

HAZARDOUS MATERIALS PROGRAM ENVIRONMENTAL GUIDE

Making Flood Prone Area Determinations for Aboveground Storage Tank (AST) Installations

This guidance is intended to provide instructions for determining whether a property is located in a designated flood prone area. This guidance does not provide technical information pertaining to the installation standards for ASTs in flood prone areas.

Introduction and Background

Flooding is the most common natural disaster that occurs in Vermont. It can be costly and difficult to clean up after a flood event, especially if a petroleum release occurs. Many homes that are situated in flood prone areas own aboveground storage tanks (ASTs), and many of these ASTs are installed in basements. During flood events, the force of buoyancy can cause submerged tanks to float; this can result in broken fuel lines and releases of petroleum contents from tanks. Releases of heating fuel in flooded basements are especially challenging to clean up, and they are incredibly disruptive to the lives of the property residents. Based on current analysis of flood hazard areas in Vermont, it is estimated that there are 12,000 structures located in flood prone areas; some of these structures are homes that store heating fuel in ASTs.

In 2013, the Agency of Natural Resources (ANR) amended the AST Rules to include minimum standards for the installation of ASTs in flood prone areas. The requirements were expanded as part of the revised AST Rules in 2017, including additional standards for the installation of new ASTs. The [2024 AST Rules](#) have incorporated these flood prone area installation standards into tank inspection requirements. Effective August 1, 2024, all *new* ASTs installed in flood prone areas will be required to be compliant with installation standards specific to flood prone areas. New tanks installed in flood prone areas which are not compliant with flood prone area installation standards will be prohibited from receiving fuel deliveries.

Note: all *existing* ASTs located in flood prone areas are required to be in compliance with flood prone area installation standards by July 1, 2030.

What is a flood prone area?

A flood prone area is an area of land that is affected by water that has extended beyond the normal banks of a waterbody. The 2024 AST Rules define a flood prone area as “any area that is susceptible to flooding by any source and is adjacent to lakes, streams and rivers that are prone to recurring floodings”. As it pertains to the AST Rules, “flood prone area” has the same meaning as “flood hazard area”, as defined under 10 V.S.A. § 752, which relies on the federal definition of “area of special flood hazard” (44 CFR § 59.1).

The Federal Emergency Management Agency (FEMA) defines an area of special flood hazard as the land in the flood plain within a community that is subject to a 1% or greater chance of flooding in any given year; this is also referred to as the “100-year” flood plain. These areas are designated by FEMA on official flood maps, known as Flood Insurance Rate Maps (FIRMs). The flood hazard areas are typically designated as “Zone A” on FIRMs; this zone can be further refined to multiple zones that specify flood insurance rates. Knowing the specific insurance rate zone is not necessary under the AST Rules, however, tank installers are required to verify whether a tank owner’s property falls within an area of special flood hazard.

Instructions for Making Flood Prone Area Determinations

FEMA provides FIRMs that identify areas that are at a high risk of flooding. These maps vary in terms of the area they cover, with older maps (from before 2007) made on a town-by-town basis, and newer maps created on a county-wide basis; maps also vary in level of detail. Some of the maps have been digitized, and all digitized maps are available for viewing on ANR’s [Natural Resource Atlas](#) (ANR Atlas). As of 2024, approximately 50% of Vermont has digitized FIRMs, including the following counties: Bennington, Chittenden, Rutland, Washington, Windham and Windsor; and the following seven communities: Bradford Village, Hardwick, Jay, Montgomery, Newbury, Stowe, and Wolcott. The remainder of the state currently relies on maps that are in a non-digitized, scanned paper format. The areas of Vermont for which digitized maps are available are illustrated in **Figure 1**.

