PETITION FOR PRELIMINARY ASSESSMENT
under the CERCLA § 105(d), 42 U.S.C. § 9605(d),

and

NOTICE OF INTENT TO FILE A CITIZEN SUIT
under the Clean Water Act, 33 U.S.C. § 1365,
and under the CERCLA, 42 U.S. Code § 9659.

Regarding:
THE SOUTH BAY
IN BOSTON, MASSACHUSETTS.

February 13 2026,

To: the U.S. Environmental Protection Agency, U.S. Attorney General, the U.S. Army Corps, and the Defendants (the City of Boston, the Commonwealth of Massachusetts, Boston University Medical School & Boston Medical Center, Harvard University Medical School, Proctor-Gamble-Gillette, et al.).

This is a Petition under the CERCLA for a mandatory preliminary assessment for placement of the South Bay on the National Priorities List. This is also a sixty-day notice (extended to one year) for a citizen enforcement action under the CERCLA and the Clean Water Act's Citizen Suit provisions.

I was severely injured at the South Bay between Sept. 2023 and Jan. 2026, due to the Defendants violations of the federal environmental laws and their maintenance of ongoing hazards to the environment and human health. This Petition/Notice attempts to capture the seemingly endless violations and pollution at this Site including industrial solvents, PCBs, PAHs, lead, arsenic, radionuclides, bacteria, medical waste, eutrophication and toxic gases, landfill leachate, infectious diseases and pathogens, geologic hazards, and the incomplete abandonment of the nation's most notorious 200yr+ old cesspool.

Unless a complete pre-assessment is completed within one year, and action is taken to list the site as an NPL Site and start the remediation process, then I intend to file a Citizen Suit in the United States District Court for the District of Massachusetts under the CERCLA and the Clean Water Act.

Respectfully,
/s/ Ashley M. Gjovik
San Jose, California

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REFERENCES

WEBSITE RESOURCES:
PRIMARY: SOUTH BAY, (https://www.ashleygjovik.com/southbay.html)

- The Hidden Hydrology of Boston & South End
- Site Geotechnical Review
- Geology of Boston Basin
- Biota: Fauna, Flora, & Microbial
- Boston History (Pre 18th Century)
- Boston History (19th-21st Century)
- Nuclear & Medical Hazards
- Industrial History, Filling, & Contamination
- The Cesspool & Sewage Hazards
- Sewer Infrastructure & CSO System
- South Bay Landfill & Incinerator

FLICKER PHOTOS

- Roxbury Canal & CSO070
- South Bay Biota

Des Barres, Joseph F. W. (Joseph Frederick Wallet). "A chart of the harbour of Boston." Map. London: J.F.W. Des Barres, 1781. *Norman B. Leventhal Map & Education Center*, https://collections.leventhalmap.org/search/commonwealth:3f462x472 (accessed February 11, 2026).

I. INTRODUCTION

This is a formal Petition for a CERCLA Site Assessment and a Sixty-Day Notice for a Citizen Suit under CERCLA & the Clean Water Act. This Petition nominates the "South Bay" in Boston, MA for the CERCLA National Priorities List and requests formal remedial action. For centuries, residents and federal regulators have described this Site as extremely polluted and dangerous to human health and the environment, while the hazards at the Site have concurrently been maintained, neglected, and concealed by the local and state government. Under information and belief this is the first Petition under CERCLA or Citizen Suit Notice for any portion of the Site, and there have never been any NPL sites in Boston.

The Defendants, including the City of Boston and Commonwealth of Massachusetts, "filled" hundreds of acres of the waters of the United States (including the ocean, tide flats, tide streams, and salt marshes). The filling and draining of these wetlands started and continued during a complicated period of time where the British monarchy called for land reclamation to support colonial settlement, followed by over a century of federal indifference towards wetlands. American wetlands received little protection until advances in scientific knowledge revealed the critical importance of marine wetlands, which led to the establishment of Bridges and Harbors Act of 1899 and Section 404 of the Clean Water Act in the 1970s.

This case is made less complicated because the Defendants filled a marine bay (containing ocean tidal waters, ebb, & flow), with literal garbage, sewage, construction debris, coal/ash, and hazardous substances. The Commonwealth also established a "historic fill" legal exemption and applied it at least dozens of times at the Site. By enacting this statute, the Commonwealth declared immunity for state action and attempted to nullify modern federal environmental legal requirements regarding these hazards. The City and Commonwealth have also removed records and registry entries for the municipal cesspool/canal, incinerator, and landfills at the Site, which maintains these hazards and prevents proper remediation.

I was severely injured at this Site from Sept. 2023 though Jan. 2026. I suffered symptoms of exposure to hazardous substances, heavy metals, radionuclides, anaerobic conditions, and toxic gases. I also found unusual organisms in my basement apartment, and in/on my body, barely explainable by severe eutrophication and active physical connection to marine ecosystems. Boston's Zoning Code forbids basement apartments around the Site, likely for this reason, yet Boston also granted a zoning variance for my building (despite a complete lack of modern building envelope or drainage, illegally insufficient light and ventilation, active water intrusion, and frequent sewage backups). Upon reporting the ventilation, sewage, and microbial issues to the City in July 2025, the City refused to document those violations.

In Oct. 2025, the City finally cited the ventilation violation but are still refusing to enforce the violation, hosting "appeals" where the property owners and their representatives were allowed to argue to me & the City, that they are not legally required to provide oxygen to tenants due to a 1991 zoning variance and Boston's non-conforming use polices. This appeal included the City allowing a non-lawyer, non-property owner representative for Defendants to be someone the City knows I filed a police report against due to breaking/entering & threatened assault, & who I demanded no contact with. The City knew I had been injured and disabled, was in imminent danger, and the City documented unsafe living conditions themselves. Then the City cancelled follow up inspections, refuses to provide record of communication with these parties, and abandoned me to an 1864 unfinished Victorian basement with active hydrogen sulfide exposure, legally insufficient oxygen, and 200+ years of extremophile microbial activity.

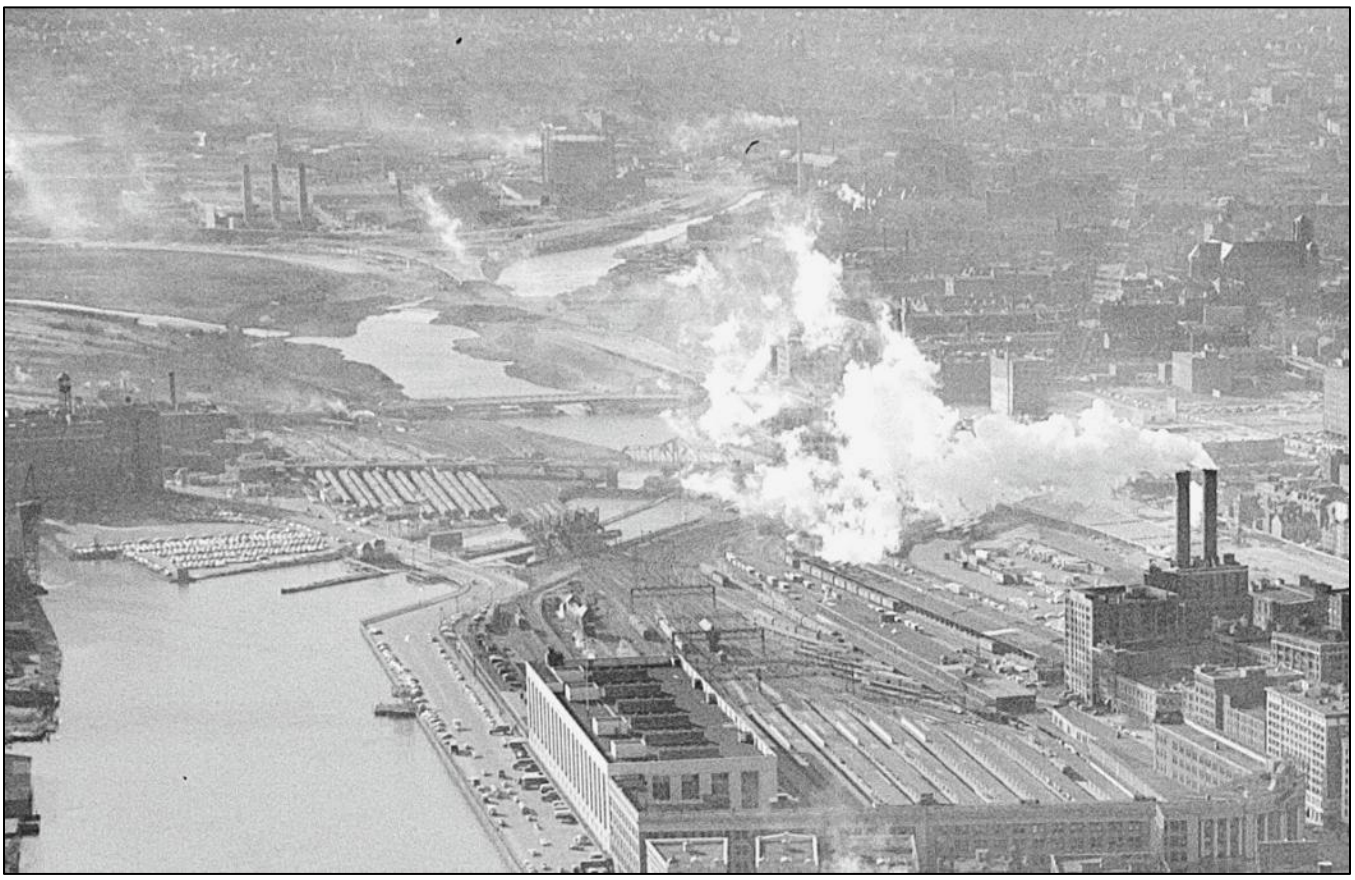
As a preliminary matter I also note that I did not have time for any of this. I've been litigating against an extremely well-resourced corporation for five years, including complex litigation and adjudication, *pro se* out of necessity due to the corporation's infamous scorched-earth litigation and because the only way I will ever get my life back, is to be remedied for the harm this corporation caused me by unlawfully terminating my employment in 2021 in retaliation for whistleblower disclosures and severely injuring me with unlawful emissions/dumping from an unpermitted chip fab next to my apartment in 2020. Multiple government agencies have taken formal enforcement action against the corporation because of this. All of my time has to be dedicated to that litigation in order to keep up with their army of law firms and lawyers. I have wasted months of time on having to respond to the violations here within in addition to suffering injuries from them, when I was supposed to be focusing on suing Apple Computer and getting my life back.

Further, I moved to Boston because of a job offer form a university in Boston and found myself suffering new, severe, novel, and complex injuries, which not only stole my time and resources that should have been dedicated to the other matter, but caused secondary harm by creating new legal issues related to causation and liability for ongoing injuries; contribution issues regarding damages; and extreme complexity and urgent disclosures impacting discovery and affirmative defenses, requiring me to have to sit down and map out highly technical environmental issues and centuries of egregious misconduct by a Boston, the Commonwealth, several universities, and others as it became a requirement for the original litigation and to disclose in my pending Chapter 7 Bankruptcy (where disclosure of potential legal claims is required and to not do so can be charged as criminal fraud). To that point, I didn't want to have to file this and upon falling down this rabbit hole, I want to leave and never look back – but I could not, because of my other ongoing legal matters, so here we are.

This Site contains extreme, documented hazards. It has dozens of individual, small clean-up sites, but no area-wide oversight or remediation. The Site includes hazards regulated by multiple government agencies but there is no cross-agency oversight. The issues are complex, long-running but also urgent, deeply troubling and reflecting larger policy issues, and require some sort of "reveal" to even raise here due to decades of concealment and information suppression.

It's clear to me that these issues have been systemically avoided for a long time. This Site is exactly the kind of site for which CERCLA petitions and Citizen Suits were designed, The Site is so complex, unpleasant, and politically complicated that all government bodies may be inclined to avoid and ignore it, regardless of the ongoing hazard to public safety. This is why there is a Citizen forcing function and that is what this Petition/Notice aims to accomplish. It's time to clean up the South Bay.

Finally, I also note that this notice is certainly incomplete, not completely finalized, and I am only filing it now because I cannot spend any more time working on Boston matters when I need to focus on my personal issues like my Apple and Santa Clara lawsuits and finding a place to live. I have urgent deadlines I'm missing, I have to disclose the Boston developments in my pending bankruptcy case or I'm committing a crime, and realistically writing this notice and making these disclosures with fully complete information would take one person multiple years to complete. Accordingly, if I do pursue litigation on this matter in one year, I am likely to send a revised Sixty-Day notice once I am able to complete additional research.



(Fort Point Channel and South Bay, from the Inner Harbor; 1955)

II. THE "SOUTH BAY" SITE

The proposed "South Bay" site (the "Site") includes the South Bay, Fort Point Channel; the Roxbury Creek/Canal; the Dorchester Brook/Canal; the western Fort Point, Channelside, southeastern South End, and southeastern South Cove neighborhoods; the prior marshes and tide flats along the areas; the industrial and wharf areas in Roxbury (to the south of South Bay, to the west of Dorchester Bay, and along Eustis St/Norfolk Ave), in South Boston (a.k.a. northern Dorchester, the Dorchester "Neck", alongside South Bay and Dorchester Ave, west of Dorchester Bay), and downtown Boston (around Albany St./Dorchester Ave to the waterfront). Most of the Site never belonged to the Defendants and, instead is something they stole from the sea. The Site also includes the Defendant's artificial infrastructure across the Site including: tunnels, conduits, pipes, piles, Victorian brick sewer systems, and British fortifications. These are often located underneath the land surface and create endless vectors for exposure and injuries.

The Petition/Notice was triggered by the Petitioner/Plaintiff's injuries at the Site when she lived at 18 Worcester Square: a 1864 row house in a block of row houses built around the same time, directly adjacent to the old Boston City Hospital (also built around that time), which then bordered the old Roxbury Canal, South Bay, and an arm of the sea stretching up onto land around Albany St & Northampton St. since the 17th Century, known as the Roxbury Creek and originally held back by Lamb's Dam (which became a Patriot fortification in the Battle of Boston).

Worcester Square was a planned development in the 1830-1850s, was originally located in the Town of Roxbury but then annexed by Town of Boston, featured some of the first Victorian sewer systems, and released its sewage directly into the sea via the Roxbury Canal. Worcester Square was marshland and tidal flats, built on a wedge of clay, and was part of the original Boston/Roxbury "Neck" (an awkward isthmus hesitantly connecting the Shawmut Peninsula to the mainland during low tide).

The Site is a bay with marine marshland, salt and mud flats, tidelands, and a wetlands ecosystem (i.e., peat; reducing conditions; naturally producing hydrogen sulfide, methane, and ammonia). South Bay was a critical part of the original Boston Harbor, was a port of international importance, and was foundational to the founding of this nation. The Site includes historic wharves and piers; iron foundries; sugar manufacturing; chemical, gas, and manufacturing plants; coal and gas storage, refineries, and combustion; and schools and universities.

The Site also includes military fortifications, hospitals, biological and radionuclide research facilities, waste dumps, and what appears to be the nation's largest and oldest (200 years+) open-air cesspool. The nation's first infectious disease research laboratory was located at the Site. Human and animal medical experiments have occurred at the Site for ~150 years, and hundreds of radioactive dogs were burned and their waste emitted across the neighborhood, among many other issues. The Site includes active biotechnology and infectious disease research facilities including a Level 4 biolab. The facilities at the Site have reported decades of unusual microbial activity and unexplained bacterial infections.

