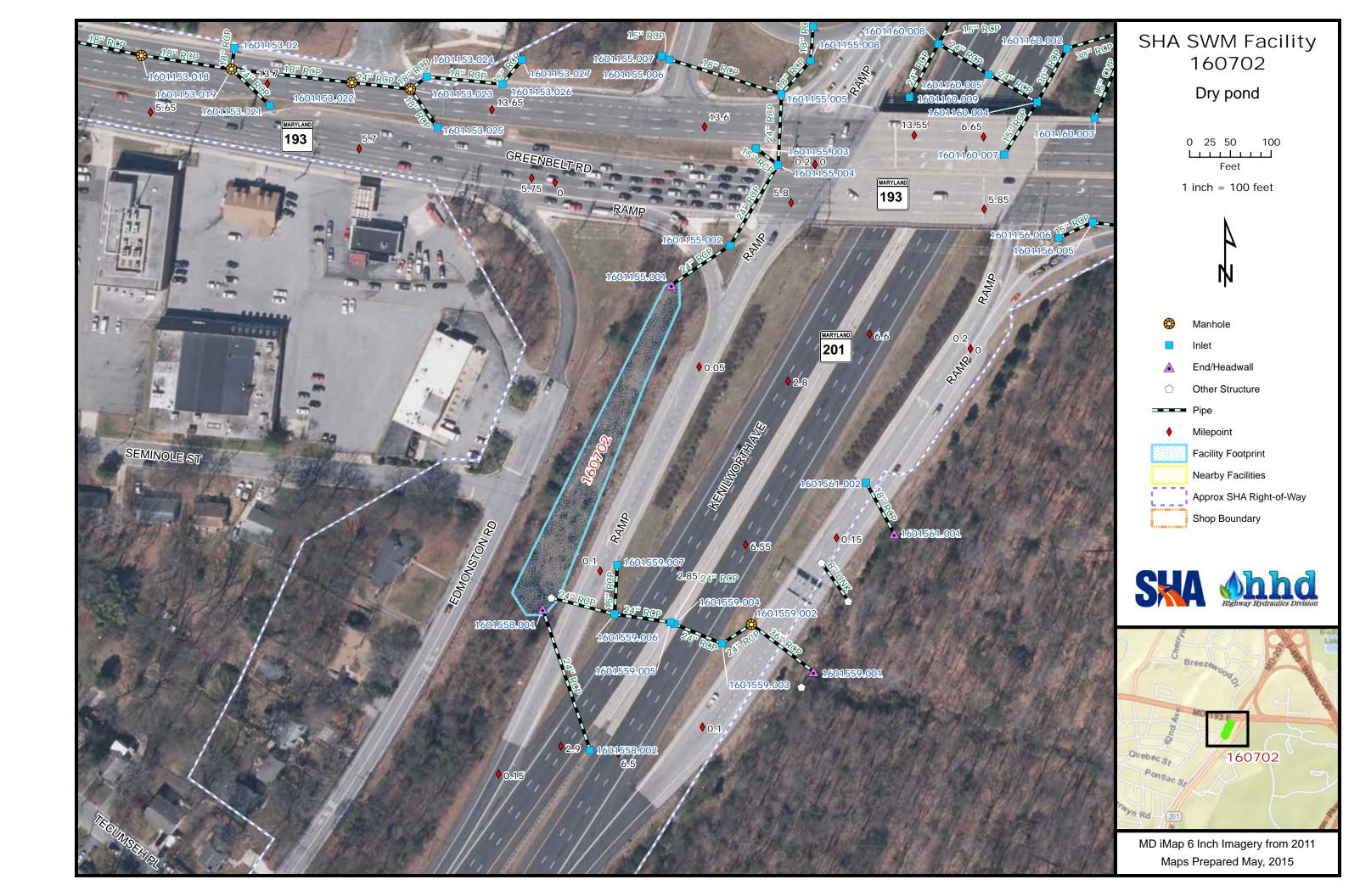




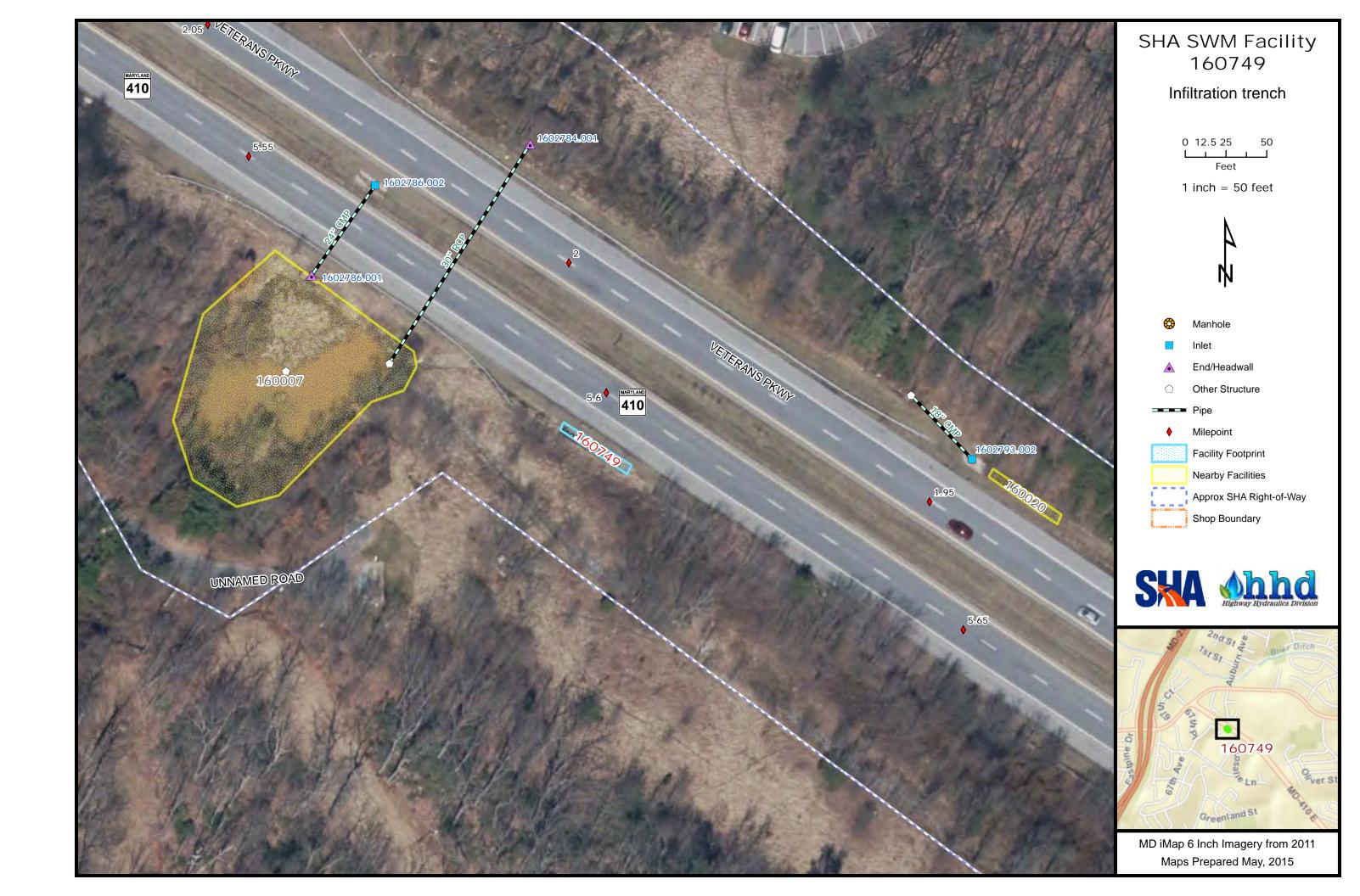


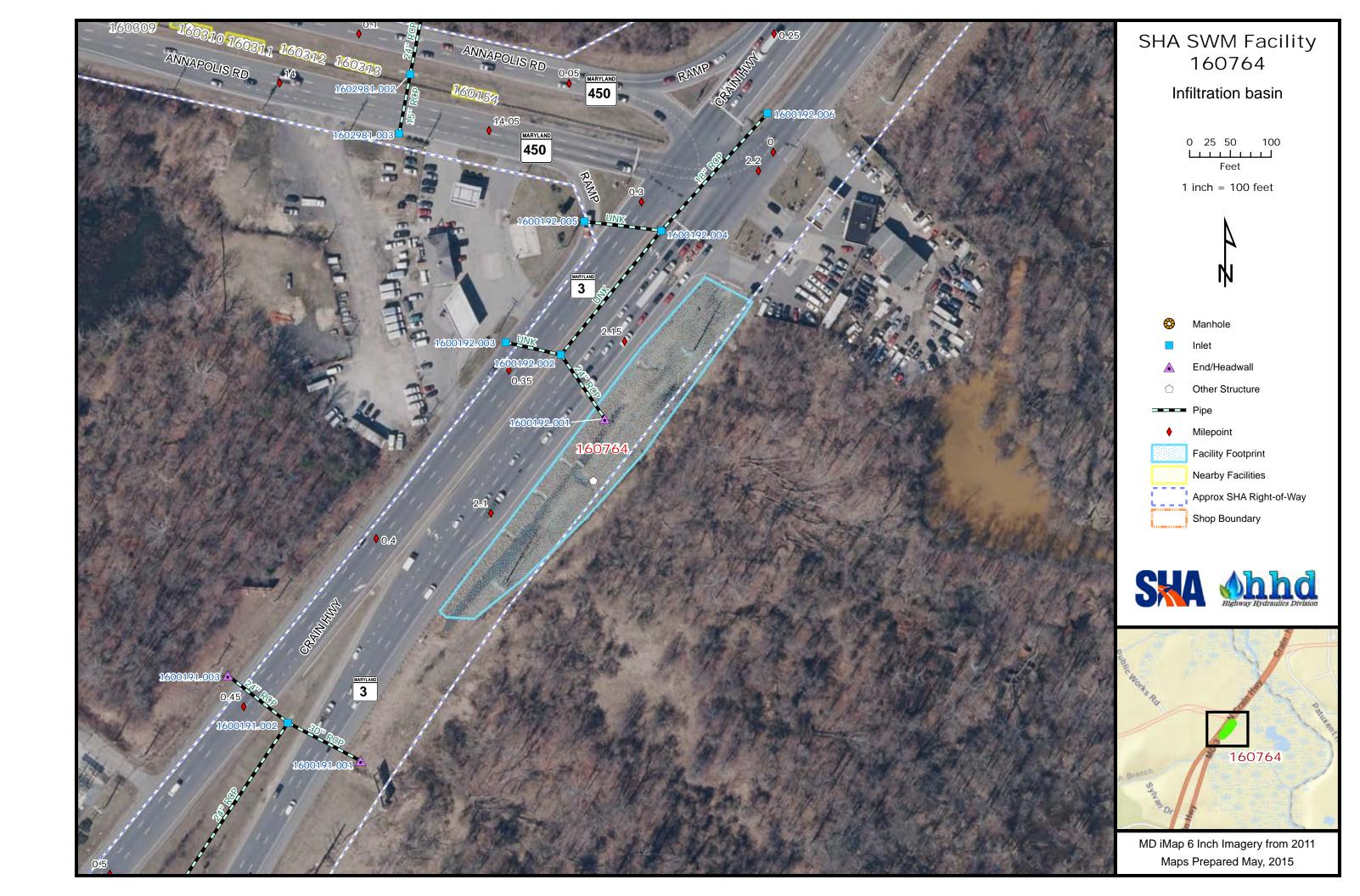












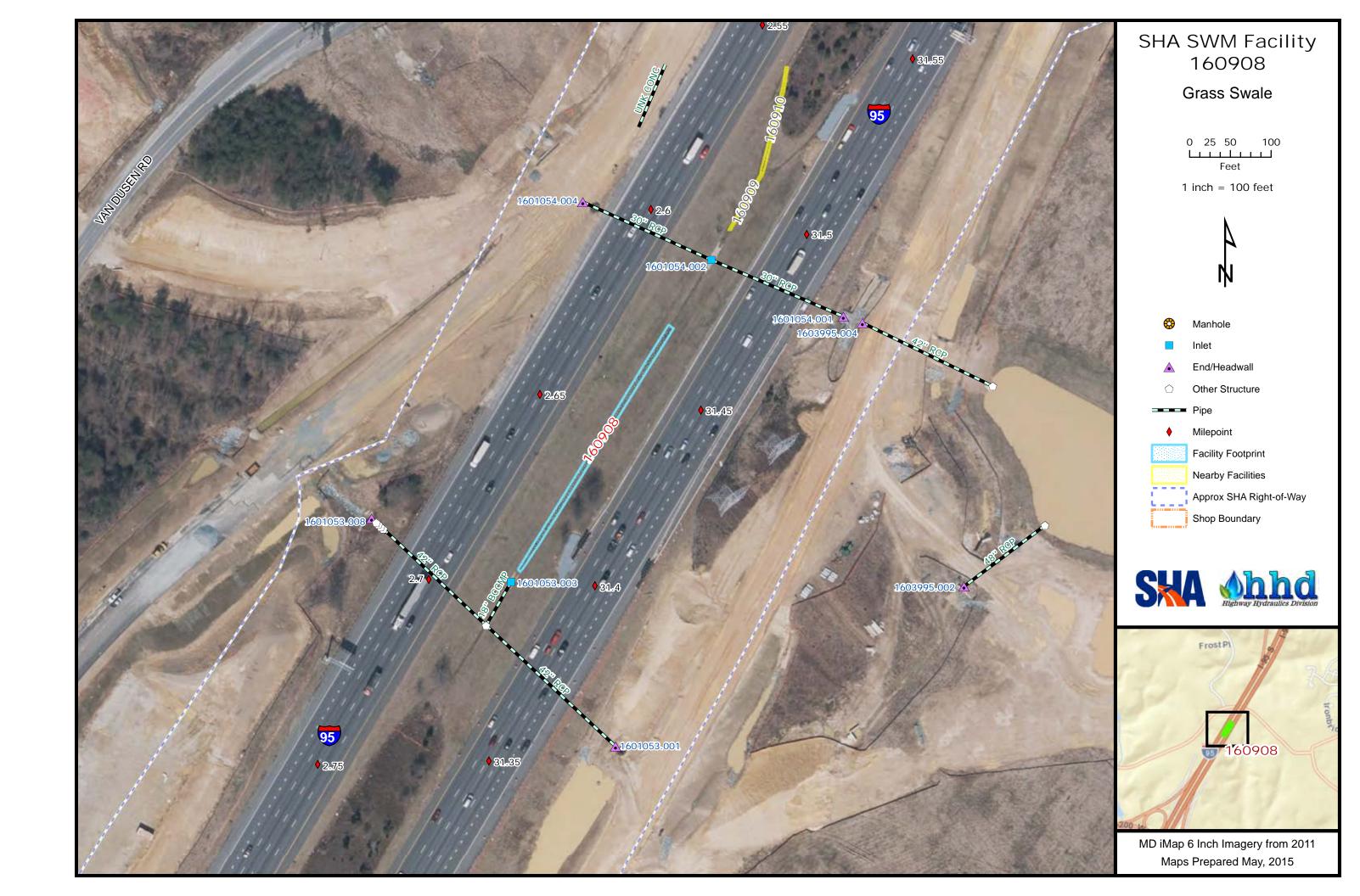


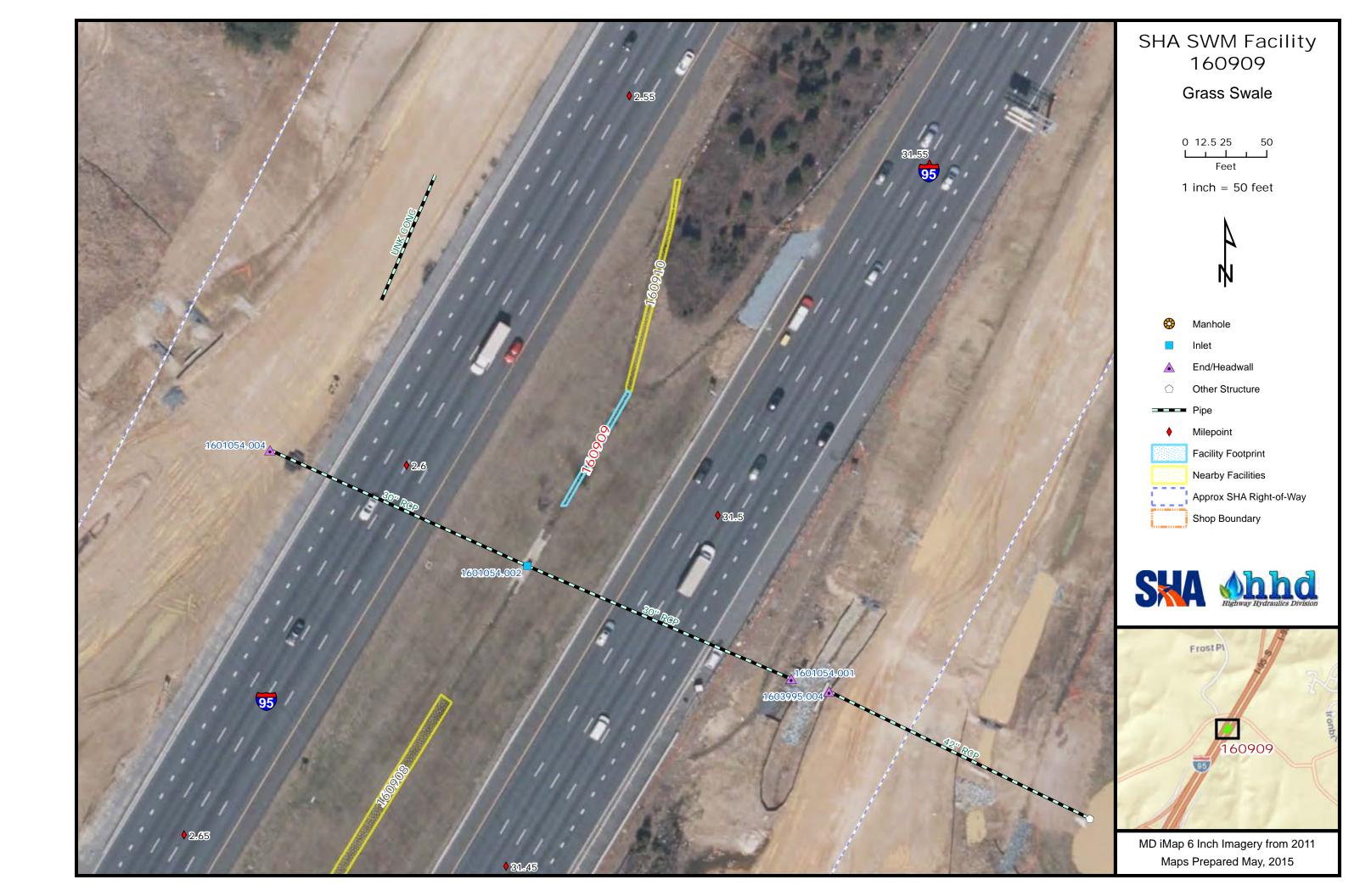




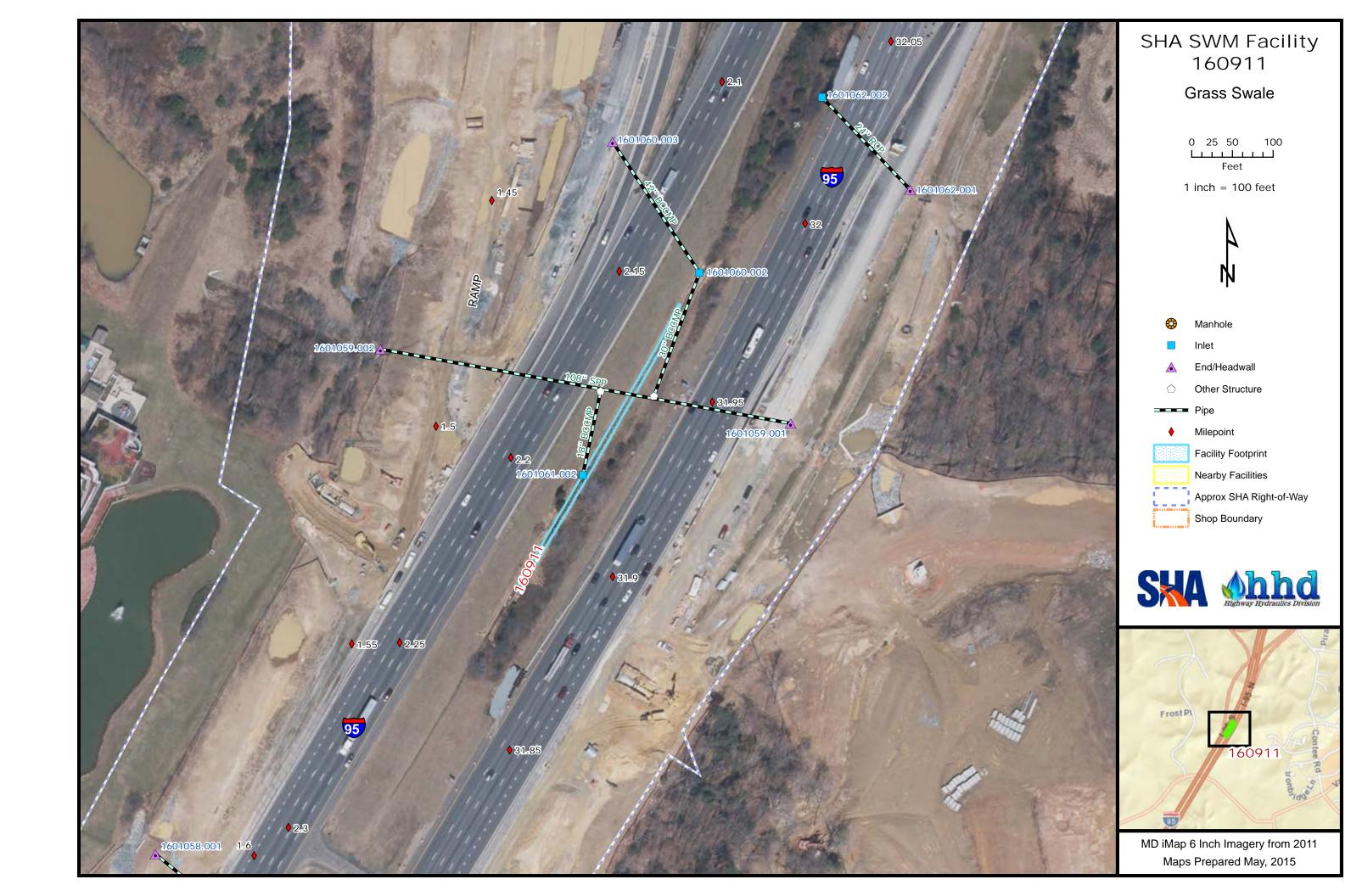


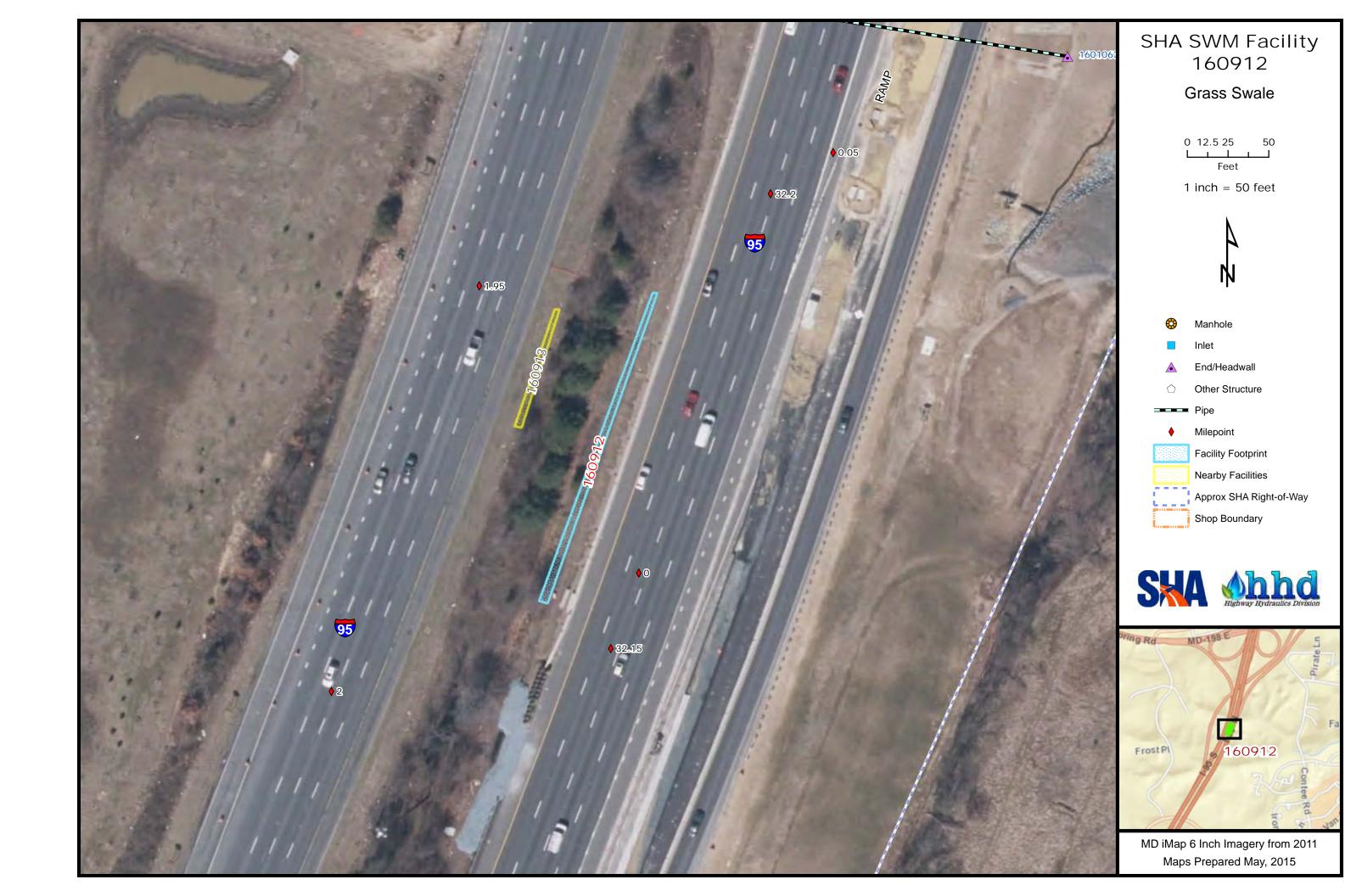


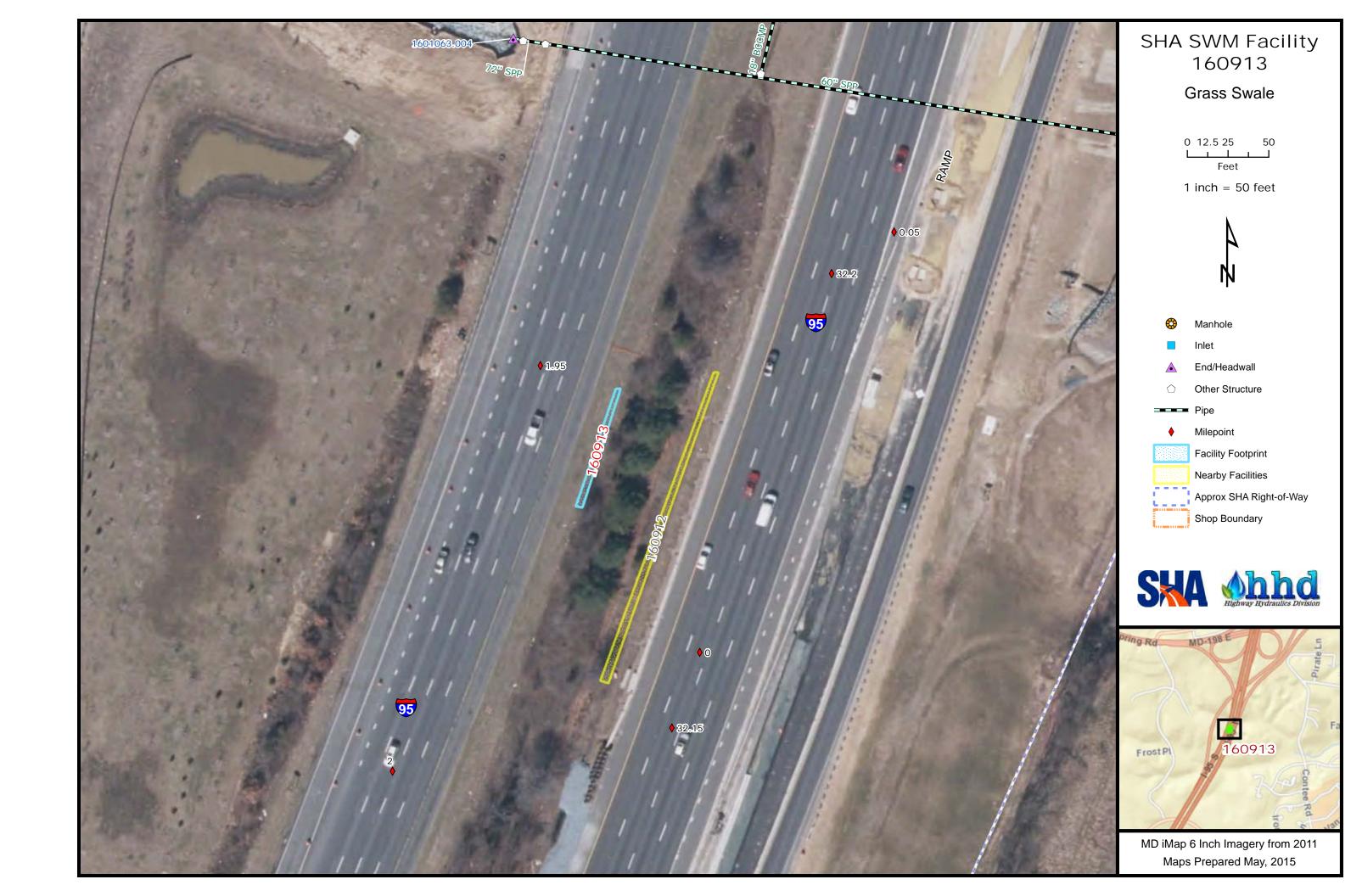


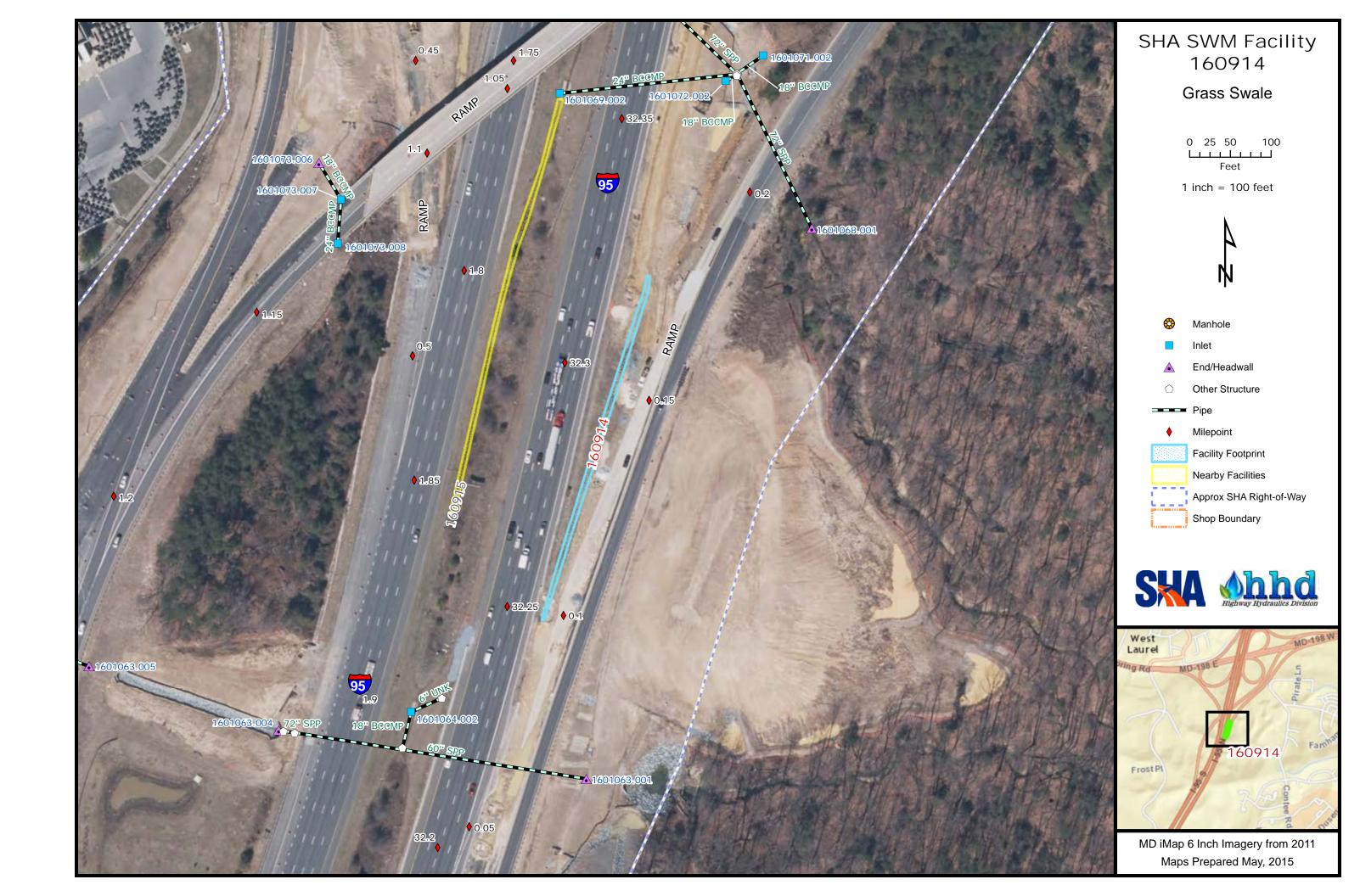






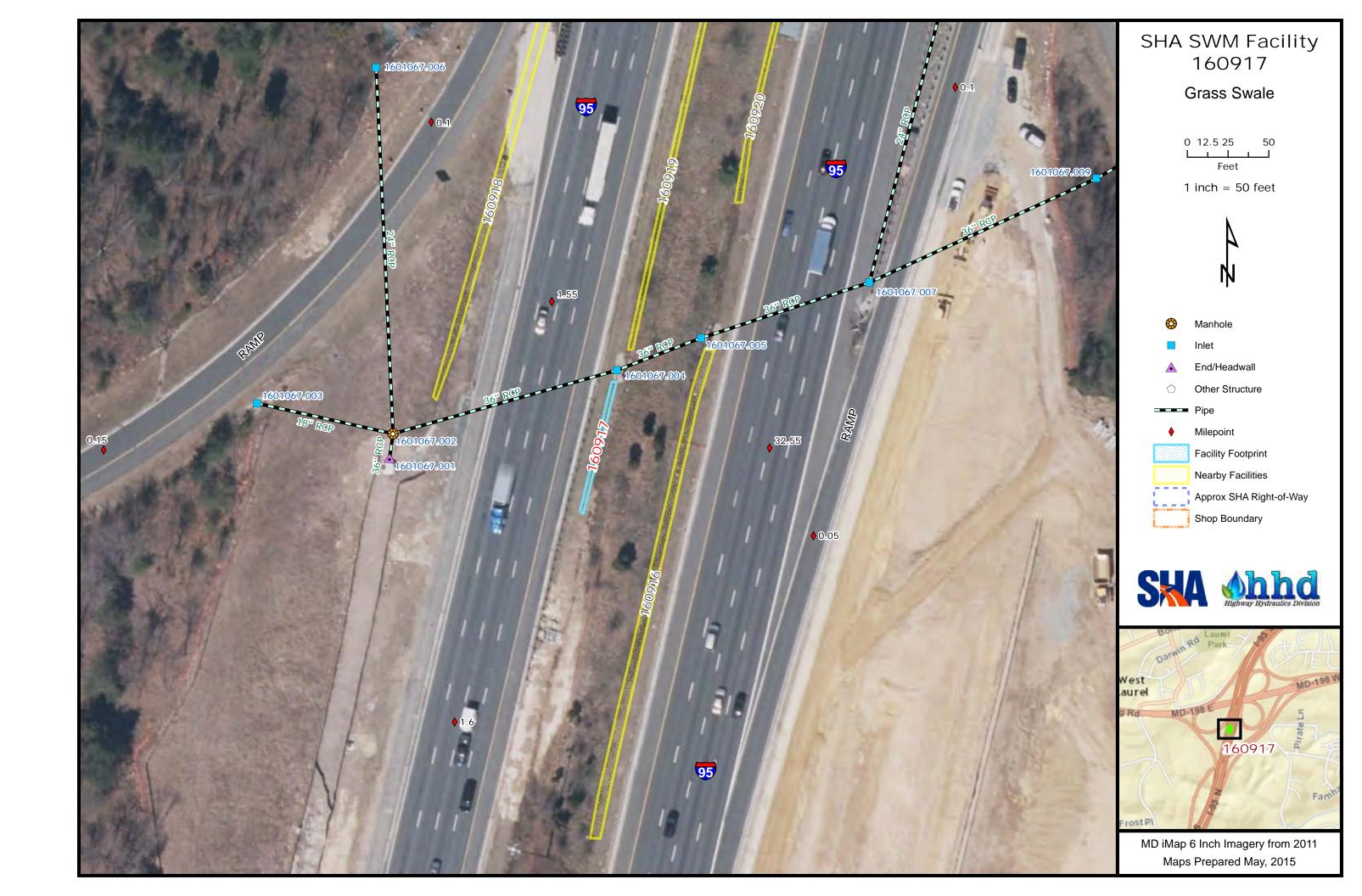


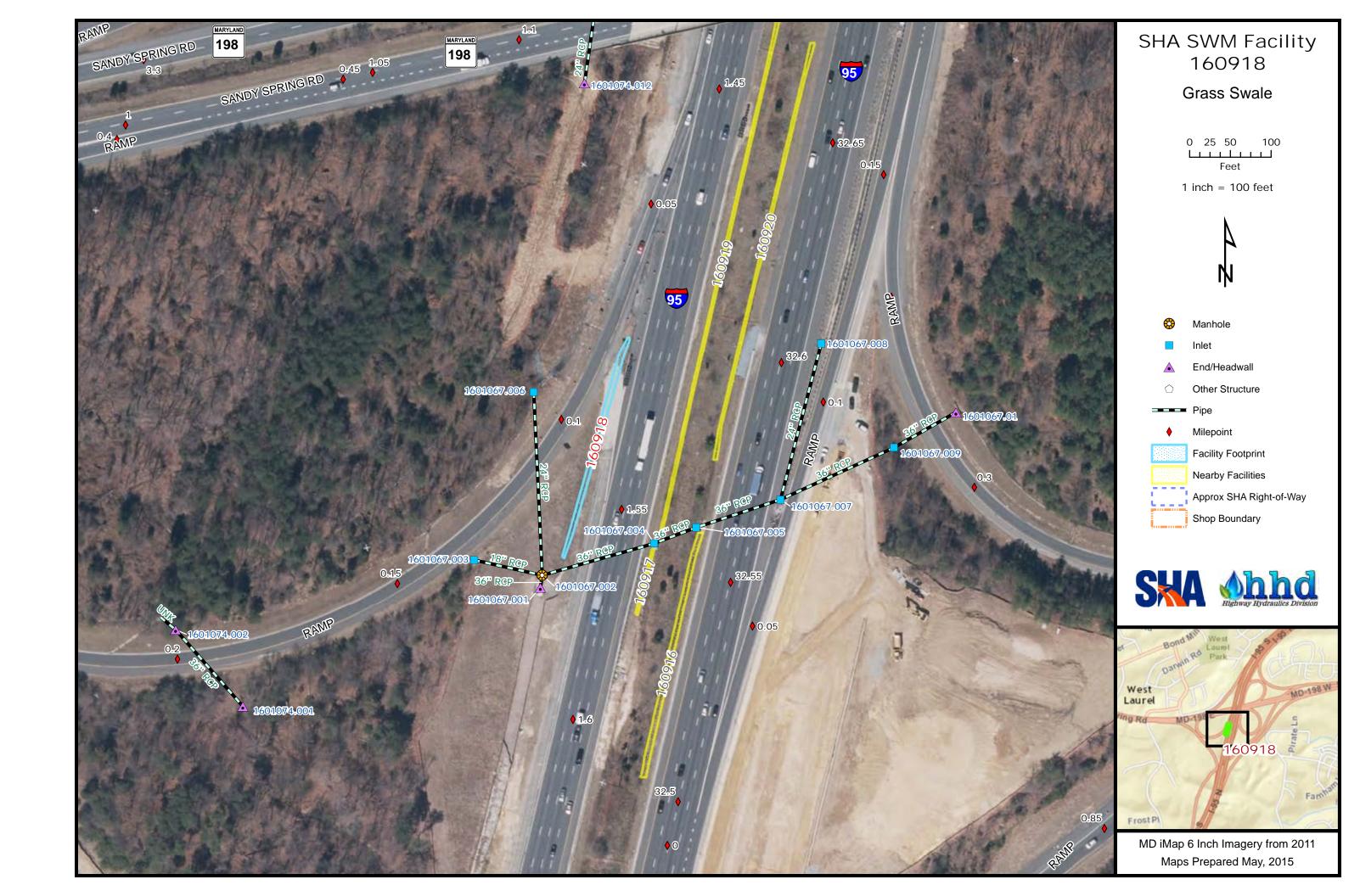


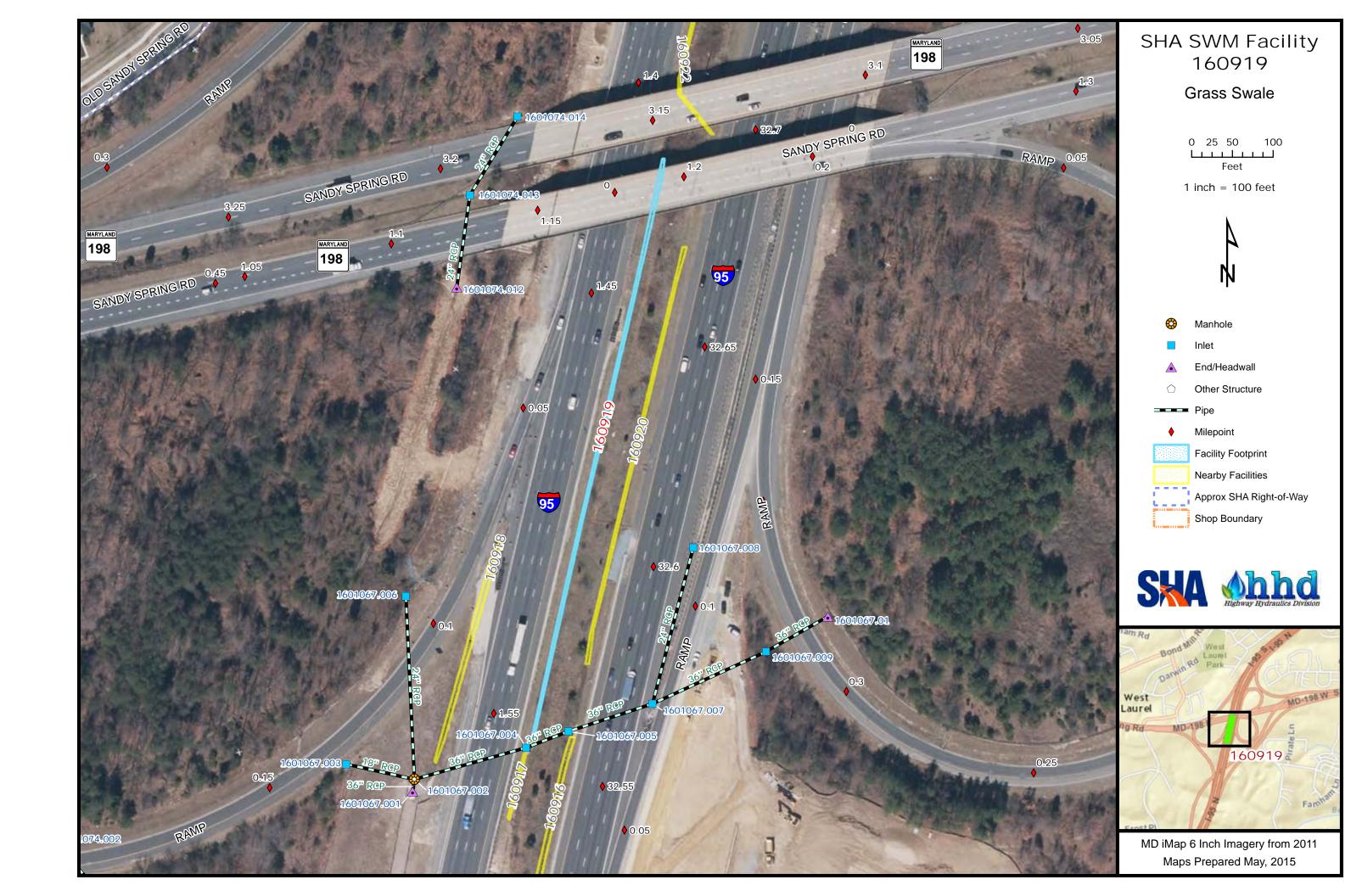


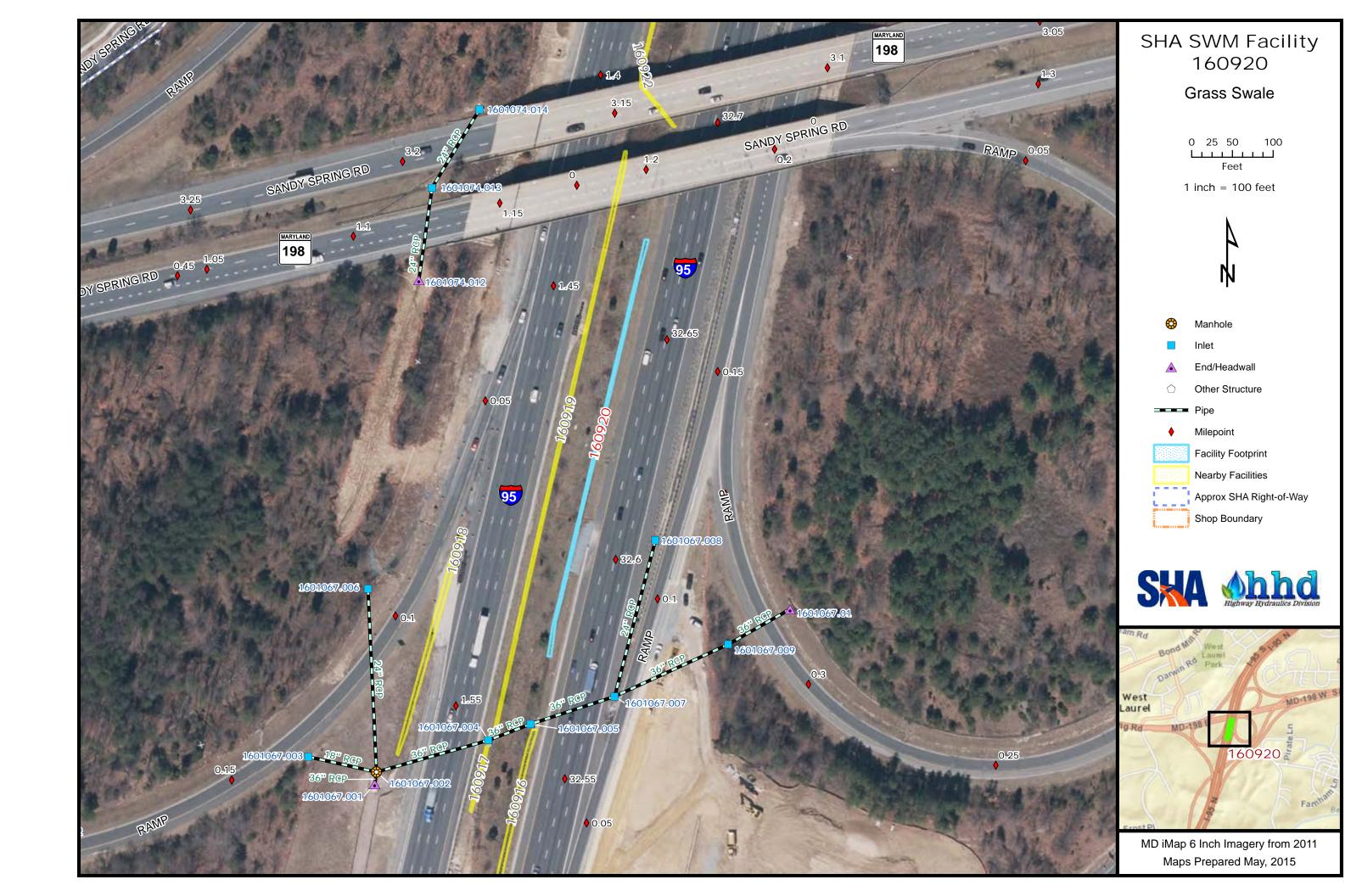


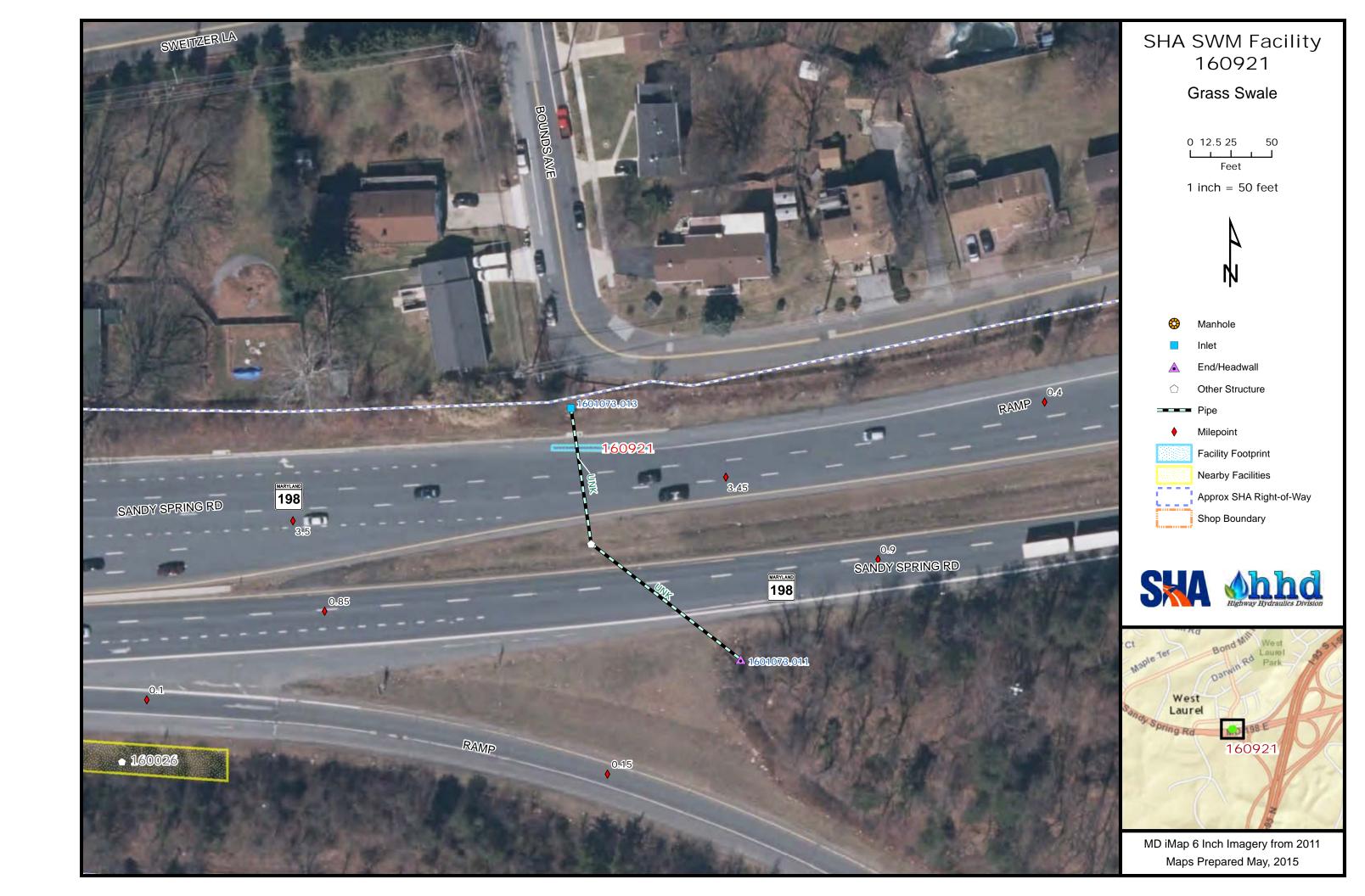


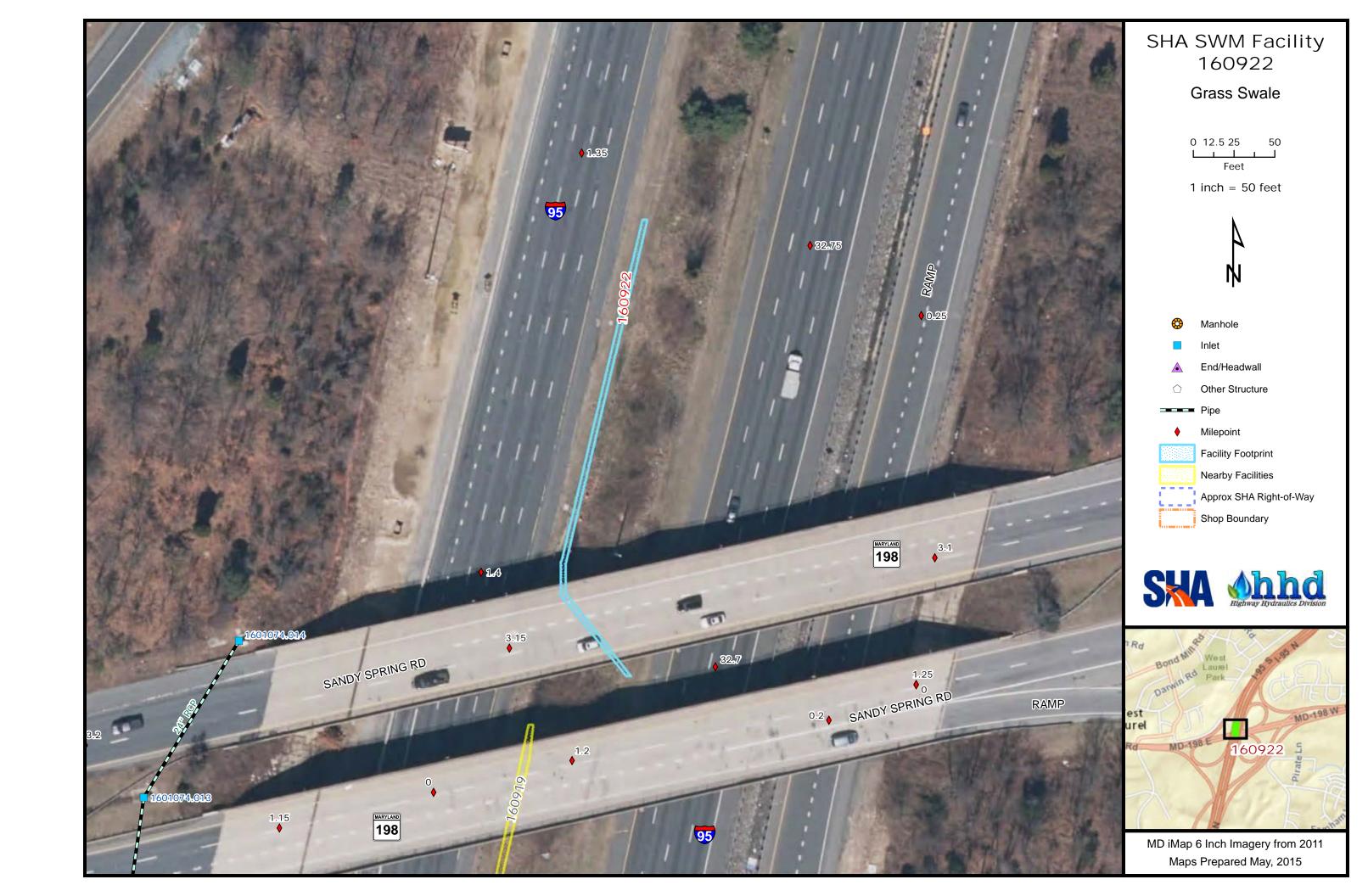