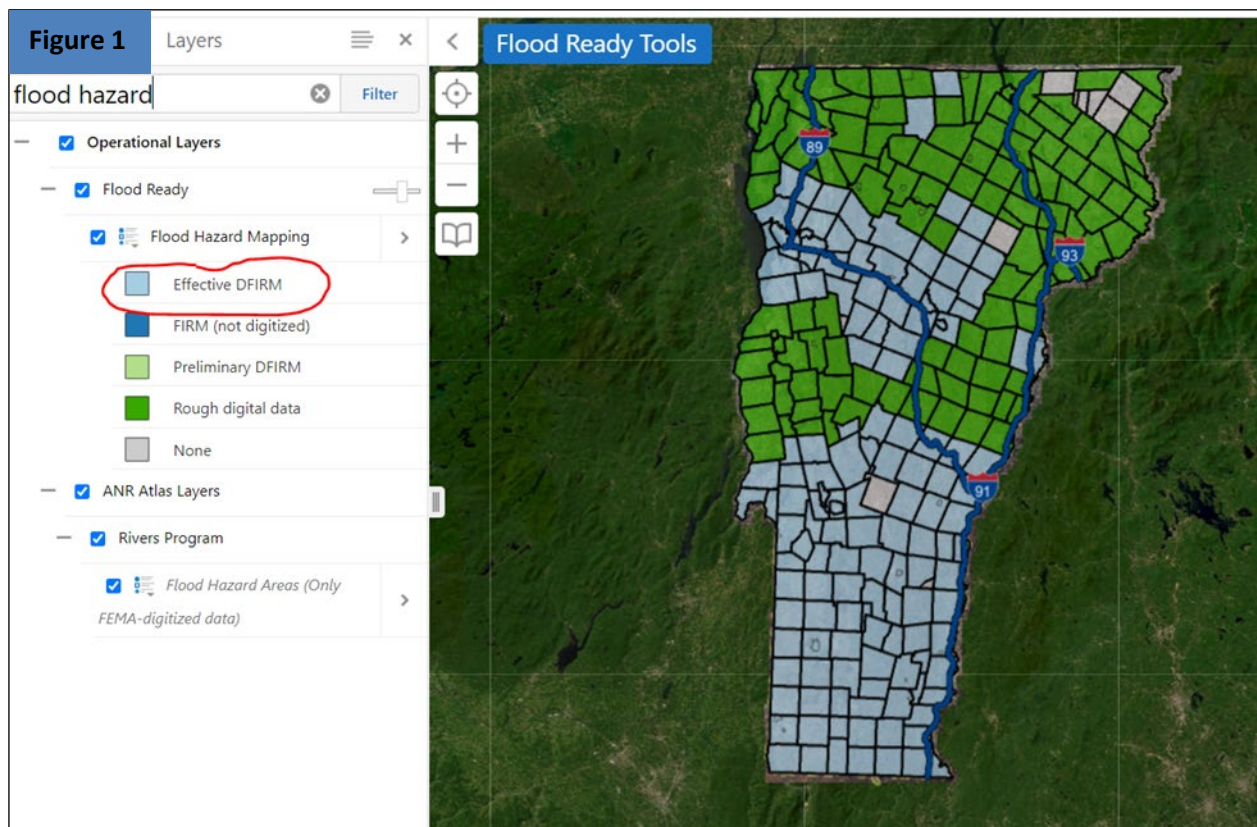


Figure 1. Digital Flood Insurance Rate Maps (DFIRMs) for Vermont; only areas shown in blue on the map have effective digitized maps which will be available in Vermont Flood Ready Atlas.

Note: FEMA is currently updating FIRMs in Vermont. This is being done in stages across the entire state, and new digitized maps of additional communities will become available in the future. While this work will take years to complete, ANR expects to have much wider coverage of digitized flood maps by 2030.

There are three mapping resources that can be used to determine whether a property falls within a flood prone area:

- **FEMA Map Service Center (MSC)** is a federal resource.
- **ANR Atlas** is Vermont-specific.
- **Vermont Flood Ready Atlas** is Vermont-specific.

The FEMA MSC has digitized maps for areas where they are available, as well as older, non-digitized maps that may be downloaded. Both ANR Atlas and the Vermont Flood Ready Atlas use FEMA digitized flood maps to show areas that are flood prone; since parts of the state do not have digitized flood maps available, those areas will not show relevant flood-related data when using ANR Atlas/Vermont Flood Ready Atlas.

What follows is an overview of how to use federal (**Option 1**) and Vermont-specific (**Option 2**) resources to determine whether an area is flood prone.

Option 1 – Using FEMA MSC: <https://msc.fema.gov/portal/home>

Step 1: Enter the property address under “Looking for a Flood Map” on the home page.

Step 2: Review the map; areas that fall under the “Special Flood Hazard Area” will show up in teal or teal/red cross hatch (see **Figure 2**). Note that not all areas of Vermont will have digitized flood maps. This is the case for many rural areas, especially in northern Vermont (refer to **Figure 1** to view statewide digitized map coverage). Areas with no digitized data will be shown with a green dotted overlay (see **Figure 3**). For such areas, a FEMA “Map Image” file must be downloaded and used (refer to **Steps 3-4**).