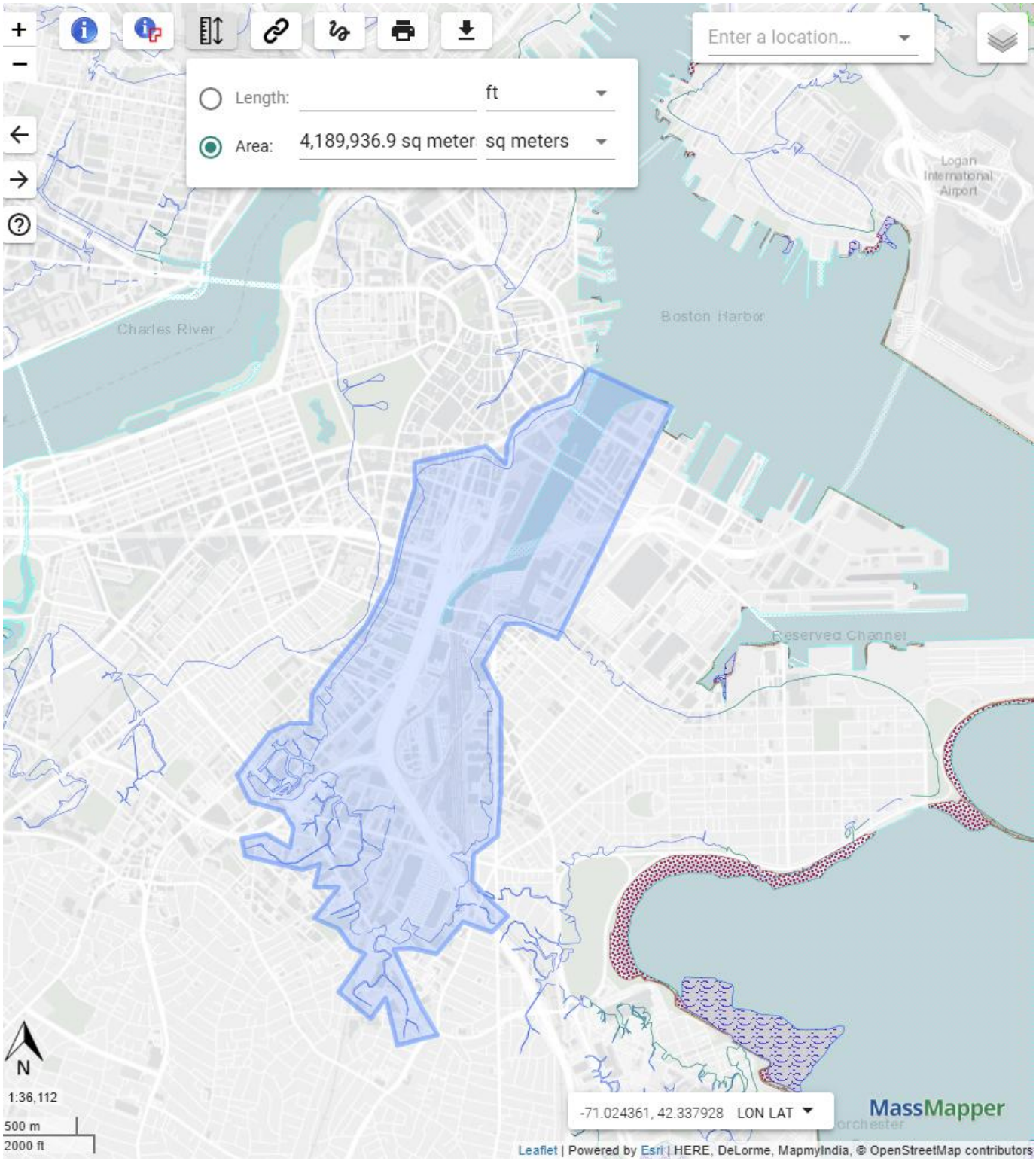
Within the Site, the Fort Point Channel has been designated the most polluted harbor/channel in the United States. The Roxbury Canal was designated an open cesspool and "*menace*" to public health for over a hundred years. The municipal incinerator operated for 25+ years without air emission technology, covered the area in toxic ash, and created "black rain" until it was shut down by order of the EPA and the Courts. Extensive radioisotope usage occurred at the Site with disposal through the air (with no abatement controls or monitoring) and the sewers (with sewer line removal required due to radioactive buildup).

This Site is extraordinarily complex across its geology, geography, tectonic and political histories, hydrology, infrastructure, governance, and industrial activity. The Site also does not have readily available public technical information or general consensus regarding most of its characteristics. Accordingly, once I realized there was far more complexity then originally indicated, I undertook extensive original research which continued out of necessity over a period of two months to build an initial conceptual site model based off of original sources (maps, letters, 18th – 19th century books, aerial photos, etc.), laboratory data (tests for remediation sites, rock and clay analysis, etc.), and first principles.

What I found in my analysis of this data is detailed in this Petition/Notice and may include the first scientific "discovery" paper regarding a geological matter of international importance that unfortunately has to be included in this environmental filing rather than an academic paper or geotechnical report. The evidence identified, diagnostic signature, and lack of any other explanation, leads to a confident diagnosis that the Site and the surrounding areas of the Towns of Boston, Cambridge, Roxbury, Chelsea, and Revere, and much of the Boston Harbor, appear to be ground zero for a massive bolide impact swarm at the end of last major glaciation. It appears those impacts (occurring ~13,000-11,000 years ago) created the unusual and unpredictable geology at the Site, left the land deeply unstable., and created unique hazards and ecosystems. This would be the first impact site validating the Younger Dryas Impact Hypothesis.

FIGURE 1: THE "SOUTH BAY" SITE

Map of the Site on MassMapper with the Ch. 91 Historic High Water Tidelands boundary as a dark blue line and the suggested area of the Site highlighted in light blue.



Rough mapping of total area of Site within the MA Tidelines Jurisdiction Ch. 91 Historic and Contemporary High Water marks: 4.9M sq meters (1,035 acres), MassMapper.

ORIGINAL BOSTON SHORELINE OVERLAY

Chesbrough, Ellis Sylvester. "Map of Boston Harbor : showing commissioners' lines, wharves &c." Map. Boston: Tappan & Bradford's Lith., [1852]. *Norman B. Leventhal Map & Education Center*, https://collections.leventhalmap.org/search/commonwealth:js956m10r (accessed February 11, 2026).

I reviewed dozens of articles and hundreds of soil boring reports for the Site. The deeper borings frequently reported otherwise unexplained breccia, pockets of igneous ash and glass, enrichment with minerals typical of bolide impacts, white kaolinization and decomposition in close proximity to "erratic" boulders and gravel while also located directly below ejecta "drumlins." The boulders match the appearance and mineral signatures of chondrite (stony) meteorites and the presentation fits perfectly with modern consensus regarding impact science for ice impacts.

The presentation matches modern understandings of impact sites and the substantial advancement in Younger Dryas Impact research over the last ~five years. Most critically this data and hypothesis actually answer most of the otherwise unexplained and perplexing features of Boston's geology whereas the prior theories still surrendered to Boston's geology being hopelessly complex and unknowable. Boston was obliterated by a swarm of stony bolides around the Younger Dryas period and is current presentation is what you would expect considering that extreme physical assault on its geology and ecosystem.

These boring reports were submitted to the Commonwealth of Massachusetts (MassDEP) who has apparently helped to conceal this pattern and insight for decades. These findings were never properly escalated by contractors during site assessments and have never been mentioned in federal environmental assessment reports. Assumably some folks in Boston already know about this, but are concealing these hazards for a number of reasons including concern about property values, stigma, and academic citation metrics. However, this finding fundamentally alters the nature of the hazards and any remediation plan for this Site. Further, due to the unique hazards of an impact/crater Site, the bolide remnants and resulting debris are also another "release" under CERCLA and this Petition includes a demand for EPA to include it in its CERCLA assessment.

In order to request Site-wide action under CERCLA or Clean Water Act, I had to attempt to delineate the Site. This required attempting the first large-scale environmental hazard analysis for the Town of Boston. Based on the results, the Site will likely be one of the largest and most complex urban sites considered for the NPL. Even then, I attempted to constrain my allegations to specific areas/features directly tied to my own injuries, even if the identified violations and impact extend further, out of concern for precedent, standing, and feasibility. This case would only be a first step in a much larger project of remediation, mitigation, and transition for the Town of Boston.

Because it appears that Boston has no "natural ecology" in any typical sense, I propose the goal should be to at least stabilize the Site, stop further destabilization, and reduce its obstruction, interference with, and harm to the natural ecological processes and marine system surrounding it. Further, if my hypothesis about the Site being an unstable impact crater is correct, the proper remediation likely includes transitioning the population density to the more stable suburban areas of Suffolk County rather than around Shawmut Peninsula and South Bay.[1] While a dramatic remedy, it may be necessary and would concurrently enable a more complete and earnest restoration of the South Bay and surrounding wetlands, and the consequential stabilization of the natural Gulf of Maine tides and overtides across the Boston Harbor and Gulf of Maine.

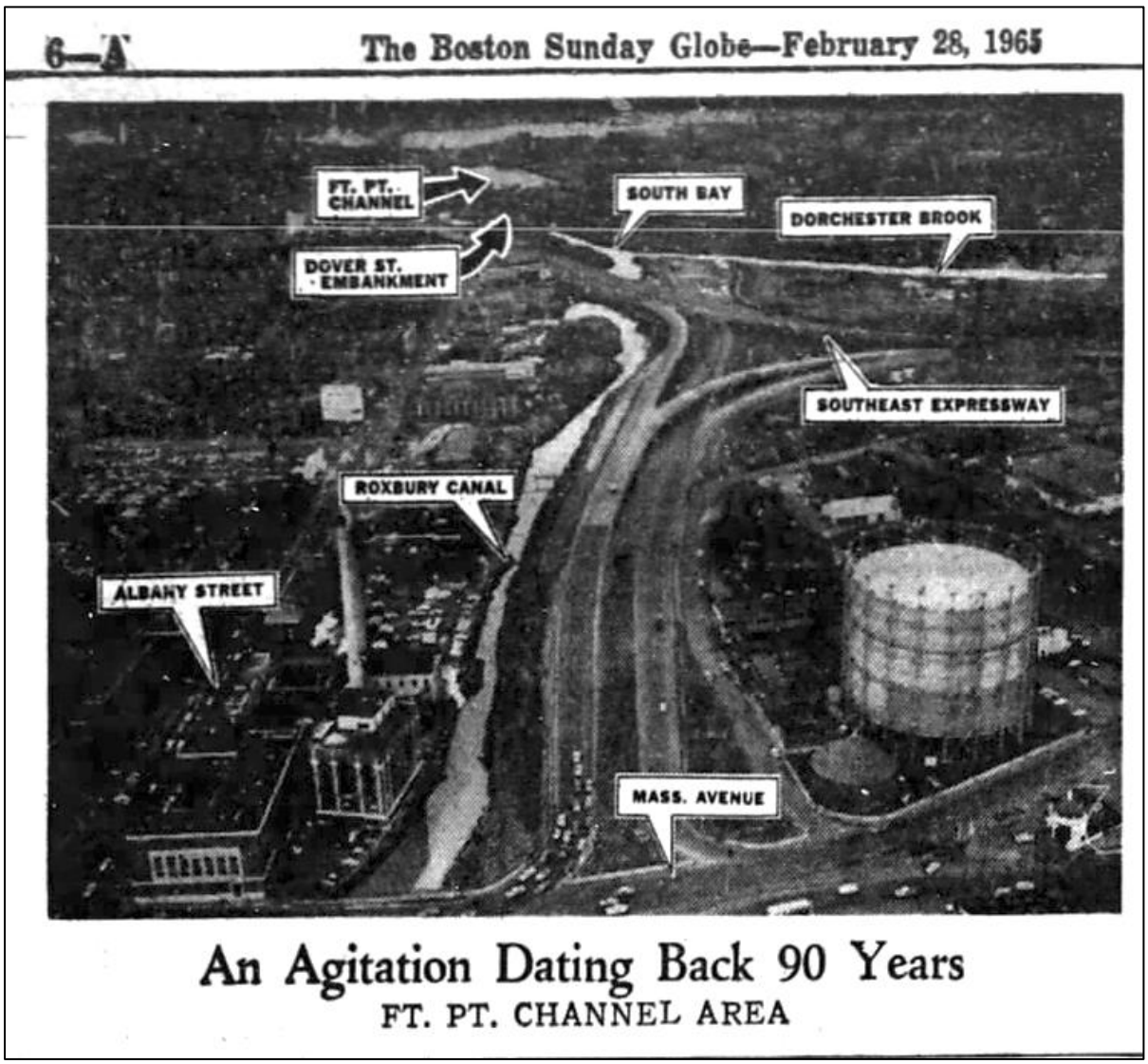
[1] Areas of the Shawmut Peninsula, Inner Boston Harbor, Back Bay, Chelsea, Revere, and Cambridge appear to suffer from similar geologic and stability issues, however I leave those areas for others to deal with as my injuries arose from South Bay so that is where I focus this complaint.

Operable Units

For now, I propose the following operable units under the portfolio of a "South Bay complex" Site and defer to the EPA to determine the best way to delineate and collect the various regions and issues.

Table 1: Proposed Operable Units

Proposed Operable Unit	OU Area Location & Description	Regulatory Classification
The South Bay	The natural South Bay out to the natural High Tide water line surrounding it (fig. 1). Includes the progressive "wharfing out" and filling of the South Bay.	Waters: bidirectional tidal Type: bay Character: estuarine Jurisdiction: Waters of the US
The Fort Point Channel	Sub-OU of South Bay. The entirety of the Fort Point Channel including seawalls, sludge, and the ground beneath. The full thalweg is ~ 12,080 feet / 2 miles.	Waters: bidirectional tidal Type: inlet & channelized bay Character: estuarine Jurisdiction: Waters of the US
The Roxbury Canal & Sewer	The environment surrounding the historic Roxbury Canal, the waters in the canal, and the infrastructure (pipes, conduits, etc.) used to fill, divert, contain, or otherwise modify the waters.	Waters: bidirectional tidal; perennial and intermittent runoff Type: artificial infrastructure Jurisdiction: Waters of the US
The Dorchester Canal & Sewer	The environment surrounding the historic Dorchester Canal, the waters in the canal, and the infrastructure (pipes, conduits, etc.) used to fill, divert, contain, or otherwise modify the waters.	Waters: bidirectional tidal; perennial and intermittent runoff Type: artificial infrastructure Jurisdiction: Waters of the US
The Roxbury Creek/Dorchester Brook Conduit and CSO Outfall 070	The environment surrounding the Conduit and Outfall, the infrastructure creating the Conduit and Outfall, and the waters in the conduit and outfall.	Waters: bidirectional tidal; perennial and intermittent runoff Type: artificial infrastructure Jurisdiction: Waters of the US
The Victorian Sewers	The City's sewer and stormwater infrastructure at the site and extending as far s the high tide flows up into them.	Waters: bidirectional tidal; Type: artificial infrastructure Jurisdiction: Waters of the US
The Underground Tunnels	The City's abandoned underground tunnel systems apparently currently occupied by Cosa Nostra.	Type: artificial infrastructure Jurisdiction: Waters of the US
The Boston Neck (a.k.a. South End)	The Boston Neck (a.k.a.South End) around South Bay including the waters up to the high tide line.	Type: tidal flats, tidal creeks, mud flats, & marsh Jurisdiction: Waters of the US
The Eastern Coastline of the Shawmut Peninsula	The eastern coast of the original Shawmut Peninsula including Fort Hill (which became Fort Point Channel).	Type: tidal flats, tidal creeks, mud flats, wet meadow, & marsh Jurisdiction: Waters of the US
The Roxbury Industrial & Wharf Area	The area of Roxbury around South Bay including the waters up to the high tide line.	Type: tidal flats, tidal creeks, mud flats, wet meadow, & marsh Jurisdiction: Waters of the US
The Dorchester Neck (aka South Boston)	The Dorchester Neck (a.k.a.South Boston) around South Bay including the waters up to the high tide line.	Type: tidal flats, tidal creeks, mud flats, wet meadow, & marsh Jurisdiction: Waters of the US



Boston Globe, Feb 28, 1965 ·Page 82

III. ENVIRONMENTAL VIOLATIONS, POLLUTION, & SAFETY HAZARDS

There is an incredible amount and variety of violations and pollution at the Site. Upon starting this project, I had to identify and document all hazards under these statutes. I never expected to find this many issues, this level of complexity, and what appears to be a complete lack of concern by the City and Commonwealth about these ongoing hazards.

These parties are concealing information, refusing to enforce their own laws in order to avoid documenting the harm they are creating, actively creating additional harm, inviting people to these hazards, and prioritizing revenue above everything else. They are championing huge residential development projects on severely polluted and dangerous land and water, they are making public false statements about the environmental conditions, and they know people are sick, injured, and dying from these violations. They have been doing this for decades and I am far from the first person to complain

about it generally. They are subject to multiple federal environmental and civil rights consent agreements and have lost accreditations due to some of these violations and related matters. None of this should surprise them and they had to know they would be held accountable for this at some point.

The violations by the other Defendants are also very serious, especially by the Boston University and Harvard University, and Cosa Nostra affiliated entities. However, somehow, the two major corporate Defendants appear to have engaged is more tolerable conduct then the conduct by the municipal, university , and non-profit entities. P&G-Gillette ahs been engaged in clean-ups around the Site for decades already so this will likely be an expansion upon the framework. Its unclear if DuPont and NRC ever conducted a radioactivity assessment around Du Pont's South End facilities but that needs to occur now with a special emphasis on the sewer systems where radioactive was released into the Victorian shared sewers and outfalls.

The Site is Sea/Wetlands Polluted with Unpermitted "Artificial Fill"

The Defendants Filled the Waters of the U.S. in Violation of the Clean Water Act, 33 U.S. Code § 1344

The Defendants violated the Clean Water Act Section § 404 when they discharged dredged and fill materials into the waters of the U.S. and navigable waters. These unpermitted discharges reduced the reach and impaired the flow, circulation, and reach of the Waters of the US. (33 C.F.R. § 1344 (f)(2)).