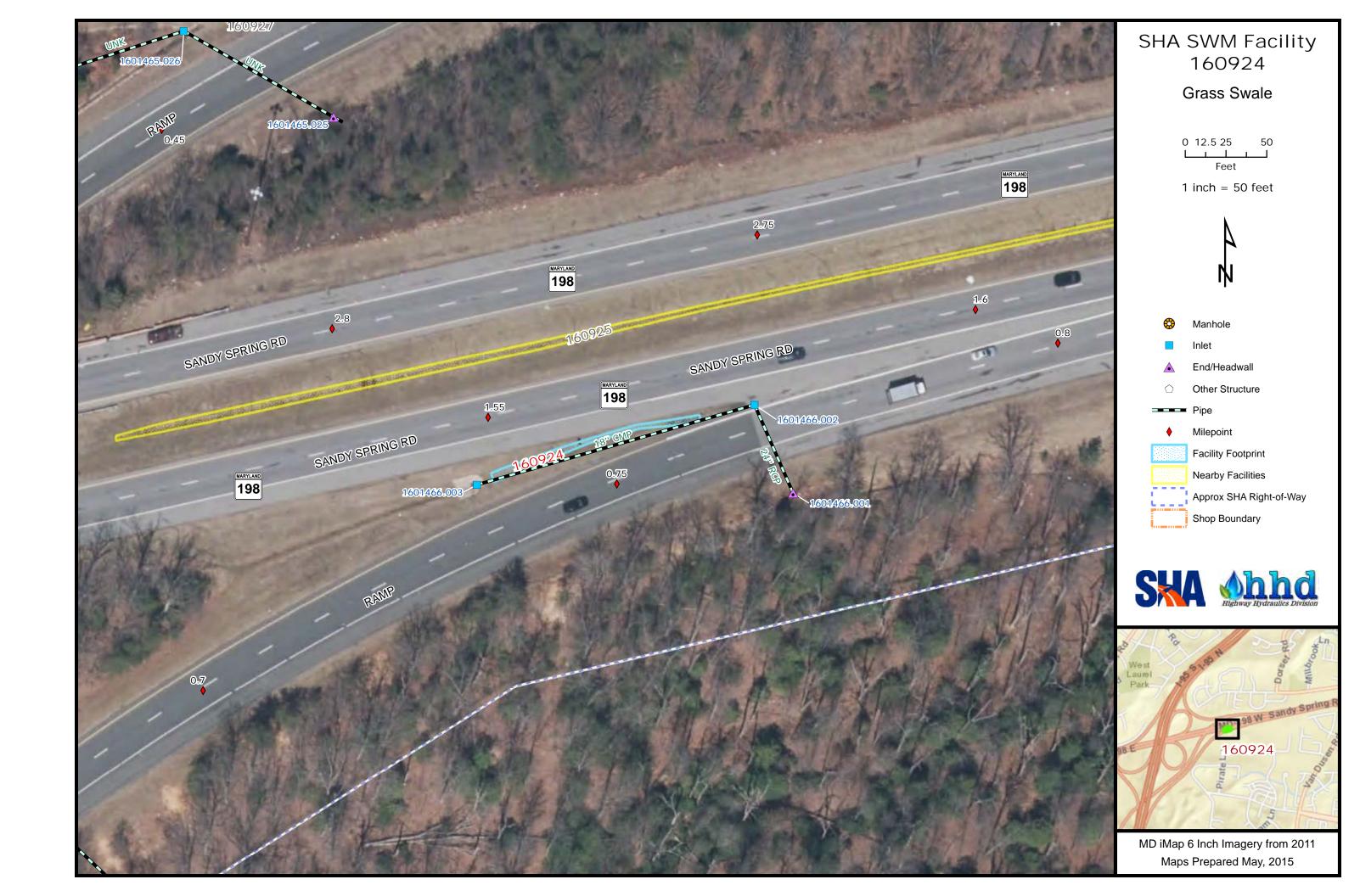


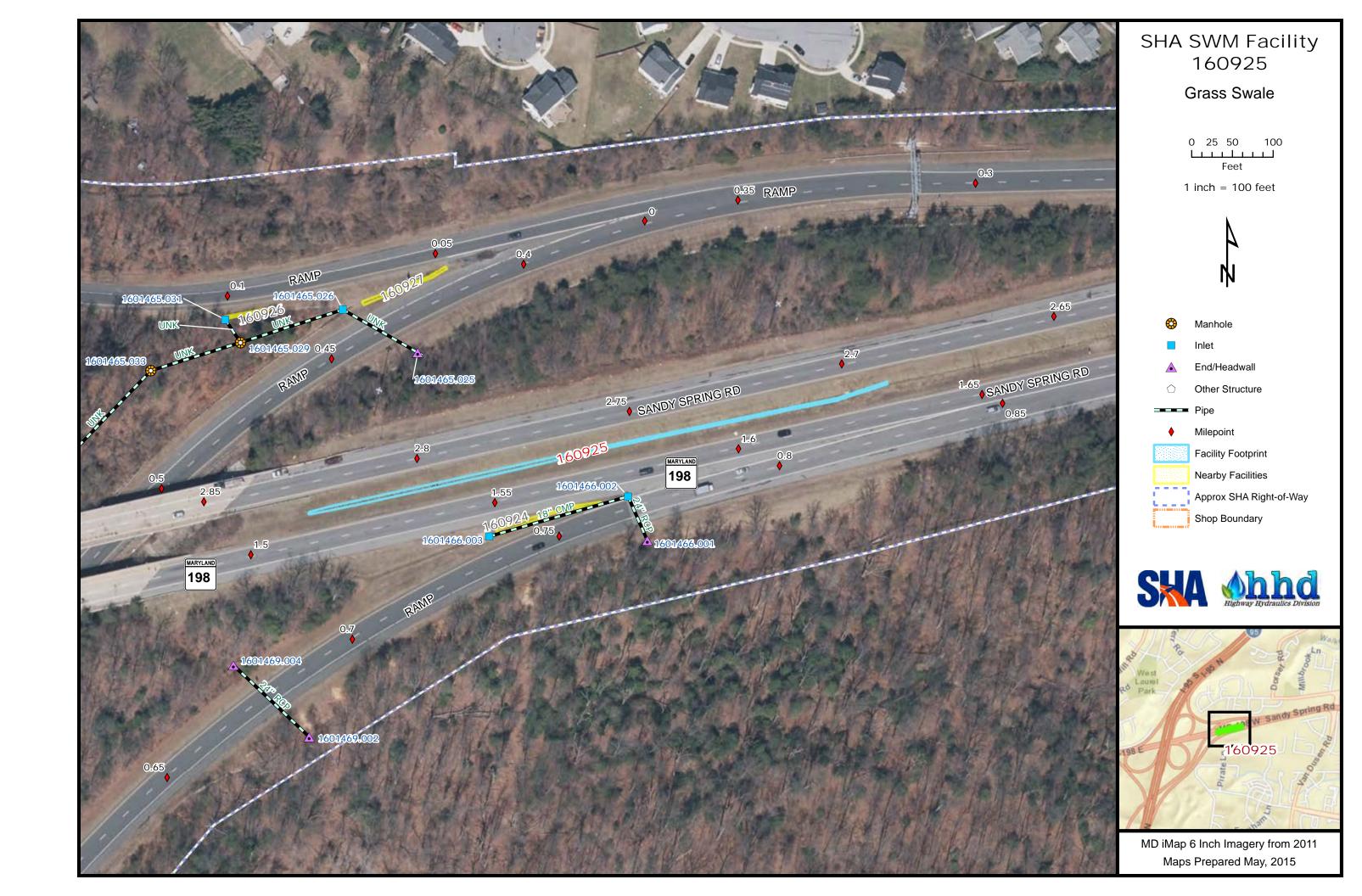






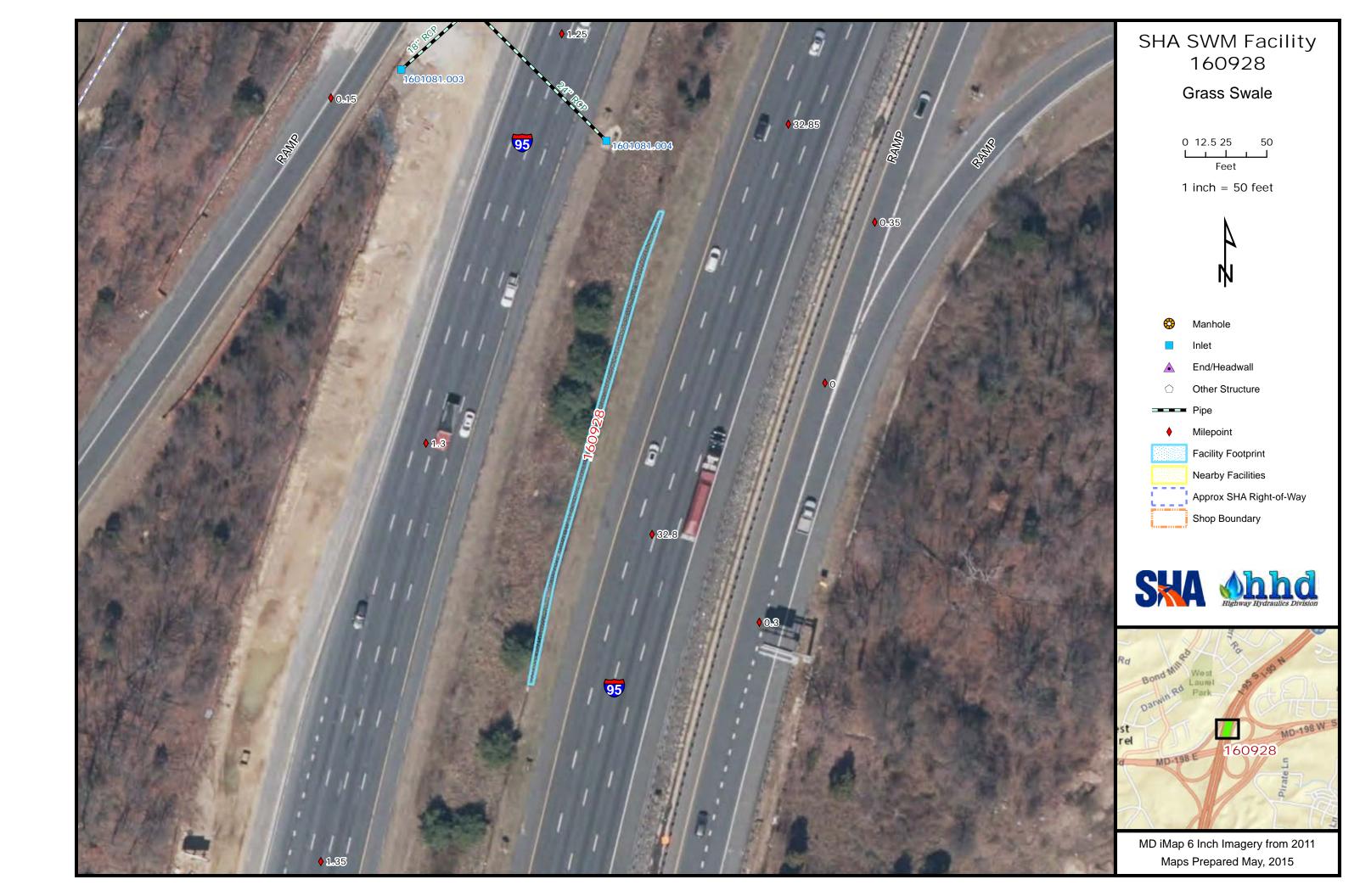


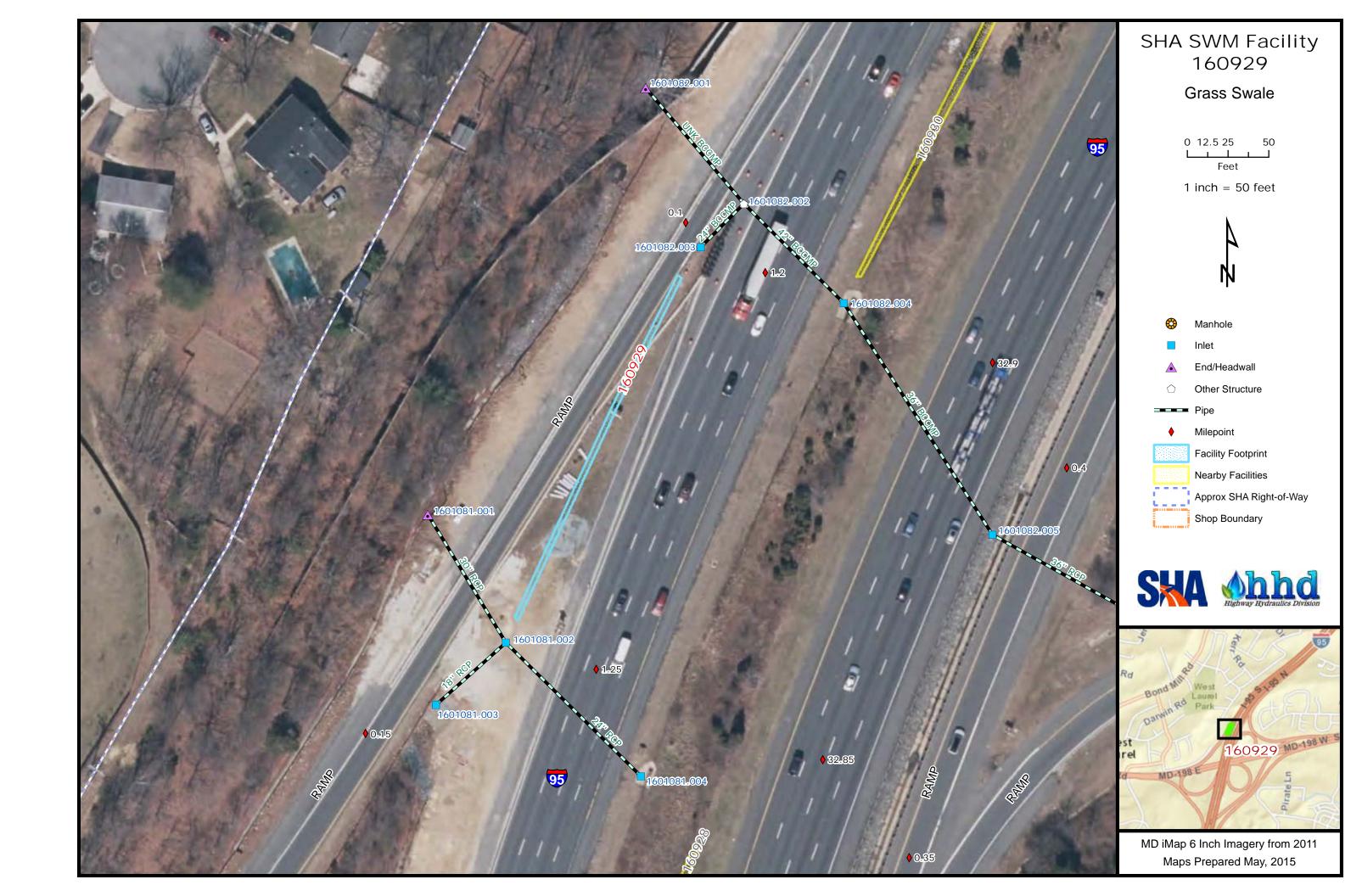


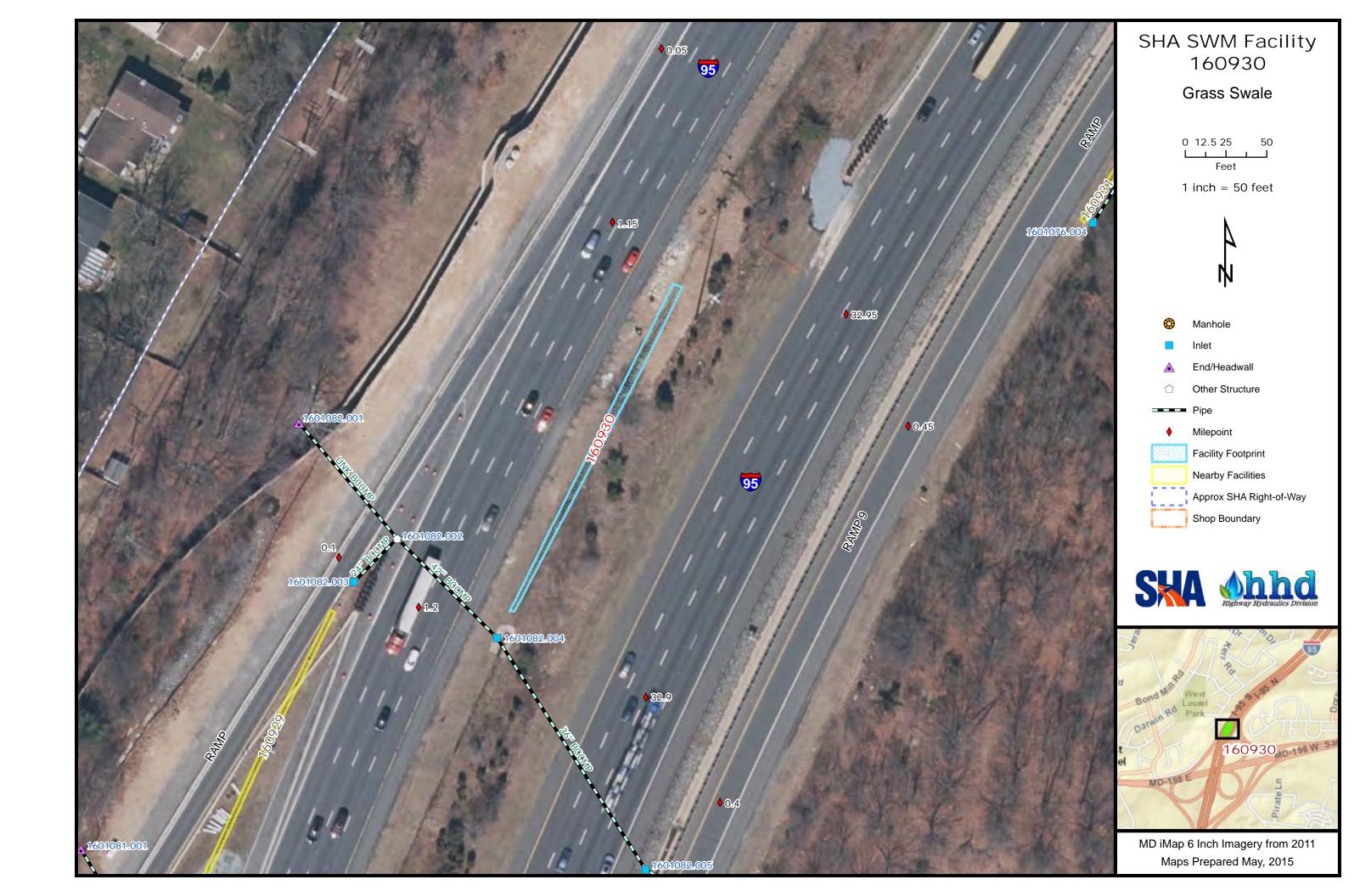


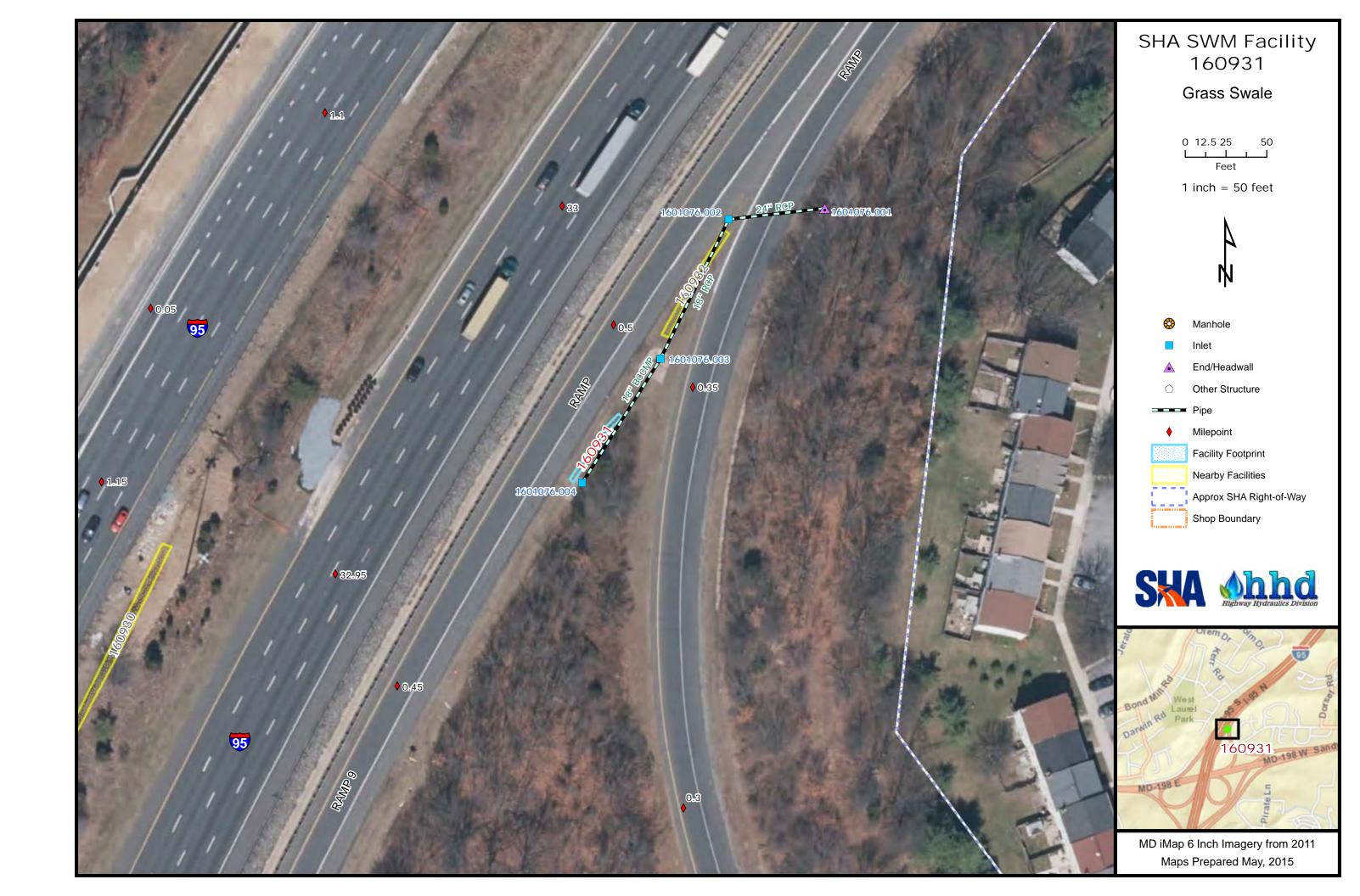


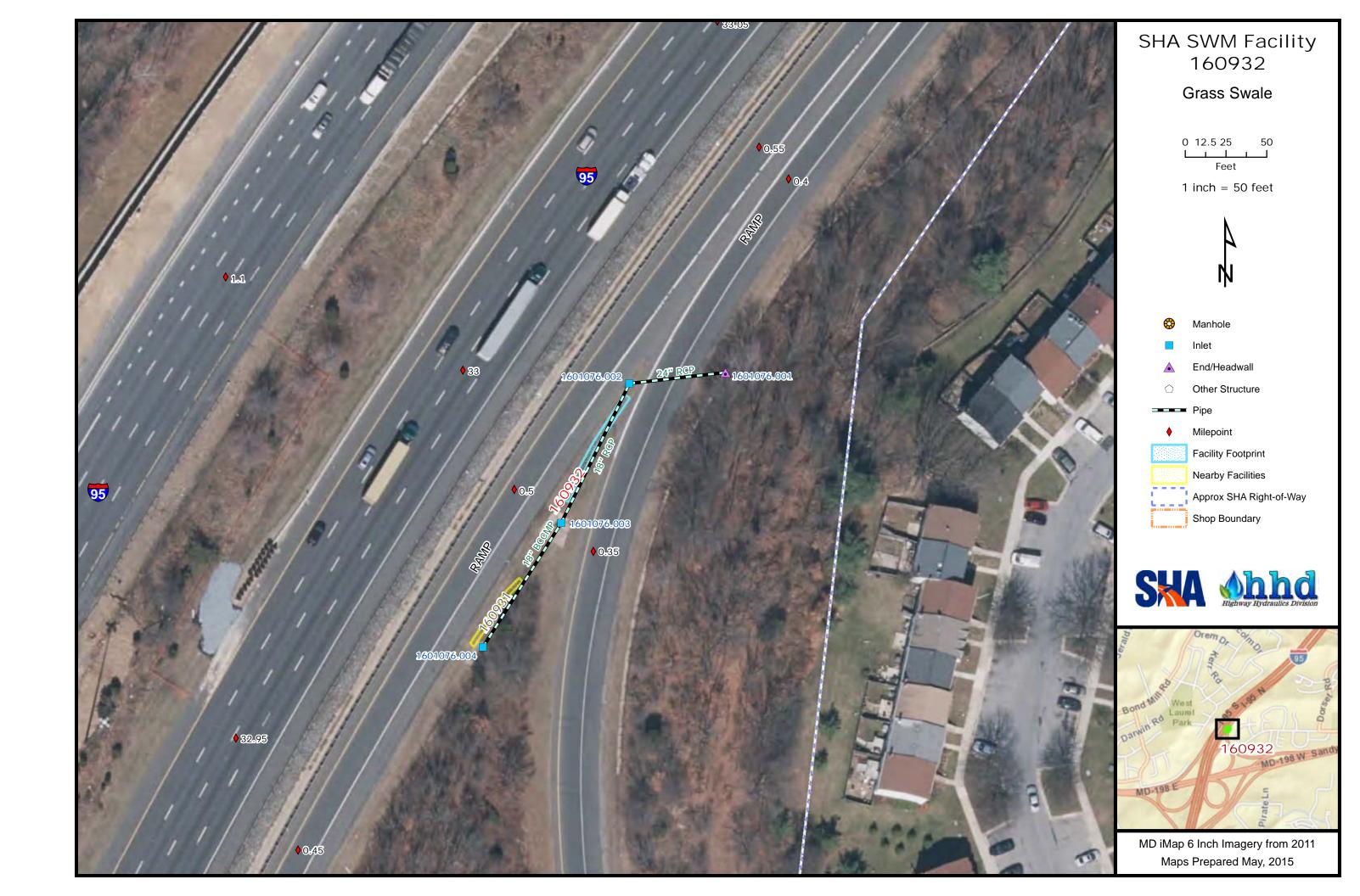


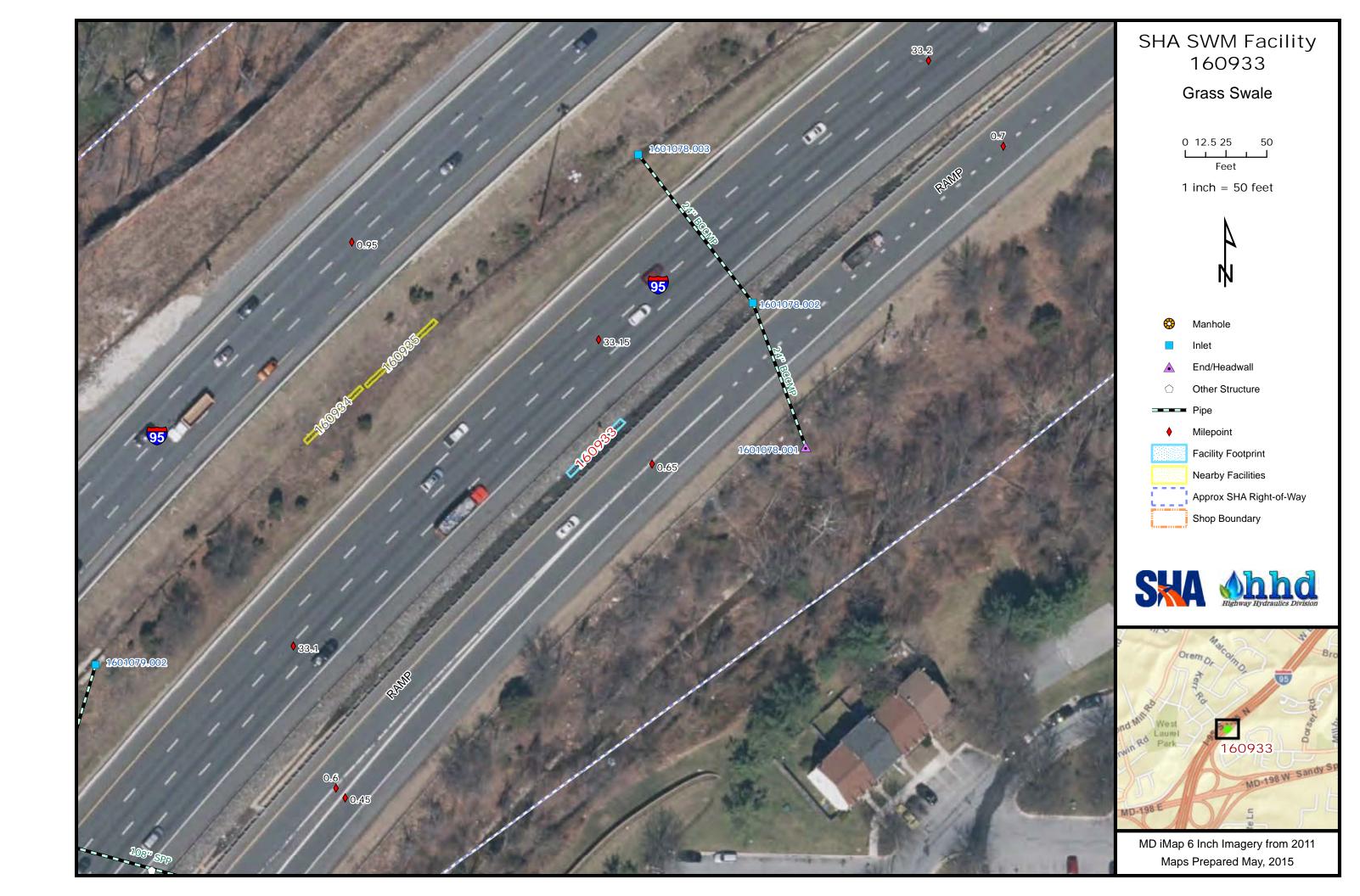


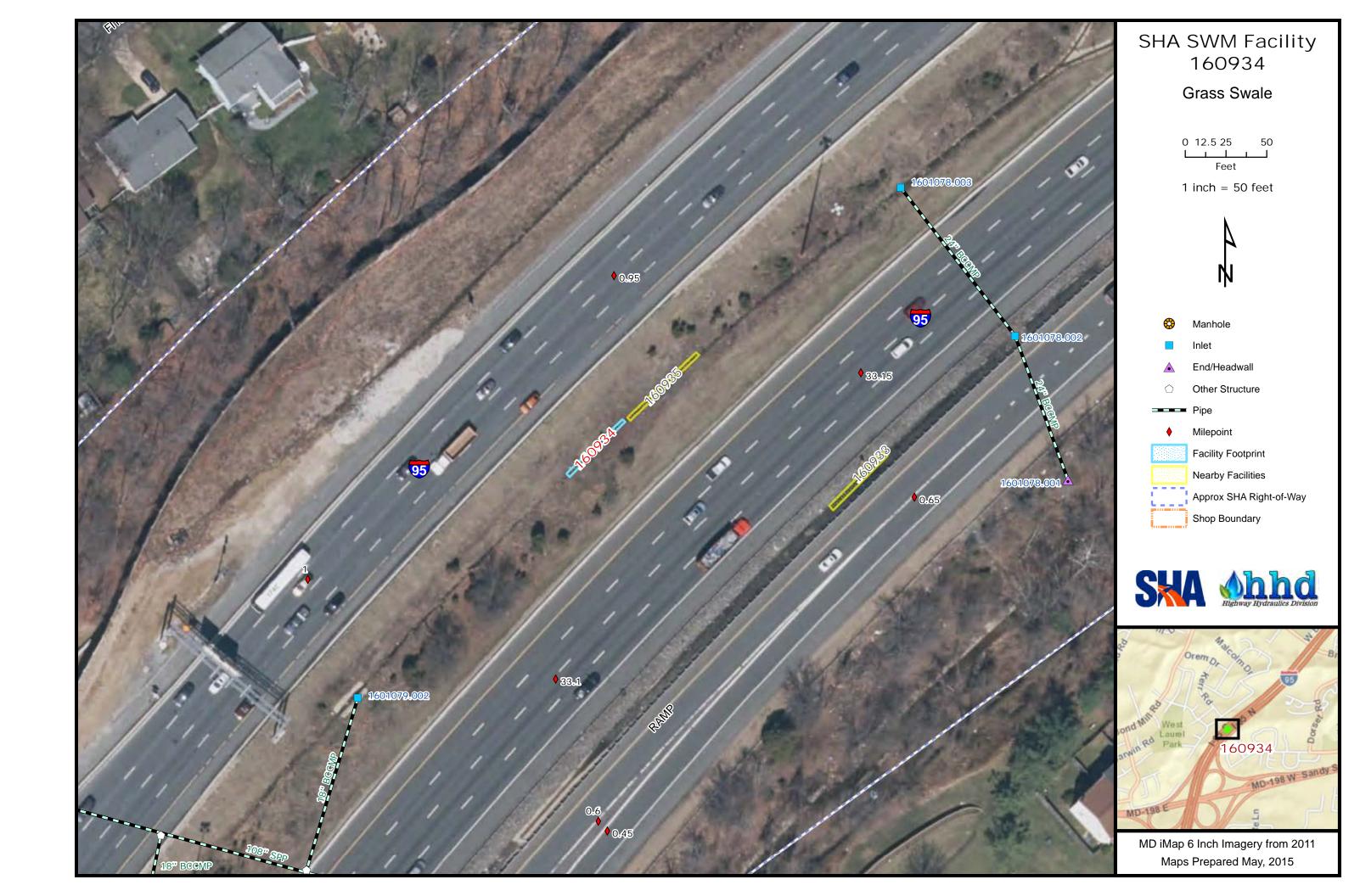




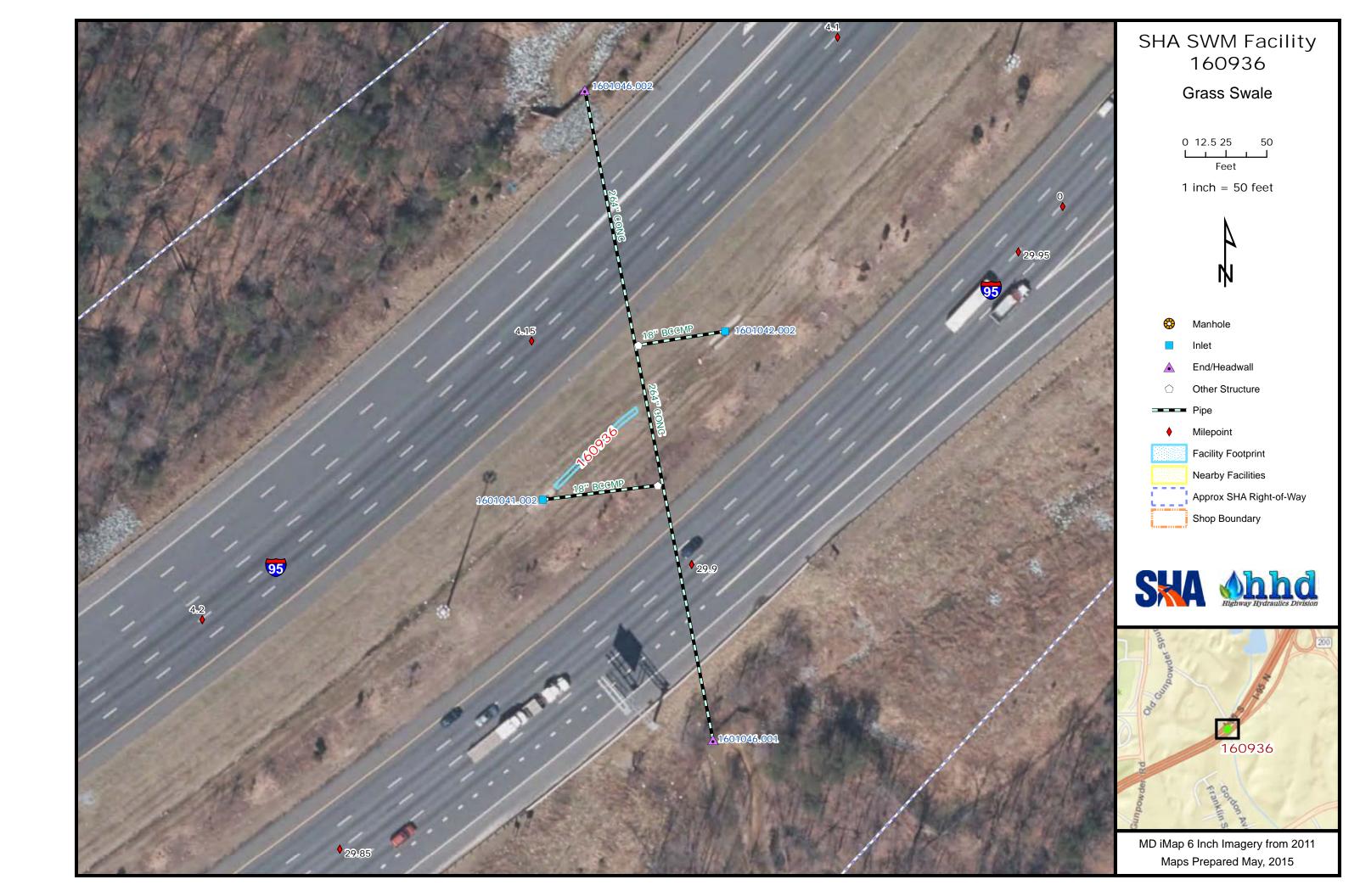






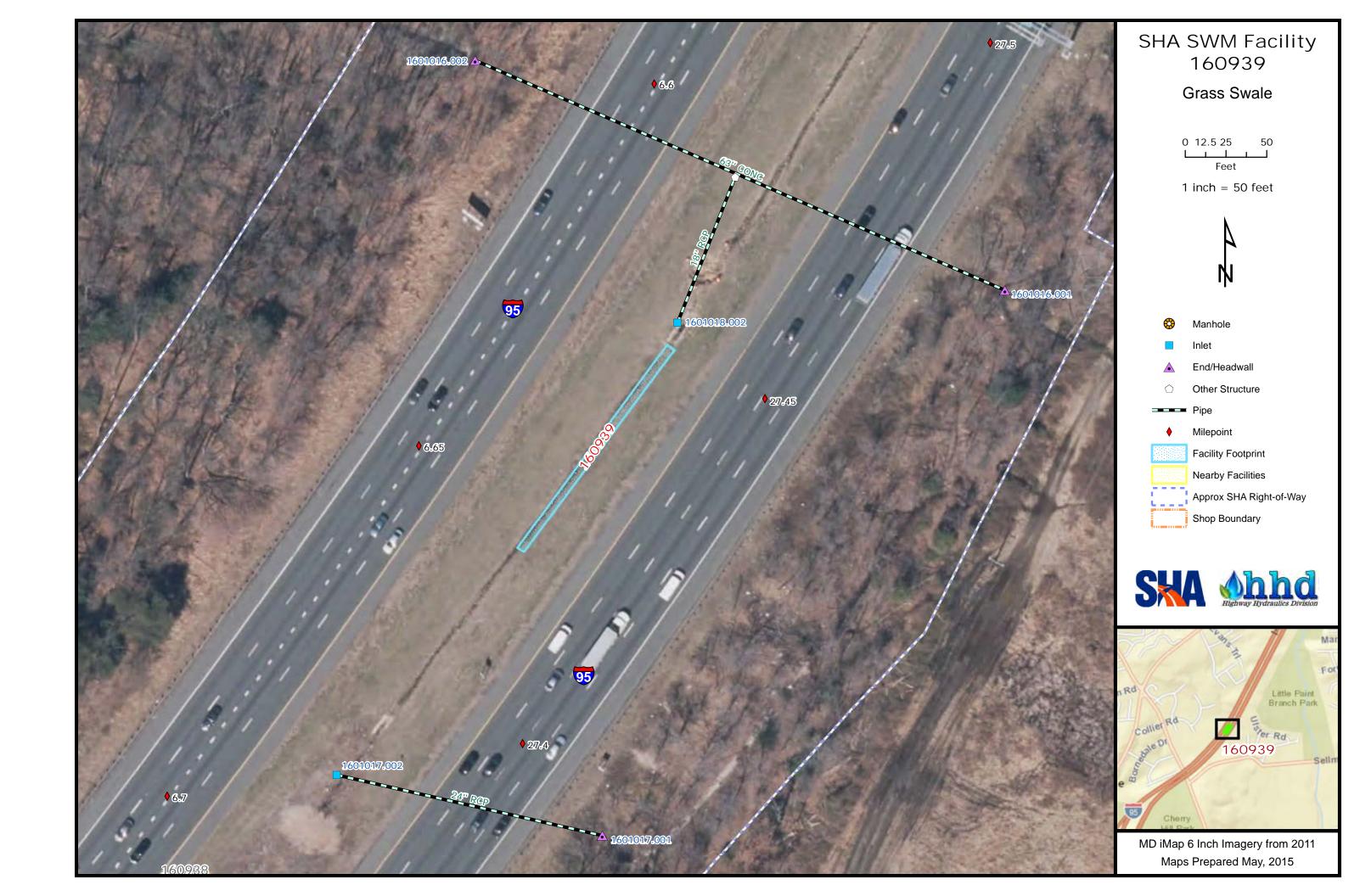


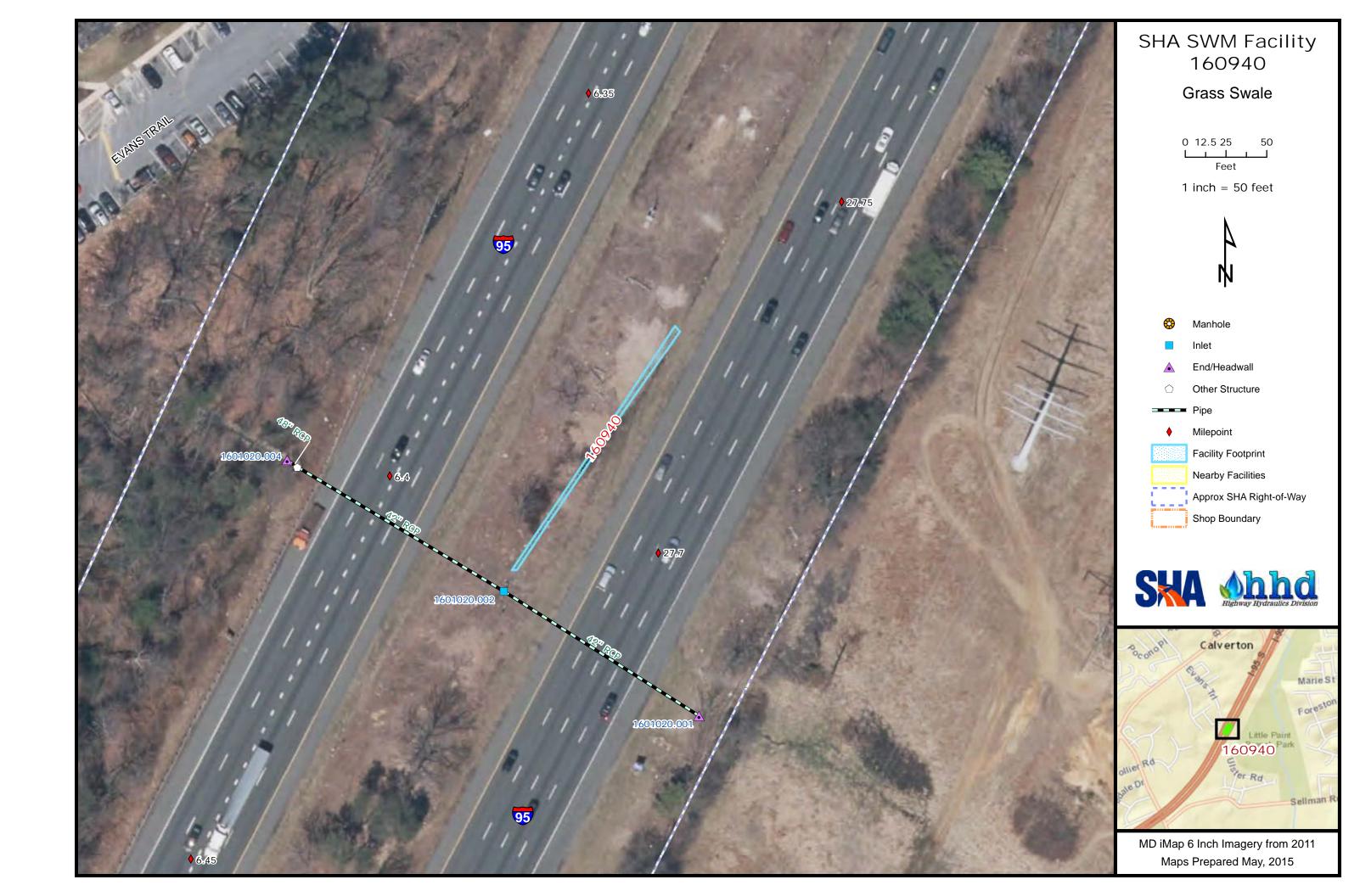




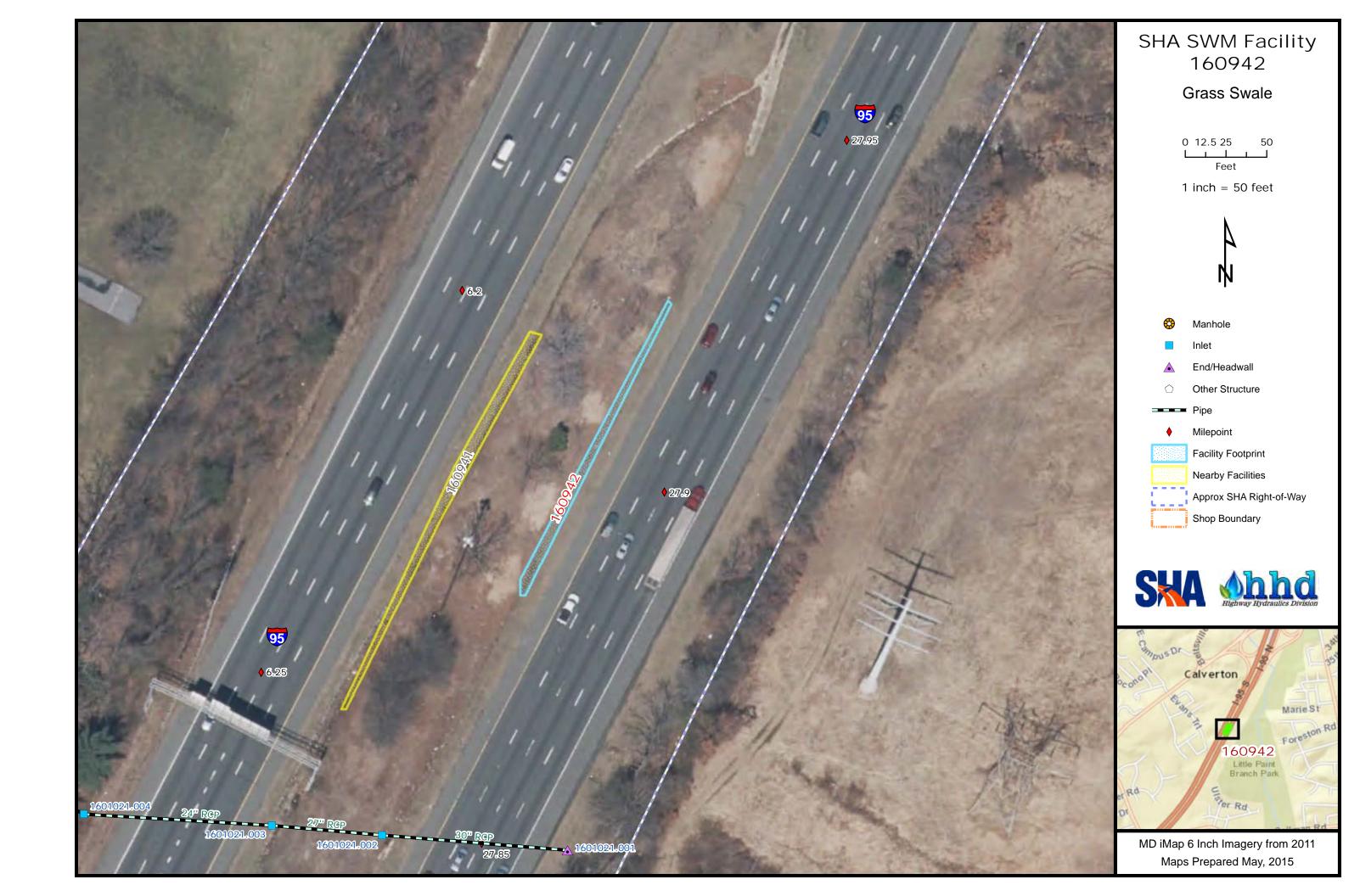


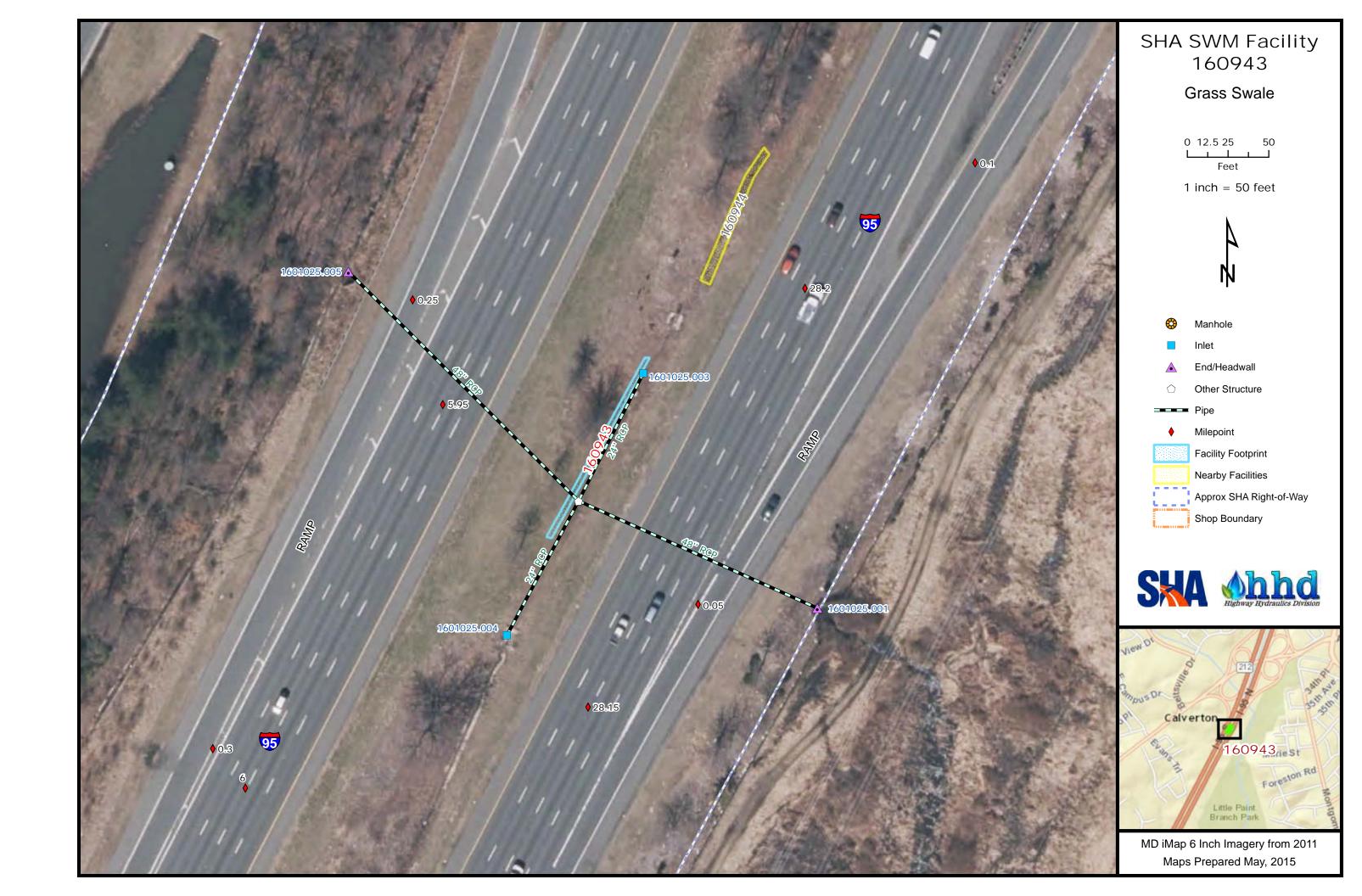