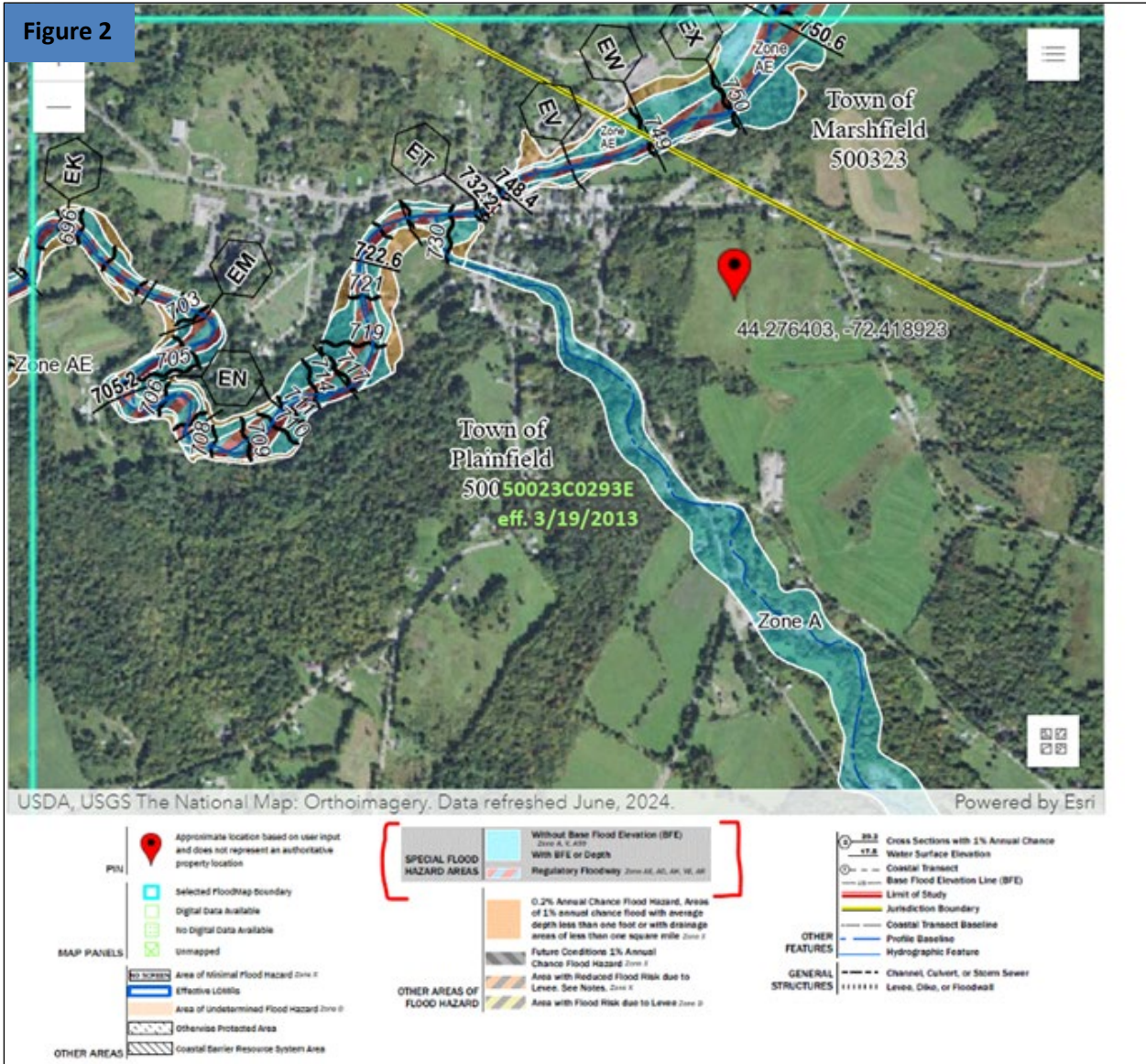


Figure 2. FEMA MSC result for Village of Plainfield, VT. Since Washington County, VT has digitized maps, digitized flood data can be used to make a flood prone area determination. Any property that falls into the solid teal or teal/red area is a special flood hazard area and any new AST located in these zones must be installed in compliance with flood prone area standards. Properties that are located outside of these areas are not considered to be flood prone for the purposes of compliance with the AST Rules. Note that the red pin marker will indicate the location of the property you are investigating.