Under the Clean Water Act, every time the Defendants discharged, placed, redeposited, and/or disturbed dredged and fill material in the waters of the US, they were required to obtain a permit, but they did not obtain any permits. The purpose of Section 404 is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material. (40 CFR Part 230).

The Defendants used materials including rocks, sand, soil, construction debris, wood, and clay to replace portions of South Bay (a water of the United States) with dry land and to change the bottom elevation of the South Bay (a water of the United States). (33 C.F.R. § 323.2(e)). Even the Defendants placement of garbage and waste as "fill" may fall under this violation where the fill was placed to create dams, dikes, seawalls, breakwaters, outfall pipes, and subaqueous utility lines. (33 CFR Part 323(f)).

The Defendants' "Fill" Discharged Pollutants into the Waters of the U.S. in Violation of 33 U.S. Code § 1311

The Defendants violated the Clean Water Act § 301 when they discharged garbage, solid waste, hazardous waste, and sanitary landfill materials into waters of the U.S. The material the Defendants used for "filling" and land reclamation included "trash and garbage" which is not "fill material" under 33 C.F.R. § 323.2(e)(3) thought they also violated § 404 as noted above. These pollutants included "incinerator waste," "sewage sludge," "sewage," "discarded equipment," "industrial and municipal waste," and "rock/sand." (40 CFR Part 230(j)).

The Clean Water Act prohibits the discharge of any pollutant into waters of the United States except as authorized under the Act. However, the Defendants did not obtain a permit under Section § 402, and any discharge of these materials required a permit. The Defendants discharged waste trucked

from a single site and a set of known processes (such as the incinerator, a burned buildings, or landfill). The waste included the EPA's examples of fly ash, and sand and gravel waste. (Water Pollution Control; Memorandum of Agreement on Solid Waste, 51 Fed. Reg. 8,871, 8,872 (1986).

This also includes the dredged and fill material listed above in Section 404 where the purpose of the discharge was to improperly conceal and already polluted area (the toxic, oil-slicked cesspool), in order to then pursue speculative development ideas for the purpose of increasing tax revenue, and the discharges created loss and modification of the waters and/or the discharged material was not heterogenous and/or the dredged material was hazardous waste and the "fill" material was typical of a dump. (J. Thompson 1991).

Most of Boston is Unstable & Artificial Land Created by "Filling" the Sea with Waste

The Site was "filled" to "reclaim" land from the sea and enable development in the sea rather than inland or on the natural coast. "Boston's South Bay was filled over a period of nearly 200 years. Early filling consisted mostly of the construction of shallow water wharves. The wharves were typically built on timber cribbing or wood pile foundations. Stone, gravel, and trash were used to fill the wharves… The majority of the fill materials placed at this time consisted of ash, debris, and gravel from Fort Hill." (Baise 2004); (Seasholes 2003).

"South Boston is composed of 1,013 acres of filled land and only 579 acres of original land. The filling of South Boston began in 1805 and continued into the late 20th century. Early filling was mainly marginal and concentrated in the southwest corner of South Boston... South Cove was filled with a broad array of materials including clay, gravel, coal ash, trash, and dredged mud… In the 1830s fill was taken out of the South Bay flats to fill the South Cove." (Baise 2004); (Seasholes 2003).

The filling around Boston started with colonial settlement and industry. South Boston Iron Works was founded by Cyrus Alger and became the largest foundry in the country by the mid-nineteenth century. "To accommodate his operation he repeatedly filled his land from the mid-1830s through 1860." Alger and other enterprises filled in an area on the east side of the channel, stretching south of the West Forth Street Bridge to just north of the Dorchester Avenue Bridge. (Historic American Engineering Record 1995).

The Boston Wharf Company (BWC) "was chartered in 1836 by a group of ship owners with commercial interests in Central America and the Caribbean." In the 1810s and 1840s, the company concentrated on importing and exporting sugar and molasses and building wharves and docks. Board members of the company included Cyrus Alger. This group filled at least some of the areas east of the Fort Point Channel, and around the Channel, the wharfs north of First Street, and the South Boston flats. (Historic American Engineering Record 1995); (Seasholes 2003).

The Atkins family were directors of Boston Wharf Company, shareholders of Bay State Sugar Refinery, ship owners for sugar and molasses transport, and presidents of the American Sugar Refining Company. Much of the southern portion of this wharf was used by the Standard Sugar Company. The Atkins family are also notorious slave owners and traffickers, including for these same business operations. Their filling continued in the southern wharfs. (Historic American Engineering Record 1995).

At the same time, over 500,000 cubic yards of material were dredged from Fort Point Channel and placed as fill on the land inside the sea wall.[2] Then the "South Cove Associates" became filing the western side of Fort Point Channel, the area known as "Gallow's Cove." (Seasholes 2003). Gillette purchased land from American Sugar Company in the 1950s and also began filling by at least the 1960s, around the east side of Fort Point Channel, and in one instance admit the fill used "was almost totally made up of bricks." Gillette's actions were approved by the Commonwealth. (Historic American Engineering Record 1995).

The City and Commonwealth were involved in most of this filling either with financial incentives, permitting, or active physical participation. The first figure calling to fill South Bay was Mayor Josiah Quincy. The first filling occurred on the east of the Boston/Roxbury neck. The South Cove was then filled with material dredged from the South Boston flats.[3] "The majority of South Cove was, however, filled in two main efforts by the railroads. Much of the soil used for these filling operations was granular in nature." (Baise 2004). "South Cove was filled with a broad array of materials including clay, gravel, coal ash, trash, and dredged mud. Many of the early wharves in the region were constructed on wood pile foundations. As the land between the wharves was filled, the wharves and the pile foundations became part of the mainland." (Baise 2004). In 1854, the South Bay was estimated to cover 306 acres. However, by 1898, it only covered 61 acres.

It was also during this time that field of geology took a sharp turn, and the resulting analysis of Boston's landscape was completely redefined. Edward Hitchock wrote the first formal geological survey for the Commonwealth in 1833-1841 and documented a large number of anomalies in the Commonwealth and New England there must have some sort of mass disaster that obliterated the landscape and which much have occurred in recent times when the land was already formed at the current levels. Hitchcock admitted he had no theory to explain all of these issues but also argued that emerging glacial theories also cannot explain these anomalies. (Hitchhock 1833), (Hitchcock 1841).

Around 1847, Defendant Harvard University established a school of science to be led by Louis Agassiz as an extension of Agassiz's research establishing "The Plan of Creation" and advocating for Creationist explanations in science. Agassiz and Harvard University successfully revised the formal explanation for most of the anomalies in New England, and at the Site, to be explained by glaciers. In order to do this, new terminology and concepts had to be invented and which is still referred today. Even though most of these glacial theories have been limited and deprioritized, they remain entrenched in Boston. These theories were used to halt investigation into Boston's geological anomalies, deter theories of catastrophism, and generally encourage development and man's domination over the land. Land movement and reclamation became a sort of "cleaning house" following the glaciers making a mess.

The 19th Century filling of South Bay included dredging the Boston Harbor and destroying adjacent drumlins to repurpose their contents for fill, including Nook's Hill, Beacon Hill, Copp's Hill, and Fort Hill. (As discussed later, these appear to be bolide impact ejecta domes). Additionally, some of the fill in the wharfs has been identified as identified as "enormous quantities of brick, plaster and miscellaneous

[2] " The Harbor Commissioners, Boston Evening Transcript, Feb 19, 1875, p. 3

[3] "Strong Protest by the Owners: South Boston Applauds Mr. McNary but Bay Front Mean not Aroused," The Boston Globe, Apr 23, 1904, pg. 6.

rubbish from Boston's Great Fire of 1872" and the fill for the South Boston flats includes "building rubble and coal ash." (Seasholes 2003). Additional material came from "cinders" and "street sweepings dumped in the Causeway streets." (P. J. Barosh 2011). So even from the start of the filling of South Bay, the material used were debris, garbage, sludge, and hazardous substances.

Around 1870, the City Hospital was constructed on Albany Street, next to the Roxbury Canal. The City Hospital was built on salt water flats and filled with land materials from Braintree. The Boston Globe noted that the "brownstone houses" (like where I lived) "didn't care to have a hospital set up in the vicinity" but it was built anyway. It noted the facilities were designed for only ten years of use under the theory the buildings would "be so full of germs that they'd have to be razed anyways" but old buildings weren't torn down until 1931. [4]

These actions were for specific, individual financial gain and were faced with opposition for centuries. The City and Commonwealth were repeatedly sued and the Courts repeatedly curtailed the filling and took action to protect South Bay and the Boston Harbor. The South Bay Wharf and Transportation Co. and Roxbury Wharf Co. were founded in 1902 and John C. Cobb was a vocal advocate for preserving the South Bay. At that time there was at least three million tons of commerce moved annually through South Bay. [5] Earlier litigation also focused around City and Commonwealth interference with use of the waterfront. See also, *Commonwealth vs. Cyrus Alger*, 7 Cush. 53, 61 Mass. 53 (March, 1851) – a case which helped define the legal concept of "police powers" in the United States and defines South Bay as navigable waters ("*the sea ebbs and flows to and from a bay above, called South Bay*.")

"Public interests" were recognized early regarding access to South Bay. "The great public interests, and the importance and value of the private rights, directly or indirectly to be affected by it. It affects the relative rights of the public and of individual proprietors, in the soil lying on tide waters, between high and low water mark, over which the sea ebbs and flows, in the ordinary action of the tides." *Commonwealth vs. Cyrus Alger,* 7 Cush. 53, 61 Mass. 53 (March, 1851).

The first Canal in the Roxbury tidal creek was constructed around 1784 in order to make room for small boat and vessel transportation to Roxbury and the Neck. It sounds like this expanded upon Lam's Dam to dredge out a channel for boats and remove some of the tidal flats and marshland, finishing around 1822.[6] The Canal went as far back as Dudley Station. (Historic American Engineering Record 1995). Prior to this, in 1785, "what is now Mass. Ave. was a salt marsh covered twice in 24 hours by tidal waters."[7] It was not long after the dredging, filling, and other modifications of the tidal prism that there were dramatic changes in the tides, overtides, sediment floats, and shoals. (Seasholes 2003); (add).

The Roxbury Canal became a strong point of contention in Boston and remained as such for over 150 years. But its clear it generally was not entirely actually about the canal. The Roxbury tidal creek created the political boundary between the Towns of Boston and Roxbury. The Dorchester Book was a tidal stream that created the political boundary between the Towns of Dorchester and Roxbury. The South Bay established the political boundary between the Towns of Boston and Dorchester.

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[4] McPartlin, J. "Inside City Hospital – II: Should Not Last More than 10 Years," The Boston Globe, Jun 28, 1956, p. 24.
[5] "Strong Protest by the Owners: South Boston Applauds Mr. McNary but Bay Front Mean not Aroused," The Boston Globe, Apr 23, 1904, pg. 6.
[6] "Roxbury Canal," Boston Evening Transcript, Dec 11, 1877, p. 2-3
[7] "What People Talk About," The Boston Globe, Jan 31, 1953, p. 4.

The South Bay was a key location for the Port of Boston and Boston Harbor, facilitated the area's economic development, and also exposed the power dynamics between municipalities and large corporations. It also brought to a head a controversial political difference between Boston and the people who lived there where Boston's aristocracy and officials admitted to prioritizing a colonial type of style of economy and governance that looked to extract resources, create and sell products, increase profits, and establish control over a larger area then its actual physical location. This is why Boston named its government center on the Shawmut Peninsula the "Hub of the Universe" and this context is needed to understand all of these violations. (GBH 2017).

The Defendants Campaign to Fill South Bay was Always Seen as Misguided "Real Estate Speculation"

Calls to "fill" the Roxbury Canal came as early as the mid-to-late 1800s. These calls came from private business interests and the City government, admittedly looking to develop land for commercial value and increased tax revenue, and without any plan beyond that objective. The Roxbury Canal was a disgusting cesspool and public health hazard, and was frequently cited as the justification to fill the Canal, but even back in the 19th Century, it was clear the proper method for abating that nuisance was for the City of Boston to stop dumping raw sewage into South Bay. However, the City did not stop and still continues this practice today.

In 1878, a council report signed by George L. Thorndike challenged calls to fill the Roxbury Canal with solid earth and instead argued for dredging it, cleaning it out, and then using it float small vessels. [8] In 1878, council members argued that "it is certainly evident to everybody that [the Roxbury Canal] is a nuisance" and an "obstruction." There is "truth" that "the city has caused the nuisance by emptying a vast amount of filth into the canal" and "there is no way of abating this nuisance by simply filling up the canal."[9]

Thorndike was on the Commission overseeing Boston's sewerage improvements and noted that the improvement plans never discussed filling the Roxbury Canal, let alone the City Taking private land and then championing real estate development – and connecting that to the sewerage issues was improper.[10] Council members noted that "before the sewers were connected with the canal there was never any complaint from it. Boys used to bathe freely in its waters and catch fish at its wharves. But now there have been for years three large sewers draining 2755 buildings, pouring their filthy contents into the canal. Is there wonder that is a nuisance? Take the sewers out of the canal, and then dredge or pump it out, and as the tide ebbs and flows freely into it I do not believe that there would be any more trouble from it." [11]

They read a 1878 letter from the Office of the Board of Health stating the nuisance "is caused by the deposits made by the sewers emptying into it" so if "those sewers shall have been intercepted and diverted and the canal shall have been thoroughly dredged out and the sewer deposits thus removed, the

[8] "Roxbury Canal," The Boston Globe, Jun 11, 1878, p. 2.
[9] "Roxbury Canal," Boston Evening Transcript, Jul 12, 1878 ·p. 2.
[10] "Roxbury Canal," Boston Evening Transcript, Jul 06, 1878, p. 2-3
[11] "Roxbury Canal," Boston Evening Transcript, Jul 06, 1878, p. 2-3

salt water of the harbor will ebb and flow through the canal twice every twenty-four hours… in a very short time.. [the canal would become] inoffensive." [12]

Thorndike added the pitch to fille the Canal it "a scheme for getting rid of a large amount of unproductive real estate (at much more than its market value) at the expense of tax payers." He said the parties are "pertinaciously insisting upon the most expensive method to the City and the most beneficial to themselves" and that building an intercepting sewer (which has to be done anyways if filling the canal), preventing any more sewerage from flowing into the canal, removing the deposits, and then let the tides clean the and will resolve the issue.[13]

As part of the Port of Boston, the Fort Point Chanel, South Bay, and Roxbury Canal "thrived with world commerce" through 1890s.[14] The 1878 Councilmembers complained the City of Boston was exploiting the topic of sewer upgrades as "a lever to force the taking of… property." The 1878 council noted that the City was heavily in debt and because of this was desiring to Take land from private parties, and thus the City's demand to fill the Roxbury Canal and South Bay was simply "real estate speculation." They further warned it was poor planning because Taking the land will destroy its tax value, the City won't be able to sell it, and the City will be plunged further into debt.[15]

The Rivers and Harbors Act of 1899 put more pressure on the Defendants to vet their "filling" ideas as they had to now request permits from the U.S. Army Corp of Engineers. However, they pursued the idea and were predictably met with a forceful pushback from the folks already living and working around South Bay.

In 1904, the South Bay Wharf Co. complained that "the idea of filling up the South Bay is absurd. It would take away about three miles of waterfront, destroy 25-30 important business enterprises, deprive 250,000 people of a cheap and convenient means of freight transportation, seriously affect a large number of woodworking and other manufacturing establishments and accomplish no good beyond eliminating the drawbridge annoyance." [16]Every one of the 25 or 30 lumber companies, coal firms and other concerns that do business along the shore of South bay" are opposed filling the South Bay and "are unitedly up in arms against the proposition and will wage a strong fight against any effort that may be made to close up or restrict the bay."[17]

Despite the existence of a serious nuisance, the filling of Roxbury Canal was frequently raised in non-serious ways and as the only abatement possibility, without further explanation. For example in 1932, the Finance Commission criticized the building conditions at the City Hospital including construction defects, roof leaks, filthy walls, and abandoned tunnels. The Mayor and City Hospital Trustees responded

[12] "Roxbury Canal," Boston Evening Transcript, Jul 06, 1878, p. 2-3
[13] "Roxbury Canal," Boston Evening Transcript, Jul 06, 1878, p. 2-3
[14] "What People Talk About," The Boston Globe, Jan 31, 1953, p. 4.
[15] "Roxbury Canal," Boston Evening Transcript, Jul 06, 1878, p. 2-3
[16] "Strong Protest by the Owners: South Boston Applauds Mr. McNary but Bay Front Mean not Aroused," The Boston Globe, Apr 23, 1904, pg. 6.
[17] "Strong Protest by the Owners: South Boston Applauds Mr. McNary but Bay Front Mean not Aroused," The Boston Globe, Apr 23, 1904, pg. 6.

by complaining the criticism was "eminently unfair" and then pivoted to protesting the real issue is that the Roxbury Canal must be filled. Its unclear how filling the Canal would fix the Hospital's roof leaks. [18]

To the Commonwealth's credit, they did object to and block Boston from filling South Bay for some time. It was only around the 1950s that the Commonwealth joined Boston on this quest to fill the Bay, likely due to increased federal oversight regarding water pollution, harbor and tidal management, and sewage disposal. The City and Commonwealth were both suffering financially by the 1940s. The idea of having to clean-up the Bay assumably seemed prohibitively expensive, while the idea of somehow concurrently flipping a severely polluted area for property development and increased tax revenue must have been appealing.

