

State of Vermont
Department of Environmental Conservation
Waste Management & Prevention Division
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Investigation and Remediation of Contaminated Properties Rule (IRule) § 35-107 Historical Fill Exemption Guidance Document

Historical Fill may present challenges to redevelopment and construction sites and can cause delays and significant cost increases to a project if not characterized properly. The IRule (effective date July 6, 2019) added the “Historical Fill Exemption” to address this type of fill and provide an alternative option for managing while remaining protective of human health and the environment.

As stated in §35-107 Historical Fill Exemption, ‘*The Secretary may make a determination in writing that Historical Fill is present at a site and may exempt the historical fill from the site investigation and corrective action requirements of this rule. No exemption shall apply without the prior, written approval by the Secretary.*’

Even if the definition of **Historical Fill** has been met, the Secretary is **not** required to grant a **Historical Fill** exemption if, in the opinion of the Secretary, such an exemption is not protective of human health and the environment. If the Secretary has made the determination that the material in question is **Historical Fill**, and if this material is disturbed or excavated, then all State and Federal rules regarding management of hazardous materials shall apply.

The following definition of **Historical Fill** is in the IRule and included below. If all of the conditions listed below in the definition are not met, then the material will not be considered **Historical Fill** and the exemption for **Historical Fill** will not be approved. **Historical Fill** means non-indigenous material deposited to raise the topographic elevation of the site, which, if contamination exists in such material, is not resultant from the land use or activities at the location of emplacement. Material is **Historical Fill** if, based on the weight of evidence the material is determined by the Secretary to meet the following criteria:

- (A) was emplaced before May 20, 1985 (the effective date of § 6615.V.S.A.);
- (B) is not primarily composed of, construction and demolition debris, reworked soils, dredge spoils, coal, coal ash, wood ash, or other solid waste material;
- (C) was contaminated with metals, hydrocarbons, or polycyclic aromatic hydrocarbons where such contamination occurred prior to emplacement and exists at concentrations consistent with the pervasive use and release of such materials prior to 1985;
- (D) does not contain oil or hazardous materials originating from operations or activities at the location of emplacement;
- (E) is not and does not contain a generated hazardous waste;
- (F) does not contain chemical production waste, manufacturing waste, or waste from processing of metal or mineral ores, residues, slag or tailings; and
- (G) does not contain material disposed in a municipal solid waste dump, burning dump, landfill, waste lagoon or other waste disposal location.





It is important to note that **Historical Fill** is fill material which was brought onto the property from another location prior to May 20, 1985 and is NOT PRIMARILY COMPOSED of debris (as specified in (B) above). It is expected that fill would include a certain amount of construction and demolition debris, reworked soils, dredge spoils, coal ash, wood ash, or other solid waste material; however, where these materials are the source of the hazardous materials and they comprise the majority of the filled area, that condition would not be considered **Historical Fill**.

Another criterion for defining Historical Fill is that the hazardous material must be consistent with the pervasive use and release of such materials. Pervasive use means that use was common or typical across Vermont such as motor vehicle use, atmospheric fallout from power plants, or ash and debris from wood or coal burning stoves/furnaces, and not specific to an individual parcel or locale.

The submittal of a Site Investigation Report that meets the requirements of §35-306, as applicable, is required in order to be considered for **Historical Fill** Exemption. Delineation beyond the property boundary is not required.

Property History

A thorough understanding of property land use history is critical to rule out on-site sources of contamination and to be able to support a **Historical Fill** determination. Sufficient evidence must be provided that the area was filled prior to 1985; that the fill contained the hazardous materials at the time of placement; that the fill does not contain a chemical production or manufacturing waste, and that the site is not a municipal solid waste dump, burning dump, landfill, waste lagoon or other waste disposal location. Historical commercial and industrialized areas require a higher level of effort to rule out on-property sources of contamination.

Aerial photos and topographic maps should be reviewed to document changes in topography which would indicate placement of fill. These maps are available on various websites and should be included in the SI report. Additional information could be available in reports or permits for the property that the State or the municipality maintains.

Site history requirements of a Phase I Environmental Site Assessment (including any history of waste disposal) are applicable and relevant to a **Historical Fill** determination and should be included in the SI report. These items are identified in the IRule in §35-303 and §35-306(b) 2,3,4,5,7, and 8.