Figure 3

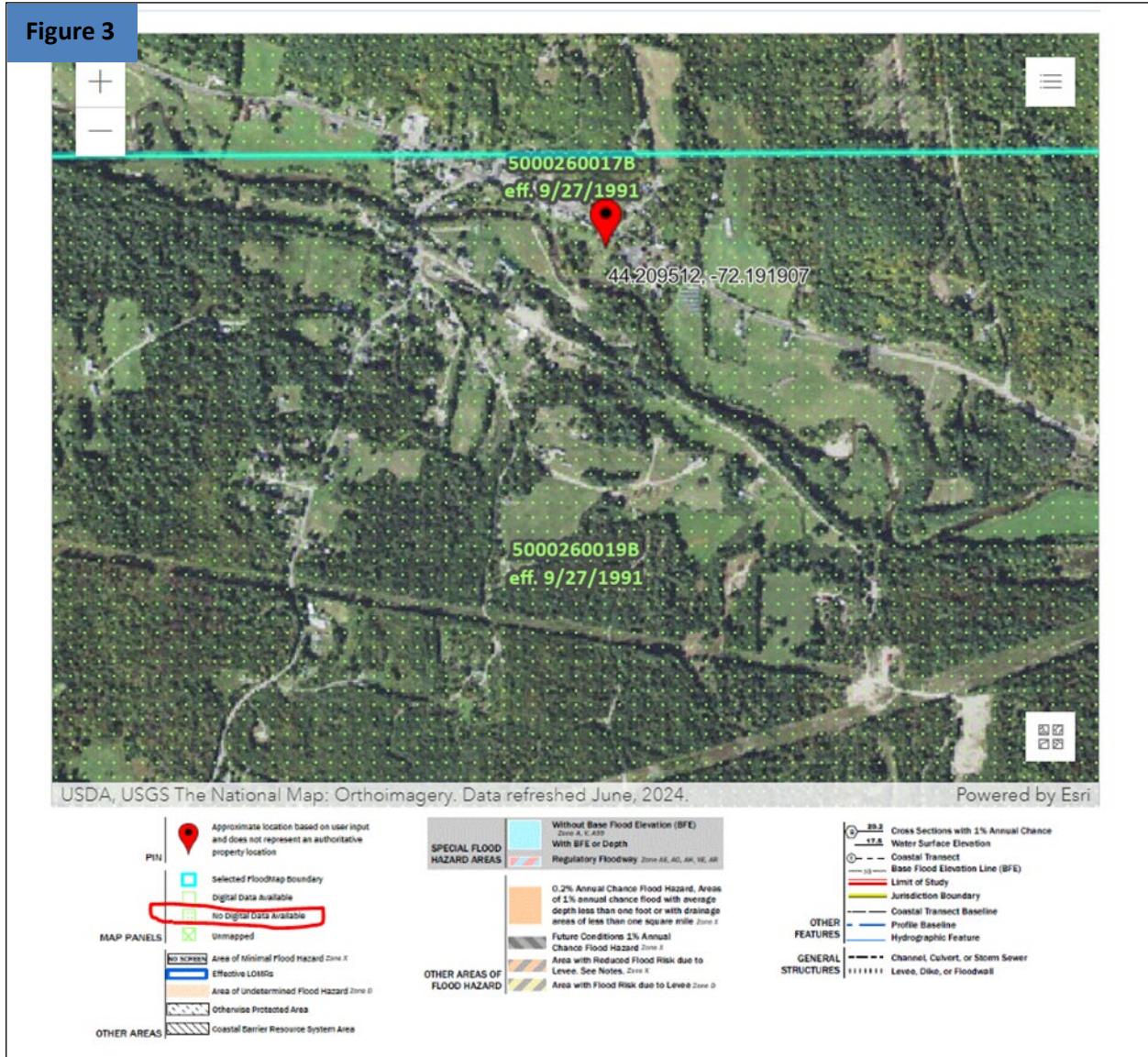


Figure 3. FEMA MSC result for Groton, VT. No digitized data is available for making a flood prone area determination for this town. A "Map Image" file must be used instead of a digital map.

Step 3 (if necessary): If digitized flood data are not available for the address, a “Map Image” file will need to be used. The FEMA MSC allows you to view the map in your web browser (“View/Print FIRM”) or download the map (“Download FIRM Panel”) (see **Figure 4**). Be aware that the flood map number and the date it became effective will also be provided for your search.