Around 1953, the Commonwealth finally agreed with the filling and immediate plans include "a flower mark, a new meat processing and distribution plant and expansion of medical facilities along Albany St."[19] Even after that in order to obtain legislative approval, funding and required support from affiliates, the City of Boston changed its "story" for the filling justification several times. In the 1950s it was more honest admitting it wanted to build a "huge market terminal, off-street parking facilities, a union bus terminal, a municipal stadium and convention hall" but in order to do so it had to fill South Bay and Fort Point Channel, and so needed approval for the filling, dredging, and also placing the Canal and Brook into conduits.[20]

In 1959, Boston argued for the "Filling of Roxbury Canal, Dorchester Brook, and South Bay up to Dorchester Ave" as required for their desire to build a municipal stadium near Central Artery and Southeast Expressway. They said it could be available for professional football and big conventions, and would bring more revenue to the city. [21]

In 1960, the Boston Mayor called for the "construction of conduits to drain off storm waters, the building of a seawall near the railroad terminal and the filling of the Fort Point channel, South Bay, and the Roxbury Canal." The Republican noted that "the Project has long been a dream of the Boston city planners. It is considered especially vital at this time because it fits into the huge redevelopment programs underway in the city… The conduit system would be maintained by the city which of course would benefit from the increased tax revenue." However, it warned: "one stumbling block is that the channel and the canal are "navigable waters" and come under the jurisdiction of the Federal Dept. of Def. which must approve before the water area can be filled in."[22]

The Defendants Created False Narratives to Mislead Officials & the Public about Why they Wanted to Fill South Bay

By May 1961, Boston sent its Public Works Department (Haley) to champion the filling of South Bay and the arguments were as follows, in this order: 1) there is flowing around the canal and filling the canal could reduce flooding ("it is within the power of men to control these floods" – DPW); 2) the canal is "one of the biggest cesspools in Massachusetts" creating a public safety hazard that is a breeding place

[18] "Hits City Hospital Building Defects: Fin. Com. Charges Inefficiency in Planning New Structures," The Boston Globe, Dec 27, 1932, p. 1, 6.
[19] "What People Talk About," The Boston Globe, Jan 31, 1953, p. 4.
[20] "Boston Stidum, Market Proposed in 'Fill' Project," The Boston Globe, May 14, 1950, p. 1.
[21] Moore, R.C., "Boston Could Do All Right With that South Station," The Boston Globe, May 24, 1959, p. 96
[22] "From the State House," The Republican, Nov 16, 1960, p. 27

for germs, mosquitoes, and disease bearing rodents," and then also, 3) if South Bay was filled the City could "reclaim" 100 acres which could provide for "millions of dollars' worth of development" including a location for "new sports stadium." [23]

One would think if the City thought the area was such a hazard they would plan a more thorough remediation then filling it before building a sports stadium on top. When pressed for further details on these development plans, Haley insist the first priority is mitigating the flooding and then "the rest will follow."[24] In Feb. 1962, Boston Public Works commissioner Haley complained the South Bay was a "cesspool." Haley said the Canal, Brook, and Channel are "breeding places for vermin and disease." He also added that filling them would increase the value of commercial property and provide new land for development.[25]

Then, by March 1962, the City, via Haley again, now dropped the stadium and doubled down on the sewage issues saying the need to fill Roxbury Canal was because "no one will build in the [South End] because it is 'a stinkhole' that has been declared obnoxious and unhealthy by the state Health Dept." The City argued "that the sewage which flows through the Roxbury Canal and into Fort Point Channel after heavy rains causes hydrogen sulfide gas in the South Bay area. The odor, like that of rotten eggs, can be detected by motorists… and by residents of the surrounding areas" and noted that "state health officials said the odors in the area are a health hazard and that the flooding attracts rats." [26]

The City also just happen to be concurrently petitioning Congress to declare South Bay and the Fort Point Channel "non navigable waters by the Army Engineers" in order to decommission the drawbridges and improve traffic. He said they will need 2.5M cubic yards of fill but do not have a source for it so they are planning on "dumping… debris" from "renewal projects" and pumping "mud from the harbor."[27] The City was openly planning on filling a pollution hazard with construction debris and septic sludge from the Boston Harbor which certainly undermines their arguments that filling Roxbury Canal was about pollution abatement. At the same time, the post office director also noted that they can expand their facility and offer 1500 more jobs but only if Channel is declared non-navigable, because of reasons.[28]

Then a few months July 1962, "a bill providing for the filling of the South Bay, Roxbury Canal, and Dorchester Brook in Boston in a redevelopment project… was passed. The State is to finance the program and get reimbursement from Boston after the filled land is sold or leased."[29]

In April 1962, The Boston Globe reported that Boston (via Mayor Collins) was requesting approval from the Commonwealth to fill Fort Point Channel and the Roxbury Canal with ashes from the City's incinerator. These ashes were previously being dumped at Columbia Point and Calf Pasture, which were being closed down by the City Council due to being a "health nuisance." The City needed a new location to dump its incinerator waste and concurrently needed a source of cheap "fill" for its plan to fill South Bay.[30]

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[23] Hanron, R.B., "$4,000,000 Project Would End Roxbury Canal Cesspool," The Boston Globe, May 21, 1961, p. 100
[24] Hanron, R.B., "$4,000,000 Project Would End Roxbury Canal Cesspool," The Boston Globe, May 21, 1961, p. 100
[25] "Powers Backs Bond Bill for Channel Fill In," The Boston Globe, Feb 08, 1962. P. 10
[26] Hanron, R.B., "Another Move To Fill in Fort Point Channel," The Boston Globe, Mar 25, 1962, p. 85.
[27] Hanron, R.B., "Another Move To Fill in Fort Point Channel," The Boston Globe, Mar 25, 1962, p. 85.
[28] Hanron, R.B., "Another Move To Fill in Fort Point Channel," The Boston Globe, Mar 25, 1962, p. 85.
[29] "Defeated in Bid to Revive Turnpike Audit," The Standard-Times, Jul 21, 1962, p. 1
[30] "Battle of the Dumps," The Boston Globe, Apr 25, 1962 , pp. 1, 25

As of 1964, the Boston Globe noted that the filling had not begun because the culvert was not yet complete. Multiple Commonwealth and City agencies were meeting to determine where to put it to reduce the likelihood the culvert would obstruct and complicate other construction projects. For example, its planned location was shifted in order to accommodate a hypothetical Sears Roebuck warehouse. However in the meantime, Boston's DPW Commissioner James Haley had "dumped hundreds of tons of incinerator ash in some sections of open area which would not interfere with culvert work." It was further noted that construction would take about a year once the started. The article notes that an architect was already designing the "mammoth sports stadium" that Boston wanted to location on the filled Bay.[31]

In Feb 1965, plans were still not approved. A news article reported that a "$9M project to fill in Fort Point Channel and relocate Dorchester Ave. [was] being pushed by the state and city officials." Boston's Dept. of Public Works wanted to reclaim around 50 acres by filling the Canal, Channel, and South Bay and now claimed it needed to be done under a US government funded highway program with 50/50 matching from the federal government.[32] Another article commented that it has taken ninety years for Boston to convince the Commonwealth to approve draining and filling the Bay and Channel.[33]

In 1966, plans were underway for building the "mammoth concrete conduit," and filling a mile of the South Bay. A news article noted that it appears nothing has happened on this but then concurrently claims its half done, but does not elaborate further. Boston DPW also now says that the reclamation will b used for city parking lots, a new power plant for the Boston University Medical School, medical buildings, a large meat packing plant on top of the "biggest open cesspool." [34]

By July 1969, the Commonwealth revoked a prior approval for filing and culverting a different creek and complained that Boston DPW's plan "served no useful purpose except to allow development of a marina" any the state would not pay for it. [35] Then in Nov. 1969, Boston DPW pivoted on its plans for the newly filled canal and now proposed the space on Frontage be used for city vehicle maintenance and would serve more than 800 vehicles.[36]

DPW raised this idea noting Boston Redevelopment Authority was forcing them to relocate from the current location on Mass. Ave in order to provide more space for the City Hospital and Boston University Medical School. As of 2026, the area is still almost entirely owned by the City and Commonwealth including agency buildings, MBTA yards, the Suffolk County House of Correction, and a new dump and transfer station that's privately owned and still unregistered with the Commonwealth.

In Sept. 1967, he Commonwealth passed bill No. 5234 communicating the Governor wanted to move forward with Boston's plans to build a sprots stadium on the filled Roxbury Canal, South Bay, and Dorchester Brook and indicated the filling of these waters was for the purpose of the sports stadium. It appears that at the time the bill was passed, the filling was already complete. Three cities dissented the bill. The federal government did not updated its annual maps to reflect this filing for several years indicating they may not have been aware the area was going to be filled until after it was filled.

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[31] Hanron, R.B., The Boston Globe, Jun 07, 1964, p. 50
[32] Hanron, R.B., "Channel Freeway Planned," The Boston Globe, Feb 27, 1965, Page 1-2
[33] Hanron, R.B., "End to the Ft. Pt. Channel Eyesore: To Fill Ditch by '66," The Boston Globe, Feb 28, 1965 ·Page 82
[34] Hanron, R.B., The Boston Globe, Apr 24, 1966, p. 98
[35] Turner, RL, The Boston Globe, Thu, Jul 10, 1969, p. 12
[36] Plotkin, A.S., The Boston Globe,, Nov 27, 1969 ·Page 35

The artificial fill is garbage and hazardous substances, transforming most/all of the site into a municipal landfill and a structural risk. Each episode of land reclamation used specific source material and a different filling method and the regions with artificial fill are "considered to have the highest liquefaction potential in the Boston area." FSPs in South Boston (historically covered by water and filled in the 19th century) have been observed around 0.35 s – 1.05 s with the bedrock depth around 20-70 m. (Brankman 2008)

HOUSE . . . . . No. 5234

The Commonwealth of Massachusetts

House of Representatives, September 19, 1967.

The committee on State Administration, to whom was referred the message from His Excellency the Governor recommending legislation relative to the construction, maintenance, repair and operation of a multi-purpose stadium and other appurtenant facilities and providing for the filling and improvement of South Bay, Roxbury Canal and Dorchester Brook and certain territories adjacent thereto for purposes of said stadium (House, No. 5171), report the accompanying bill (House, No. 5234) [Representatives Nolen of Ware, Cavanaugh of Medford, Melia of Boston, Desmond of Lowell, Hollis of Braintree and Desrocher of Nantucket dissenting].

For the committee,

JOHN FINNEGAN.

House Bill No. 5234, (1967),
Act for the Construction of a Sports Stadium on the Filled South Bay, Roxbury Canal, Dorchester Book

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Metadata Object Description - Record Information

Record Identifier: 40100014x5-A027-001

Record Creation Date: 2024-02-19

Description Standard: dacs

Metadata Object Description

Title: South End: View of filling in of Fort Point Channel at City Hospital

Creator Name: Boston Redevelopment Authority

Type of Resource: photographs

Date Created: 1966 March 26

Language: english

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LCSH Subject Heading: Urban renewal

LCSH Subject Heading: Neighborhoods

LCSH Subject Heading: South End (Boston, Mass.)

City: tgn:7013445

Neighborhood: tgn:4012577

Collection name and number: Boston Redevelopment Authority photographs (4010.001)

: Box 10

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"South End: View of filling in of Fort Point Channel at City Hospital," Boston Redevelopment Authority, March 26 1966,
https://cityofboston.access.preservica.com/uncategorized/IO_43c90419-13f8-4c80-a661-8fb31ddd2843/

The Site is Polluted by Ancient, Unmaintained, Tidal, Gaseous Sewers

The Defendants Filled the Waters of the U.S. in Violation of the Clean Water Act, 33 U.S. Code § 1344

The Defendants violated the Clean Water Act Section 1344 when they discharged dredged materials, fill materials (sewers, pipes, conduits) into waters of the U.S. and navigable waters. These unpermitted discharges reduced the reach and impaired the flow, circulation, and reach of the Waters of the US. (1344(f)(2)). Under the Clean Water Act, every time the Defendants discharged, placed, redeposited, and/or disturbed these pipes and conduits in the 2aters of the US, Defendants were required to obtain a permit, but they did not obtain that permit.

Further, under both the Rivers and Harbors Act Section 10 and the Clean Water Act, there is a legal requirement to keep "fill" in "good condition." For fill that was authorized or not waste, the Defendants still had an obligation to maintain it and without formally "abandoning" this infrastructure through a U.S. Army Corps. modification permit, the Defendants remain legally liable for its condition. Further, the Defendants avoided maintenance of the Roxbury Canal and Dorchester Brook Conduits so long that the structures are admittedly no longer "serviceable" which triggers the recapture provisions of the CWA under Section 404(f)(2)).

These structures are covered in debris, sludge, and marine biota. These structures are hazardous submarine caves which allow the tides to push sewer gases and sea life into the sewers and drains of the adjacent South End buildings. The Defendants lots any maintenance exemption under the CWA and must now apply for new permits in order to conduct required repairs – which they have delayed and avoided doing for decades, and which would involve a full review of the original 1960s filling and the Conduit's current environmental impact.

The Defendants' Sewers Discharged Pollutants into the Waters of the U.S. in Violation of 33 U.S. Code § 1311, 1312

The Defendants violated the Clean Water Act § 301 when they discharged pollutants into the waters of the U.S. These pollutants include "sewage sludge," "sewage," "discarded equipment" (sewer pipes, conduits, and regulators), "industrial waste," and "municipal waste." (40 CFR Part 230(j)).

Tthe Conduit and is in such disrepair that it is likely shedding concrete, metal, or sediment into the tidal stream. Any unauthorized addition of pollutants (including debris from a collapsing structure) from a "point source" (the conduit) into WOTUS is a violation of the CWA. While the original 1960s fill of the pipes/conduit was pre-CWA, the *current* discharge of material from that fill into the water is a modern event. The courts treat this as a "continuing violation" rather than a past event shielded by time.

The protection of navigable waterways from pollutants could not be achieved without extending regulatory measures to the water flowing into such streams. "It would, of course, make a mockery of [Congress's power to abate pollution] if its authority to control pollution was limited to the bed of the navigable stream itself. The tributaries which join to form the river could then be used as open sewers as far as federal regulation was concerned. The navigable part of the river could become a mere conduit for upstream waste." *United States v. Ashland Oil and Transp. Co.*, 504 F.2d 1317 (6th Cir. 1974).

If the agencies determine that a structure is failing and "contaminating the channel," they can skip the debate over 1960s permits and use their 2026 powers to require Defendants to remove the decaying conduit and restore the tidal stream's original flow. If Defendants want to keep the structure, they need to apply for a permit *now* to authorize the existing fill and the repairs. This puts the entire site—including the original harbor fill—under a "Public Interest Review" using 2026 environmental standards.

33 U.S. Code § 1311(a) provides that it is unlawful to "discharge" a pollutant unless it is done in compliance with the Clean Water Act, including NPDES permitting; and "discharge" is defined to include the addition of a pollutant to the Waters of the United States from a "point source" (such as a pipe, ditch or channel). 33 U.S. Code § 1312 requires permits for these types of discharges under NPDES and under 1311(d), those discharges are managed under the standards and prohibitions of §§ 1311 and 1312.

The Commonwealth Cannot Certify this Discharges into the Waters of the U.S. in Violation of 33 U.S. Code § 1341

Under 33 U.S. Code § 1341 the Commonwealth is required to certify discharges and that certification must "set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations." There is no record of a certification regarding point source discharges from this infrastructure itself and the Commonwealth could not certify it while knowing this infrastructure is not maintained, failing apart, and generally a hazard.