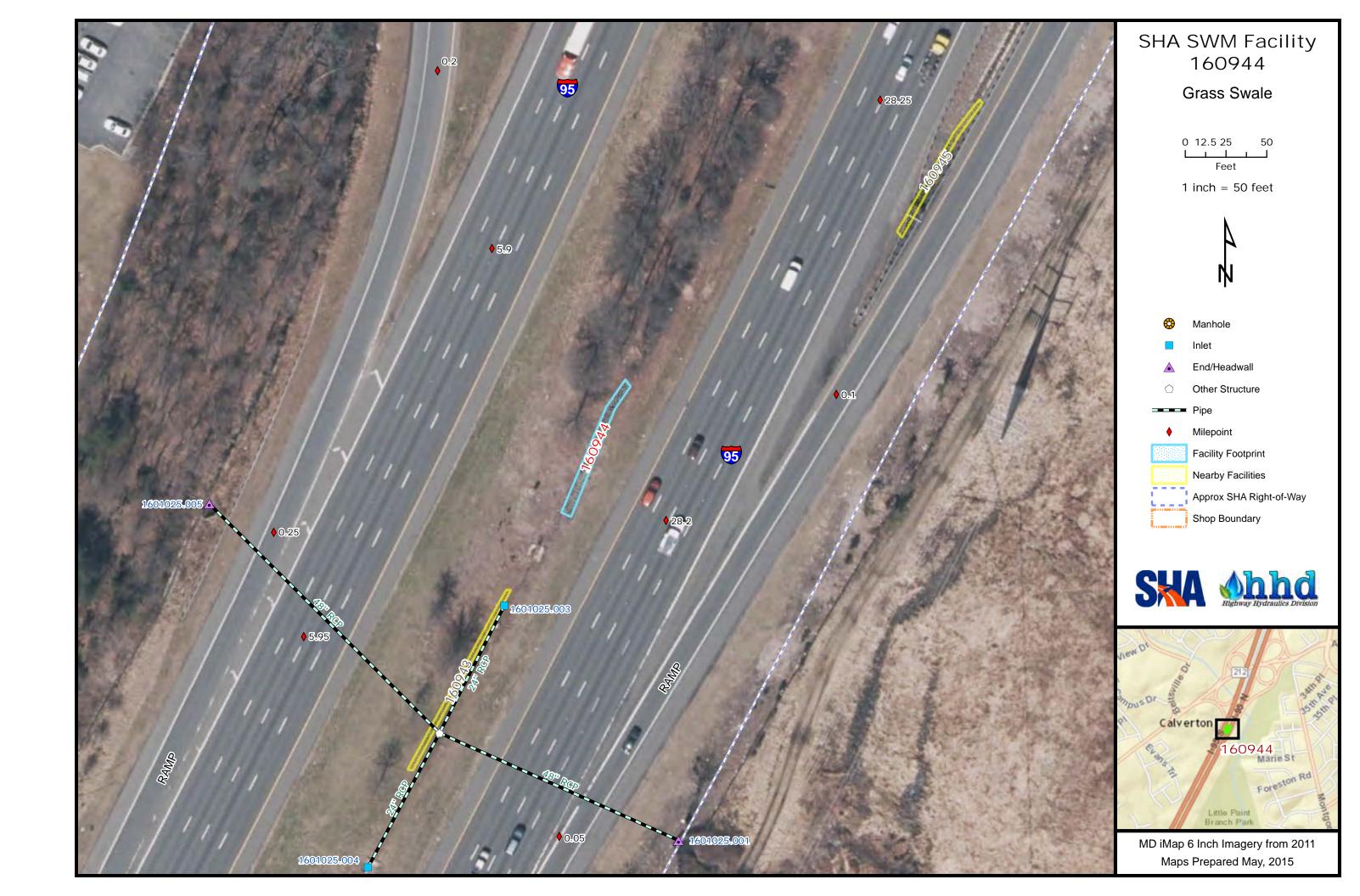




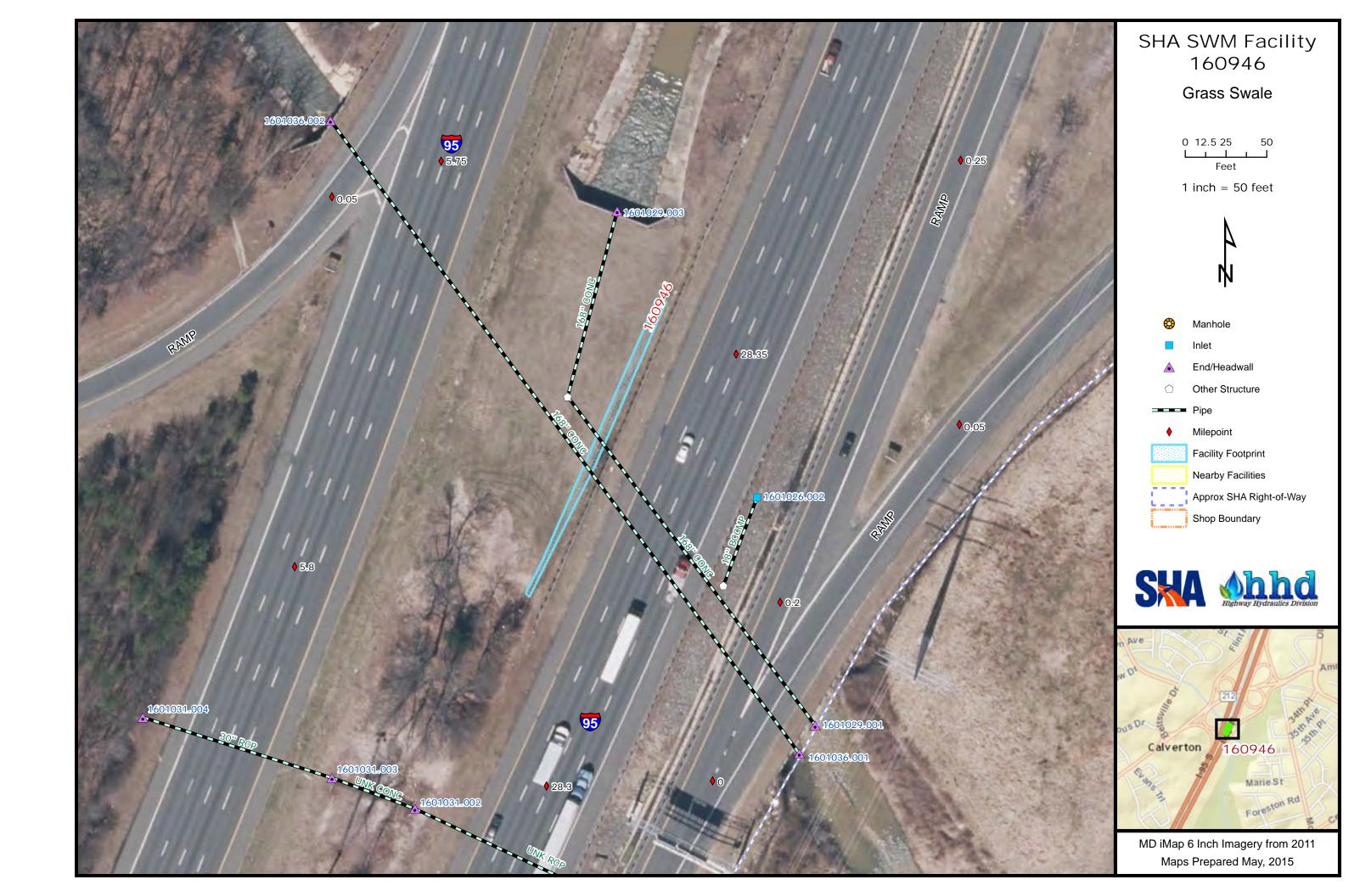


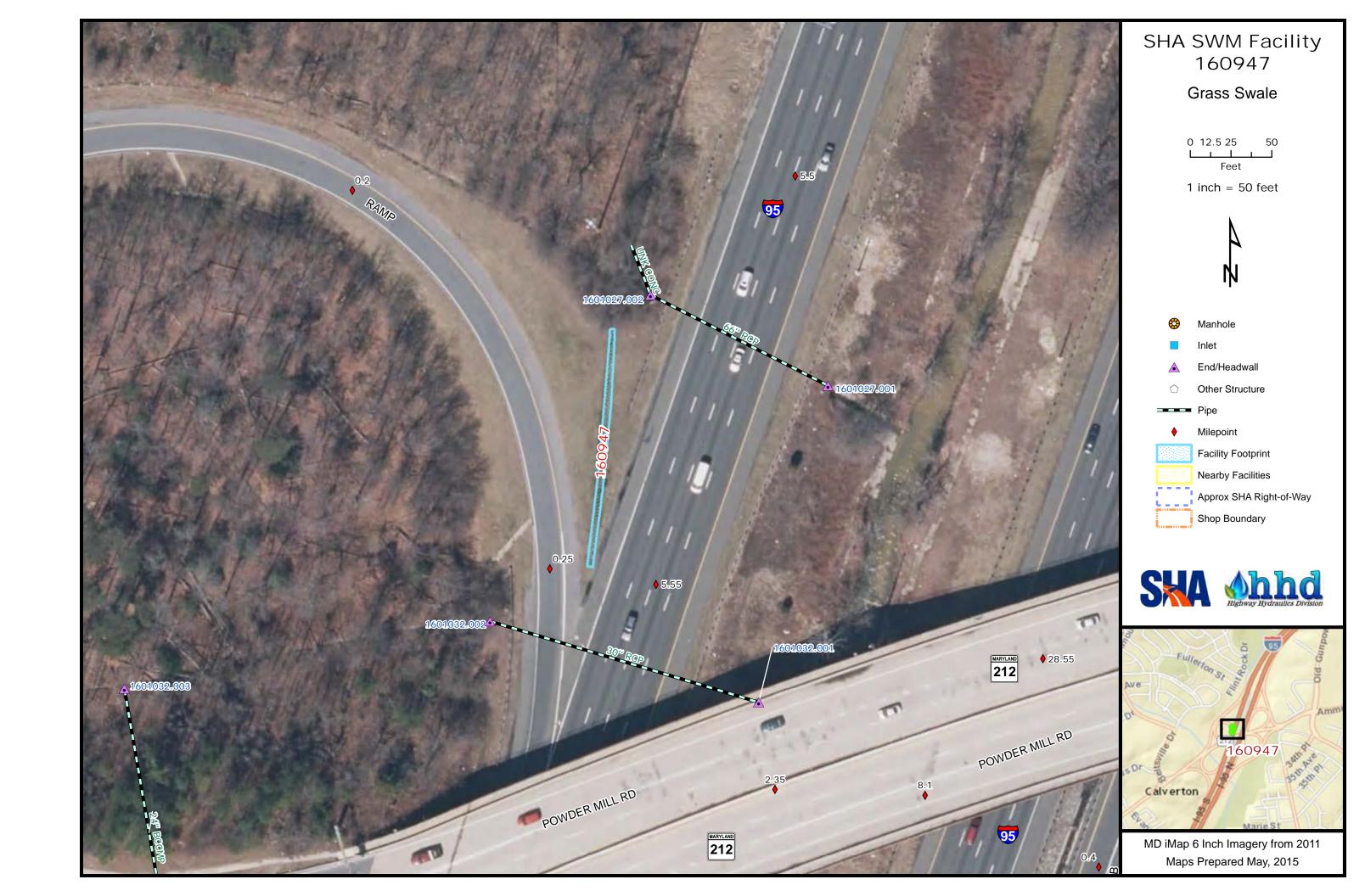






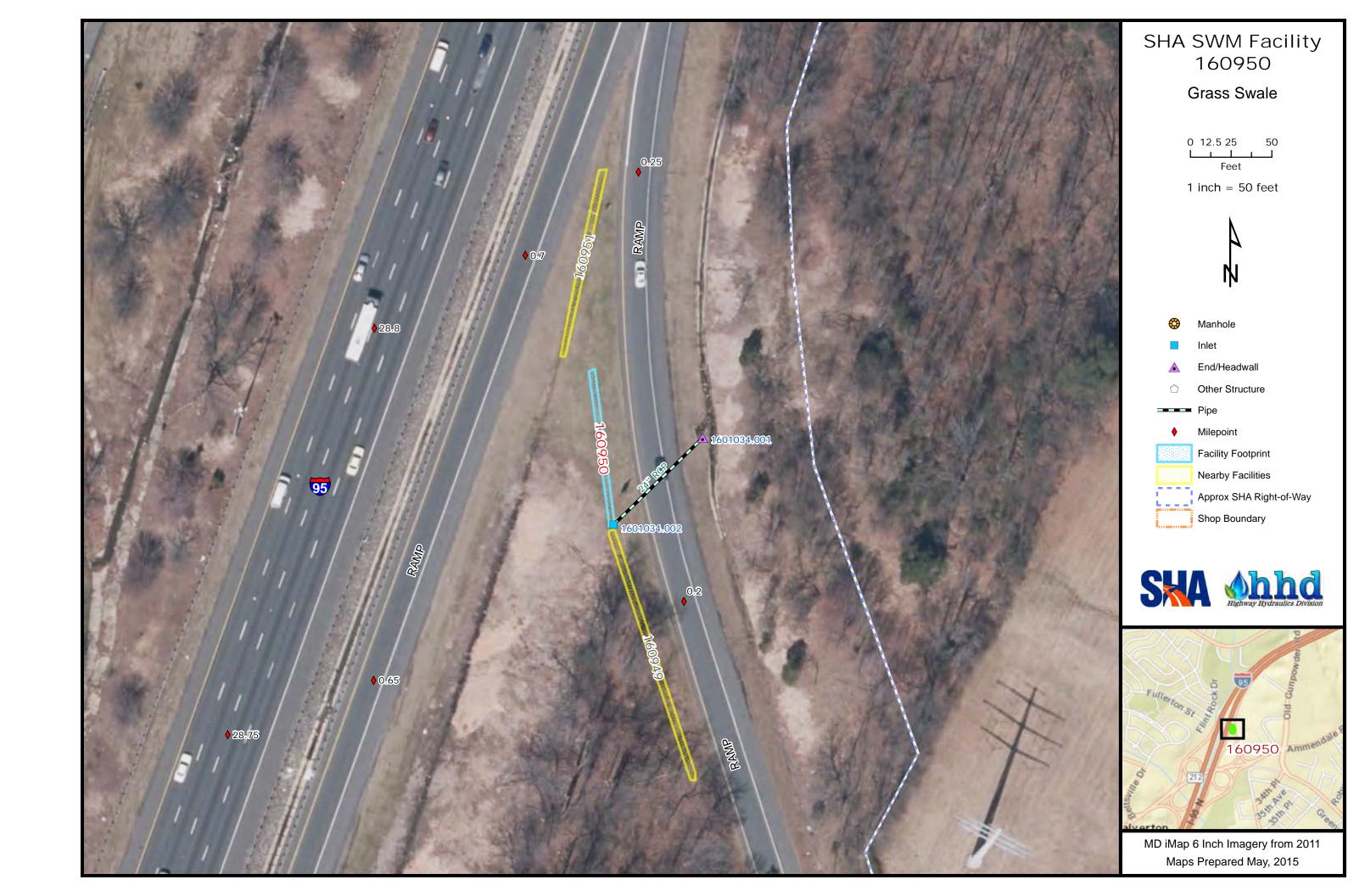


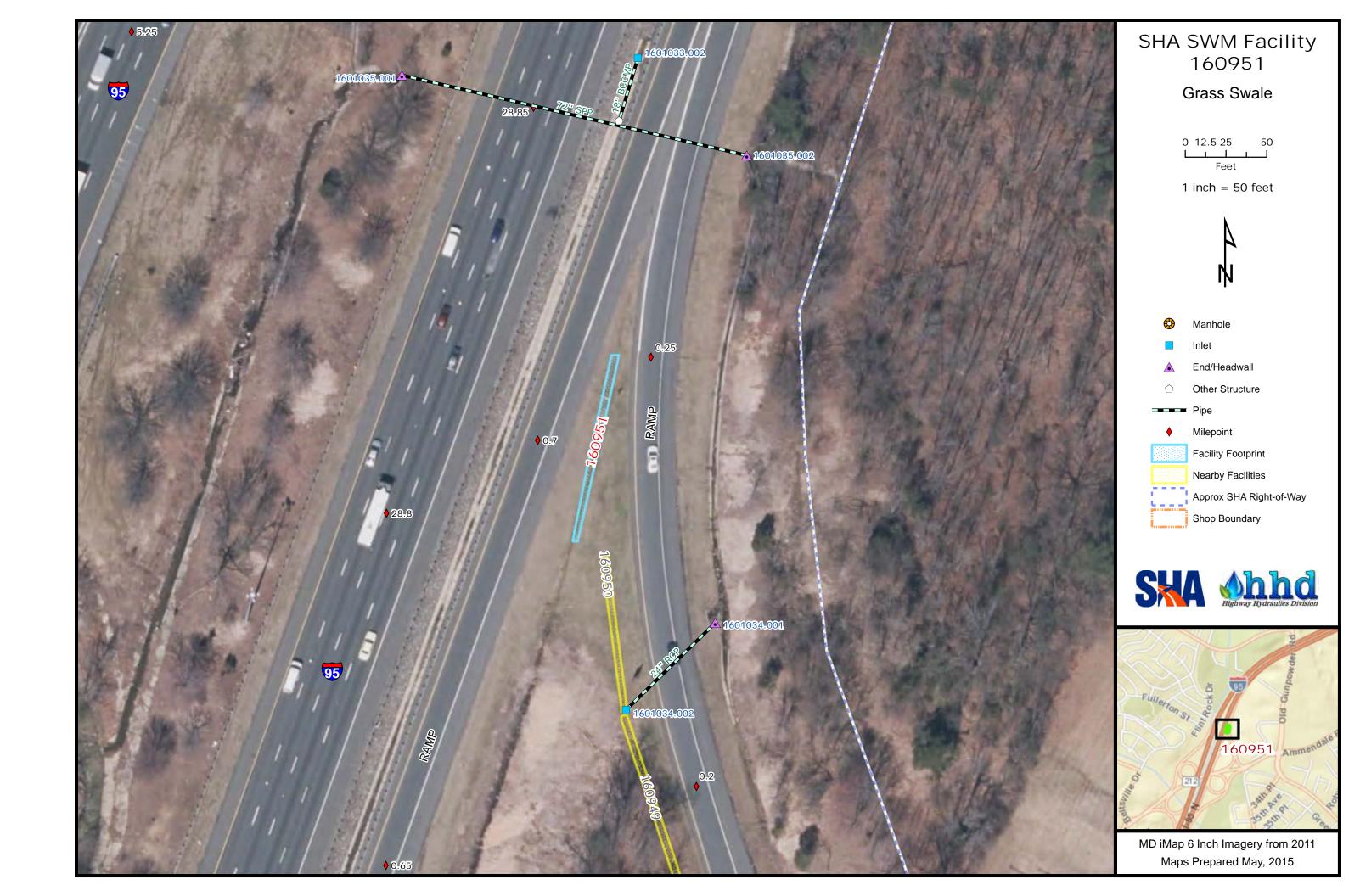






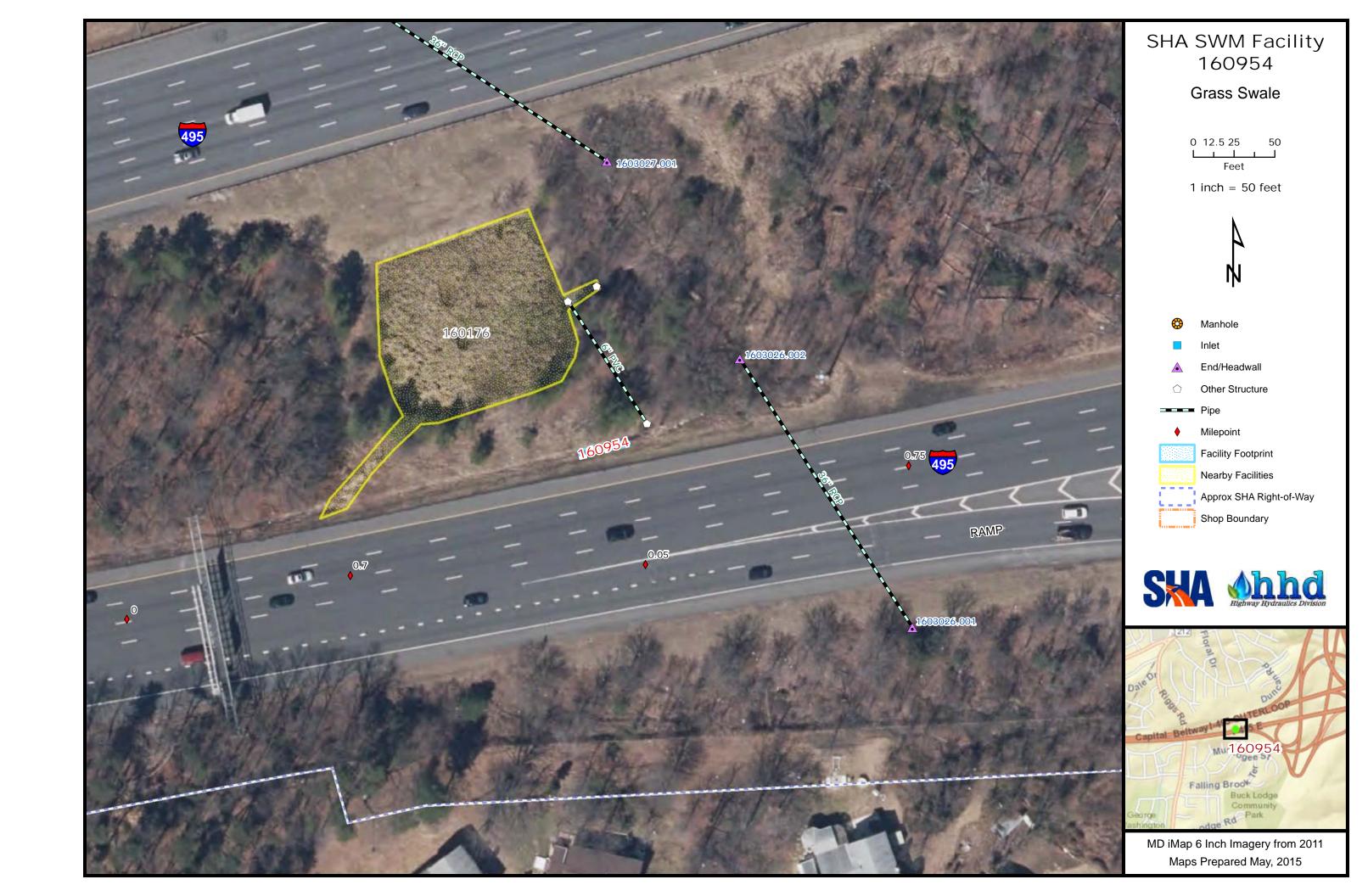




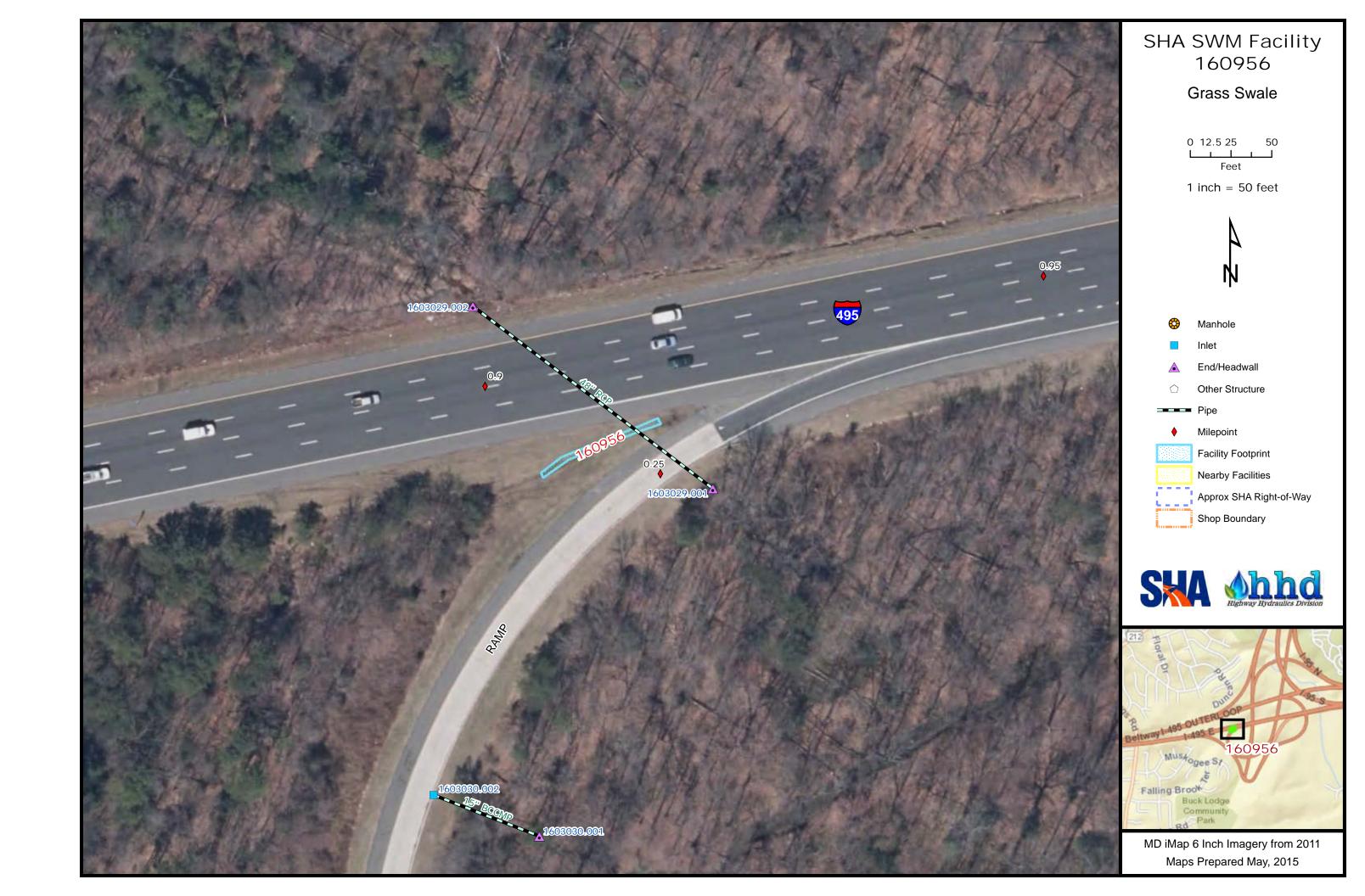






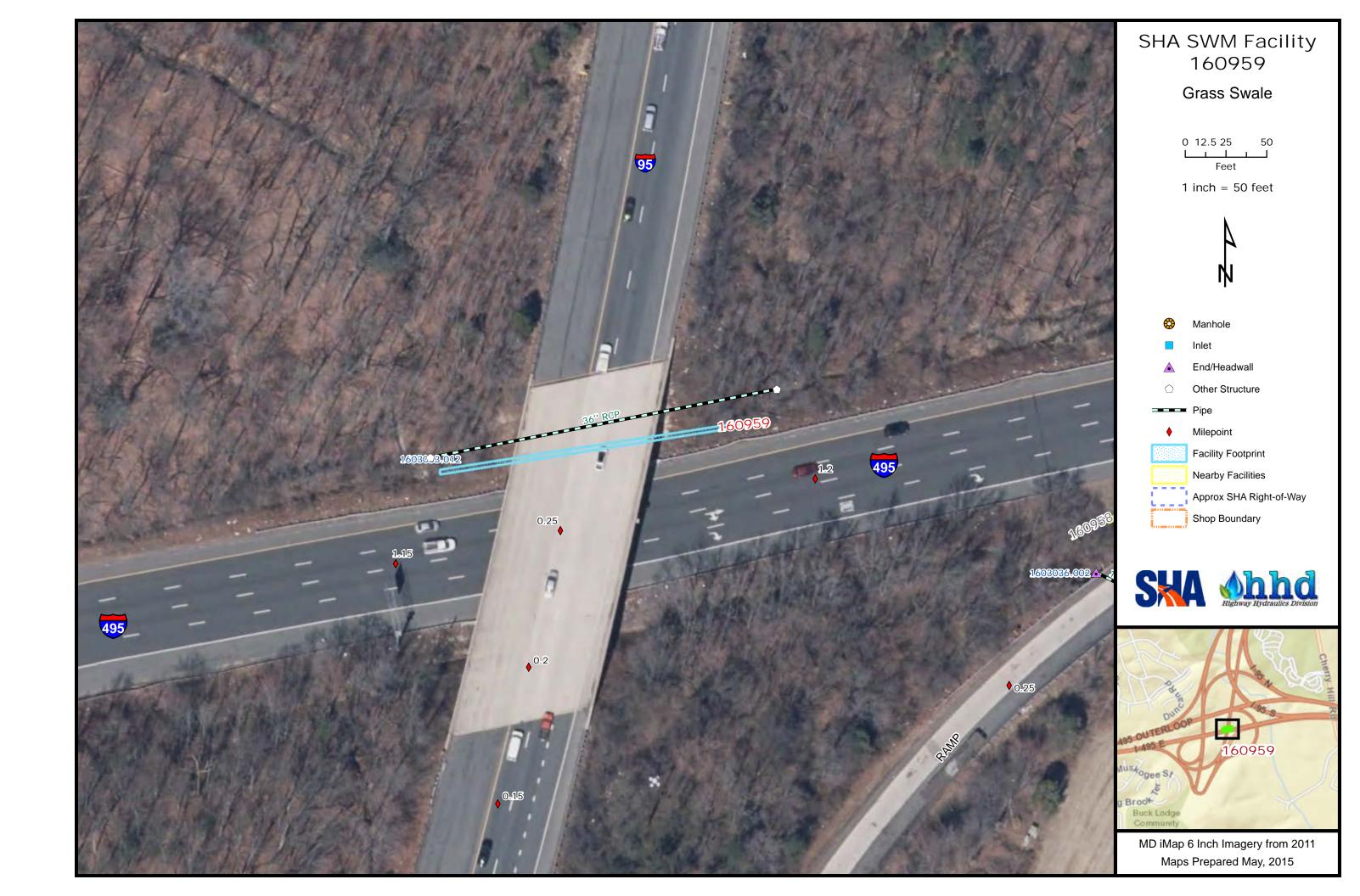


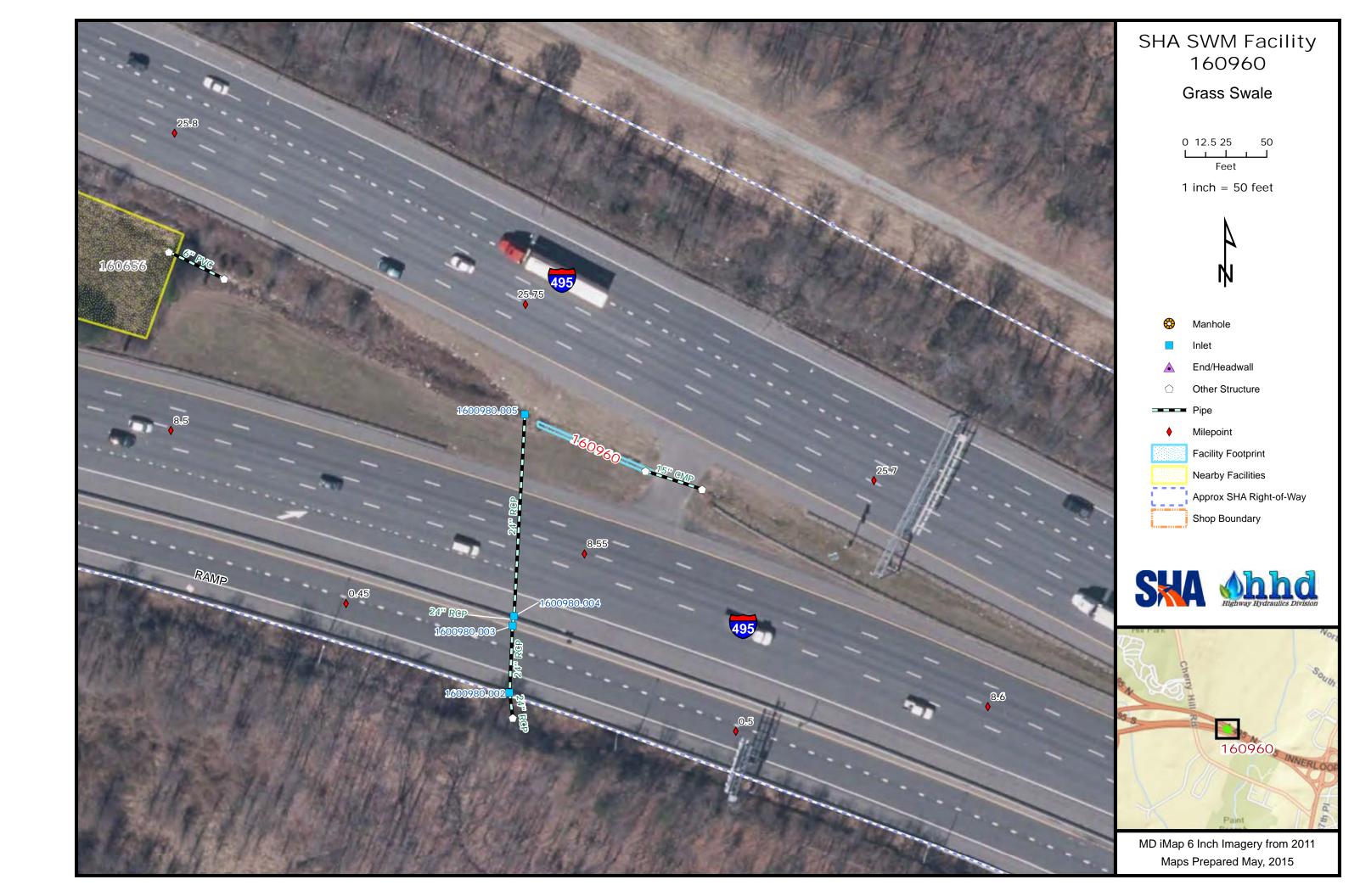






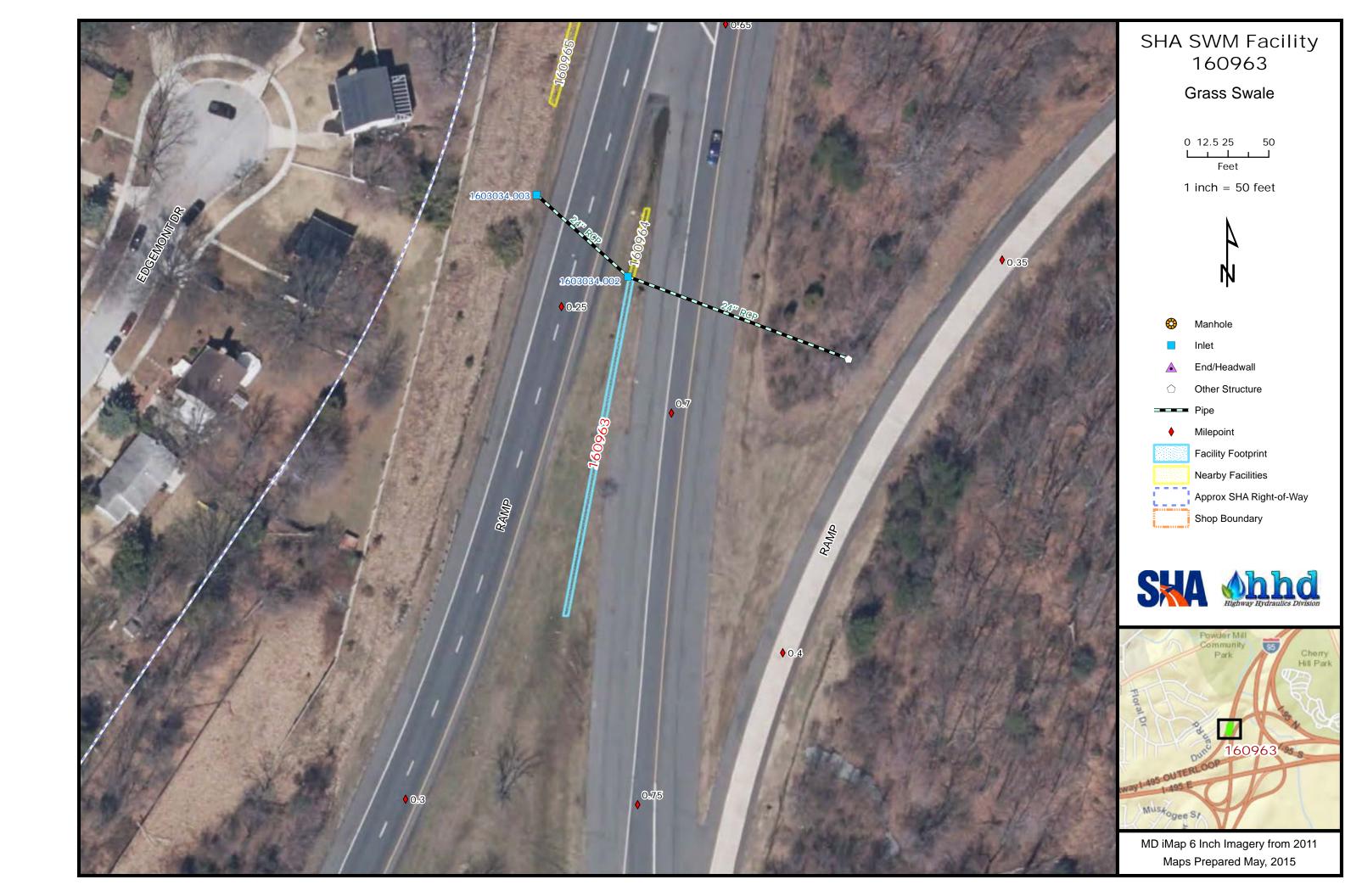


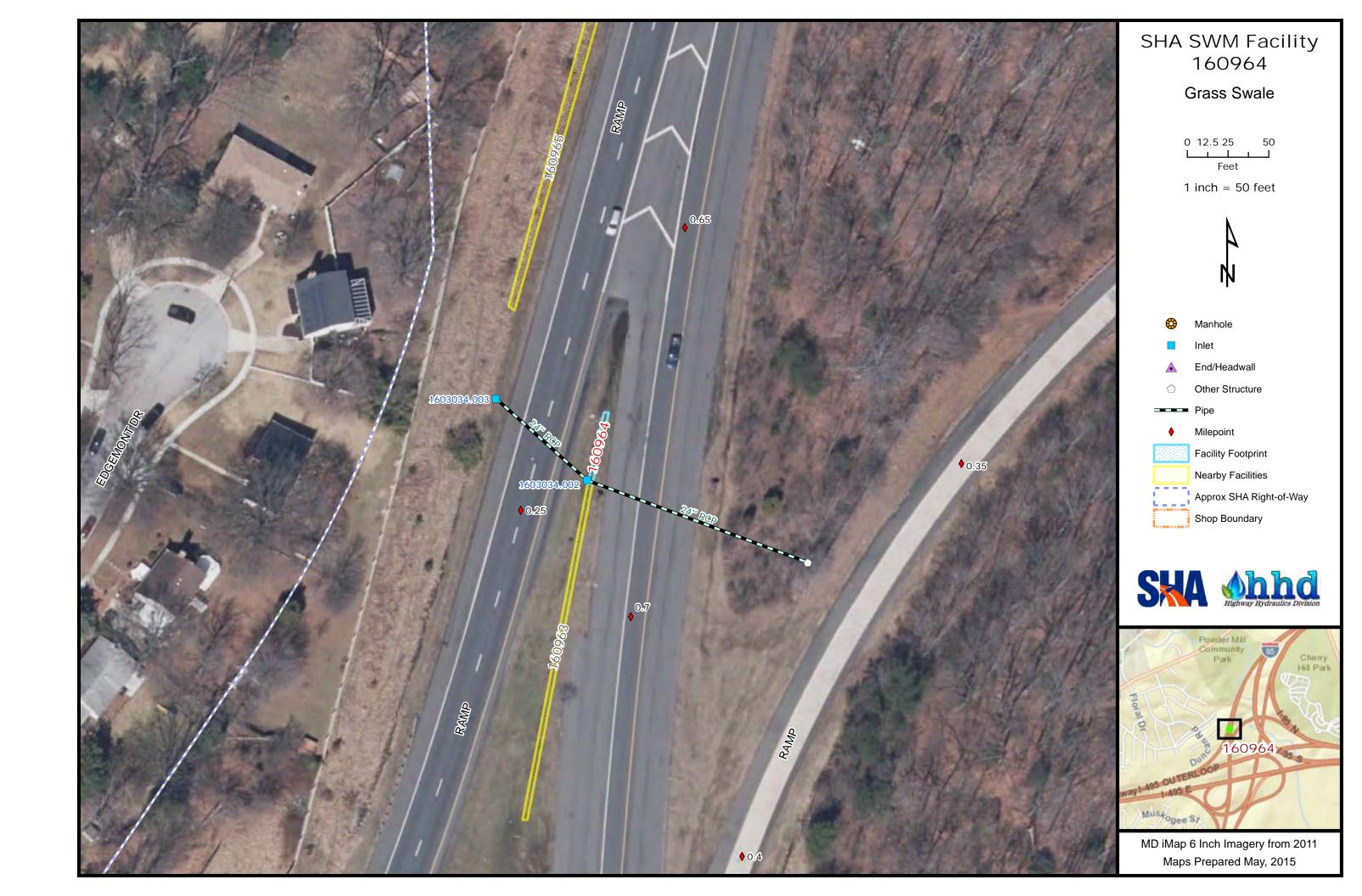










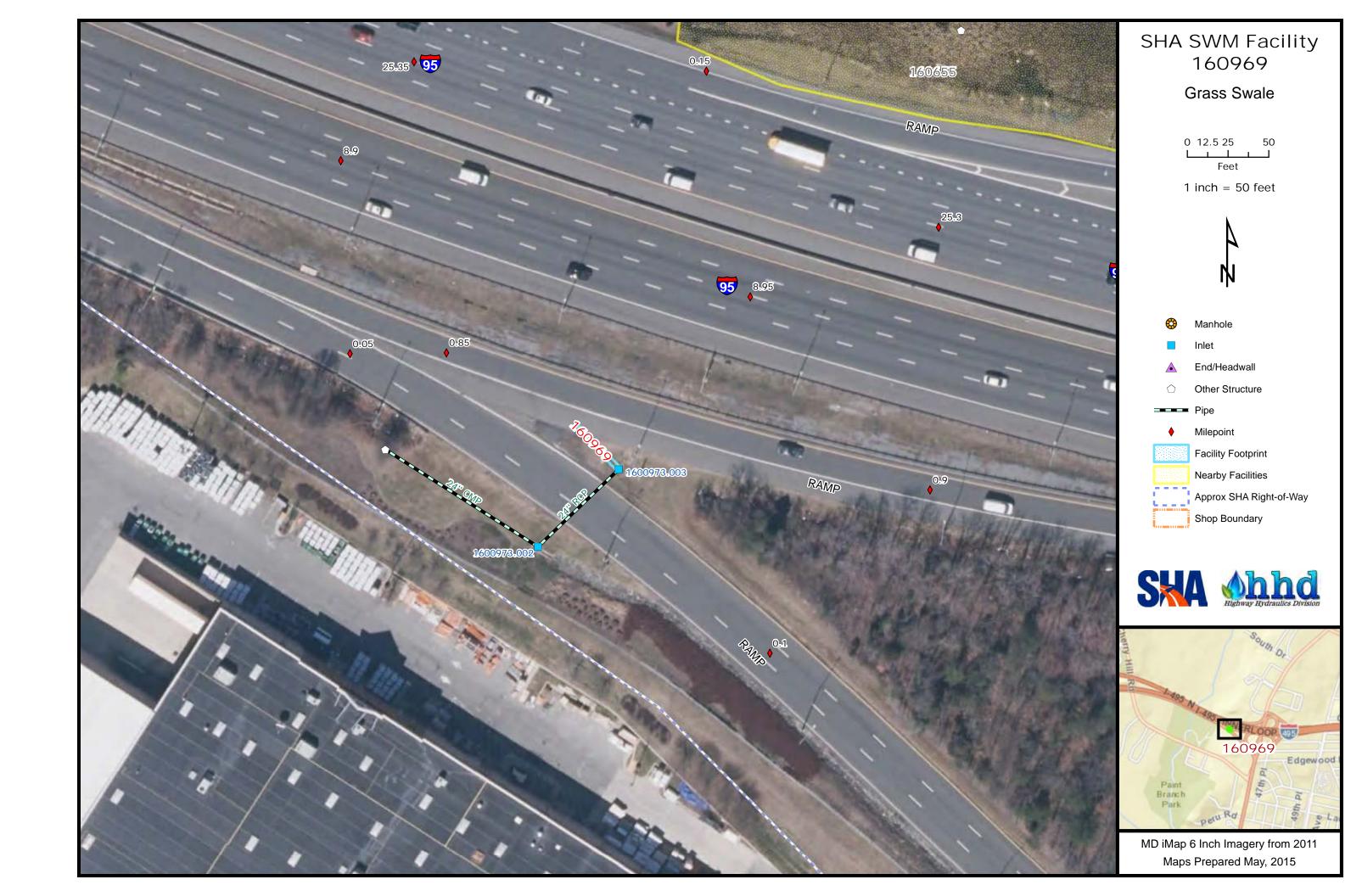


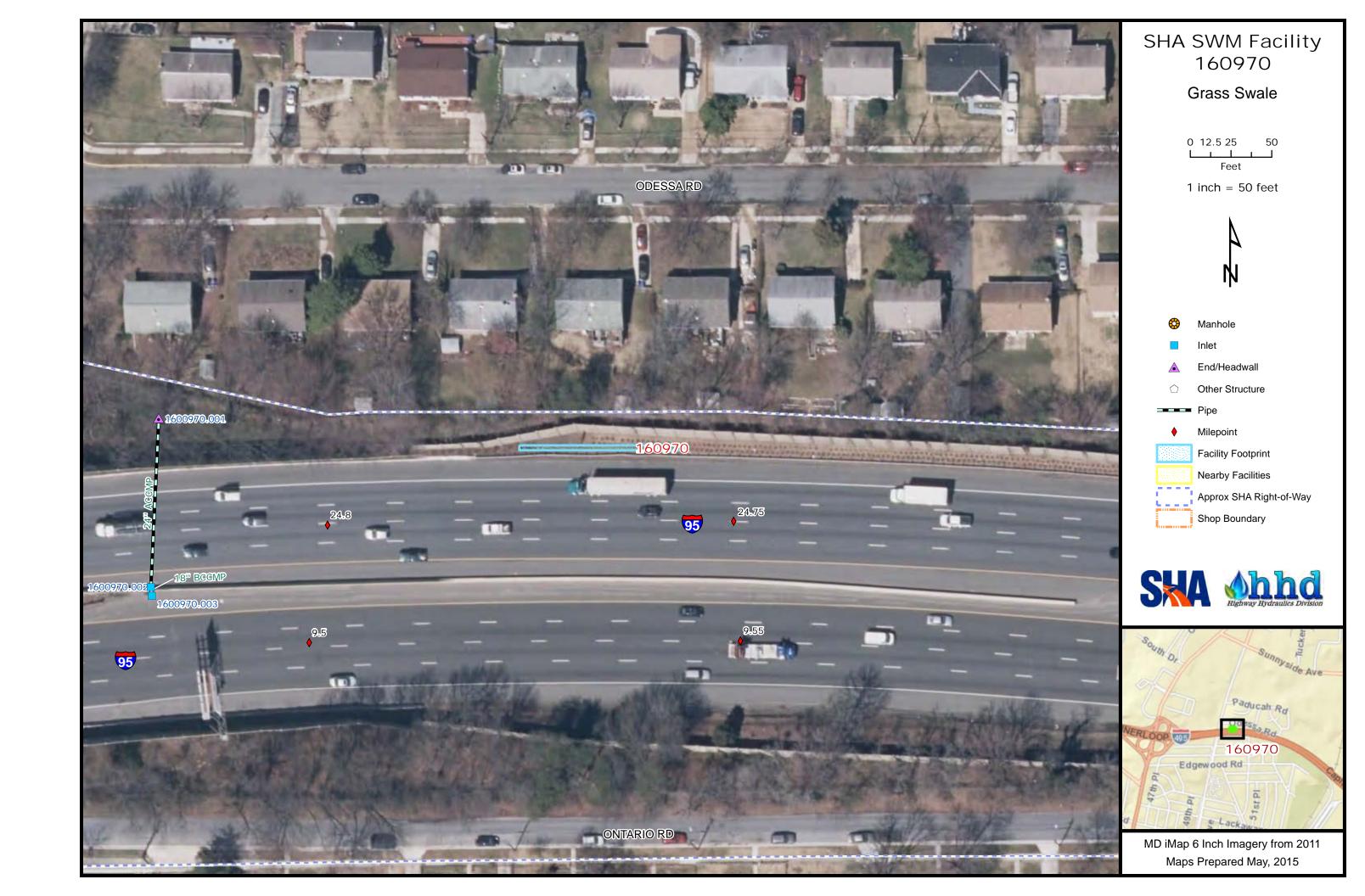


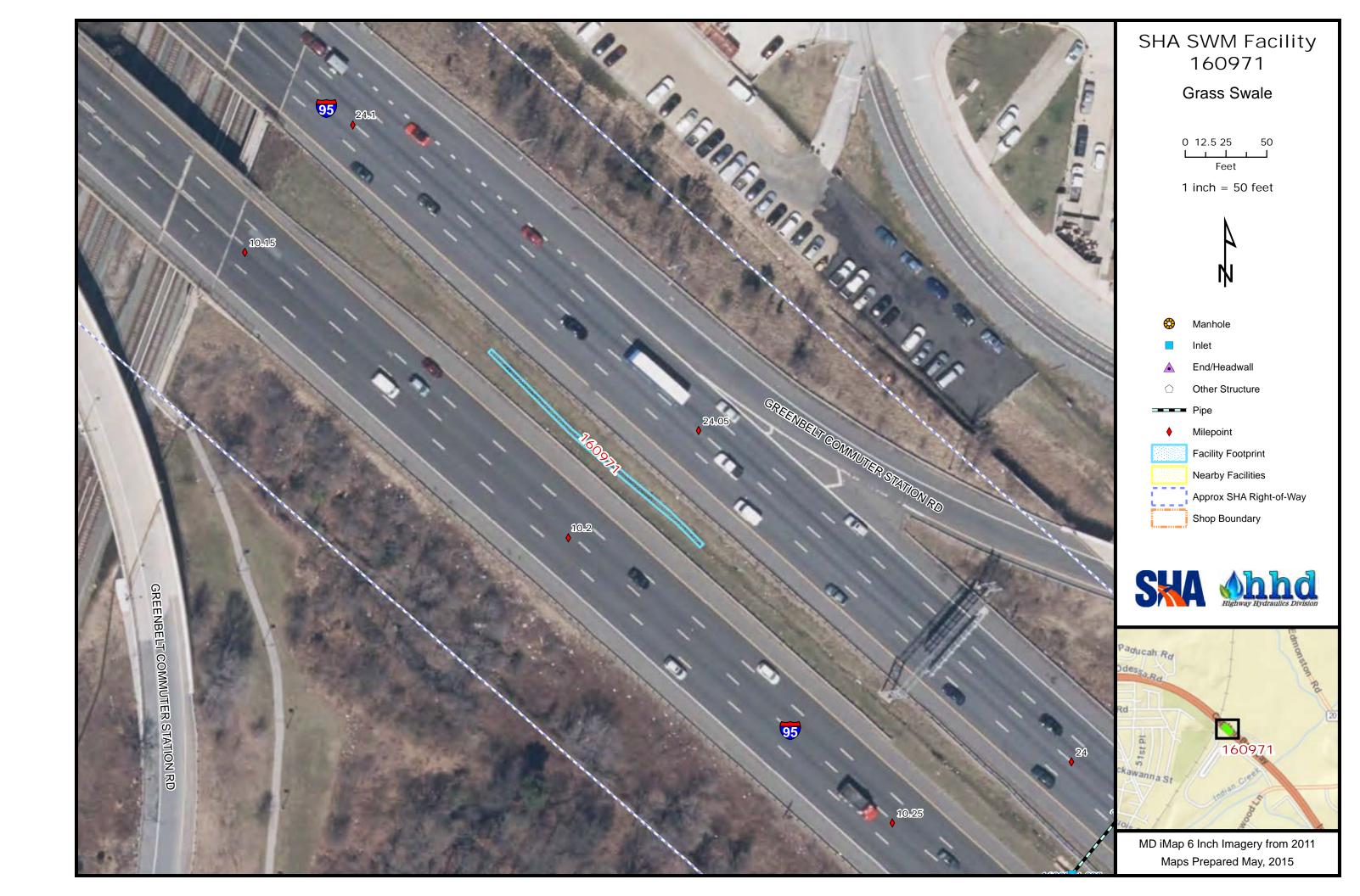




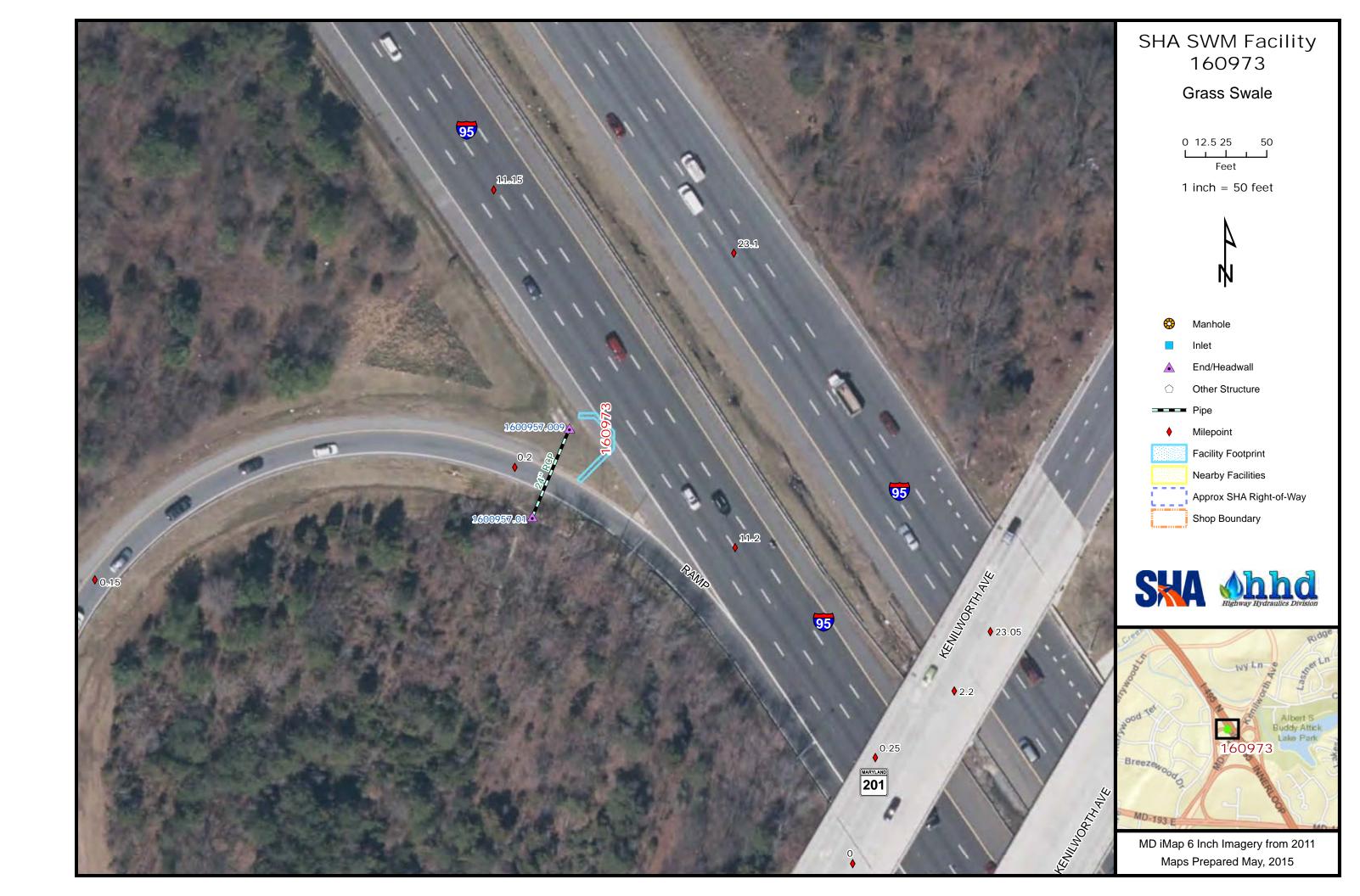