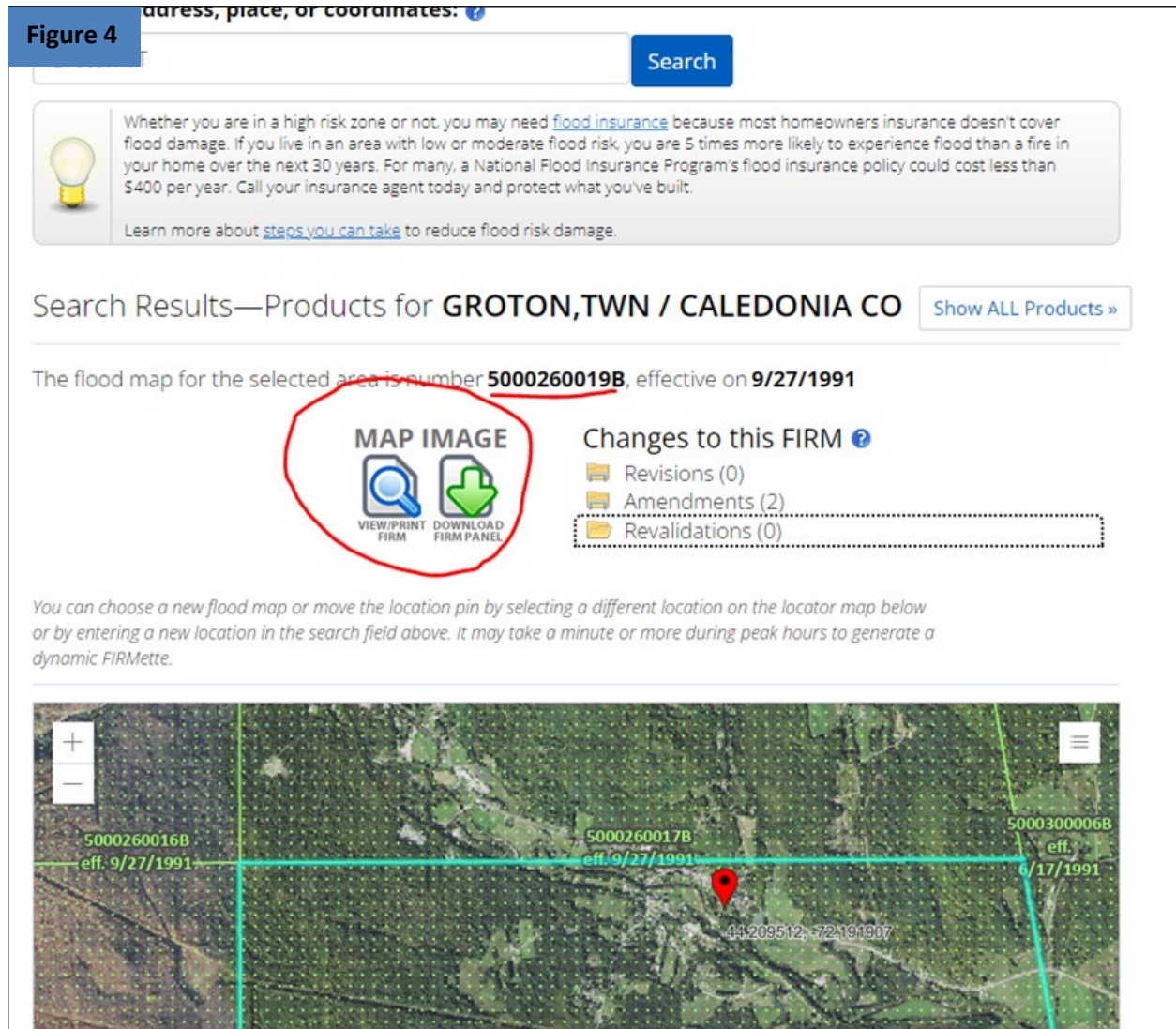


Figure 4. Instructions for obtaining a non-digitized flood map in FEMA MSC for Groton, VT. Please note that if choosing to “View/Print FIRM” you may get a warning message saying that there is “not enough memory to open this page”; if you get this message, choose the “Download FIRM Panel” option.

Step 4 (if necessary): Review the downloaded FIRM; special flood hazard areas will be shaded in gray (see **Figure 5**). Since you cannot input the exact address of the property into this map, you will need to approximate where the property is located. Please note that not all FEMA flood maps will include town road names.