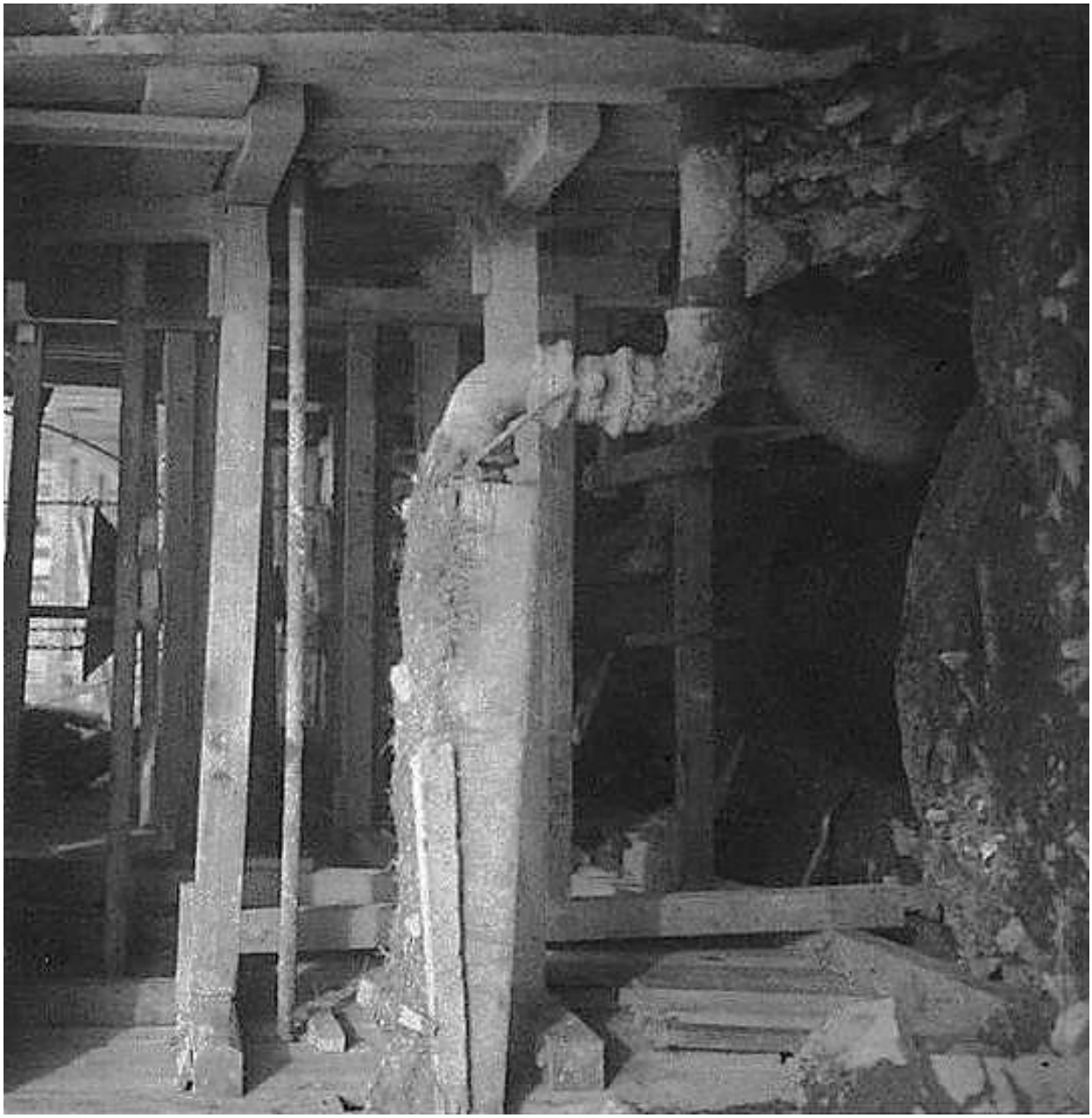
The Victorian Sewers have become a Pollutant, and Source of Discharge via its Sludge & Collapsing Infrastructure

The conduit system is connected to over 1,360 miles of sewers in Boston, the majority constructed between 1877 and 1894 as part of the Boston Main Drainage System. This is a combined sewer system at the source, meaning sewage and stormwater flow in the same pipes. The original construction used brick and wooden materials, documented in 1885 as "ill adapted" and "usually leaky." (add) The system provides a direct hydraulic pathway from tidal waters through the conduit, through the sewers, to building basements throughout the South End, Lower Roxbury, and surrounding neighborhoods.

Buildings constructed before 1877 predate the Boston Main Drainage System. The original drainage destinations for these buildings are unknown. They may connect to older "common sewers" that discharged directly to waterways, to private cesspits under or adjacent to the buildings, or to drains that connected directly to the canal or South Bay. (add finding cesspool under building)

There is no systematic documentation of how—or whether—these buildings were integrated into the later municipal sewer system. For an 1864 building, this means at least 13 years of sewage discharge and (add)+ drainage infrastructure existed before the City's sewer system was built. Where did the sewage go? Where does it go now? Nobody knows.

This sewer infrastructure is its own type of contamination. The sludge contains everything that went into the sewers for a century (heavy metals, pathogens, PAHs, petroleum, radioactive waste, etc). The wood, brick, and mortar absorbed contamination; the utility transport contaminates groundwater; and gas generation continues from organic decomposition. Boston and Massachusetts failure to maintain or properly abandon this infrastructure which enables the hazard.



Digital Commonwealth, 1914: *"Sewer work near Blue Hill Ave."*. Historic New England. Appears to show filamented bacteria creating a very long (5ft+?) sheathed microbial mat along the outflow of the pipe.

Plumbing vectors include basement floor drains, toilets, sinks, water heaters, bathtubs, etc. Groundwater and vapor intrusion vectors include cracked foundations; unsealed building envelopes; inadequate building drainage resulting in leakage and water intrusion; holes in the walls and floor; and old or defective plumbing connections. Organism migration can occur via any of these routes, especially when the organism is able to engage in some form of locomotion (slime, plasma, flagella, etc.). The Site is wildly active and unpredictable.

The South End consists predominantly of Victorian-era rowhouses constructed between the 1860s and 1880s. Every time the sewer system surcharges (which is twice daily from tides plus during any rain event), contaminated water and gases can back up into the houses. There is no physical barrier between

the ocean and the inside of these houses. The only things that might slow migration are P-traps (water seals in drains) - but these can dry out or be siphoned, building sewer valves - but these are often missing or failed, watertight building envelopes – but unlikely in Victorian basements; and flow direction - but this reverses with tides. Modern vapor intrusion guidance assumes buildings with concrete slabs and vapor barriers. Victorian buildings lack these protections. Gas and water intrusion pathways that would be blocked in modern construction are open in these buildings.

"Suppressed waterway filled with water."
Photograph. [ca. 1880–1889]. *Digital Commonwealth*.

This Site has distributed contamination throughout the subsurface, active hydraulic pumping twice daily via tides, a network of preferential pathways (the sewers and the conduit system), continuous contaminant generation, direct connections to buildings (house drains), and ongoing discharge to navigable water. Every high tide raises water levels, backing water up into the conduit systems. This pressure increase is transmitted through connected sewers. Courts generally hold that a discharge occurs not just when the fill is first placed, but every time the material is redeposited or continues to shed into the water. In 2026, a collapsing pre-CWA conduit that is "shedding" into a tidal stream acts as a modern point source discharge of pollutants.

Sewer levels rise in buildings throughout the connected system. If building drains are below the high-tide hydraulic grade line, a backup occurs. Then twice a day, the pressure cycling stresses the infrastructure and forces sewage, tides, and gases through cracks and gaps. The sewer system is an active

contamination distribution system. Since this discharge is unauthorized and occurring now, it is a present-day violation of CWA Section 301, regardless of when the conduit was built.

The CWA maintenance exemption only applies to "currently serviceable" structures. By refusing to maintain the conduit for decades, the owner has allowed it to become unserviceable. Any attempt to fix it now—or the act of letting it fall apart—constitutes a "new use" or a "reduction in reach" of the water body, which recaptures the activity into the full Section 404 permitting process. The fact that "the tide and waves hit it all twice a day" is the ultimate jurisdictional hook as it proves a continuous surface connection to a traditional navigable water (the ocean), meeting the strictness of the *Sackett* standard.

A 1967 engineering report documented that "because of the extremely poor conditions of the tide gates, regulators, and outlets, lower reaches of the principal sewerage system throughout the city are surcharged by tidewater on flood tides, and purged through outlets on ebb tides." It added that where I lived, "it is evident that during incoming tides there is considerable leakage of tide water back into the sewer system due to broken, inoperative, or blocked tide gates. On outgoing tides, raw sewage is discharged through the tide gates into the harbor each day, regardless of weather conditions." (Camp, Dresser, & McKee 1967).

Gases generated in buried cesspool sediments also migrate upward through porous fill material. Preferential pathways include utility corridors, backfilled trenches, and old foundations. Gases enter buildings through foundation cracks, utility penetrations, sump pits, and basement floor joints. Negative pressure from heating systems draws soil gas into buildings. Gases accumulate in enclosed spaces. High water table fluctuations pump gas up and down. Marine clay barriers force gas to migrate laterally until it finds exit points, potentially including building basements far from the source.

This issue has caused grievances for over a century. "On June 24, at low tide, the volume of air entering the open outlets of all the West End sewers.. was measured with a Casella's anemometer and found to amount for all to 6800 cubic feet per minute, the air on the river being still. If we suppose that the gases arising from decomposition etc. such as carboric acid, carburetted and sulphuretted hydrogen, amounted for the sewers of this district to only 1200 cubic feet per minute, there would be 8000 cubic feet of sewer air to be distributed among the houses on the west side of the hill, every minute during low tide. If we allow an average of one conductor for rain water for each house, 800 houses would thus be supplied with ten cubic feet of gases per minute… It is easy to see… the amount of sewer air discharged where it is not wanted must be very great." (*Boston Evening Transcript, July 26, 1876).*

The City and Commonwealth refuse to fix these issues and the private parties owning these buildings, including the one where I lived, also refuse to mitigate these issues at a house-level. Back in 1964, Defendants noted that "Most of the buildings in the South End have combined sanity and storm water (roof drain) connections to the combined sewerage system" and "many buildings have plumbing system arranged in a manner that prohibits separating sanity from storm flows short of a major revision of the plumbing in the building." BHA noted that the "existing combined sewers must continue to function as such for years to come" but that "over a period of years other buildings will be rehabilitated or demolished." They also noted that "there is no inventory or records for these buildings." Sixty years later and this still has not been addressed. (Boston Redevelopment Authority 1964).

The Roxbury Canal/Dorchester Brook Conduit is being used as a Dump & is covered in Sludge

As discussed, in the 1960s, the "conduit" system was built to contain the Roxbury Canal and Dorchester Brooks in twin-barrel, concrete-box culverts and route them to Fort Point Channel with a solid surface above them in order to provide the City more land for development. The point where the Canal and Brook meet the open air and flow to the Channel is designated by BWSC as "CSO BOS-070." The Canal/Creek pipes are ~10ft x 15ft and the outflow is ~20ft x 15.5ft. (Jacques 2018).

This conduit/outfall conveys groundwater, stormwater, and sewage into the sea. The pipelines are "hydraulically connected to Boston Harbor and have no tide gates." The water levels in the conduit fluctuate over 13 feet, twice a day, with the tides. "During high tide, both outfall conduits are effectively submerged and inaccessible." There is only "4 to 5 hours" each tidal cycle were the conduits are not completely submerged by the tides. In addition, the 1960s access panels were not maintained and are now "deteriorated" and "unusable." (Jacques 2018).

Sewage is released during storm events but also due to the defective tide guides, broken regulator, illicit connections, and the sewage-dumping permitting program the City and Commonwealth established for properties in the South End district. During a 2018 drone inspection (the only way to see inside at all) the conduit was found to be completely dark, submerged, and covered in "several feet of sediment" including sand, gravel, "loose sludge," "hard-packed deposits," and "organic backwash from the Boston Harbor." (Jacques 2018).

On December 30, 2025 (11:54 AM - 12:13 PM EST), I visited the mouth of the Roxbury Canal where it discharges to Fort Point Channel. The following conditions were documented from the Traveler Street Bridge (42.343615, -71.060516) and South Bay Harbor Trail (42.343444, -71.060892). When I visited it was around low tide (-0.02 ft at 1:06 PM) and the most recent high tide was 10.4 ft at 6:42 AM. The weather was 27.7°F, wind W/SW 25 mph, 41% humidity. The most recent precipitation was 0.39 inches in prior 24 hours.

The surface of the water was covered in sheen, froth present, visible sludge, debris throughout, unnatural coloration. The water actively flowed from the canal mouth into the channel during dry conditions near low tide. This indicates continuous discharge, not storm-related overflow. Additional storm water outlet observed on opposite bank with significant flow volume and velocity, also during dry conditions. The source is unknown.

On the banks, the color stratification visible on brick/stone banks—sludge deposits at lower level (below high tide), green algae/moss in the tidal zone, orange/rust iron oxidation at and above high tide level. This stratification indicates chemical gradient consistent with cesspool conditions. There was garbage and debris dumped into the water and on the banks including shopping carts, wheelchairs, office chairs, clothing, shoes, traffic cones, and other refuse. The canal is being used as a *de facto* landfill. After visiting the Canal/Conduit, I suffered facial skin redness and painful inflammation which developed after less than one hour on site. My allergic symptoms persisted for more than 24 hours following the visit.




Dec. 30 2025 | Photos by Ashley Gjovik | Roxbury Canal / Fort Point Channel South Bay Harbor Trail, Boston, MA 02127 (42.343444, -71.060892) & Traveler St Bridge, Boston, MA 02127 (42.343615, -71.060516)

The Site Also has an Excessive Amount of Subterranean Tunnels, Conduits, Caves, And Bunkers.

The Boston City Hospital created multiple hazards from the start of its operations including that their sewers created "seepage of ooze and flow of tides in some parts of the building." (add). They noted attempts to install tide gates but that the tidal ooze did not cease until the 1878 East Side Interceptor was constructed and noted it acted "as a bulkhead" implying the prior issue was not about the drainage issue from the Hospital, but rather it was the tides pushing the sewage back up into the buildings. (add cite)

The Boston City Hospital's buildings constructed prior to 1872 "used old fashioned 'barrel' sewers" and "the sluggish flow caused the solids to settle, forming a deposit that gradually became obstructive." The Hospital noted that only after 1872 did the buildings have catch basins for storm water and "soil pipe sewage into the sewer proper." The City Hospital's pre-1872 buildings have one discharge for both sewer and stormwater, and that connection was not connected "into the sewer proper," so it assumably flows directly to the Roxbury Canal and/or Fort Point Channel. The City also noted a rat infestation had taken hold in its sewers system under the Hospital. (add cite).

City Hospital and the larger Victorian buildings have wooden piles driven through contaminated fill, the organic (cesspool) layer, through contaminated septic groundwater, and into the clay. These piles create vertical pathways for contamination migration between layers. "Examination of existing piling showed some rotting, indicating probable lowering of the water levels in some areas." Wooden piles rot when exposed to air - indicating groundwater fluctuation. (BDA South End Urban Renewal Study 1963).

This was already identified and proven to be a high-risk pathway at the Gillette campus on Fort Point Channel. At this Gillette site, the foundation of "Z Building" is constructed on piles" and the "piles terminate either in the till or bedrock and they fully penetrate the approximately 50-foot-thick clay layer. The piles create a pathway for DNAPL to continue its preferred downward migration by gravity. Once in bedrock, DNAPL flows vertically down steeply dipping and closely spaced fractures until residual saturation is reached. The total depth of contamination at the Site is not known, but may reach a few hundred feet. The Phase II Site Asssement noted that "the foundation piles offer multiple pathways through the overlying clay." (70 Sobin Park 1998).

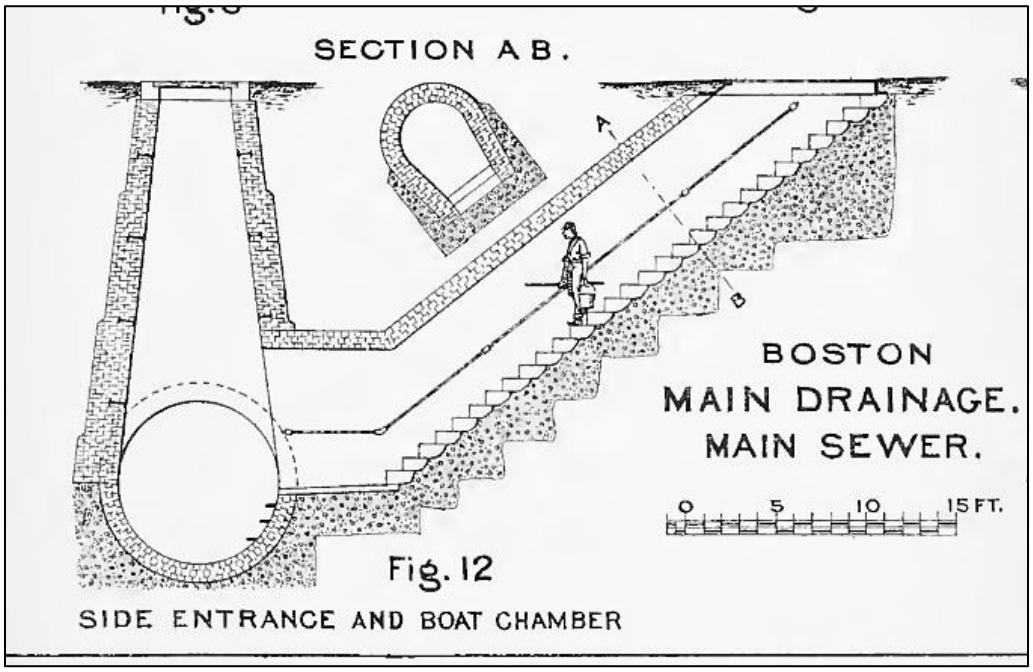
Casting Basin Excavation: Demolition of Gillette Bunkers, (November 17, 1996), CB9611170207, https://www.doneyles.com/BDX/BigDigShots.html?CB9611170207

Similarly, at the Widett Circle and Cabot Yard sites on Fort Point Channel and South Bay, site assessments determined that "certain utilities such as water, sewer and stormwater conduits could

intersect the groundwater table and therefore have the potential to serve as preferential pathways. The Dorchester Brook Conduit is known to intersect the groundwater table at the Site."