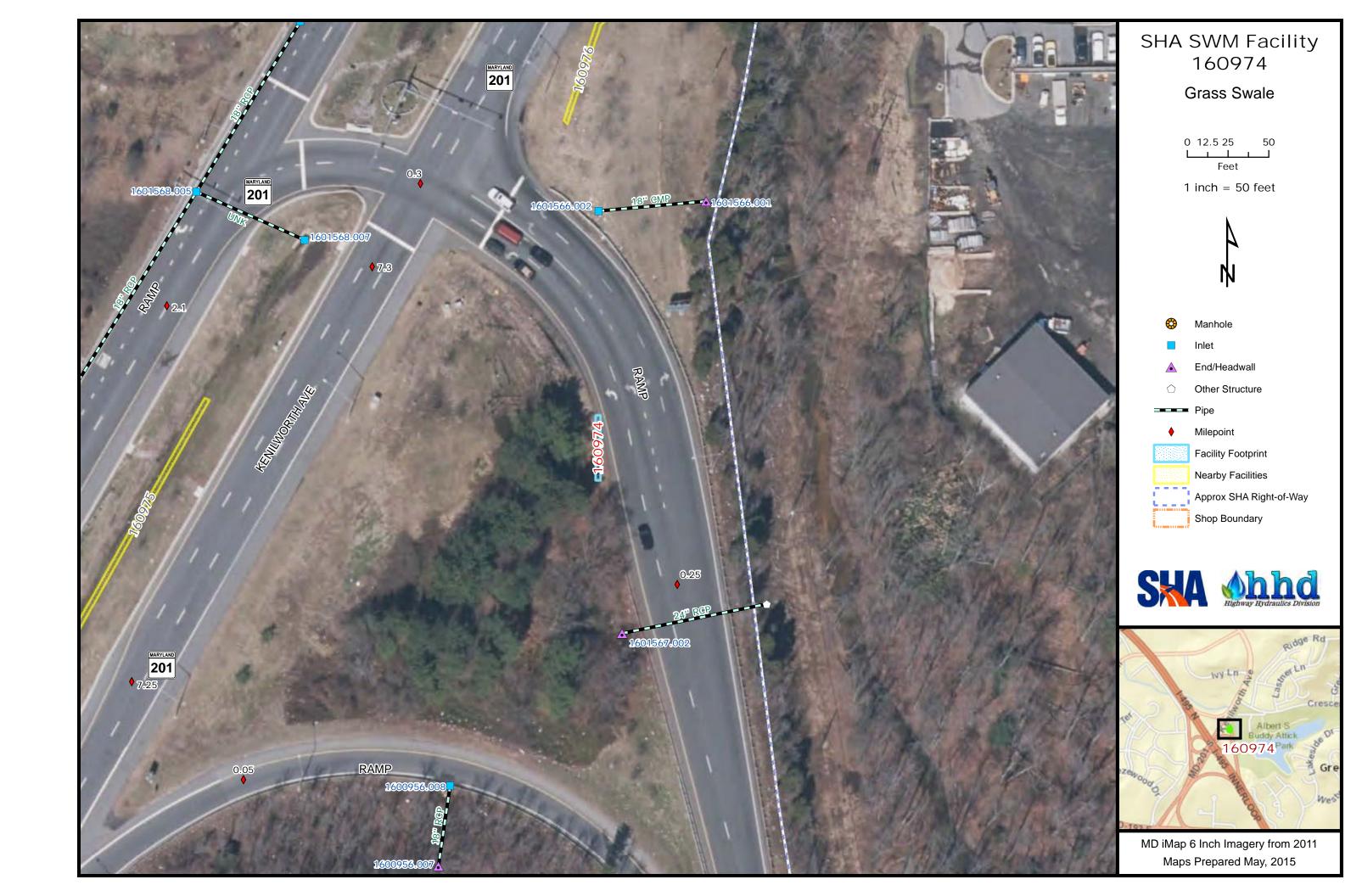


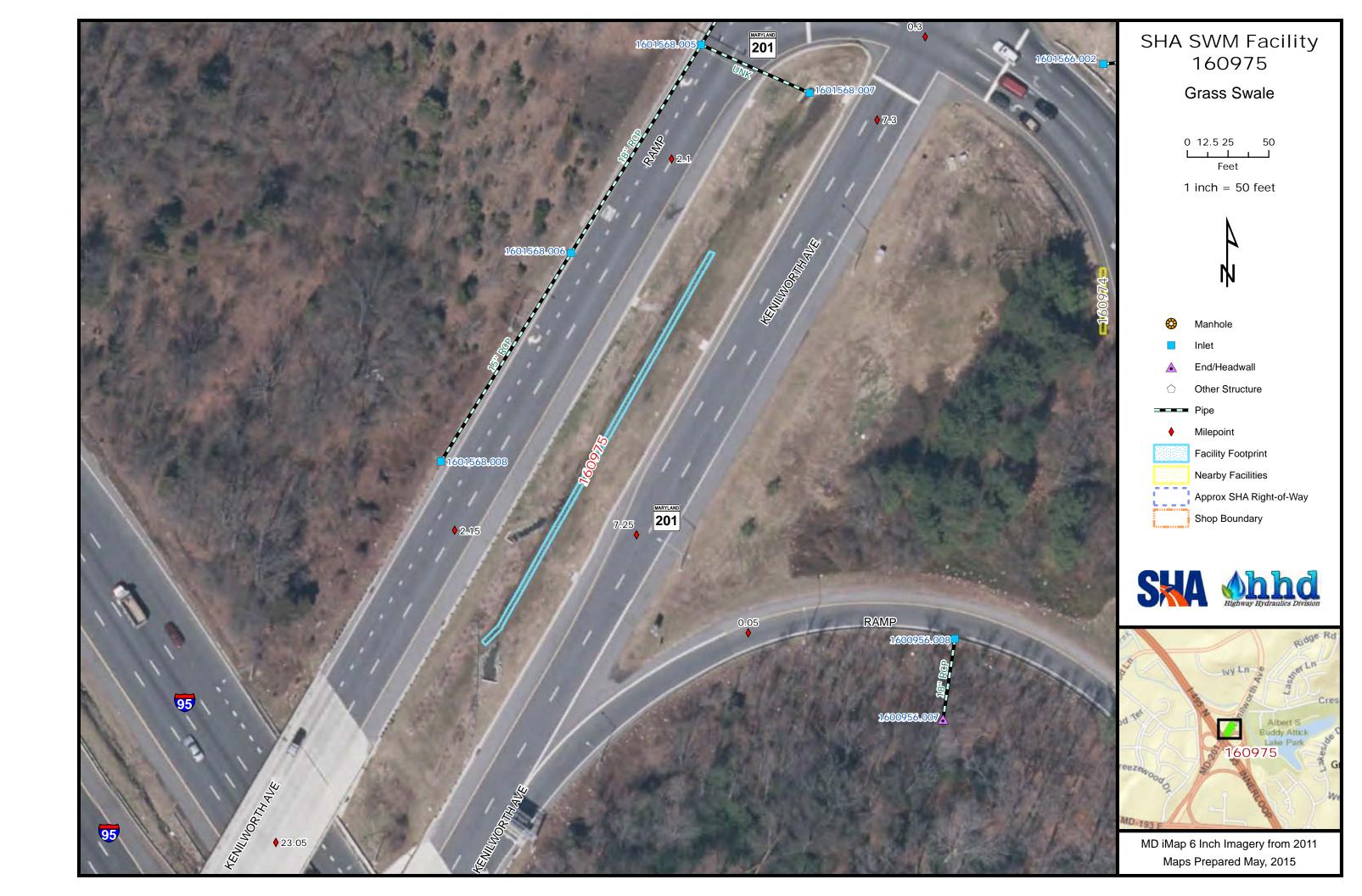






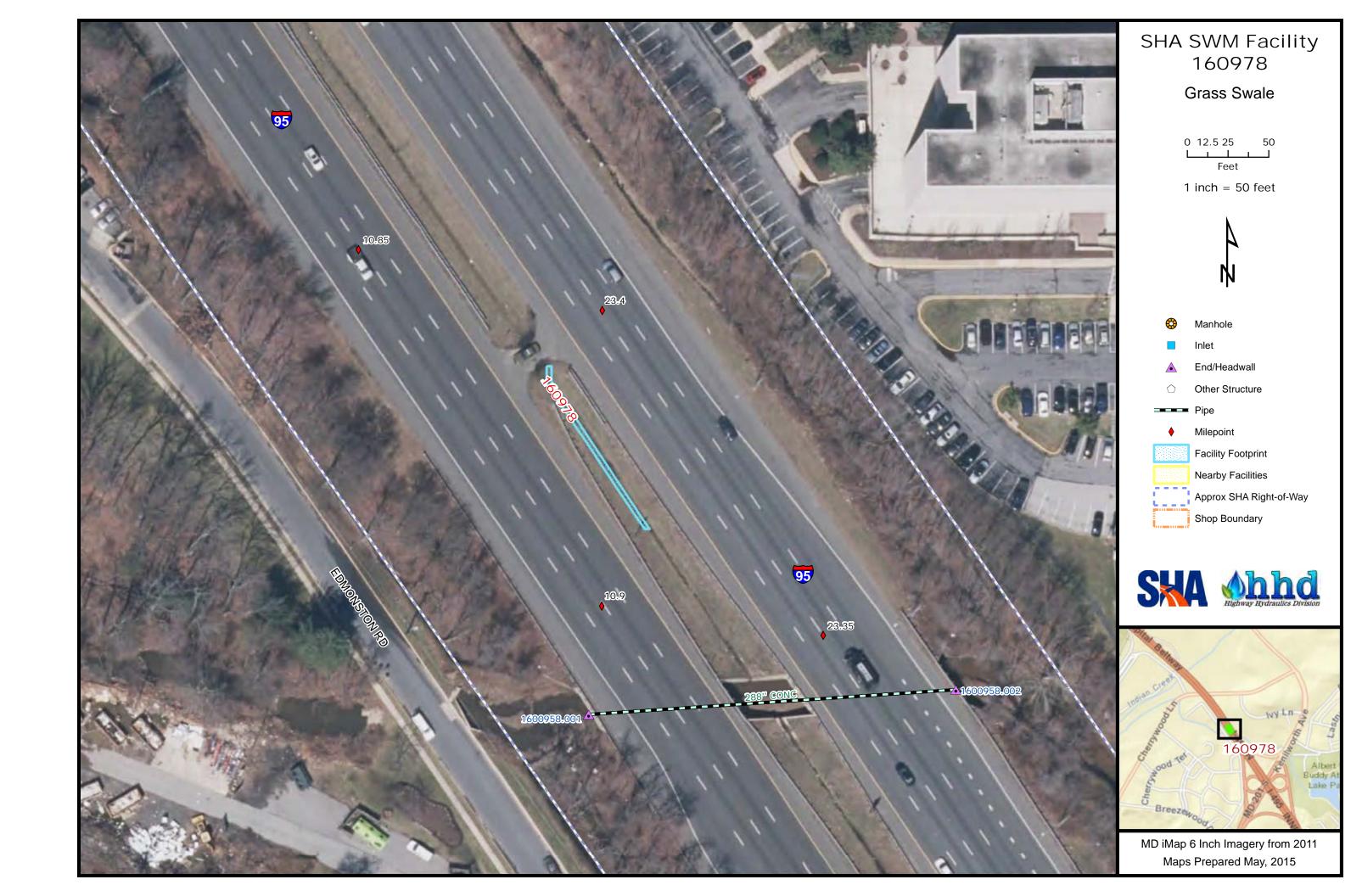


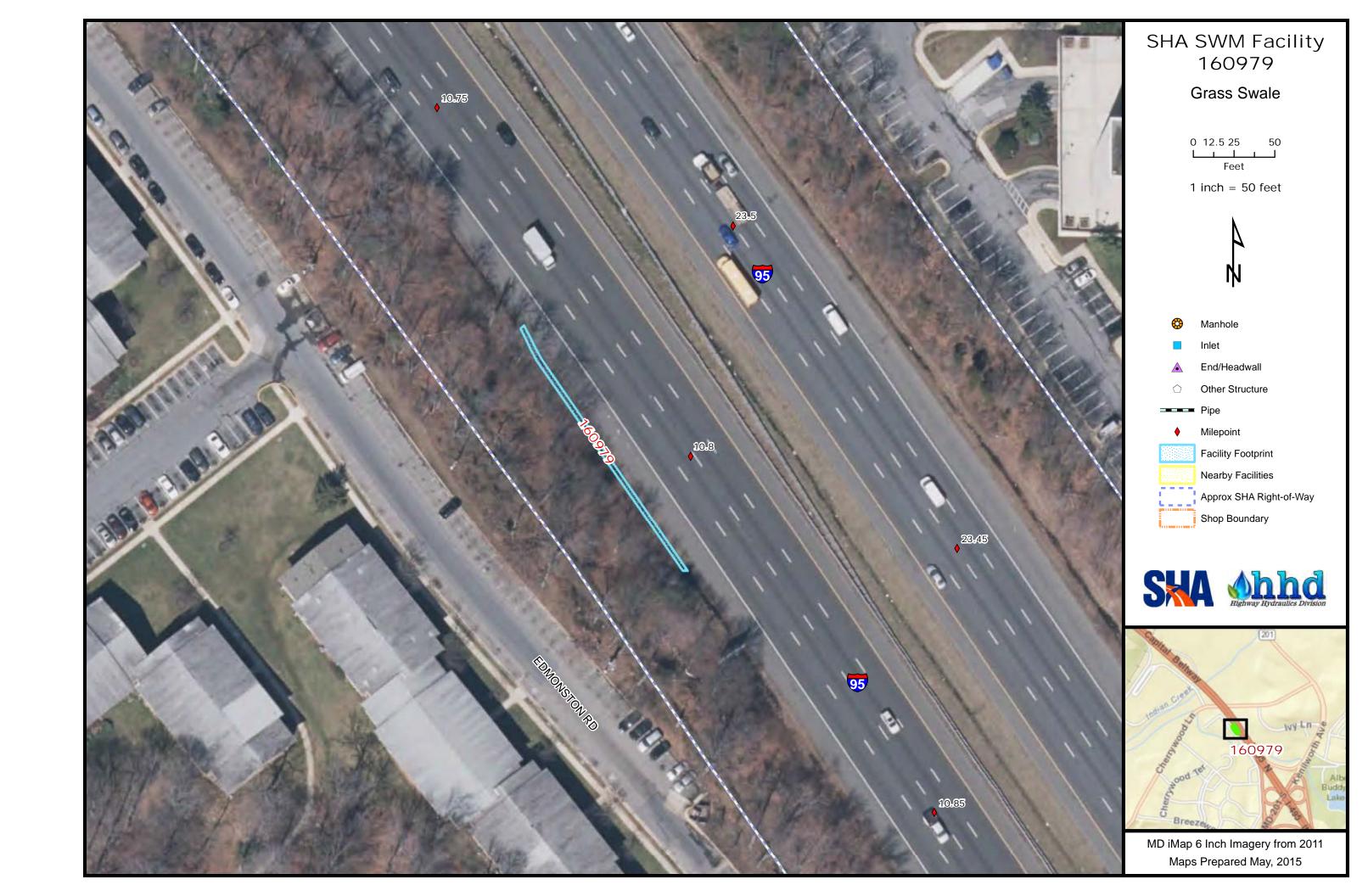


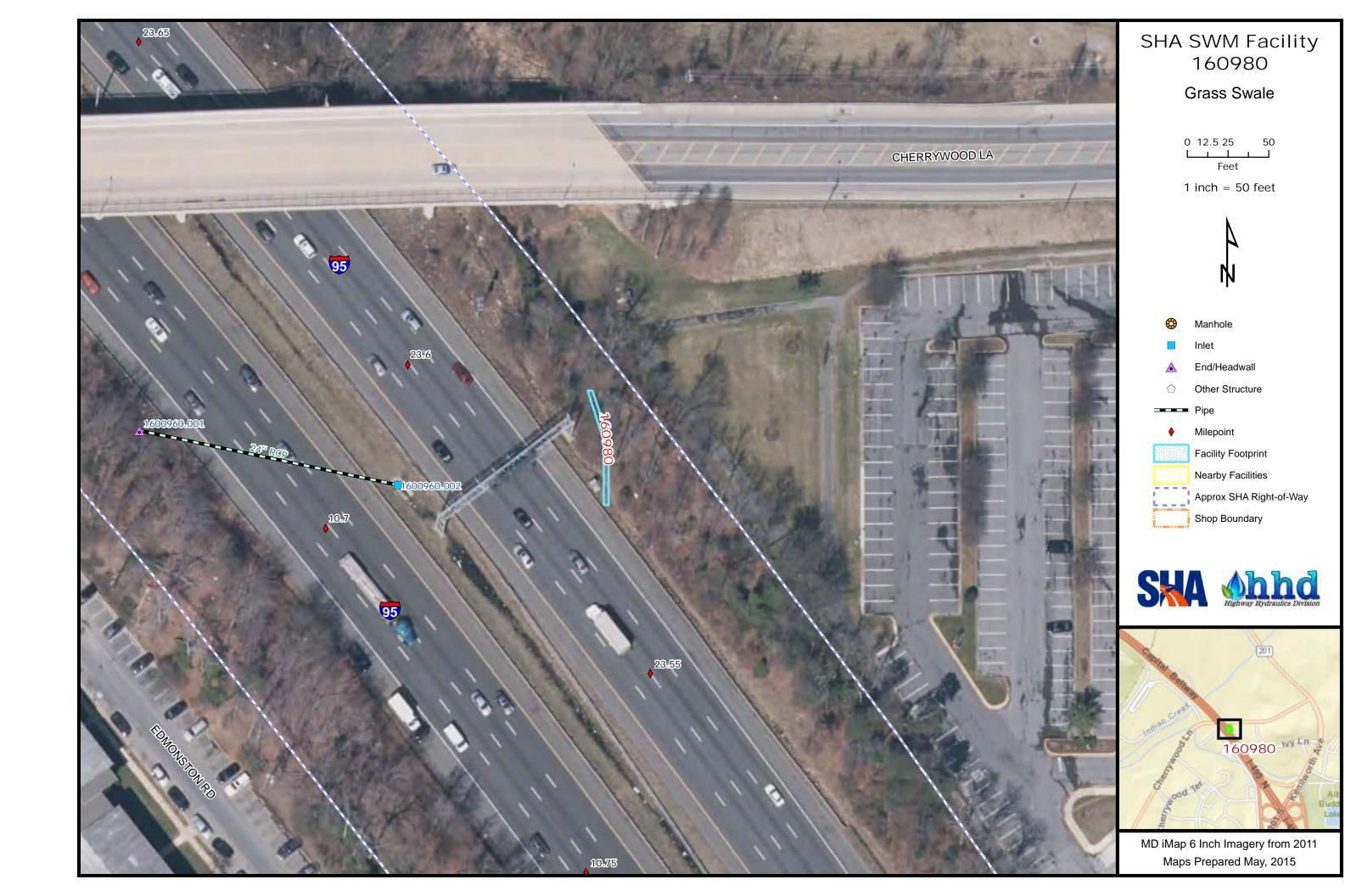


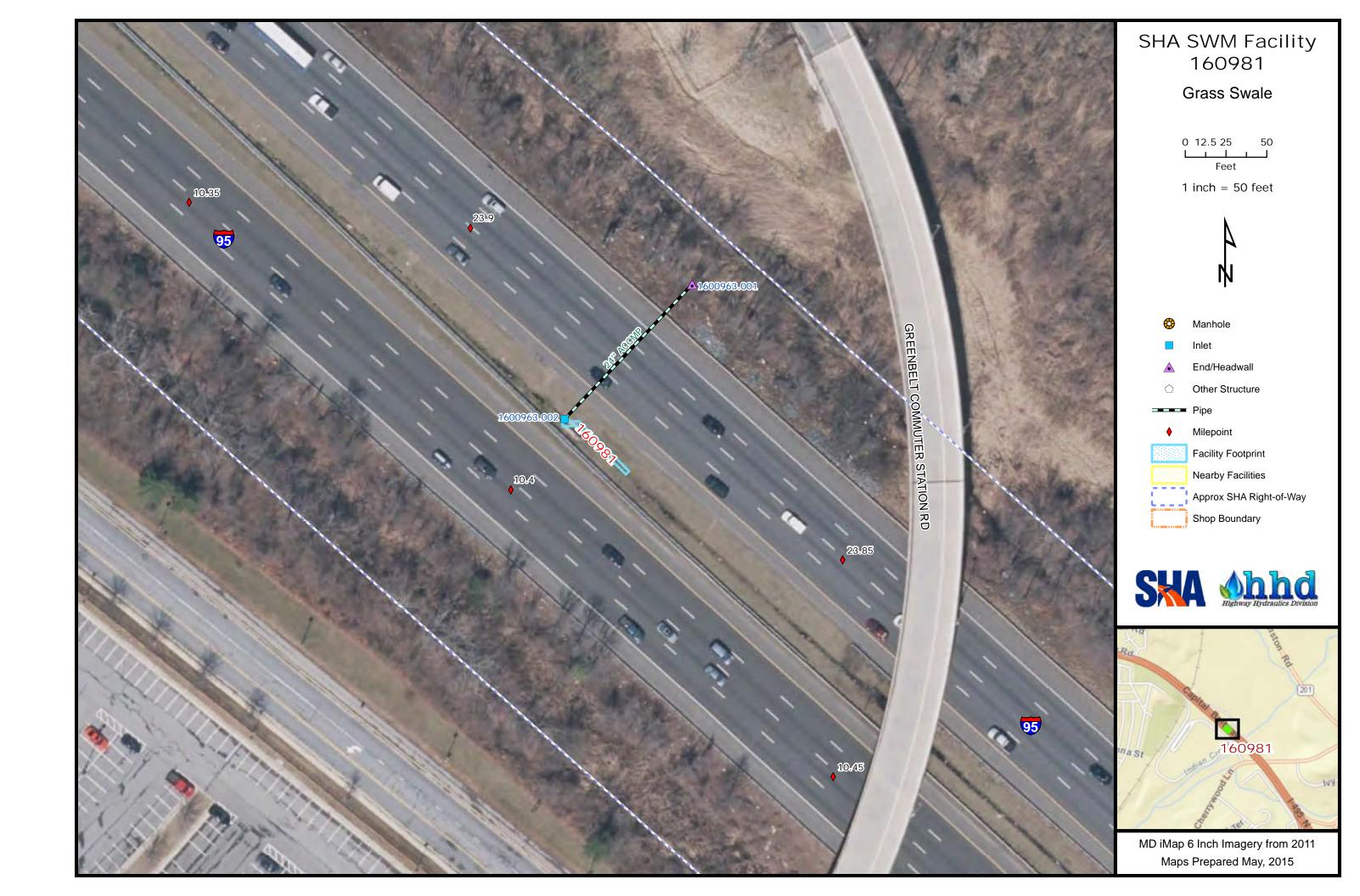








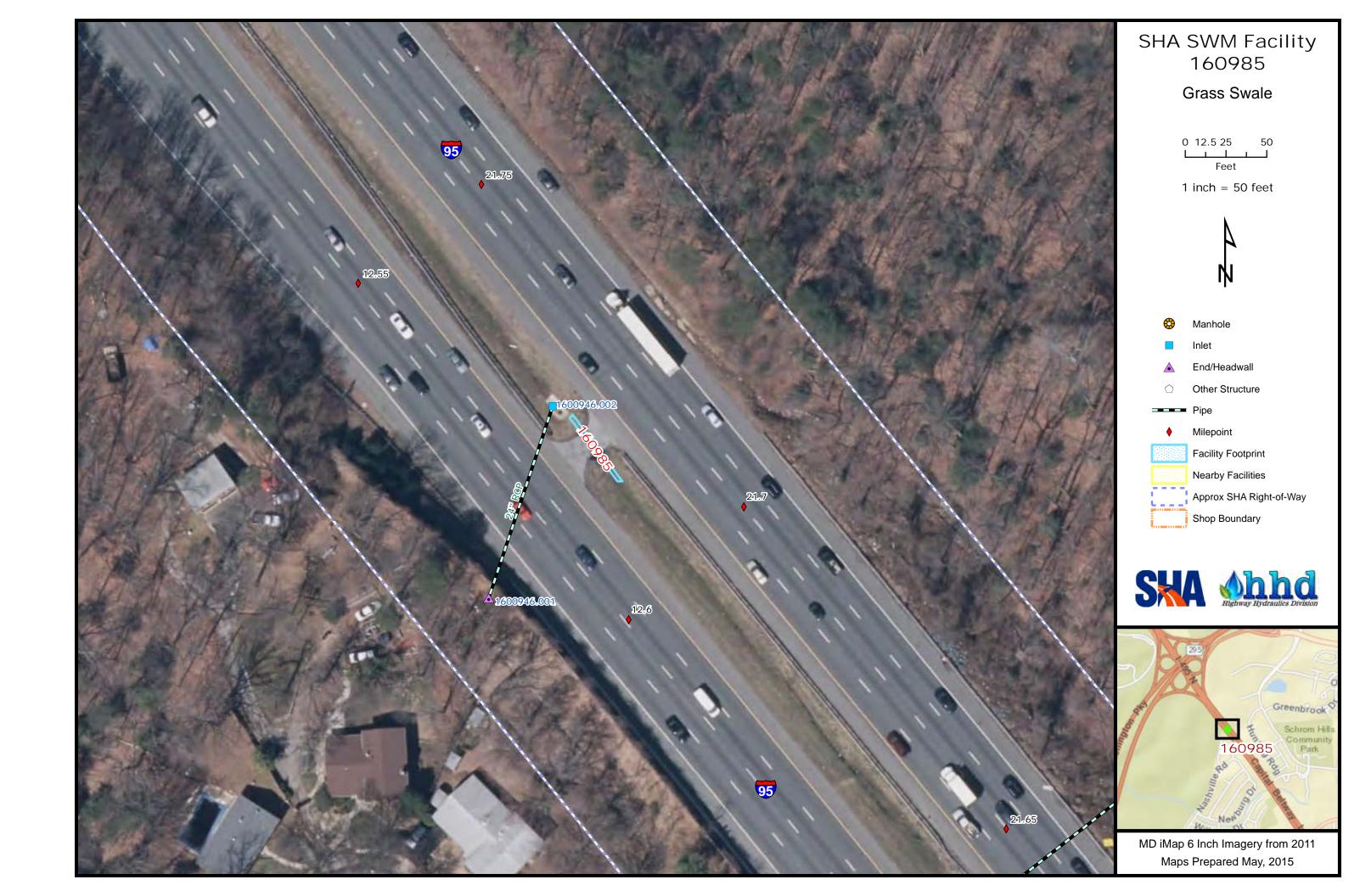










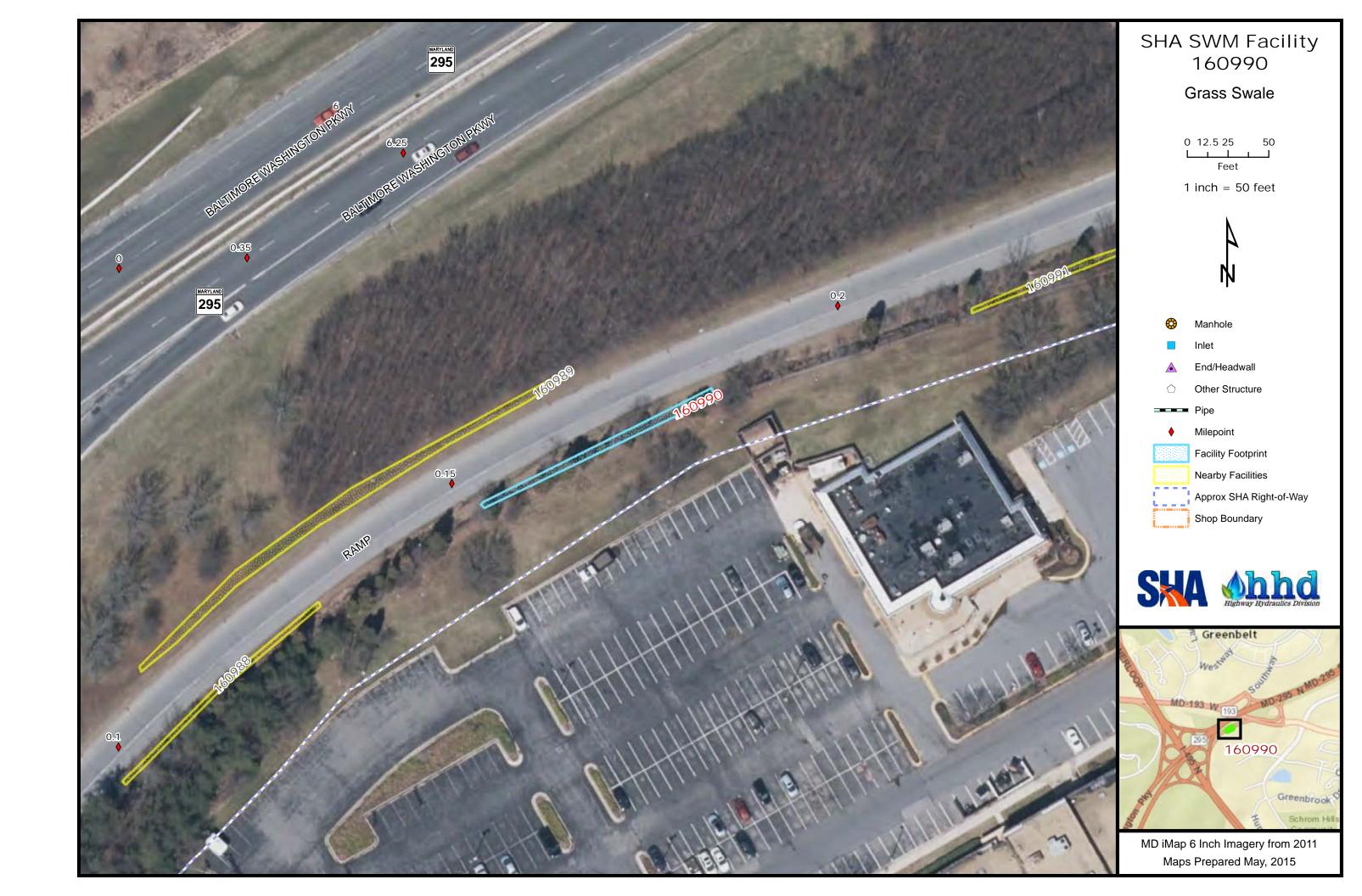


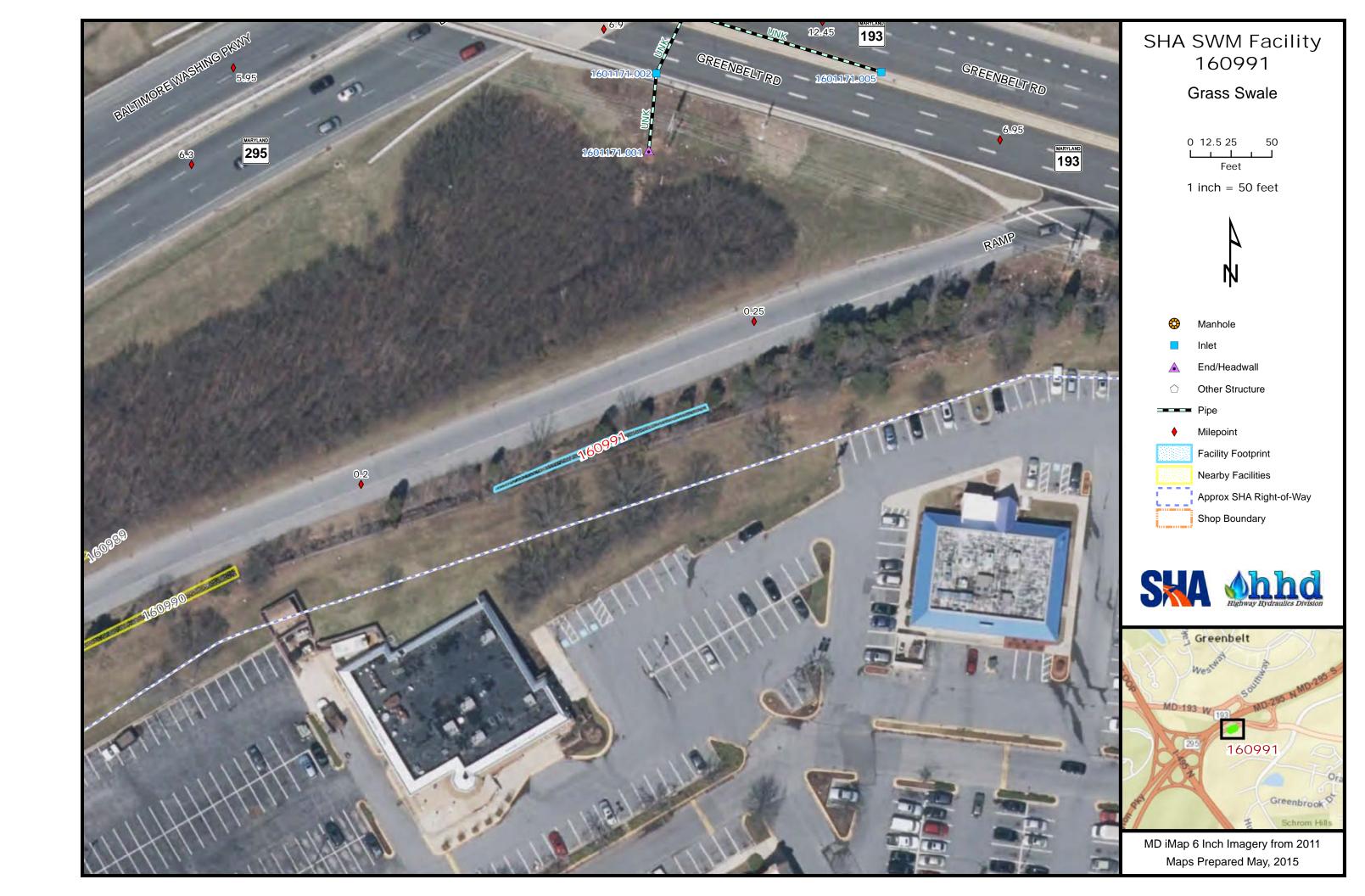


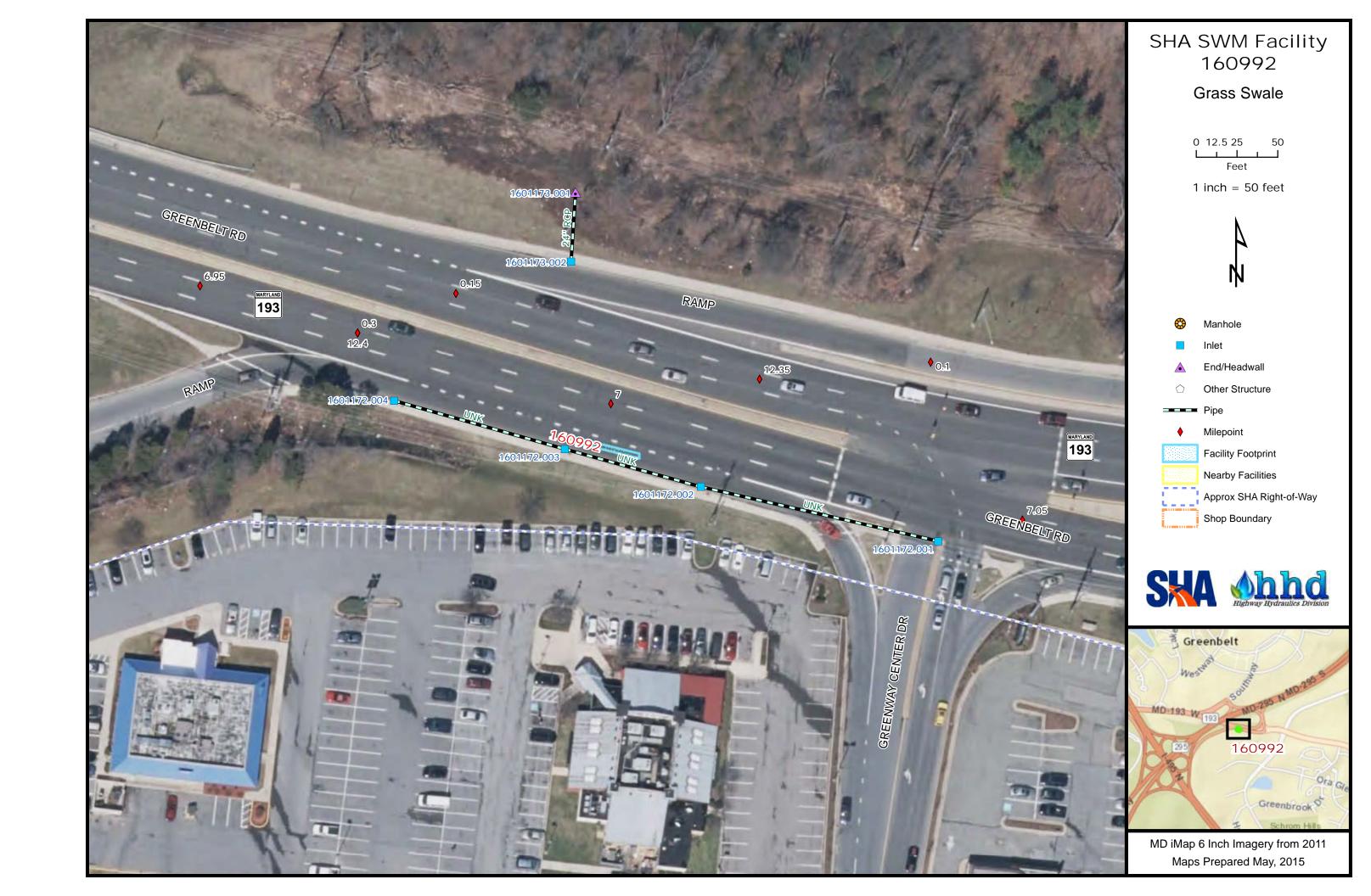


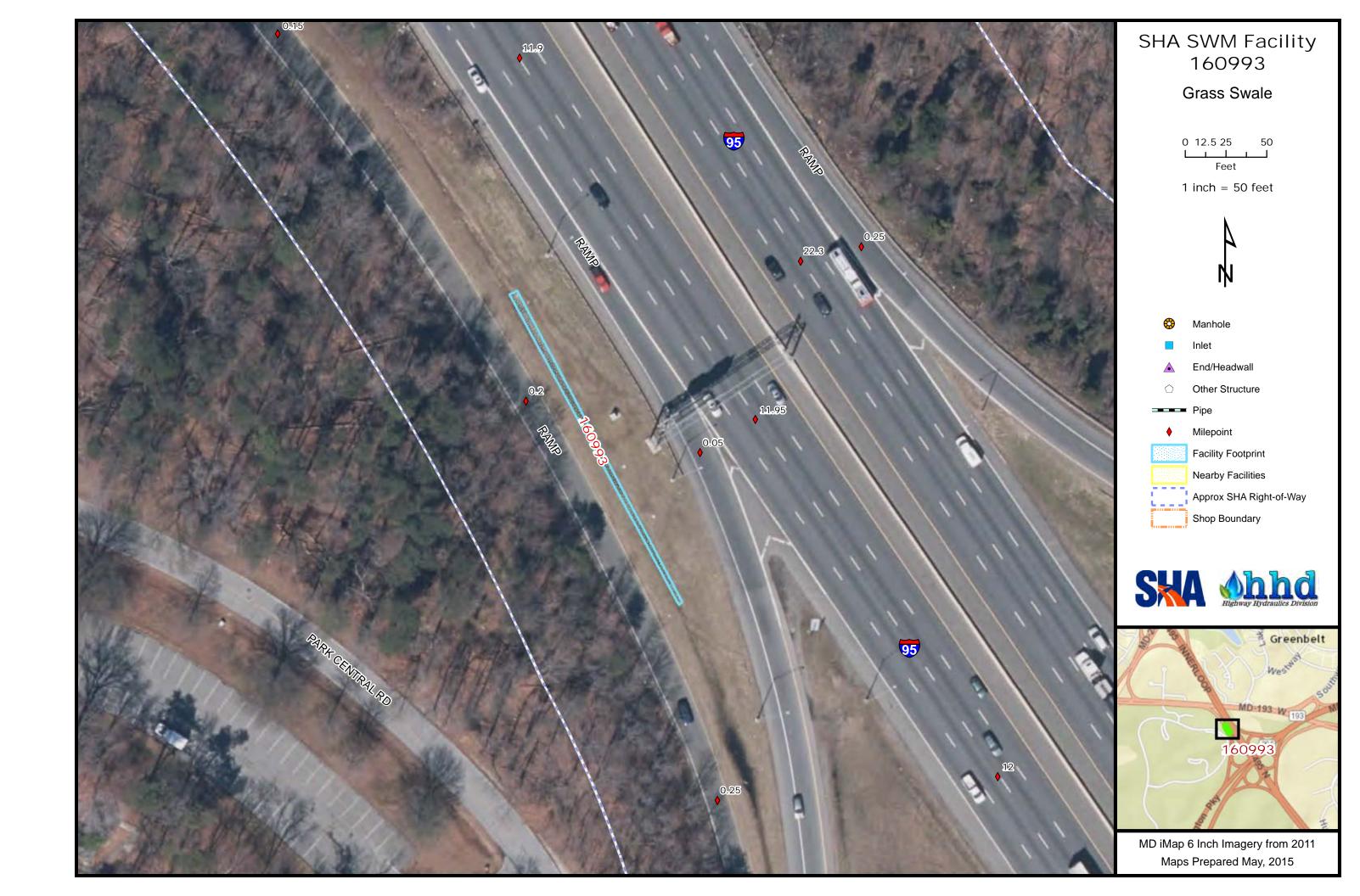














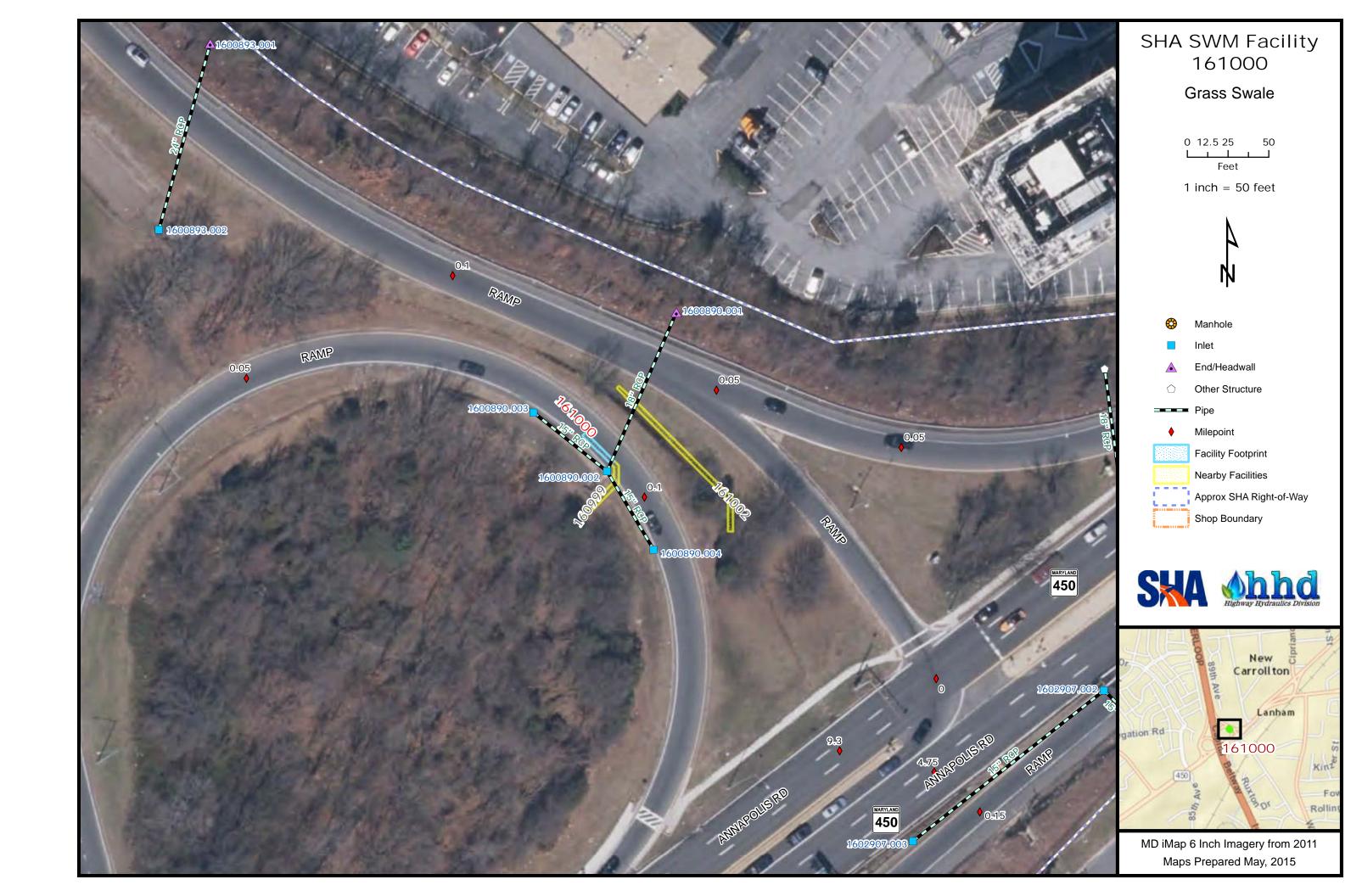


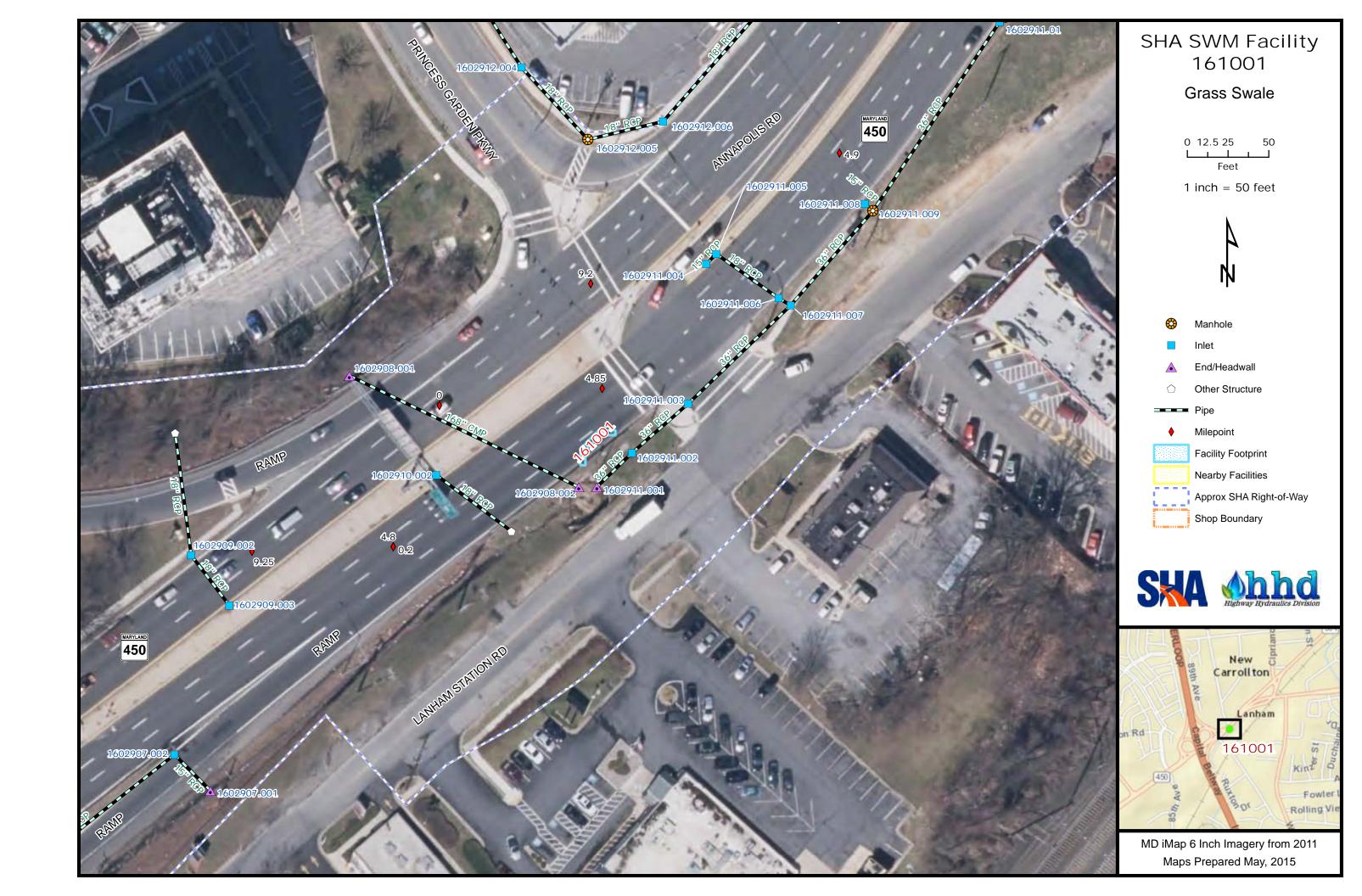




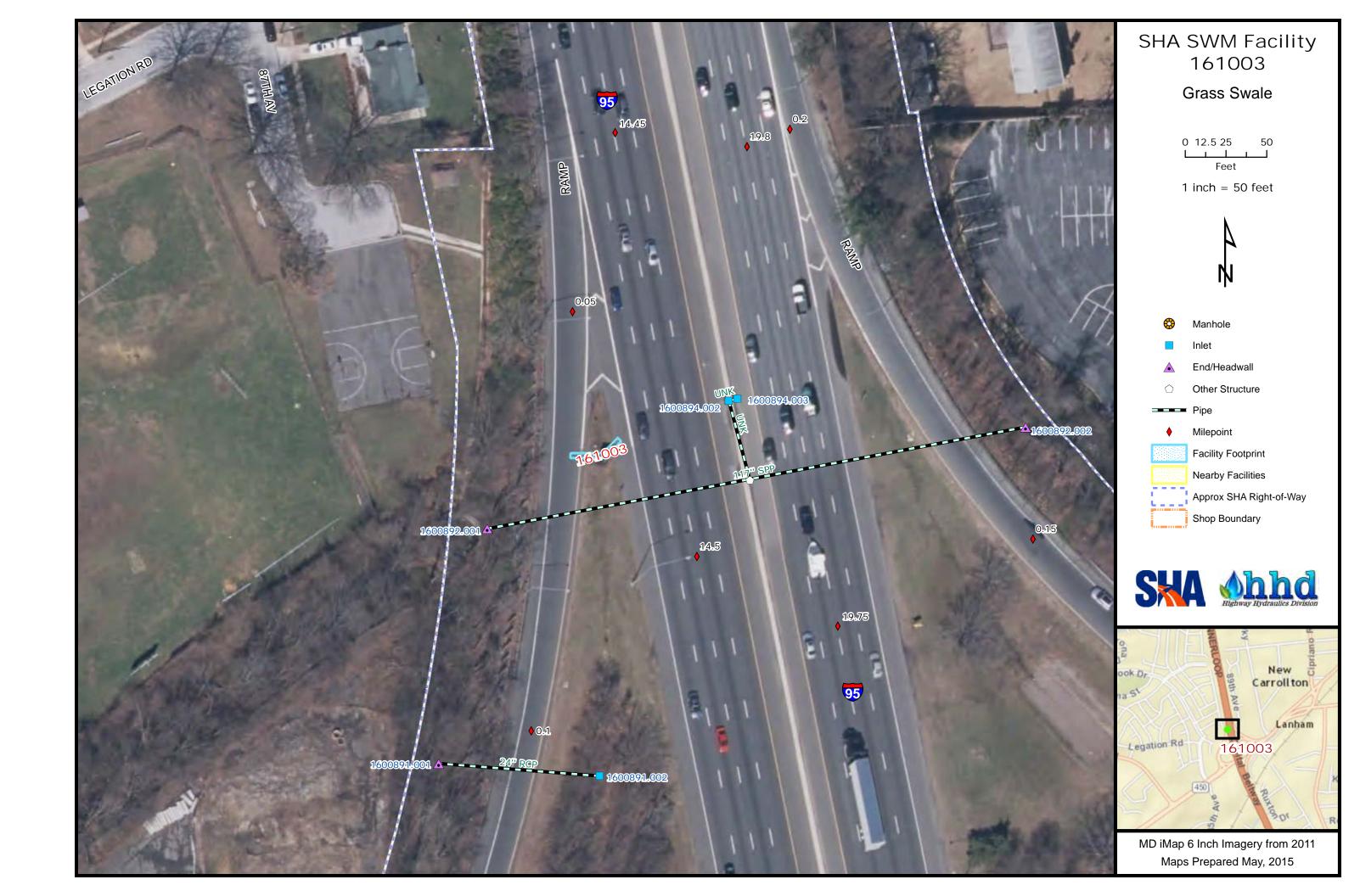


