Site Investigation

If a release of hazardous materials has been identified and a **Historical Fill** exemption is desired, the areas believed to contain **Historical Fill** must be field verified using a sufficient number of test pits, soil borings, and/or trenches, to adequately identify and locate the **Historical Fill**. A minimum number of borings/test pits recommended for a typical urban location (1/4 acre) is 4-6, with more required for larger or more complicated areas. An electrical conductivity (EC) probe driven with direct push technology can be effective in distinguishing between the historic fill and native material and assist in determining in the field where to collect soils samples.

The areas asserted to be **Historical Fill** must be identified, characterized analytically and visually in order to provide enough documentation to make a **Historical Fill** exemption. Again, the site history plays an important role in determining the location, number and chemical analyses of the samples. A site with a long history of industrial use would require a higher level of investigation to distinguish between releases from historical operations vs **Historical Fill** emplacement. At a minimum, the Priority Pollutant 13 metals (or RCRA 8), Polycyclic Aromatic Hydrocarbon (PAH) analyses and total petroleum hydrocarbon (TPH) analyses should be conducted on a representative number of soil samples. Depending on visual, olfactory, and field screening (ie. Flame ionization device (FID)/



Photoionization Detector (PID)) readings, volatile organic compound (VOC) sampling may be warranted. Refer to the 'Sampling and Analysis Guidance Document' for appropriate analytical methods. If analytical results confirm that the historic fill does not exceed the resident soil standards, then no further investigation of the fill is required. For TPH, EPA Method 8015 GRO/DRO should be used at a minimum and results compared to EPA Regional Screening Levels.

A representative number of soil samples must be collected including at least one from each discrete horizon/fill zone identified. The boundary between **Historical Fill** zones and native soil may be obvious based upon visual observations, but in some cases the distinction will not be clear and may require chemical analyses to assist in this determination. This is extremely important in areas where the **Historical Fill** may be within the top 0-18" of the site.

Compound Specific Discussion

Historical Fill can contain hazardous materials such as PAHs, heavy metals (including lead), and/or hydrocarbons, and may contain these contaminants at concentrations that exceed Vermont Soil Standards. It is important that sufficient due diligence is conducted to differentiate the source of the contaminant release to demonstrate that the fill meets the definition of **Historical Fill**.

PAHs

PAHs found above the VT Urban Background Standard (0.58 mg/kg) warrant closer evaluation of the potential sources, distribution and potential type of PAH (petrogenic vs pyrogenic). For

example: PAHs indicative of a petrogenic (petroleum-gasoline, heating oil, asphalt and coal) origin include naphthalene, 2-methylnaphthalene, phenanthrene, and acenaphthene. PAHs indicative of a pyrogenic (hydrocarbons produced by fire-ash) origin include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene and indeno (1,2,3-cd)pyrene. Coal-tar based products such as roofing and pavement sealers may contain pyrogenic PAHs.

Heavy Metals

Arsenic, beryllium, cadmium, copper, lead, nickel, and zinc may be present in soil as natural background and/or in **Historical Fill**. Arsenic concentrations may be naturally occurring in the soil, or by anthropogenic causes such as the application of pesticides or from deposition of coal ash. Beryllium, cadmium, copper, nickel, and zinc are not likely to trigger exceedances to soil standards at levels typically found in fill.

Lead warrants special consideration as it is naturally occurring in soil and can be attributable to a number of different sources. Lead was used as a pigment in paints where it was widely applied to buildings, bridges, and water towers. Lead was also a widely used additive in gasoline until the mid-1980s and used in many manufacturing applications including plumbing and building materials, inks, solder, and in pesticides/herbicides. A thorough site history indicating no sources of lead at the property is a critical component to determine **Historical Fill**. Areas of consistently high concentrations require a case-specific evaluation and justification including microscopy (to identify the presence of lead from paint chips) and/or other forensic testing. Of particular concern are situations where the elevated lead concentrations may have originated from smelting/foundry operations, pesticide use/manufacturing, the manufacturing or disposal of lead-acid batteries, or concentrated pockets of lead paint wastes (all of which would NOT be considered consistent with **Historical Fill**).



Volatile Organic Compounds

Small quantities released in a manner associated with pervasive use could be present but would be expected to be low if released prior to May 20, 1985. VOCs detected at elevated concentrations are likely due to a release/condition that would NOT meet the definition of **Historical Fill**. Elevated VOC concentrations in soil would need very strong evidence to demonstrate that a **Historical Fill** exemption could be applied and that a release is not present.