The MBTA Cabot Yard report provides direct evidence stating that "acting as a preferential pathway, the bedding materials of this large sewer line likely contain [hazardous materials] and are influencing the shape of the plume. After constructing the South Boston Haul Road and installing numerous utilities, a preferential pathway was created south of Cabot Yard that likely acts as a sink. Therefore, as the 48-inch sewer line collects product and carries it via bedding materials towards the north and south, the groundwater sink created by the Haul Road draws the carried [pollution] from the sewer line's bedding materials into the Haul Road's stormwater collection system." This confirms sewer bedding materials transport contamination, act as collection/distribution systems, and pollution migrates through these pathways. (add cite).

The City of Boston "was underlain by a maze of subterranean channels leading groundwater off to the Harbor." There are no known records for most of the pre 1863 underground sewers, tunnels, or buildings. Today, the location of those early drains and pipes is "entirely a matter of conjecture, except where they have been uncovered by recent construction." The early "sewers and drains" were only the "beginning of the present maze of underground channels of which little or nothing is known, but which form channels by or along which the groundwater can escape to sewers in which the gradient is at a sufficiently low elevation to help drain the area." (Stone & Webster 1990).



Albany Street entrance with a "boat chamber." City of Boston, MA.

Since the 1990s, Boston's conduits and interceptors are known to "have the ability to transport water rapidly along their length via their underdrain system" and one specific sewer line at in Back Bay was shown to drawdown the groundwater for decades until a "dam" was installed in that sewer but the dam also proved to require ongoing maintenance and any failure triggers the same groundwater issues.

The conduits and interceptors also "effectively isolate the Boston Peninsula from significant recharge from the Charles River." The only known source of significant groundwater recharge was "leaking water mains." (Stone & Webster 1990).

Further, "all of the early sewers were constructed on top of an 8 to 12 inch underdrain which was designed to collect and control groundwater during construction. These remain in place to this day and are capable of transporting significant quantities of groundwater." (Stone & Webster 1990). Site assessments have also confirmed these are an active vector for pollutant migration and discharge. (add cite). These conduits connect the entire Victorian sewer network into a subsurface drainage system that intersects the water table, runs through contaminated fill and organics, connects to the Roxbury Canal/Dorchester Brook Conduit, and transports groundwater (and contamination) throughout the area. But there's also additional vectors with the underground tunnels (including City Hospital), underground "bunkers" (including Gillette), and other subterranean passageways that are unmaintained, unsealed, and easy vectors for migration and additional discharge of pollutants.

Archaeological excavations have uncovered remains of wharves, docks, bulkheads, landfill and living spaces from the 17th through 19th centuries. (Written In Stone 2017). (add British fortifications)."Underneath Boston's skyscrapers and sidewalks lies a hidden, long-forgotten labyrinth of abandoned subway stations and tunnels—vestiges of the country's first subway system." (Boston University 2012). "Under City Hall Plaza is an abandoned T tunnel that was in operation from the end of the 19th century to the early 1960s. Tremont Street Subway extension was abandoned in the early '60s as part of the redevelopment of Government Center. There is also an abandoned subway station in the city called Court Street Station, which is located under the front steps of 26 Court St. and still contains some of the original platform. Located under City Hall Plaza, the tunnel is only accessible through the City Hall garage. Bagley estimates the tunnel is about 15 feet high, 200 to 300 feet long, and 30 to 40 feet wide, enough room for two trains to pass through." (Boston.com 2018)

At the Site, The Tides are Ebbing and Flowing ~Two Miles "Inland."

The tidal influenced water level in the Roxbury Canal Conduit is anticipated to generally range ten feet per day, from mean high and low water marks, with a twice daily tidal pumping mechanism. Groundwater infiltration into of water exfiltration out of the conduit is assumed. The 2019 drone inspection noted the "tidal work window was determined to be about five hours" - meaning the conduit is tidally flooded for approximately 7 hours of each 12-hour tidal cycle.

Reports for the last ~fifty years note that nearly ever tide gate was missing or broken at the Site, and the tide gate for the Roxbury Canal Conduit, if there ever was one, has been missing for decades and is still missing today (confirmed in the 2019 drone inspection, and the onsite walk-through by the Petitioner/Plaintiff).

This means at high tide the Atlantic Ocean harbor water pushes up the conduit, the water level rises in the conduit (documented: up to 13 feet vertical change), hydraulic pressure increases in surrounding soil, and contaminated water is pushed laterally into: the surrounding fill, connected sewers , the conduit network, and building foundations.

The 1967 CDM report documented that sewers are "surcharged above their crowns for extended periods during each tidal cycle." When sewers surcharge: pressure increases inside the sewer and water is forced out through deteriorated brick joints, cracked pipe walls, failed connections. (Camp, Dresser, & McKee 1967).

Then, at low tide, water drains from the conduit, the hydraulic gradient reverses, and groundwater flows toward the conduit. This draws contaminated groundwater from surrounding areas and also pulls pore water from contaminated sediments. This happens twice daily, every day, for 60+ years since the conduit was built (and before that, the open canal had the same tidal influence for 200+ years). "The organic sediment, which smells of hydrogen sulfide (H2S); also contains methane, and is highly fossiliferous with plant fibers and traces of wood as well as remnants of oyster banks." (P. J. Barosh 2011).

The water table is already high and tidally influenced. As sea level rises, the water table will rise, the tidal range in conduit will increase, more contaminated material will be saturated, and the vapor intrusion risk will change as the water table approaches building slabs. The vapor intrusion risk related to the sewer pipes (both as a contaminated source and pathway for other contamination, including microbial) will continue to expand as sea levels rise and the tides push further and further into the sewer systems.

I can attest that this is occurring at Worcester Square. I was suffering severely with what seemed like unpredictable symptoms until I discovered my proximity to the Canal, the Victorian sewer system under/around my building, and the history of complaints about tides assaulting house drains and pushing sewer gases into living spaces. Then I went and pulled the tidal charts and compared it to prior symptoms and issues and found indeed the worst malaise, fatigue, headache, and nausea seemed to be occurring at high tide – especially when hide tide was beyond 11ft.

The Site is Cesspool Polluted with Sewage & Putrefaction

The Victorian sewer infrastructure at the Site was built in the 1850s-1880s and acted as a submarine cesspool for 150+ years, accumulating 3ft+ of sludge and receiving tidal flow with the reach of high tide twice a day. The tides push the sewage and sewer gases up into the pipes and houses of the South End. These sewers have a direct connection to occupied buildings, septic sewage, and the ocean. Defendants Boston and Massachusetts have abandoned these sewers in the literal sense, as they continue to accumulate sediment, the tide gates have been missing for nearly a century, and they still carry sewage and other pollution into the sea.

The sewers where I lived were and are still combined sewer system from the source (not just the discharge point). Even in the 1960s, the entire South End was "served almost entirely by a combined sewerage system that is more than 80 years told and in fair to poor physical condition" and discharges storm water to the Roxbury Canal. In addition, where lived the "tide waters surcharge the system through the Roxbury Canal at high tide." (Boston Redevelopment Authority 1964).

Worse, by design, my sewerage system was "affected by the tide water" and even in dry weather, the "tide water enters the systems through outlets and regularly flushes out portions of the system" which then discharges and creates sewage pollution of the Boston Harbor. I have found no evidence that this was fixed, or that the direct connection to the Roxbury Canal Conduit was abandoned, and accordingly it appears I was pooping directly into the ocean for over two years. (Camp, Dresser, & McKee 1967).

The sewers have leaked for a century and the open canal cesspool was never contained and was known to overflow. The cesspool functioned with the tides, and the tides also include the groundwater around the Site, including where I lived. That means the tides regularly pushed the septic sewage, gases, and bacteria up into groundwater towards and into our basements. (The "groundwater levels in the lowland areas generally are affected by tidal action and lie only slightly above mean sea level"; "The effects of the tide levels in the Roxbury Canal influence the water table at this site." (Boston Redevelopment Authority 1964)).

"Drains built when the South End district was developed were of relatively large size to provide storage for storm water between the periods when the tide level in the former South Bay was below the drain outlet levels." (Camp, Dresser, & McKee 1967). This means that until low tide, the sewers acted as a cesspool under buildings like where I lived. My own plumbing, the land around it, my drains – are all cesspool infrastructure. When my sewage was backing up and flooding into my bathtub – that was the same infrastructure and sewer lines that have held the septic sewage of a City for over a hundred years. Where I lived was especially cursed because even when other areas of South End were elevated and outfalls were improved, Worcester Square was already build and the East Concord sewers were ignored.

The East Side Interceptor was a circular brick tunnel roughly 66" x 68" that ran along Albany St. prior to being abandoned in the 1960s. The Boston Main Interceptor was even larger, at around 108" near Mass. Ave. The East Concord sewer connection to the Roxbury Canal Conduit was a brick horseshoe-shape sized at around 81" x 93". (Camp, Dresser, & McKee 1967). The East Concord Street sewer was a combined sanity sewer and storm drain system by default, always combining storm waters with sewage. In 1964 the plan was to separate these lines so the Roxbury Canal outfall could be closed, but by 1967 that plan was abandoned and assumably the outfall to Roxbury Canal was and is maintained. (Boston Redevelopment Authority 1964).

Also warned that certain areas have mud fifty feet deep, across 500 feet. Says superintendent of City Hospital says that canal is not injurious to health, and no complaints have been made by patients. But state health report year prior said it was a nuisance and adjacent properties were being abandoned. "Here is a foul place in the midst of a thickly populated portion of the city, like a cancer upon the body."

Last year Committee on Health said that have to divert sewers and fill with "clean gravel" because "the bed and surroundings of the canal are so completely saturated with filth that a long period would elapse before they were be purified by natural methods." City physical warned "the foul mud, which reaches for a considerable distance beyond the walls of either side of the canal, would also for a long time, furnish a source of contamination to the canal." The hospital and "other medical institutions growing up in its vicinity… are all of the opinion that this canal and its foul odors and unhealthy vapors and miasma that arises from it are injurious to the health of the patients." The South Bay "is a foul and filthy place." [37]

In 1967, a report on the conditions of Boston's sewer infrastructure described this E. Concord regulator as part of the Roxbury Canal Conduit infrastructure and explained it is a 81-in x 93- horseshoe-shaped reinforced cone conduit using Outlet No. 77. The report also notes the regulator has a "tidegate chamber with two 81-in x 87-in rect. wooden tide gates in series at Albany St." and that the "dry weather

[37] "Roxbury Canal," Boston Evening Transcript, Jul 06, 1878, p. 2-3

connection working satisfactorily" with "moderate sludge," but the "upstream gate has fallen off and is laying in invert" and the "downstream gate works but leaks at high tide." Report On Improvements to the Boston Main Drainage System Volume 1 HUD Project No, P-Mass-—3306, Camp, Dresser & Mckee (Sept., 1967).

The City installed the East Side intercepting sewer in (add year). It starts on Albany St. and East Chester Park, and runs to Dover St. (~2 miles; 4,524 feet). Its 5'8" x 5'6" with a 1 in 2,000 inclination, about 24 feet bgs, at 6.5 ft below low tide elevation. The excavation found "marsh mud and peat extended from near the surface of the ground to a depth… considerably below the bottom of the sewer." The City made a drive in piles and fasten a "timber platform" for the "rubble masonry abutment walls." The first common sewer "taken in by the interceptor" is on E. Concord St. next to the Petitioner's home.

The City complained that tide would "dam up" the old sewers because "for much of the time, [those sewers] were converted into stagnant cesspools, and the air in them was compressed, and to find outlets, was driven into house-drains and other openings." In 1967 it was reported that "he physical condition of long sections of the sewer is poor as revealed by a photographic inspection of portions downstream of Dover Street in 1963. Substantial deposits of material have been found by soundings at manholes. (Camp, Dresser, & McKee 1967).

Around the time Worcester Square was build the "cellars and basements of the South End… flooded with water on the occasion of every rain, accompanied with a high tide" "any new sewer which may be built will act only as a reservoir to hold additional water until the tide shall have abated so sufficiently for the contents of the sewer to pass off." (Boston_Journal_1869-10-23)

It was warned that "house drains when perfected to the last degree of our present knowledge of traps would avail but little against the force of gases, subjected as they were to the additional force of gases, subjected as they were to the additional force of wind and tide. Tide gates should be provided to keep the tide from driving the gas back into the sewers. A reservoir should be constructed in the basin to afford the temporary relief."

As part of this adventure, the Petitioner had to try to sort out where her wastewater went after it left her home drains. What should have been a straight forward question led to, what appears to be, a regulatory and public health abyss – and those findings raised even more questions in response. Because Defendants themselves admit that "there are no plans in detail of the Sewers of Boston" (Main Drainage Works, 1885), my findings can serve as a sort of case study with the information I was able to piece together.

The Petitioner's sewage/drainage appears connected to the East Concord station and the 1967 CDM report notes that the connections from her neighborhood were left as "open connections... without the control of regulating devices." That means direct discharge? No valve or gate… just a pipe open to the canal/conduit system? If her building connects to that system, or to something even older that predates it... when she flushes her toilet, she may be sending her own sewage into the Atlantic Ocean. That is horrifying and morally injurious, and creates a personalized injury for the Petitioner that cannot be remedied financially but requires injunctive relief: investigation, remediation, disclosure, corrective actions.

Further, when I went looking around the storm drains around Wrocester Square, the two in the Public Alley were not connected to anything or if they were, they were full of dirt and mud. (20JCB167 ; 20JCB177). One of them appeared to simply be sitting on top of the ground without there ever being a hole below it. There was one on Worcester Square near the northern buildings and it had a hole under but it had standing dark water, strange growths and films, and floating trash.

If it was connected to any drainage system, it must have been blocked. It was viewed around low tide, so assumably the blockage was not the tide. I did confirm the gutters for 18 Worcester Square did go into the building at the basement level, ran in the drop ceiling and appeared to go back to the boiler room. However there's no known sewage or drainage connection back there so it must have been doing to the secret Roxbury Canal connected sewers under the house, running under Worcester Square row houses.

The Petitioner's building is a Victorian rowhouse built around 1864 on a planned development prepared by the City of Boston starting around 1850. The sewer system for the Worcester Sq. buildings was constructed in the 1850s-1860s. The City's reports in the 1880s claims there are no detailed plans or records about prior sewer systems, and many of the older ones have no man holes, exist side by side modern ones, and sometimes have newer systems built on top of them." (Main Drainage Works, 1885).

City of Boston is under federal consent agreement regarding its CSO system and sewers and it cannot explain how its system works, where the infrastructure goes, or other basic information. Upon filing Public Records Requests to understand the sewers at Worcester Square, the most recent information provided was from the 1960s which noted that the sewers at Worcester Square were a problem and compliance could not be met but still provided no detail on where my waste went when I flushed the toilet.

The Site is Polluted by Eutrophication, Fouling, & Marsh Gas Emissions

The Defendants Discharge Sewage, Sewage Sludge, and Biological Materials into Waters of the United States Causing Eutrophication and Toxic Gas Emissions in Violation of the Clean Water Act, 33 U.S. Code §§ 1311, 1321, 1345

33 U.S.C. § 1311(a) prohibits the discharge of any pollutant into navigable waters except in compliance with the Act. 40 CFR 230.3(j) defines "pollutant" to include "sewage sludge," "solid waste," "biological materials," and "municipal waste." 33 U.S.C. § 1345(a) prohibits the disposal of sewage sludge resulting from the operation of a treatment works — including the removal of in-place sewage sludge from one location and its deposit at another — where any pollutant from such sludge would enter navigable waters, except under permit issued pursuant to § 1342. Section 1345(e) makes it unlawful for any person to dispose of sludge from a publicly owned treatment works except in accordance with regulations established under subsection (d). 33 U.S.C.