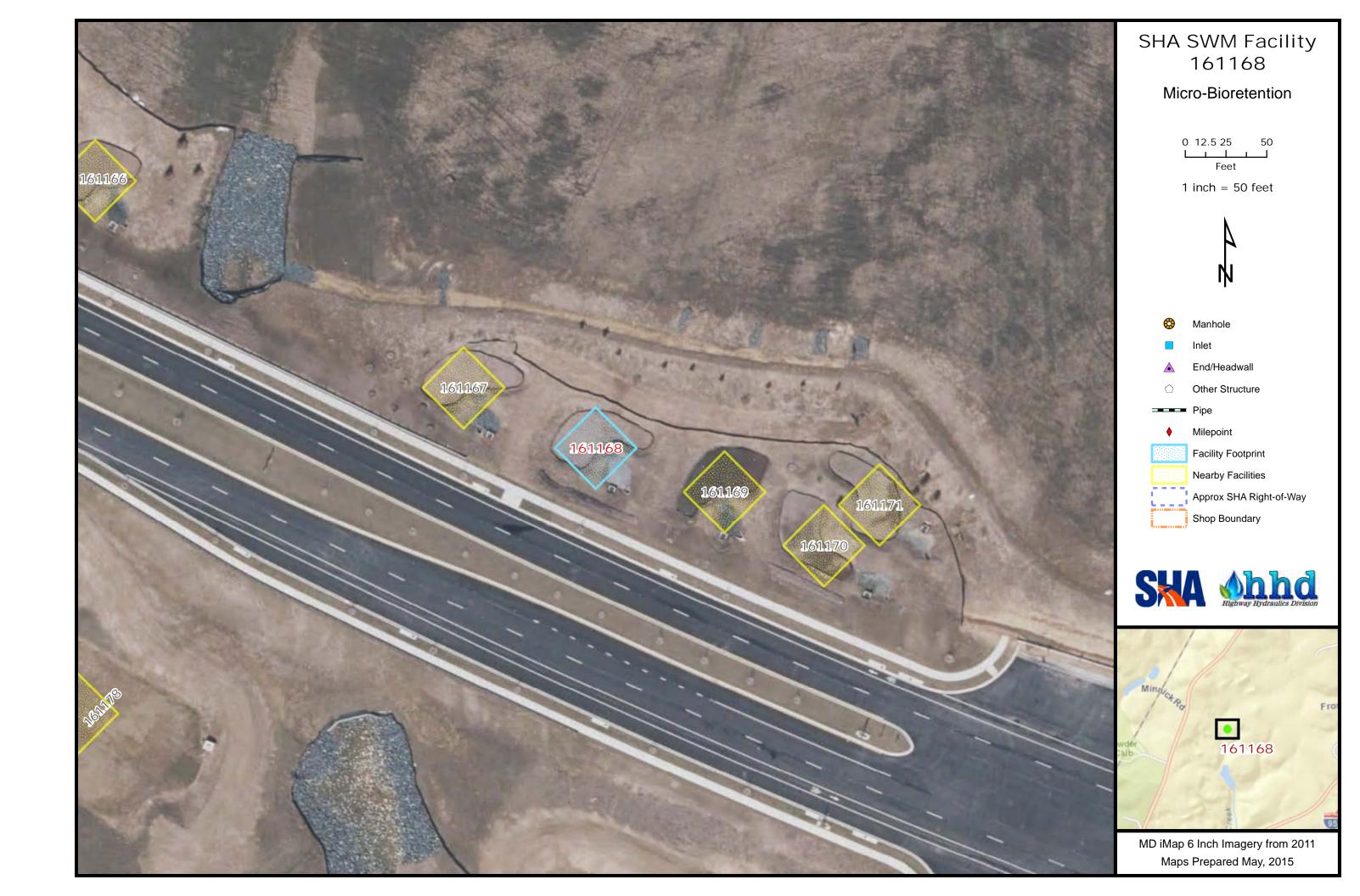


































## APPENDIX C

**Index of Stormwater Management Facilities** 

SWM	SWM Facility Type	Routine Maintenance	Tile Map
Facility No.	5 W W I acmity Type	Category	The Map
160006	Wet pond	Wet Pond	D2
160007	Wet pond	Wet Pond	D2
160008	Infiltration trench	Infiltration Facility	D2
160009	Infiltration trench	Infiltration Facility	D2
160012	Infiltration trench	Infiltration Facility	D2
160015	Infiltration trench	Infiltration Facility	D2
160016	Infiltration trench	Infiltration Facility	D2
160017	Infiltration trench	Infiltration Facility	D2