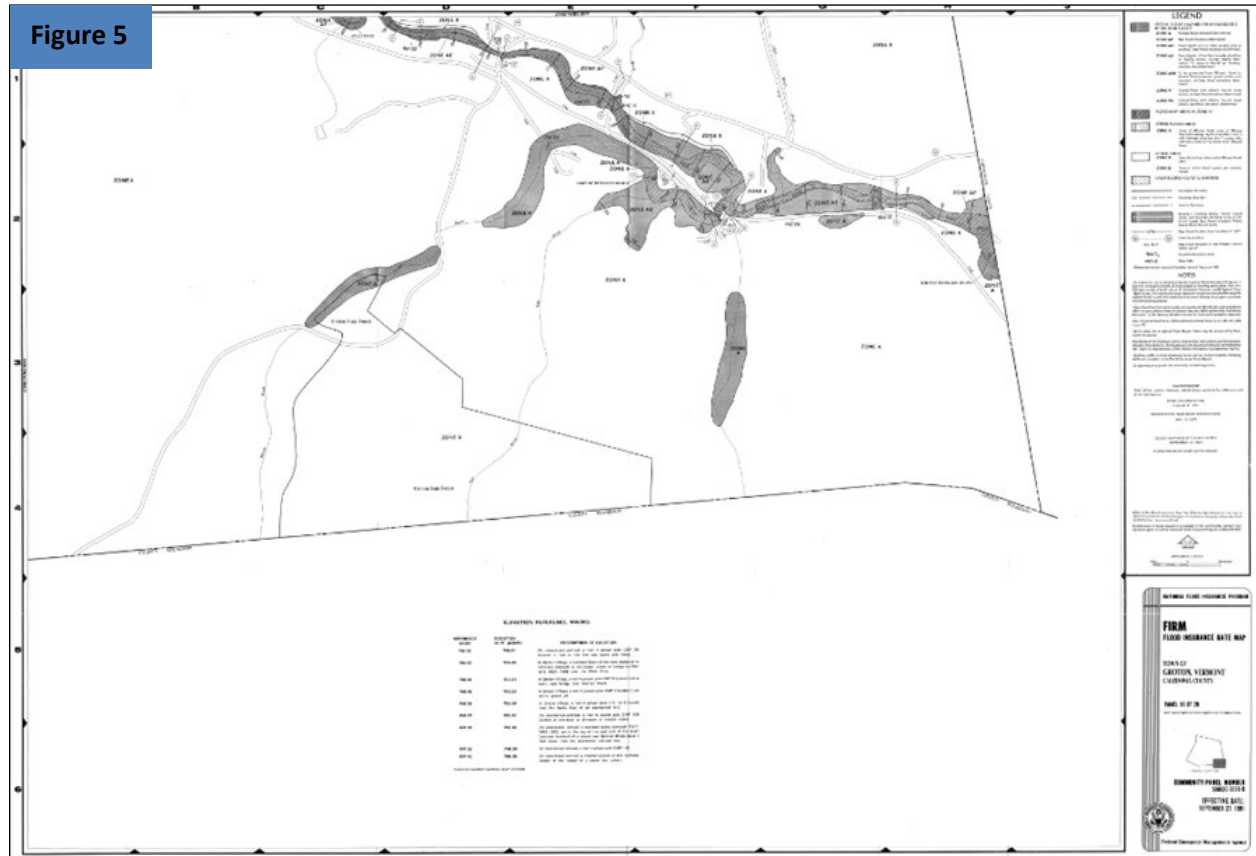


Figure 5. Downloaded FIRM for the town of Groton, VT; flood prone areas are shown in gray.

Option 2 – Using Vermont-Specific Mapping Resources

Note: As of 2024, digitized flood area maps are available for the following counties: Bennington, Chittenden, Rutland, Washington, Windham and Windsor; and the following communities: Bradford Village, Hardwick, Jay, Montgomery, Newbury, Stowe, and Wolcott. If you are searching for a property *outside* of these areas, do not use Vermont mapping resources; please use the FEMA MSC (refer to **Option 1** in this guide).

- **ANR Atlas:**
<https://anrmaps.vermont.gov/websites/anra5/>
- **Vermont Flood Ready Atlas:**
https://floodready.vermont.gov/assessment/vt_floodready_atlas#atlas

River corridor maps, which include areas of special flood hazards, can be viewed on the **ANR Atlas** or the **Vermont Flood Ready Atlas** (links to both resources above). If using ANR Atlas, all flood-related map layers will need to be manually enabled. However, the Vermont Flood Ready Atlas has the appropriate flood-related map layers enabled; it is recommended that tank installers use this resource to search for properties in flood prone areas. For additional instructions on using the Vermont Flood Ready Atlas beyond what is covered in the steps below, please refer to:

https://floodready.vermont.gov/assessment/vt_floodready_atlas

Step 1: Open the Vermont Flood Ready Atlas and select “Toggle Flood Data On” under “Flood Ready Tools” (see **Figure 6**).

Step 2: Enter the address of the property you are investigating under “find address” (see **Figure 6**). If multiple addresses are provided, it is recommended that the “911” address is used.