§ 1292(2)(B) defines "treatment works" to include any method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste, including storm water runoff or industrial waste in combined storm water and sanitary sewer systems. 33 U.S.C. § 1321(b)(1) declares the national policy that there should be no discharges of oil or hazardous substances into navigable waters, and § 1321(e) authorizes enforcement orders to abate an imminent and substantial threat to public health or

welfare from a prohibited discharge. 40 CFR § 122.2 confirms that a "discharge" includes flow from "surface runoff which is collected or channelled by man" and "discharges through pipes, sewers, or other conveyances… which do not lead to a treatment works."

The South Bay and Fort Point Channel system has functioned as a nutrient-saturated, oxygen-depleted, sewage-impacted estuary for over 150 years. The channel and its tributaries — the Roxbury Canal Conduit and the Dorchester Brook Conduit — receive continuous inputs of nitrogen, phosphorus, and organic carbon from combined sewer overflows, legacy sewage sediments, and the ongoing anaerobic decomposition of buried organic fill materials. The result is a system that the 1959 Massachusetts Senate Commission described as "an open cesspool" and the 1968 Federal Water Pollution Control Administration documented as "severely polluted, and septic" — conditions that have never been fully remediated because the underlying sources (CSO infrastructure, buried organic fill, and legacy sludge deposits) remain in place.

The Site data spanning 1905 to 2024, documents a system in which eutrophication is not a historical artifact but an active, ongoing process. Ammonia in Widett Circle groundwater reaches 25,800 µg/L — over 100 times the reference threshold — indicating that the buried fill is still actively decomposing. Total phosphorus in Roxbury Canal groundwater reaches 4.3 mg/L — roughly 100 times the eutrophic threshold. Biochemical oxygen demand at the same location reaches 287 mg/L — 57 times the standard for unpolluted water. And methane in Roxbury Canal groundwater reaches 2,100 mg/L — 210 times the explosive hazard threshold — confirming vigorous anaerobic decomposition beneath the surface.

Ther have been reports for over a century of premature disease and death in this area speaking of the "decay" of human health, that people were regularly dying before fifty years old, and the area had a "very large proportion" of chronic diseases and its often the young and healthy that get the sickest. Old reports note "peculiarities in the air of this place" and may be attributed to the "marshy ground." The southern area of Boston (where the South End and South Boston are) was designated the location with the most hazards from the marshes gases and resulting diseases. (Shurtleff 1871).

The degradation of South Bay and Fort Point Channel water quality is as old as the sewered city itself. The 1876 Boston Evening Transcript reported that "an hour at high tide at summer on the Roxbury Canal, or in the midst of the foul gases bubbling up on Beacon Street, would show that the mud banks are the chief but not the only source of the offense." The 1885 Main Drainage Works report documented that sewers surrounded by marsh mud turned black from hydrogen sulfide, and that catch-pails under manhole covers filled with organic sludge monthly.

By 1939, the Massachusetts Special Commission on Sewerage found that "at practically every harbor station the mud samples contained many more bacteria characteristic of pollution than did the water at the surface above" and that "conditions now existent in Boston Harbor and along the shores of the bay are sufficiently grave to make it mandatory that we recommend a definite program for alleviation." In the minority report, the City of Boston's own Division Engineer recommended delaying corrective action until "more favorable financial conditions."

The 1950 Port of Boston Authority study concluded that South Bay and Fort Point Channel "are of little value to commerce, and the general condition of the properties in this area presents an unsightly

nuisance," while noting the area had "been the subject of consideration by legislative committees for over eighty years" with "little change as a result of these investigations."

The most damning characterization of the channel comes from the 1968 Federal Water Pollution Control Administration study, which found Fort Point Channel sludge contained 23.5% organic carbon and 1.29% organic nitrogen — concentrations the report compared to "raw wastes from packinghouses, sewage, or rapidly decomposing sludge." Sludge deposits in the channel exceeded three feet in depth, contained oily residues, and emitted foul odors. Hydrogen sulfide gas bubbled continuously from the sludge, rose to the surface, and burst, "creating readily apparent odors like those of raw sewage and rotten eggs."

The 1969 Joint Report on Pollution documented that "the average value of ammonia nitrogen and soluble phosphorus were equal to or greater than 100 and 40 micrograms per liter, respectively, in all areas of Boston Harbor inland from its mouth." These nutrient concentrations "stimulated dense populations of phytoplankton which exceeded 1,000 per milliliter in about sixteen square miles, or 66 percent of the harbor." In Winthrop Bay, decomposing masses of sea lettuce (*Ulva*) caused hydrogen sulfide emissions sufficient to discolor paint on nearby dwellings.

The 1967 biological survey found "an absence of bottom-associated organisms" in Fort Point Channel — a dead zone, devoid of benthic life due to oxygen depletion. At the same time, pollution-indicating polychaete worms exceeded 1,000 per square foot across 14 square miles (30%) of Boston Harbor, with over 200 per square foot in 34 square miles (80%).

The 2003 site assessment at 400 Frontage Road — located along the former Roxbury Canal, now the Roxbury Canal Conduit carrying combined sewage to Fort Point Channel — documents extreme nutrient loading and oxygen demand in groundwater:

- Biochemical Oxygen Demand (BOD): 287 mg/L at RST-2 (raw sewage equivalent; standard is <5 mg/L), with four additional wells ranging from 9.3 to 31 mg/L — all "severely degraded" to "hypereutrophic."
- Chemical Oxygen Demand (COD): 1,800 mg/L at ETMW-102 (90× the reference), 730 mg/L at ETMW-101, 600 mg/L at RST-2, 300 mg/L at RST-1 — all indicating massive organic loading.
- Total Phosphorus: 4.3 mg/L at ETMW-102, 3.5 mg/L at ETMW-101, 2.6 mg/L at RST-1, 1.8 mg/L at RST-2, 1.5 mg/L at MW-2. The eutrophic threshold for phosphorus in surface water is 0.03–0.05 mg/L.

These concentrations are 30–140 times the threshold. Every well sampled at this location is hyper-eutrophic.

The methane results include: 2,100 mg/L at RST-2, 1,800 mg/L at ETMW-102, 1,700 mg/L at ETMW-1, 1,500 mg/L at RST-1 and MW-2, 1,400 mg/L at ETMW-101. The explosion hazard threshold is approximately 10 mg/L. Every well at this location exceeds it by 140–210 times. The 1985 South Hampton Yard assessment also documented methane in fill at A-OW-1, A-OW-2, and A-OW-4. The Gillette bedrock wells show methane at 210 mg/L (MW822B, 2000) and 25 mg/L (MW813B, 1999). Methane at these concentrations confirms vigorous anaerobic decomposition of buried organic matter — the same process producing ammonia, hydrogen sulfide, and carbon dioxide throughout the fill.'

The 2024 Widett Circle Phase I by VHB for MBTA explicitly states: "The ammonia is believed to be a result of the natural decomposition processes in the fill underlying the Site." Ammonia concentrations from monitoring wells: MW-23: 25,800 µg/L (2022) — 129× the 0.2 mg/L reference, MW-24: 22,600 µg/L (2024), MW-25: 17,600 µg/L (2022), MW-27: 17,200 µg/L (2024), MW-26: 10,400 µg/L (2022), MW05: 690 µg/L (2024).

Every well at Widett Circle shows extreme ammonia, confirming that the organic-rich fill across this area is actively decomposing under anoxic conditions, generating ammonia, methane, hydrogen sulfide, and carbon dioxide. The buried organic material includes peat (the original salt marsh), sewage sludge (from decades of direct discharge into the canal), and heterogeneous organic fill (food waste, wood, textiles, animal matter). This material, saturated by a water table at 5–10 feet, will continue to decompose and produce nutrients and gases for decades.

The Widett Circle assessment also documented heterotrophic bacteria at 220,000 CFU/mL and hexadecane-degrading bacteria at 230,000 CFU/mL in well WSA-2 — an enormous microbial population confirming active biological processing of organic material in the subsurface.

The data documents extreme pH values across the study area, indicating the fill is not a stable, inert matrix but an active geochemical system: pH 12.0 at Shattuck Hospital (88 East Newton St) — strongly alkaline, consistent with buried concrete, cement, or calcium-rich industrial waste reacting with groundwater; pH 11.9 at BMC Power Plant (750 Albany St); pH 4.9 at Channelside (Fort Point) — acidic, consistent with organic acid generation from anaerobic decomposition or sulfide oxidation; pH 5.5 at Channelside; pH 5.9 at BMC Power Plant.

The range from pH 4.9 to 12.0 across the study area — a 10-million-fold difference in hydrogen ion concentration — demonstrates that the fill is geochemically heterogeneous and reactive. Acidic zones promote metal mobilization (lead, arsenic, cadmium all become more soluble at low pH), while alkaline zones indicate ongoing mineral reactions. Neither condition is stable.

At BioSquare II (BUMC campus), reactive sulfide in fill at 9–11 feet depth measured 2,900 mg/kg — exceeding the 500 mg/kg RCRA hazardous waste threshold. This fill is classified as hazardous waste by characteristic reactivity. Reactive sulfide at these levels generates hydrogen sulfide gas upon contact with acid or water, creating both toxicity and explosion hazards.

Active CSO monitoring in 2024 documents ongoing pollutant loading to Fort Point Channel:

- CSO 070 (Roxbury Canal Conduit outfall): ammonia detected, marine life impact noted, oily sheen
- CSO 064: conductivity 17,450 µS/cm (subsaline, indicating heavy dissolved solids load)
- SDO 196: conductivity 12,790 µS/cm

The 1975 Camp Dresser & McKee report documented Roxbury Canal Conduit water quality: 7,400,000 mg/L coliform, 6,900,000 mg/L fecal coliform, 0 mg/L dissolved oxygen, 26 mg/L BOD, 175 mg/L total suspended solids. The 2019 and 2020 BWSC CSO monitoring reports document that 70–75% of samples at Station 075 (near the BOS 070 outfall at Fort Point Channel) exceed bacterial standards — in both wet and dry weather. BWSC acknowledged that "CSOs appear to be only one factor contributing to bacterial levels."

The biological record confirms that Fort Point Channel and South Bay have been ecologically devastated by nutrient loading and oxygen depletion. The 1967 federal survey found zero bottom-associated organisms in Fort Point Channel. The 1968 report documented the sludge as compositionally equivalent to raw sewage. Boston Inner Harbor remains on the 2012 Massachusetts Integrated List of Waters as Category 5 — impaired for PCBs in fish tissue, fecal coliform, enterococcus, dissolved oxygen, and other parameters, requiring one or more TMDLs.

Current biological observations in the Fort Point Channel area document a community consistent with severe organic enrichment: Beggiatoa mats (filamentous sulfur-oxidizing bacteria indicating high sulfide and anoxic conditions), high fecal indicator bacteria, and an absence of sensitive species. Polychaete worms, including Capitella — a classic opportunistic colonizer of organically enriched, oxygen-depleted sediments — dominate the benthic community. Aurelia (moon jelly) blooms in the channel reflect high nutrient availability. Invasive tunicates (Botrylloides violaceus, Ciona intestinalis) and invasive skeleton shrimp (Caprella mutica) dominate the fouling community — tolerant generalists that thrive where native communities have been eliminated.

The Phragmites australis invasion documented throughout New England salt marshes is directly linked to eutrophication from sewage inputs — nitrogen enrichment facilitates the competitive displacement of native cordgrass. While the original South Bay salt marsh has been buried under fill, the nutrient-laden groundwater that seeps from the fill into the channel continues to drive the same eutrophication dynamics in the receiving waters.

The scientific literature on "undesirable river biofilms" (URBs) — historically called "sewage fungus" — describes a polymicrobial biofilm dominated by bacteria (Sphaerotilus, Zoogloea, Beggiatoa, Thiothrix), with associated fungi and algae, that forms in waters with high organic pollution. URBs consume dissolved oxygen at 10–20 times the rate of aquatic macrophytes, outcompete native periphyton, degrade benthic habitat, concentrate heavy metals, and persist long after pollution events end. The conditions in Fort Point Channel — high organic carbon, high ammonia, high phosphorus, low dissolved oxygen, hydrogen sulfide generation, heavy metals in sediments — are precisely the conditions that sustain URB formation.

The eutrophication of Fort Point Channel and South Bay is not a single pollution event with a beginning and end. It is a self-reinforcing system: The buried organic fill decomposes anaerobically, producing ammonia, phosphorus, methane, hydrogen sulfide, and carbon dioxide. These nutrients enter groundwater and seep into the channel. CSO overflows add fresh sewage, nitrogen, phosphorus, and organic carbon during every significant rain event. The nutrient load stimulates phytoplankton and bacterial growth, which consumes dissolved oxygen. Oxygen depletion kills aerobic organisms and creates anoxic sediment conditions, which promote further anaerobic decomposition, sulfide generation, and nutrient release from sediments. The legacy sludge deposits (3+ feet deep in the channel as of 1968) continue to act as a nutrient source and oxygen sink. The contaminated sediments (PAHs, PCBs, metals) suppress recolonization by sensitive species, leaving the benthic community dominated by pollution-tolerant opportunists.

Until the sources are addressed — the CSO discharges, the leaching fill, the legacy sludge — this system will not recover. It has not recovered in 150 years of documented pollution, despite multiple

legislative commissions, court orders, and the $3.8 billion Boston Harbor Cleanup. The channel still receives CSO discharges. The fill still decomposes. The sludge still lies on the bottom.

Boston explicitly labels the growths on case-iron pipe as "Tubercles with electrolytic pits beneath." The Reality of the "Tubercles." "Tubercles" are microbial mats (biofilms). Modern corrosion science confirms that these tubercles are essentially the physical evidence of Microbiologically Influenced Corrosion. Iron-oxidizing bacteria and sulfate-reducing bacteria are fundamental to tubercle formation on cast iron pipes. They consume iron for energy and excrete corrosion products (iron oxides and sulfides) that build the hard outer shell of the tubercle. The bacteria create a mini, highly aggressive environment directly against the pipe surface. Under the tubercle, the oxygen is depleted, creating a differential aeration cell—an area where intense, focused corrosion occurs.

Ammonia persists in anaerobic conditions; converts to nitrate when oxidized; phosphorus binds to sediments. Organic matter (such as that measured at 23.5% organic carbon) creates anaerobic conditions, generates gases, provides substrate for continued microbial activity. Hydrogen sulfide is produced continuously in anaerobic organic-rich sediments; reacts with metals to form insoluble sulfides. "Ammonia was detected in excess of the RCGW-2 standards... The ammonia is believed to be a result of natural decomposition processes in the fill underlying the Site." (add Widett Circle). Concentrations: 17.2 to 26.2 mg/L are well above the GW-2 standard. This may be direct evidence that the buried organic material is still actively decomposing.

Hydrogen Sulfide is extremely dangerous. "It's toxicity is comparable to that of hydrogen cyanide... 0.06 to 0.1 percent is sufficient to cause serious symptoms within a few minutes." (Sayers, 1934). Effects include headache, sleeplessness, dizziness, pain in eyes, conjunctivitis, bronchitis, chest pain, depression, stupor, unconsciousness, death. The heart continues beating after respiration ceases. (Id.). Methane displaces oxygen causing asphyxiation and carries an explosion risk (Winston-Salem 1969 explosion killed 3, seriously injured 5). Methane migrates through soil and can concentrate in nearby structures (1973 EPA report on landfill gases).

Carbon Dioxide at 3% concentration: hyperpnea and discomfort; at 8.5%: dyspnea, blood pressure rise, "insupportable" within 15-20 minutes; and at 25-30%: coma, death. Ammonia causes acute inflammation of respiratory organs, edema of lungs, chronic bronchial catarrh Carbon Monoxide has an affinity for hemoglobin 300x that of oxygen and at 1% concentration, can produce 60-80% hemoglobin saturation (potentially fatal) in "a few breaths."

The carbonic acid gas in the Boston City Hospital basement, next to my basement apartment was 5 to 6 %. For context: outdoor air has ~0.04% CO_2, so the hospital basements had 125-150 times normal levels. "Again, the amount of carbonic acid gas in country pastures, or in the woods, is only a small fraction of 1 per cent.; in cities and towns, 2 to 8 per cent. The amount of carbonic acid gas, found not from borings upon the ground, but from various places throughout the basement. showed that there was 5 to 6 per cent. of carbonic acid gas. These conditions caused great deterioration in the Hospital buildings, but they would not have been recognized except for actual scientific tests." (Cheever 1906).

Everything in this system is likely coated in biofilms: a slimy matrix of bacteria, fungi, and extracellular polymers. Biofilms protect organisms from disinfection, concentrate nutrients, allow gene transfer between bacteria (including antibiotic resistance), shelter pathogens, and accumulate on every

surface: pipe walls, sediments, and house drains. The documented gases (H_2S, methane, CO_2, ammonia, plus VOCs from industrial contamination) also migrate through soil as vapor.