160018	Infiltration trench	Infiltration Facility	D2
160019	Infiltration trench	Infiltration Facility	D2
160020	Infiltration trench	Infiltration Facility	D2
160021	Infiltration trench	Infiltration Facility	D2
160022	Infiltration trench	Infiltration Facility	D2
160023	Wet pond	Wet Pond	D2
160024	Infiltration trench	Infiltration Facility	D2
160025	Infiltration trench	Infiltration Facility	D2
160026	Infiltration trench	Infiltration Facility	A2
160027	Other wetland	No Routine Maintenance	A2
160029	Shallow marsh	Wet Pond	A2
160030	Shallow marsh	Wet Pond	A2
160148	Underground detention	No Routine Maintenance	D3
160149	Wet pond	Wet Pond	C3
160150	Infiltration trench	Infiltration Facility	C3
160151	Infiltration trench	Infiltration Facility	C3
160152	Wet extended detention pond	Wet Pond	C3
160153	Dry pond	Dry Pond	C3
160154	Infiltration trench	Infiltration Facility	C4
160162	Shallow marsh	Wet Pond	B2
160166	Bioretention	Filtration Facility	D1
160167	Bioretention	Filtration Facility	D2
160169	Bioretention	Filtration Facility	C1
160170	Dry pond	Dry Pond	A2
160171	Dry pond	Dry Pond	A2
160176	Wet extended detention pond	Wet Pond	C1
160177	Wet extended detention pond	Wet Pond	C1
160178	Infiltration trench	Infiltration Facility	C1
160188	Dry pond	Dry Pond	D2
160193	Infiltration trench	Infiltration Facility	D2