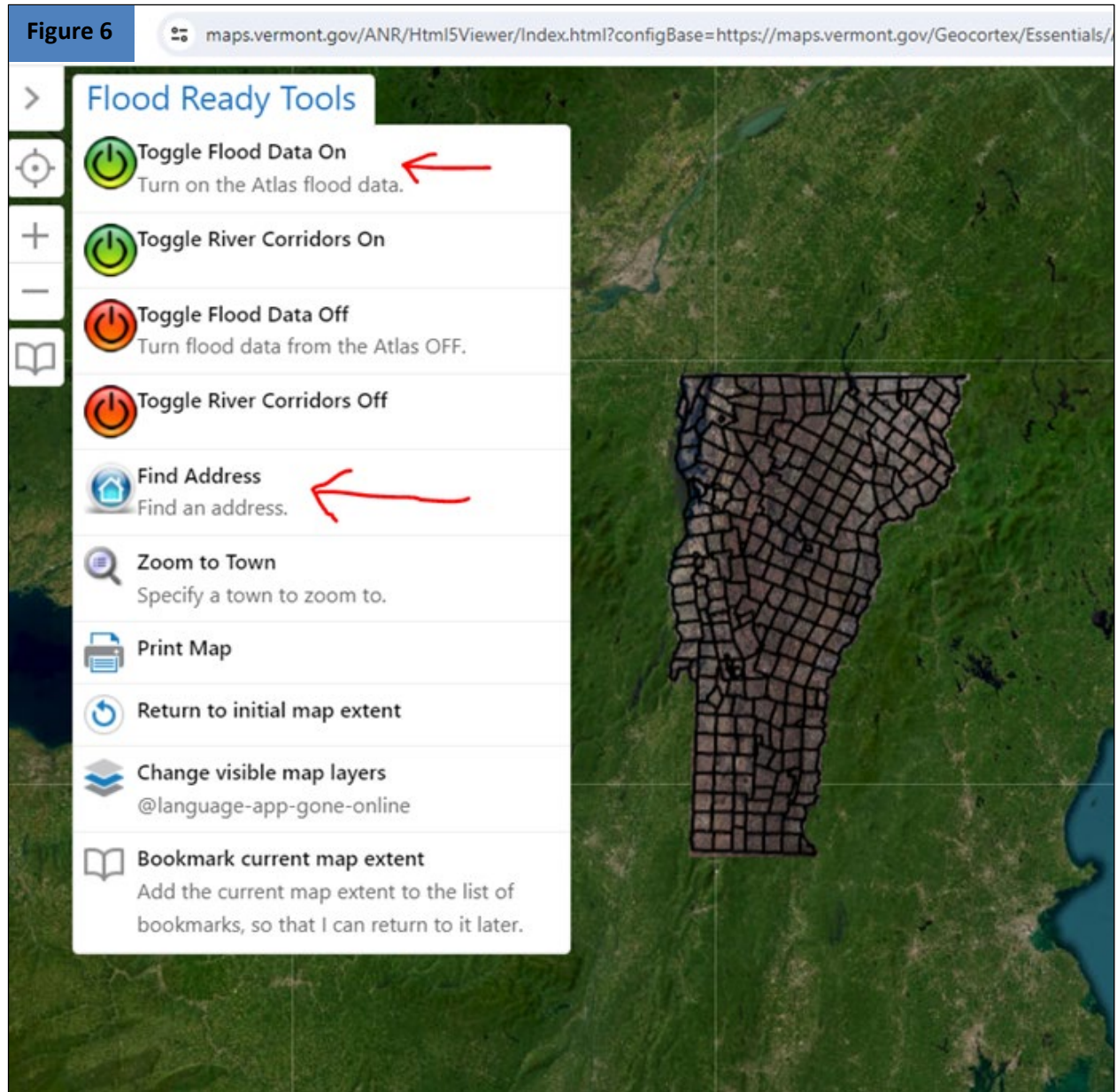


Figure 6. Enabling flood data and searching for an address using Vermont Flood Ready Atlas.

Step 3: Review results of the search; flood prone areas are shown in red and yellow (see **Figure 7**).