Total Petroleum Hydrocarbons (TPH)

Under the updated Irule (effective date July 6, 2019) TPH is not regulated. However, the TPH value can be used as an indicator of a historical release. Elevated concentrations of TPH would need very strong evidence to demonstrate that a **Historical Fill** exemption could be applied and that a more recent petroleum release is not present.

Coal Ash

Coal ash can be found in filled areas, particularly in older urban centers and near historic coal burning facilities. Published reports on coal ash composition indicate that arsenic, barium and chromium are the metals in coal ash most likely to exceed standards; with arsenic being the highest. Residual PAHs may also be present.

PCBs

Polychlorinated biphenyls (PCBs) were commonly used in hundreds of industrial and commercial products and its presence would suggest a product spill. Concentrations of PCBs above VSS (resident soil 0.114 mg/kg and non-resident soil 0.68 mg/kg) would indicate a release condition and would not be considered **Historical Fill**. PCBs are a federally regulated compound and any concentration over 1 ppm will require compliance with TSCA.

Historical Fill Management Options:

If the **Historical Fill** is located greater than 18" below grade surface in the project area and contains hazardous materials above Vermont Soil Standards, then the fill material will be required to be managed in accordance with IRule §35-804 Soil Management Plans. If the historical fill is to remain at depth (>18"), then no additional management is required.

If the **Historical Fill** is located in surface soils (0-18") below ground surface in the project area and contains hazardous materials above Vermont Soil Standards, the fill material to be removed will be required to be managed in accordance with Irule §35-804 Soil Management Plans. If the Historical Fill is planned to remain onsite at the surface, then an engineering and/or an institutional control plan will be required in accordance with Irule §35-901 to address direct contact threat.

Definitions:

"Reworked soil" means soil material that has no identifiable natural soil profile.

"Construction and demolition debris" means waste derived from the construction or demolition of buildings, roadways or structures, including clean wood, treated or painted wood, plaster sheetrock, roofing paper and shingles, insulation, glass, stone, soil, flooring materials, brick, masonry, mortar, incidental metal, furniture and mattresses, and architectural waste.

"Dredge Spoils" means unconsolidated, randomly mixed sediments composed of rock, soil, and/or shell materials extracted and deposited during dredging and dumping activities.



“Coal ash” or “wood ash” means ash that is derived from the combustion or gasification of coal or natural wood.

“Fill material” is generally defined as soil, sediments, rock and/or stone obtained off-site that is used to fill holes or depressions or to build up the site elevation of a property (such as along a water body or wetland) but may contain other material.

“Off-site” means originating outside of the property but could be mixed with materials deposited within the property.

“Solid waste material” means any discarded garbage, refuse, septage, sludge from a waste treatment plant, water supply plant, or pollution control facility and other discarded material including solid, liquid, semi-solid, or contained gaseous materials resulting from industrial, commercial, mining, or agricultural operations and from community activities but does not include animal manure and absorbent bedding used for soil enrichment; high carbon bulking agents used in composting; or solid or dissolved materials in industrial discharges which are point sources subject to permits under the Water Pollution Control Act, 10 V.S.A. chapter 47.



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Investigation and Remediation of Contaminated Properties Rule
§ 35-107 Historical Fill Exemption Request Form

Site Name: _____ SMS Site Number: _____

- A Site Investigation Report that meets the requirements of §35-303, as applicable, is included with this request and includes sufficient documentation to show that Criteria (A) –(G) listed in Investigation and Remediation of Contaminated Properties Rule §35-201 Definition of Historical Fill supports this request for the Historical Fill Exemption.
The Historical Fill is located greater than 18” below grade surface in the project area and contains hazardous materials above Vermont Soil Standards.
Historical Fill is planned to be removed and will be managed in accordance with IRule §35-804. Soil Management Plans.
Note: If historical fill is to remain at depth (>18”), then no additional management is required.

-or-

- The Historical Fill is located in surface soils (0-18”) below ground surface in the project area and contains hazardous materials above Vermont Soil Standards
Historical Fill is planned to be removed and will be managed in accordance with IRule §35-804. Soil Management Plans.
Historical Fill is planned to remain onsite at the surface. Engineering and/or an institutional control plan will be prepared in accordance with IRule §35-901 to address direct contact threat.

In the context of this Historical Fill determination, and as the party responsible for compliance with the “Investigation and Remediation of Contaminated Properties Rule (IRule), July 6, 2019,” and applicable statutes, I hereby certify that the representations made on this form are to the best of my knowledge true and correct.

Name of Owner/Owner Representative (printed) Company Title

Signature of Owner/Owner Representative Date