SWM	OWN F. T. T	Routine Maintenance	T'1. M.
Facility No.	SWM Facility Type	Category	Tile Map
160194	Infiltration trench	Infiltration Facility	D2
160204	Underground detention	No Routine Maintenance	D4
160205	Wet pond	Wet Pond	D4
160206	Wet pond	Wet Pond	D4
160208	Shallow marsh	Wet Pond	D4
160213	Infiltration trench	Infiltration Facility	D3
160214	Infiltration trench	Infiltration Facility	D3
160215	Infiltration trench	Infiltration Facility	D3
160216	Infiltration trench	Infiltration Facility	D3
160217	Dry swale	Bio-Swale	D4
160225	Infiltration trench	Infiltration Facility	D4
160226	Infiltration trench	Infiltration Facility	D4
160227	Infiltration trench	Infiltration Facility	D4
160228	Infiltration trench	Infiltration Facility	D4
160229	Infiltration trench	Infiltration Facility	D4
160231	Infiltration trench	Infiltration Facility	D4
160232	Infiltration trench	Infiltration Facility	D4
160233	Infiltration trench	Infiltration Facility	D4
160236	Other	No Routine Maintenance	D3
160237	Dry swale	Bio-Swale	D3
160238	Dry swale	Bio-Swale	D3
160239	Dry swale	Bio-Swale	D3
160240	Dry swale	Bio-Swale	D3
160241	Dry swale	Bio-Swale	D3
160242	Dry swale	Bio-Swale	D3
160243	Dry swale	Bio-Swale	D3
160244	Infiltration trench	Infiltration Facility	D3
160245	Infiltration trench	Infiltration Facility	D3
160246	Infiltration trench	Infiltration Facility	D3
160247	Infiltration trench	Infiltration Facility	D3
160248	Other	No Routine Maintenance	D3
160250	Infiltration trench	Infiltration Facility	D3
160251	Dry pond	Dry Pond	D4
160252	Underground detention	No Routine Maintenance	D4
160253	Underground detention	No Routine Maintenance	D4
160301	Wet pond	Wet Pond	D2
160302	Wet pond	Wet Pond	D2
160303	Shallow marsh	Wet Pond	D2

SWM	CWM Facility Type	Routine Maintenance	Tile Man
Facility No.	SWM Facility Type	Category	Tile Map
160304	Wet pond	Wet Pond	D3
160305	Wet pond	Wet Pond	D3
160306	Wet pond	Wet Pond	D3
160307	Infiltration trench	Infiltration Facility	C4
160308	Infiltration trench	Infiltration Facility	C4
160309	Infiltration trench	Infiltration Facility	C4
160310	Infiltration trench	Infiltration Facility	C4
160311	Infiltration trench	Infiltration Facility	C4
160312	Infiltration trench	Infiltration Facility	C4
160313	Infiltration trench	Infiltration Facility	C4
160315	Wet pond	Wet Pond	D3
160316	Shallow marsh	Wet Pond	D2
160351	Wet pond	Wet Pond	D3
160377	Shallow marsh	Wet Pond	D3
160378	Shallow marsh	Wet Pond	C3
160379	Wet pond	Wet Pond	B2
160426	Infiltration trench	Infiltration Facility	D4
160427	Infiltration trench	Infiltration Facility	D4
160428	Dry pond	Dry Pond	D4
160429	Infiltration trench	Infiltration Facility	C4
160501	Wet pond	Wet Pond	C2
160502	Infiltration trench	Infiltration Facility	D3
160506	Wet pond	Wet Pond	C1
160507	Wet pond	Wet Pond	C2
160526	Infiltration trench	Infiltration Facility	B1
160535	Dry pond	Dry Pond	B2
160536	Dry pond	Dry Pond	A2
160553	Shallow marsh	Wet Pond	D2
160577	Dry pond	Dry Pond	D1
160578	Infiltration basin	Infiltration Facility	D1
160601	Wet pond	Wet Pond	D2
160608	Other filtering	No Routine Maintenance	D1
160612	Wet pond	Wet Pond	B1
160613	Bioretention	Filtration Facility	D1
160614	Dry swale	Bio-Swale	D1
160615	Surface sand filter	Filtration Facility	D1
160616	Surface sand filter	Filtration Facility	D1
160617	Dry swale	Bio-Swale	D1

SWM	CWM Equility Tyma	Routine Maintenance	Tile Man
Facility No.	SWM Facility Type	Category	Tile Map
160618	Surface sand filter	Filtration Facility	D1
160619	Bioretention	Filtration Facility	D1
160620	Dry swale	Bio-Swale	D1
160621	Infiltration trench	Infiltration Facility	D2
160622	Infiltration trench	Infiltration Facility	D2
160623	Infiltration trench	Infiltration Facility	D2
160624	Infiltration trench	Infiltration Facility	D2
160625	Infiltration trench	Infiltration Facility	D2
160626	Infiltration trench	Infiltration Facility	D2
160653	Wet pond	Wet Pond	D2
160654	Wet extended detention pond	Wet Pond	C1
160655	Wet extended detention pond	Wet Pond	C1
160656	Wet extended detention pond	Wet Pond	C1
160657	Infiltration trench	Infiltration Facility	C1
160658	Infiltration trench	Infiltration Facility	C1
160702	Dry pond	Dry Pond	C2
160745	Shallow marsh	Wet Pond	C1
160749	Infiltration trench	Infiltration Facility	D2
160764	Infiltration basin	Infiltration Facility	C4
160805	Bioretention	Filtration Facility	D1
160809	Grass Swale	Turfgrass Maintenance	B2
160810	Dry swale	Bio-Swale	A2
160880	Dry pond	Dry Pond	A2
160881	Dry pond	Dry Pond	A2
160906	Grass Swale	Turfgrass Maintenance	A2
160907	Grass Swale	Turfgrass Maintenance	B2
160908	Grass Swale	Turfgrass Maintenance	B2
160909	Grass Swale	Turfgrass Maintenance	B2
160910	Grass Swale	Turfgrass Maintenance	B2
160911	Grass Swale	Turfgrass Maintenance	A2
160912	Grass Swale	Turfgrass Maintenance	A2
160913	Grass Swale	Turfgrass Maintenance	A2
160914	Grass Swale	Turfgrass Maintenance	A2
160915	Grass Swale	Turfgrass Maintenance	A2
160916	Grass Swale	Turfgrass Maintenance	A2
160917	Grass Swale	Turfgrass Maintenance	A2
160918	Grass Swale	Turfgrass Maintenance	A2
160919	Grass Swale	Turfgrass Maintenance	A2

SWM	CWM Equility Type	Routine Maintenance	Tile Men
Facility No.	SWM Facility Type	Category	Tile Map
160920	Grass Swale	Turfgrass Maintenance	A2
160921	Grass Swale	Turfgrass Maintenance	A2
160922	Grass Swale	Turfgrass Maintenance	A2
160923	Grass Swale	Turfgrass Maintenance	A2
160924	Grass Swale	Turfgrass Maintenance	A2
160925	Grass Swale	Turfgrass Maintenance	A2
160926	Grass Swale	Turfgrass Maintenance	A2
160927	Grass Swale	Turfgrass Maintenance	A2
160928	Grass Swale	Turfgrass Maintenance	A2
160929	Grass Swale	Turfgrass Maintenance	A2
160930	Grass Swale	Turfgrass Maintenance	A2
160931	Grass Swale	Turfgrass Maintenance	A2
160932	Grass Swale	Turfgrass Maintenance	A2
160933	Grass Swale	Turfgrass Maintenance	A2
160934	Grass Swale	Turfgrass Maintenance	A2
160935	Grass Swale	Turfgrass Maintenance	A2
160936	Grass Swale	Turfgrass Maintenance	B2
160937	Grass Swale	Turfgrass Maintenance	B2
160938	Grass Swale	Turfgrass Maintenance	B1
160939	Grass Swale	Turfgrass Maintenance	B1
160940	Grass Swale	Turfgrass Maintenance	B1
160941	Grass Swale	Turfgrass Maintenance	B1
160942	Grass Swale	Turfgrass Maintenance	B1
160943	Grass Swale	Turfgrass Maintenance	B1
160944	Grass Swale	Turfgrass Maintenance	B1
160945	Grass Swale	Turfgrass Maintenance	B1
160946	Grass Swale	Turfgrass Maintenance	B1
160947	Grass Swale	Turfgrass Maintenance	B1
160948	Grass Swale	Turfgrass Maintenance	B1
160949	Grass Swale	Turfgrass Maintenance	B1
160950	Grass Swale	Turfgrass Maintenance	B1
160951	Grass Swale	Turfgrass Maintenance	B1
160952	Grass Swale	Turfgrass Maintenance	C1
160953	Grass Swale	Turfgrass Maintenance	C1
160954	Grass Swale	Turfgrass Maintenance	C1
160955	Grass Swale	Turfgrass Maintenance	C1
160956	Grass Swale	Turfgrass Maintenance	C1
160957	Grass Swale	Turfgrass Maintenance	C1

SWM	CWALE 114 T	Routine Maintenance	T'1 M
Facility No.	SWM Facility Type	Category	Tile Map
160958	Grass Swale	Turfgrass Maintenance	C1
160959	Grass Swale	Turfgrass Maintenance	C1
160960	Grass Swale	Turfgrass Maintenance	C1
160961	Grass Swale	Turfgrass Maintenance	C1
160962	Grass Swale	Turfgrass Maintenance	C1
160963	Grass Swale	Turfgrass Maintenance	C1
160964	Grass Swale	Turfgrass Maintenance	C1
160965	Grass Swale	Turfgrass Maintenance	C1
160966	Grass Swale	Turfgrass Maintenance	B1
160967	Grass Swale	Turfgrass Maintenance	B1
160968	Grass Swale	Turfgrass Maintenance	C1
160969	Grass Swale	Turfgrass Maintenance	C1
160970	Grass Swale	Turfgrass Maintenance	C1
160971	Grass Swale	Turfgrass Maintenance	C2
160972	Grass Swale	Turfgrass Maintenance	C1
160973	Grass Swale	Turfgrass Maintenance	C2
160974	Grass Swale	Turfgrass Maintenance	C2
160975	Grass Swale	Turfgrass Maintenance	C2
160976	Grass Swale	Turfgrass Maintenance	C2
160977	Grass Swale	Turfgrass Maintenance	C2
160978	Grass Swale	Turfgrass Maintenance	C2
160979	Grass Swale	Turfgrass Maintenance	C2
160980	Grass Swale	Turfgrass Maintenance	C2
160981	Grass Swale	Turfgrass Maintenance	C2
160982	Grass Swale	Turfgrass Maintenance	C2
160983	Grass Swale	Turfgrass Maintenance	C2
160984	Grass Swale	Turfgrass Maintenance	C2
160985	Grass Swale	Turfgrass Maintenance	C2
160986	Grass Swale	Turfgrass Maintenance	C2
160987	Grass Swale	Turfgrass Maintenance	C2
160988	Grass Swale	Turfgrass Maintenance	C2
160989	Grass Swale	Turfgrass Maintenance	C2
160990	Grass Swale	Turfgrass Maintenance	C2
160991	Grass Swale	Turfgrass Maintenance	C2
160992	Grass Swale	Turfgrass Maintenance	C2
160993	Grass Swale	Turfgrass Maintenance	C2
160994	Grass Swale	Turfgrass Maintenance	C2
160995	Grass Swale	Turfgrass Maintenance	C2

SWM		Routine Maintenance	
Facility No.	SWM Facility Type	Category	Tile Map
160996	Grass Swale	Turfgrass Maintenance	C2
160997	Grass Swale	Turfgrass Maintenance	C2
160998	Grass Swale	Turfgrass Maintenance	D2
160999	Grass Swale	Turfgrass Maintenance	D2
161000	Grass Swale	Turfgrass Maintenance	D2
161001	Grass Swale	Turfgrass Maintenance	D2
161002	Grass Swale	Turfgrass Maintenance	D2
161003	Grass Swale	Turfgrass Maintenance	D2
161156	Bioretention	Filtration Facility	B2
161157	Micro-Bioretention	Filtration Facility	A1
161158	Micro-Bioretention	Filtration Facility	A1
161159	Micro-Bioretention	Filtration Facility	A1
161160	Micro-Bioretention	Filtration Facility	A1
161161	Micro-Bioretention	Filtration Facility	A1
161162	Micro-Bioretention	Filtration Facility	A1
161163	Micro-Bioretention	Filtration Facility	A2
161164	Micro-Bioretention	Filtration Facility	A1
161165	Micro-Bioretention	Filtration Facility	A2
161166	Micro-Bioretention	Filtration Facility	A2
161167	Micro-Bioretention	Filtration Facility	A2
161168	Micro-Bioretention	Filtration Facility	A2
161169	Micro-Bioretention	Filtration Facility	A2
161170	Micro-Bioretention	Filtration Facility	A2
161171	Micro-Bioretention	Filtration Facility	A2
161172	Micro-Bioretention	Filtration Facility	A2
161173	Micro-Bioretention	Filtration Facility	A2
161174	Micro-Bioretention	Filtration Facility	A2
161175	Micro-Bioretention	Filtration Facility	A2
161176	Micro-Bioretention	Filtration Facility	A2
161177	Micro-Bioretention	Filtration Facility	A2
161178	Wet pond	Wet Pond	A2
161179	Wet pond	Wet Pond	A2

SWM Facility No.	SWM Facility Type	Routine Maintenance Category	Tile Map
161157	Micro-Bioretention	Filtration Facility	A1
161158	Micro-Bioretention	Filtration Facility	A1
161159	Micro-Bioretention	Filtration Facility	A1
161160	Micro-Bioretention	Filtration Facility	A1
161161	Micro-Bioretention	Filtration Facility	A1
161162	Micro-Bioretention	Filtration Facility	A1
161164	Micro-Bioretention	Filtration Facility	A1
160026	Infiltration trench	Infiltration Facility	A2
160027	Other wetland	No Routine Maintenance	A2
160029	Shallow marsh	Wet Pond	A2
160030	Shallow marsh	Wet Pond	A2
160170	Dry pond	Dry Pond	A2
160171	Dry pond	Dry Pond	A2
160536	Dry pond	Dry Pond	A2
160810	Dry swale	Bio-Swale	A2
160880	Dry pond	Dry Pond	A2
160881	Dry pond	Dry Pond	A2
160906	Grass Swale	Turfgrass Maintenance	A2
160911	Grass Swale	Turfgrass Maintenance	A2
160912	Grass Swale	Turfgrass Maintenance	A2
160913	Grass Swale	Turfgrass Maintenance	A2
160914	Grass Swale	Turfgrass Maintenance	A2
160915	Grass Swale	Turfgrass Maintenance	A2
160916	Grass Swale	Turfgrass Maintenance	A2
160917	Grass Swale	Turfgrass Maintenance	A2
160918	Grass Swale	Turfgrass Maintenance	A2
160919	Grass Swale	Turfgrass Maintenance	A2
160920	Grass Swale	Turfgrass Maintenance	A2
160921	Grass Swale	Turfgrass Maintenance	A2
160922	Grass Swale	Turfgrass Maintenance	A2
160923	Grass Swale	Turfgrass Maintenance	A2
160924	Grass Swale	Turfgrass Maintenance	A2
160925	Grass Swale	Turfgrass Maintenance	A2
160926	Grass Swale	Turfgrass Maintenance	A2
160927	Grass Swale	Turfgrass Maintenance	A2
160928	Grass Swale	Turfgrass Maintenance	A2
160929	Grass Swale	Turfgrass Maintenance	A2
160930	Grass Swale	Turfgrass Maintenance	A2

SWM	SWM Equility Type	Routine Maintenance	Tile Man
Facility No.	SWM Facility Type	Category	Tile Map
160931	Grass Swale	Turfgrass Maintenance	A2
160932	Grass Swale	Turfgrass Maintenance	A2
160933	Grass Swale	Turfgrass Maintenance	A2
160934	Grass Swale	Turfgrass Maintenance	A2
160935	Grass Swale	Turfgrass Maintenance	A2
161163	Micro-Bioretention	Filtration Facility	A2
161165	Micro-Bioretention	Filtration Facility	A2
161166	Micro-Bioretention	Filtration Facility	A2
161167	Micro-Bioretention	Filtration Facility	A2
161168	Micro-Bioretention	Filtration Facility	A2
161169	Micro-Bioretention	Filtration Facility	A2
161170	Micro-Bioretention	Filtration Facility	A2
161171	Micro-Bioretention	Filtration Facility	A2
161172	Micro-Bioretention	Filtration Facility	A2
161173	Micro-Bioretention	Filtration Facility	A2
161174	Micro-Bioretention	Filtration Facility	A2
161175	Micro-Bioretention	Filtration Facility	A2
161176	Micro-Bioretention	Filtration Facility	A2
161177	Micro-Bioretention	Filtration Facility	A2
161178	Wet pond	Wet Pond	A2
161179	Wet pond	Wet Pond	A2
160526	Infiltration trench	Infiltration Facility	B1
160612	Wet pond	Wet Pond	B1
160938	Grass Swale	Turfgrass Maintenance	B1
160939	Grass Swale	Turfgrass Maintenance	B1
160940	Grass Swale	Turfgrass Maintenance	B1
160941	Grass Swale	Turfgrass Maintenance	B1
160942	Grass Swale	Turfgrass Maintenance	B1
160943	Grass Swale	Turfgrass Maintenance	B1
160944	Grass Swale	Turfgrass Maintenance	B1
160945	Grass Swale	Turfgrass Maintenance	B1
160946	Grass Swale	Turfgrass Maintenance	B1
160947	Grass Swale	Turfgrass Maintenance	B1
160948	Grass Swale	Turfgrass Maintenance	B1
160949	Grass Swale	Turfgrass Maintenance	B1
160950	Grass Swale	Turfgrass Maintenance	B1
160951	Grass Swale	Turfgrass Maintenance	B1
160966	Grass Swale	Turfgrass Maintenance	B1

SWM Facility No.	SWM Facility Type	Routine Maintenance Category	Tile Map
160967	Grass Swale	Turfgrass Maintenance	B1
160162	Shallow marsh	Wet Pond	B2
160379	Wet pond	Wet Pond	B2
160535	Dry pond	Dry Pond	B2
160809	Grass Swale	Turfgrass Maintenance	B2
160907	Grass Swale	Turfgrass Maintenance	B2
160908	Grass Swale	Turfgrass Maintenance	B2
160909	Grass Swale	Turfgrass Maintenance	B2
160910	Grass Swale	Turfgrass Maintenance	B2
160936	Grass Swale	Turfgrass Maintenance	B2
160937	Grass Swale	Turfgrass Maintenance	B2
161156	Bioretention	Filtration Facility	B2
160169	Bioretention	Filtration Facility	C1
160176	Wet extended detention pond	Wet Pond	C1
160177	Wet extended detention pond	Wet Pond	C1
160178	Infiltration trench	Infiltration Facility	C1
160506	Wet pond	Wet Pond	C1
160654	Wet extended detention pond	Wet Pond	C1
160655	Wet extended detention pond	Wet Pond	C1
160656	Wet extended detention pond	Wet Pond	C1
160657	Infiltration trench	Infiltration Facility	C1
160658	Infiltration trench	Infiltration Facility	C1
160745	Shallow marsh	Wet Pond	C1
160952	Grass Swale	Turfgrass Maintenance	C1
160953	Grass Swale	Turfgrass Maintenance	C1
160954	Grass Swale	Turfgrass Maintenance	C1
160955	Grass Swale	Turfgrass Maintenance	C1
160956	Grass Swale	Turfgrass Maintenance	C1
160957	Grass Swale	Turfgrass Maintenance	C1
160958	Grass Swale	Turfgrass Maintenance	C1
160959	Grass Swale	Turfgrass Maintenance	C1
160960	Grass Swale	Turfgrass Maintenance	C1
160961	Grass Swale	Turfgrass Maintenance	C1
160962	Grass Swale	Turfgrass Maintenance	C1
160963	Grass Swale	Turfgrass Maintenance	C1
160964	Grass Swale	Turfgrass Maintenance	C1
160965	Grass Swale	Turfgrass Maintenance	C1
160968	Grass Swale	Turfgrass Maintenance	C1

SWM	ONDER TO T	Routine Maintenance	T'1 M
Facility No.	SWM Facility Type	Category	Tile Map
160969	Grass Swale	Turfgrass Maintenance	C1
160970	Grass Swale	Turfgrass Maintenance	C1
160972	Grass Swale	Turfgrass Maintenance	C1
160501	Wet pond	Wet Pond	C2
160507	Wet pond	Wet Pond	C2
160702	Dry pond	Dry Pond	C2
160971	Grass Swale	Turfgrass Maintenance	C2
160973	Grass Swale	Turfgrass Maintenance	C2
160974	Grass Swale	Turfgrass Maintenance	C2
160975	Grass Swale	Turfgrass Maintenance	C2
160976	Grass Swale	Turfgrass Maintenance	C2
160977	Grass Swale	Turfgrass Maintenance	C2
160978	Grass Swale	Turfgrass Maintenance	C2
160979	Grass Swale	Turfgrass Maintenance	C2
160980	Grass Swale	Turfgrass Maintenance	C2
160981	Grass Swale	Turfgrass Maintenance	C2
160982	Grass Swale	Turfgrass Maintenance	C2
160983	Grass Swale	Turfgrass Maintenance	C2
160984	Grass Swale	Turfgrass Maintenance	C2
160985	Grass Swale	Turfgrass Maintenance	C2
160986	Grass Swale	Turfgrass Maintenance	C2
160987	Grass Swale	Turfgrass Maintenance	C2
160988	Grass Swale	Turfgrass Maintenance	C2
160989	Grass Swale	Turfgrass Maintenance	C2
160990	Grass Swale	Turfgrass Maintenance	C2
160991	Grass Swale	Turfgrass Maintenance	C2
160992	Grass Swale	Turfgrass Maintenance	C2
160993	Grass Swale	Turfgrass Maintenance	C2
160994	Grass Swale	Turfgrass Maintenance	C2
160995	Grass Swale	Turfgrass Maintenance	C2
160996	Grass Swale	Turfgrass Maintenance	C2
160997	Grass Swale	Turfgrass Maintenance	C2
160149	Wet pond	Wet Pond	C3
160150	Infiltration trench	Infiltration Facility	C3
160151	Infiltration trench	Infiltration Facility	C3
160152	Wet extended detention pond	Wet Pond	C3
160153	Dry pond	Dry Pond	C3
160378	Shallow marsh	Wet Pond	C3

Table   Tabl	SWM	SWM Engility Typo	Routine Maintenance	Tile Map
Infiltration Facility   C4	Facility No.	S w w racinty Type	Category	The Map
Infiltration trench   Infiltration Facility   C4	160154	Infiltration trench	Infiltration Facility	C4
Infiltration trench	160307	Infiltration trench	Infiltration Facility	C4
160310	160308	Infiltration trench	Infiltration Facility	C4
160311Infiltration trenchInfiltration FacilityC4160312Infiltration trenchInfiltration FacilityC4160313Infiltration trenchInfiltration FacilityC4160429Infiltration trenchInfiltration FacilityC4160764Infiltration BasinInfiltration FacilityD1160166BioretentionFiltration FacilityD1160577Dry pondDry PondD1160578Infiltration basinInfiltration FacilityD1160608Other filteringNo Routine MaintenanceD1160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2<	160309	Infiltration trench	Infiltration Facility	C4
160312Infiltration trenchInfiltration FacilityC4160313Infiltration trenchInfiltration FacilityC4160429Infiltration trenchInfiltration FacilityC4160764Infiltration basinInfiltration FacilityC4160166BioretentionFiltration FacilityD1160577Dry pondDry PondD1160578Infiltration basinInfiltration FacilityD1160608Other filteringNo Routine MaintenanceD1160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2<	160310	Infiltration trench	Infiltration Facility	C4
Infiltration trench   Infiltration Facility   C4	160311	Infiltration trench	Infiltration Facility	C4
160429Infiltration trenchInfiltration FacilityC4160764Infiltration basinInfiltration FacilityC4160166BioretentionFiltration FacilityD1160577Dry pondDry PondD1160578Infiltration basinInfiltration FacilityD1160608Other filteringNo Routine MaintenanceD1160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160312	Infiltration trench	Infiltration Facility	C4
160764Infiltration basinInfiltration FacilityC4160166BioretentionFiltration FacilityD1160577Dry pondDry PondD1160578Infiltration basinInfiltration FacilityD1160608Other filteringNo Routine MaintenanceD1160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160313	Infiltration trench	Infiltration Facility	C4
160166BioretentionFiltration FacilityD1160577Dry pondDry PondD1160578Infiltration basinInfiltration FacilityD1160608Other filteringNo Routine MaintenanceD1160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160429	Infiltration trench	Infiltration Facility	C4
160577         Dry pond         Dry Pond         D1           160578         Infiltration basin         Infiltration Facility         D1           160608         Other filtering         No Routine Maintenance         D1           160613         Bioretention         Filtration Facility         D1           160614         Dry swale         Bio-Swale         D1           160615         Surface sand filter         Filtration Facility         D1           160616         Surface sand filter         Filtration Facility         D1           160617         Dry swale         Bio-Swale         D1           160618         Surface sand filter         Filtration Facility         D1           160619         Bioretention         Filtration Facility         D1           160620         Dry swale         Bio-Swale         D1           160805         Bioretention         Filtration Facility         D1           160006         Wet pond         Wet Pond         D2           160007         Wet pond         Wet Pond         D2           160008         Infiltration trench         Infiltration Facility         D2           160012         Infiltration trench         Infiltration Facility         D2     <	160764	Infiltration basin	Infiltration Facility	C4
160578Infiltration basinInfiltration FacilityD1160608Other filteringNo Routine MaintenanceD1160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160166	Bioretention	Filtration Facility	D1
160608Other filteringNo Routine MaintenanceD1160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160577	Dry pond	Dry Pond	D1
160613BioretentionFiltration FacilityD1160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160010Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160578	Infiltration basin	Infiltration Facility	D1
160614Dry swaleBio-SwaleD1160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160010Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160608	Other filtering	No Routine Maintenance	D1
160615Surface sand filterFiltration FacilityD1160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160613	Bioretention	Filtration Facility	D1
160616Surface sand filterFiltration FacilityD1160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160010Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160614	Dry swale	Bio-Swale	D1
160617Dry swaleBio-SwaleD1160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160615	Surface sand filter	Filtration Facility	D1
160618Surface sand filterFiltration FacilityD1160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160616	Surface sand filter	Filtration Facility	D1
160619BioretentionFiltration FacilityD1160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160617	Dry swale	Bio-Swale	D1
160620Dry swaleBio-SwaleD1160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160618	Surface sand filter	Filtration Facility	D1
160805BioretentionFiltration FacilityD1160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160619	Bioretention	Filtration Facility	D1
160006Wet pondWet PondD2160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160620	Dry swale	Bio-Swale	D1
160007Wet pondWet PondD2160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160805	Bioretention	Filtration Facility	D1
160008Infiltration trenchInfiltration FacilityD2160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160006	Wet pond	Wet Pond	D2
160009Infiltration trenchInfiltration FacilityD2160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160007	Wet pond	Wet Pond	D2
160012Infiltration trenchInfiltration FacilityD2160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160008	Infiltration trench	Infiltration Facility	D2
160015Infiltration trenchInfiltration FacilityD2160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160009	Infiltration trench	Infiltration Facility	D2
160016Infiltration trenchInfiltration FacilityD2160017Infiltration trenchInfiltration FacilityD2	160012	Infiltration trench	Infiltration Facility	D2
160017 Infiltration trench Infiltration Facility D2	160015	Infiltration trench	Infiltration Facility	D2
· · · · · · · · · · · · · · · · · · ·	160016	Infiltration trench	Infiltration Facility	D2
160018 Infiltration trench Infiltration Facility D2	160017	Infiltration trench	Infiltration Facility	D2
	160018	Infiltration trench	Infiltration Facility	D2
160019 Infiltration trench Infiltration Facility D2	160019	Infiltration trench	Infiltration Facility	D2
160020 Infiltration trench Infiltration Facility D2	160020	Infiltration trench	Infiltration Facility	D2
160021 Infiltration trench Infiltration Facility D2	160021	Infiltration trench	Infiltration Facility	D2
160022 Infiltration trench Infiltration Facility D2	160022	Infiltration trench	Infiltration Facility	D2
160023 Wet pond Wet Pond D2	160023	Wet pond	Wet Pond	D2
160024 Infiltration trench Infiltration Facility D2	160024	Infiltration trench	Infiltration Facility	D2

SWM	SWM Facility Type	Routine Maintenance	Tile Men
Facility No.	SWM Facility Type	Category	Tile Map
160025	Infiltration trench	Infiltration Facility	D2
160167	Bioretention	Filtration Facility	D2
160188	Dry pond	Dry Pond	D2
160193	Infiltration trench	Infiltration Facility	D2
160194	Infiltration trench	Infiltration Facility	D2
160301	Wet pond	Wet Pond	D2
160302	Wet pond	Wet Pond	D2
160303	Shallow marsh	Wet Pond	D2
160316	Shallow marsh	Wet Pond	D2
160553	Shallow marsh	Wet Pond	D2
160601	Wet pond	Wet Pond	D2
160621	Infiltration trench	Infiltration Facility	D2
160622	Infiltration trench	Infiltration Facility	D2
160623	Infiltration trench	Infiltration Facility	D2
160624	Infiltration trench	Infiltration Facility	D2
160625	Infiltration trench	Infiltration Facility	D2
160626	Infiltration trench	Infiltration Facility	D2
160653	Wet pond	Wet Pond	D2
160749	Infiltration trench	Infiltration Facility	D2
160998	Grass Swale	Turfgrass Maintenance	D2
160999	Grass Swale	Turfgrass Maintenance	D2
161000	Grass Swale	Turfgrass Maintenance	D2
161001	Grass Swale	Turfgrass Maintenance	D2
161002	Grass Swale	Turfgrass Maintenance	D2
161003	Grass Swale	Turfgrass Maintenance	D2
160148	Underground detention	No Routine Maintenance	D3
160213	Infiltration trench	Infiltration Facility	D3
160214	Infiltration trench	Infiltration Facility	D3
160215	Infiltration trench	Infiltration Facility	D3
160216	Infiltration trench	Infiltration Facility	D3
160236	Other	No Routine Maintenance	D3
160237	Dry swale	Bio-Swale	D3
160238	Dry swale	Bio-Swale	D3
160239	Dry swale	Bio-Swale	D3
160240	Dry swale	Bio-Swale	D3
160241	Dry swale	Bio-Swale	D3
160242	Dry swale	Bio-Swale	D3
160243	Dry swale	Bio-Swale	D3

SWM	SWM Facility Type	Routine Maintenance	Tile Map
Facility No.	7 (7)	Category	D.0
160244	Infiltration trench	Infiltration Facility	D3
160245	Infiltration trench	Infiltration Facility	D3
160246	Infiltration trench	Infiltration Facility	D3
160247	Infiltration trench	Infiltration Facility	D3
160248	Other	No Routine Maintenance	D3
160250	Infiltration trench	Infiltration Facility	D3
160304	Wet pond	Wet Pond	D3
160305	Wet pond	Wet Pond	D3
160306	Wet pond	Wet Pond	D3
160315	Wet pond	Wet Pond	D3
160351	Wet pond	Wet Pond	D3
160377	Shallow marsh	Wet Pond	D3
160502	Infiltration trench	Infiltration Facility	D3
160204	Underground detention	No Routine Maintenance	D4
160205	Wet pond	Wet Pond	D4
160206	Wet pond	Wet Pond	D4
160208	Shallow marsh	Wet Pond	D4
160217	Dry swale	Bio-Swale	D4
160225	Infiltration trench	Infiltration Facility	D4
160226	Infiltration trench	Infiltration Facility	D4
160227	Infiltration trench	Infiltration Facility	D4
160228	Infiltration trench	Infiltration Facility	D4
160229	Infiltration trench	Infiltration Facility	D4
160231	Infiltration trench	Infiltration Facility	D4
160232	Infiltration trench	Infiltration Facility	D4
160233	Infiltration trench	Infiltration Facility	D4
160251	Dry pond	Dry Pond	D4
160252	Underground detention	No Routine Maintenance	D4
160253	Underground detention	No Routine Maintenance	D4
160426	Infiltration trench	Infiltration Facility	D4
160427	Infiltration trench	Infiltration Facility	D4
160428	Dry pond	Dry Pond	D4
		· · · · · · · · · · · · · · · · · · ·	