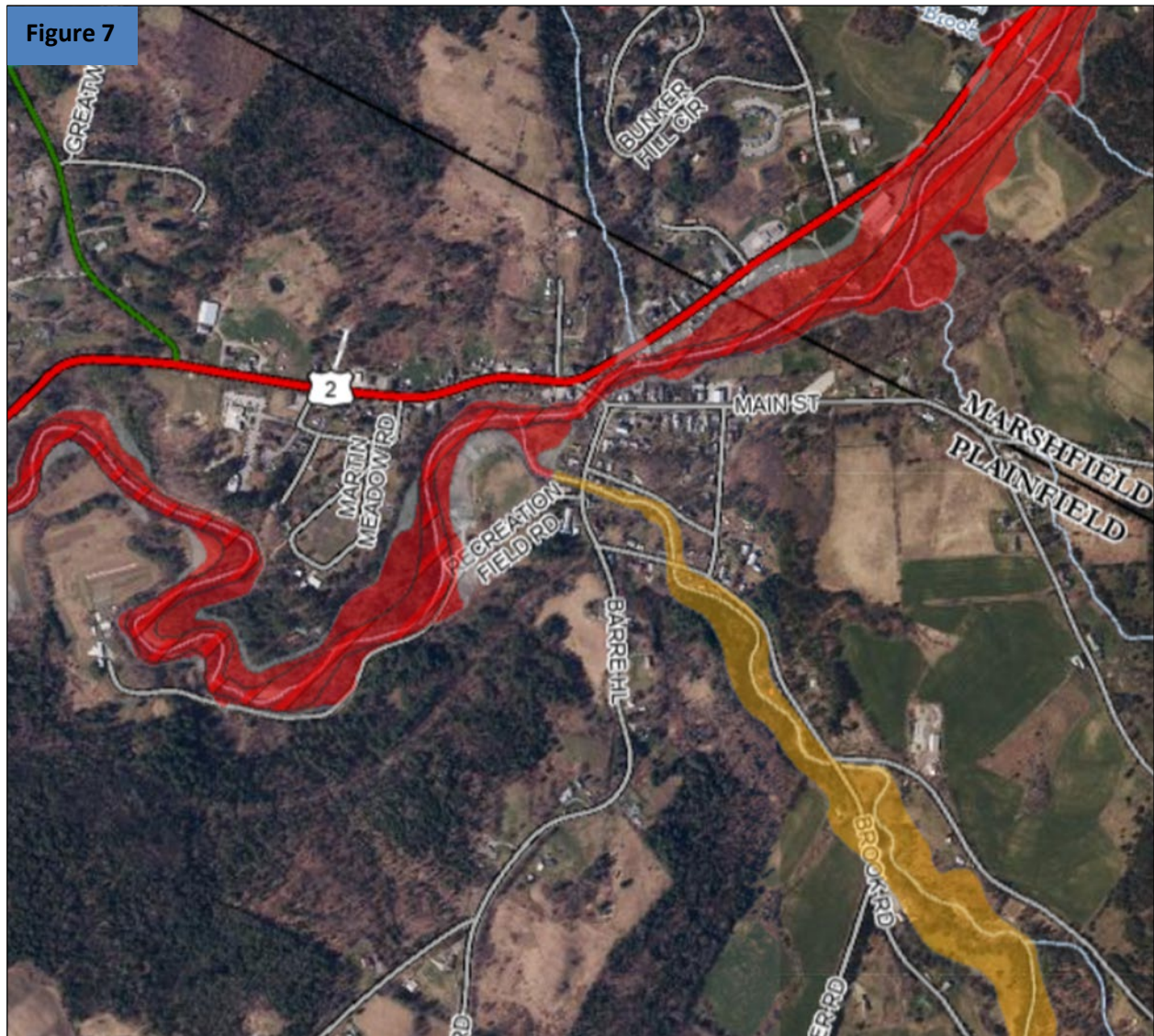


Figure 7. A map of Plainfield Village, VT, generated through Vermont Flood Ready Atlas; flood prone areas are shown in red and yellow. This map shows the same flood prone area as the FEMA MSC image (see **Figure 2**).

Additional Considerations When Making Flood Prone Area Determinations

What about properties near streams that do not fall in a special flood hazard area?

Properties which are located in close vicinity to smaller streams may also be at risk of flooding. Older FEMA maps may not depict accurate flood zones surrounding streams, and FEMA typically does not map flood inundation hazards on streams draining less than one square mile of watershed. If an AST is being installed in close proximity to a small stream where sufficient flood maps are not available, ANR recommends considering a 50-foot setback. If an AST cannot be located at least 50 feet beyond the stream channel, then ANR strongly recommends that the AST be anchored. Please note that this is a recommendation and not a requirement of the AST Rules.

What about properties just outside of a special flood hazard area?

Properties that are located just outside of special flood hazard areas will have a lower chance of flooding; these areas are known as moderate or minimal flood hazard areas and have an annual flooding probability of 0.2% (“500-year” flood plain). On FEMA maps, these areas will be labeled as zones “X” or “B”. While ASTs located in these areas are not required to be installed per the flood prone area standards, ANR recommends considering these standards when discussing the AST installation with the homeowner. In recent flood events, many moderate flood hazard areas sustained significant damage. If a home located within such a zone has been flooded within the past five years, ANR strongly recommends following the flood prone area installation requirements specified in the AST Rules.

What are the requirements for installing ASTs in flood prone areas?

The requirements for installing ASTs in flood prone areas are established in § 9-304 of the AST Rules. For more information, please refer to the [Requirements for Installing ASTs in Flood Areas Fact Sheet](#).

For more information regarding making flood prone area determinations, or if you have other questions about ASTs, please contact:

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802-828-1138

<https://dec.vermont.gov/waste-management/storage-tanks/aboveground-storage-tanks-asts>