Nearly every single Phase I-II Assessment reviewed for the Site included the presence of peat and organic matter beneath the surface. Some had a little, some noted a lot, and some also reported indicators of redox environment and emissions of hydrogen sulfide, methane, and/or ammonia (NH_3). The presence of peat throughout the subsurface is dispositive evidence of wetland conditions. The black carbonaceous variety commonly contains trapped gases. (P. J. Barosh 2011).

The Harbor is marine, tidal, and with an oxygenated surface. Fort Point Channel is Brackish, contaminated sediments, low oxygen, and with "absence of bottom-associated organisms" (1968). Around the CSO 070 Outfall, a discharge point and mixing zone, bacteria are 100-770x standards. In the Roxbury Canal Conduit, its tidal and dark, with 3+ feet sediment, and no tide gates. The Victorian sewers have combined sewage/stormwater, tidal backflow, and organic deposits. House drains in South End have a direct connection to the Victorian sewers, providing entry points into residential and medical buildings. The Defendant's sewers, conduits, and outfalls connect all of these zones.

The Site is Polluted by Pathogens, Microorganisms, & Medical Waste

Discharge of Toxic Pollutants from Medical Waste (33 U.S.C. §§ 1311, 1317)

The Defendants have violated the Clean Water Act by dumping, releasing, and discharging medical waste, pathogens, and microorganisms into the waters of the United States. 33 U.S.C. § 1311(a) provides that it is unlawful to "discharge" a pollutant into the Waters of the United States, unless it is done in compliance with the Clean Water Act including 33 U.S.C. § 1317. Section 1317 creates additional limitations and prohibitions regarding discharging "toxic pollutants."

"The term 'toxic pollutant' means those pollutants… including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism… will… cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions… or physical deformations, in such organisms or their offspring." 33 U.S.C. § 1362(13). In addition, 33 U.S.C. § 1317 and 40 CFR 230.3(k) define "pollutant" as "the man-made or man-induced alteration of the chemical, physical, biological or radiological integrity of an aquatic ecosystem."

Further, 33 U.S.C. § 1311(f) explains under "Illegality of discharge of radiological, chemical, or biological warfare agents, high-level radioactive waste, or medical waste" that "notwithstanding any other provisions of this chapter it shall be unlawful to discharge any radiological, chemical, or biological warfare agent, any high-level radioactive waste, or any medical waste, into the navigable waters."

The biological contamination exists across multiple environmental compartments: groundwater, ocean water, and tidal flow at bottom, mid-water, and surface levels; subsurface groundwater, seeps, and springs; soil and sediment on dry ground, below ocean waters, underground, and consisting of organic matter and fill; air escaping from the ground, produced by organisms, and rising from the water; wet sediment ("sludge," "black mayonnaise"); deep buried sediment; material within the natural clay aquitards (subject to self-release via artesian pressure); and the extensive, ancient, underground, and admittedly

unmonitored drainage infrastructure, utility conduits, and colonial fortification tunnels running throughout the Site.

Boston Water and Sewer Commission monitoring data shows bacterial exceedances at the CSO-070 outfall in 40–79% of samples, varying by year. A 2024 BWSC report found "very little correlation exists between rainfall and bacterial contamination" — meaning the contamination is continuous, not merely during overflow events. (add cite). Groundwater data from adjacent sites shows extreme reducing conditions consistent with active organic decomposition: iron at 210,000 µg/L and manganese at 240,000 µg/L at Cabot Yard, ammonia at 17–26 mg/L at Widett Circle.

The 2019 conduit inspections — the first in over sixty years — documented "several feet of sediment… that has built up over more than 50 years of operation," iron-oxidizing bacteria visible as orange/rust biofilms, and marine worms swimming in murky water. (add cite). Once released into the sea water, the pollution persists. The 1939 Special Commission documented that bacteria concentrate in bottom sediments: "at practically every harbor station the mud samples contained many more bacteria characteristic of pollution than did the water at the surface above… Probably the organisms are deposited in the mud with the sewage solids and are not washed out to sea with the outgoing tide."

Boston City Hospital: 160 Years of Medical Discharge

The Boston City Hospital was opened in 1864 on "Agricultural Fair Grounds" that flooded at high tide, where "a large portion of the site was water flats, largely of dock mud." "The old Roxbury canal, which carried the sewage of Roxbury to tide-water, ran through one corner of the premises." The ground was raised approximately seven feet with gravel and the foundations built on piles, but the basements were built 3.5 feet below ground level without a building envelope excluding moisture, producing "a great deal of dampness." (Cheever 1906).

The hospital's sewers created "seepage of ooze and flow of tides in some parts of the building." Attempts to install tide gates failed; the tidal ooze did not cease until the 1878 East Side Interceptor was constructed, which acted "as a bulkhead" — implying the problem was not drainage from the Hospital but tides pushing sewage back up into the buildings. Buildings constructed prior to 1872 "used old fashioned 'barrel' sewers" where "the sluggish flow caused the solids to settle, forming a deposit that gradually became obstructive." Only after 1872 did buildings have separate catch basins for stormwater and "soil pipe sewage into the sewer proper" — implying that pre-1872 buildings discharged combined sewer and stormwater through a single connection not connected to the main sewer system. A rat infestation had taken hold in the hospital's sewer system. (Cheever 1906).

The hospital also struggled with ventilation, confessing its original system was designed in such a way that vents and propelled air had "unexpected leaks and mishaps," the "system was never considered a success," the "air vitiated with sewer gas" and "pushed into the wards." The City's "Medical Staff who served during the earlier years of the Hospital asserted that all patients with surgical open wounds who were assigned to beds near the air inlets invariably had erysipelas, pyaemia, or some other septic complication, many of whom died." The City's own history acknowledged that "the old Roxbury canal" was "a villainous site for a hospital ward." (Cheever 1906).

By 1932, the Finance Commission documented 4 feet of flooded water in the hospital's electric tunnels and "at all times there are several inches of water on the floor" of basement rooms. The medical

records room had "so much water on the floor of a large check room in the basement that it interferes with the use of the room." Tunnels across campus had leaks and floods, and incomplete construction of tunnels to the pathology building had been left as an open ditch. Basement floors were constructed with a design not suited for wet soils. Excavated material was left around the grounds like "public dumps." The Commission blamed the City Hospital authorities. The Mayor and hospital trustees responded that the report was "eminently unfair," blaming instead the sewers at Massachusetts Avenue where there was "an overflow discharge outlet at Mass Ave at the Roxbury Canal directly in the rear of the Pathological building" with "tremendous discharge" during high tide or heavy storms that "backs into the discharge sewers connecting the Roxbury Canal with the City Hospital" reaching "a height greater than the top of the walls adjoining the Roxbury Canal."

The Infectious Disease Program & The Hospital-Acquired Infection Epidemic

The City opened its first Infectious Disease department around 1865, creating a separate facility behind the main building on the banks of South Bay and the Roxbury Canal, initially for smallpox patients. The City expanded the facilities and eventually opened the Maxwell Finland Laboratory for Infectious Diseases on the Site. The hospital was opened in 1864 and saw patients with some of the same dangerous diseases that the NEIDL now studies — typhoid, smallpox, diphtheria, scarlatina, measles. There are 160 years of discharges of infected bodily fluids at that location. The adjacent South Burial Ground graveyard also contains hundreds, if not thousands, of bodies of people who died from these diseases. Boston University claims to have taken over all City Hospital operations when the entities were merged in the 1990s.

The City Hospital had its own Infectious Disease laboratory originally located in the basement of the library off of the administration building. The 1906 history claimed the Hospital had 27,000 pathology slides "overflowing" from cabinets where there were "a hundred or more" examples of "any lesion or almost any disease." That basement laboratory was approximately 830 feet from the Roxbury Canal, in an area with mapped tide waters, outside the original shoreline. (Cheever 1906).

"Extensive bacteriological experiments were made of the air by cultures taken in the basement" which found "innumerable colonies of moulds" — less than 500 feet from where the Petitioner now resides in another unfinished Victorian basement, connected by dozens of utility lines, pipes, and conduits running between the residential rowhouses and the hospital property. (Cheever 1906).

Boston City Hospital conducted regular bacterial assessments and published its findings — never disclosing the proximity to the Roxbury Canal or ongoing concerns about the sewage hazards — but it did disclose metrics about infections and organisms, and reported a supposedly inexplicable increased rate of bacterial infections occurring at the hospital, including superinfections and fatalities.

Between 1935 and the 1970s, approximately half of all patients who died from bacterial infections at the hospital acquired those infections there, on average 20 days after admission, dying approximately 15 days after the first positive blood culture. The top pathogens causing fatal hospital-acquired infections were Staphylococcus aureus, Escherichia coli, "other single gram negative rods," and "mixed and miscellaneous" (including Neisseria meningitidis and Haemophilus influenzae). (Finland, M., & Barnes, M.W. 1978).

Comparing the microbial species identified, patients infected at the hospital had:

- Significantly higher rates of Gammaproteobacteria Enterobacterales infections by Klebsiella/Enterobacter and Proteus species;
- Infections by Gammaproteobacteria species not identified in the community infection group including Enterobacterales (*Serratia, Citrobacter freundii,* and *Providencia*) and Pseudomonadales (*Herellea/Acinetobacter*, and *Pseudomonas aeruginosa*);
- Infections by Pseudomonadati bacteria only appearing in the hospital-infection group including Neisseriaceae Betaproteo (*Eikenella corrodens*), Flavobacterium, Alcaligenes, and Bacilli (anaerobic Streptococcus);
- Fungal infections from Torulopsis/Nakaseomyces glabratus (Ascomycota Saccharomycetes);
- A death due to filamentous, ferruginous, aerobic Betaproteobacteria *Leptothrix* — a bacterium with an affinity for iron-rich water, sewage, and swamps. (Finland, M., & Barnes, M.W. 1978), (Tothero 2024).

In 1973, of 645 surveyed patients, 22% (142) had a community-acquired infection and 15% (97) had an infection acquired at the hospital. Those metrics are very high, and the hospital failed to comment on why it had patients dying from organisms characteristic of sewage environments.

Around 1973, the hospital reported an unexplained "steady" increase in patient bacterial infections and deaths caused by infections acquired at the Hospital between 1955–1965, remaining elevated through 1970 before declining through 1973 — a period during which large portions of the remaining Fort Point Channel, Roxbury Canal, and Dorchester Brook were being filled, causing sewage to become more stagnant. (add cite). Multiple reports documented that during this time, there was a decrease in infections and fatalities for community-acquired cases, while there was an increase in infections, hospital stay duration, and deaths caused by bacterial infections acquired at Boston City Hospital. The hospital noted it had decreased the number of patients admitted and introduced a variety of antibacterial agents, but patients kept getting sick and dying. (Finland, M., & Barnes, M.W. 1978). One report documented an increase in severe E. coli infections originating from the Hospital, with a high rate of fatalities, and noted that surviving patients' hospitalizations were of longer duration in 1947–1957 than in 1935–1941, despite advances in pharmacology. (Kass 1993).

Six percent of 6,414 bacteremic patients over a period of twelve years developed superinfections "with organisms not isolated or identified in the primary bacteremic infection." These "bacteremic superinfections, like the primary hospital-acquired bacteremias, increased in incidence over the years, particularly since 1961; they were more frequent and were associated with a higher mortality rate and longer duration of hospital stay in the primary hospital-acquired cases than in the patients in whom bacteremia was considered to be community-acquired." (Finland, M., & Barnes, M.W. 1978).

Maxwell Finland wrote that "during 1965, there were twelve bacteremic cases with five deaths from infections due to S. marcescens at BCH" — "an unusually frequent occurrence at this hospital." By 1967, "the bacteriology laboratory at the hospital was reporting the isolation of S. marcescens from clinical specimens with increasing frequency." (Finland 1973). An external review of 39 infections between 1963–1967 presented an immediate mortality rate of 36% and identified several serological types endemic to Boston City Hospital. As of 1973, rates of infection and of antibiotic resistance were still increasing. (McGowan 1985).

In 1965–1966, an unexplained cluster of infant infections and deaths from Proteus mirabilis occurred in one specific nursery building, causing meningitis and osteomyelitis — "certainly an unusual occurrence, since association of this with neonatal sepsis had previously only rarely been encountered." Seven additional cases followed in 1968–1969, "arous[ing] considerable interest and concern." (McGowan 1974).

A 1917 bacteriological study found that bacteria were "more abundant in the medical than in the surgical pavilion" and in the men's ward rather than the women's ward, despite the buildings being "exactly alike, all the conditions within being the same." The paper questioned what variables could explain this and concluded that medical wards had more diseased patients and that women tend to sit still more, disturbing less air. It also noted there were more bacteria on clear days than rainy days. (Tucker 1917).

Reviewing historical maps, the medical pavilion was in the southern corner of the parcel — closest to the Roxbury Canal — while the surgical building was near East Concord Street, farther away. The men's wards were on the first floor; the women's beds were on the upper floors. The most common location of infection was the ward located closest to the ground and closest to the "open cesspool" of the Roxbury Canal. In 2019, the Roxbury Canal Conduit inspection — the first in over sixty years — found that Boston Medical Center had illicit sewer connections and was discharging sewage waste directly into the Roxbury Canal Conduit, and thus directly into Fort Point Channel and the Atlantic Ocean. The inspection records note: "Conduct additional inspections at 840 Boston Medical Center Place to identify source of NOT LEGAL dye test result…" (Jacques 2018; NEWEA 2019).

The Boston University National Emerging Infectious Diseases Laboratories (NEIDL) is located on Albany Street, approximately 3,000 feet from the CSO BOS-070 outfall at Fort Point Channel. The NEIDL is one of the nation's few biosafety level 4 research laboratories and is approved to store and test "some of the deadliest, most infectious pathogens such as Ebola, plague and anthrax." (WBUR 2013). The lab began conducting Ebola research in 2018 following approval from the City of Boston, with the Boston Public Health Commission claiming it "ensured the laboratory has met the strictest safety procedures and will continue to monitor and inspect the lab to ensure it continues to meet all health and safety requirements." (Boston Herald 2018). This is the same City agency tasked with managing community health risks and notifications related to the City's CSO sewage discharges.

The NEIDL uses the shared 30-inch × 52-inch CSO system that runs along Albany Street and into the Roxbury Canal Conduit. "Stormwater runoff from the site discharges into the existing BWSC system entering the Roxbury Canal Conduit, which runs through the site and flows easterly toward an outfall in the Fort Point Channel." (Boston University 2017). A facility designed to contain the world's most dangerous pathogens drains into a 19th-century combined sewer system that regularly overflows contaminated water into a navigable waterway. In 2013, the district Councilmember objected that Boston University was trying to bring "some of the most deadly agents into a very, very highly densely populated area in the inner city" and that residents "have shouldered a great deal of really difficult things in our community and this is one that we just can't take."

Hospital wastewater is "characterized by densely populated and diverse microbial communities" and "this often poorly regulated environment serves as a critical hotspot for horizontal gene transfer (HGT), facilitating the exchange of antimicrobial resistance among bacterial species. These exchanges are

facilitated by mobile genetic elements, such as plasmids and transposons, which act as key drivers in the spread of resistance traits." (Paul 2025). Hospital wastewater "contains various pathogens and infectious agents such as bacteria, protozoa, helminths, and viruses that are from different excretions and body fluids of human beings." (Yadav 2020).

Antibiotics are frequently administered to patients in hospitals, who then excrete those antibiotics through urine and feces into sewer and wastewater systems. Significant amounts of antibiotics have been discharged into the Victorian sewer and CSO infrastructure at this Site for at least eighty years. "The constant exposure of bacteria to antibiotics in water systems leads to the development of antibiotic-resistant genes against more than one drug" and the concurrent "discharge of high load of multidrug-resistant bacteria (such as Proteus vulgaris, Mycobacteria) from hospital wastewater and domestic sewage… increases the threat to both environmental and human health." (Yadav 2020).

Dangerous bacterial pathogens are known to live in sewage waters, which can be a vector for infections of typhoid (Salmonella typhi) and cholera (Vibrio cholerae). (Paul 2024; Tulchinsky 2018). Viruses and protozoa can be resistant to disinfection, and outbreaks have been caused by protozoan parasites like Giardia, Cryptosporidium, and Norovirus in disinfected drinking water. (Yadav 2020; Maier 2009).

The WHO guidelines on Safe Management of Wastes from Health-care Activities state that healthcare facilities generate "very high-risk" infectious wastewater which can contain chemicals (laboratory materials, cleaning products), pharmaceuticals (analgesics, β-blockers, anesthetics), contagious biological agents, and radioactive isotopes (X-ray contrast media). β-emitters (phosphorus-32, strontium-89, and yttrium-90) derived from patients′ excreta cause contamination up to 90% of the administered radioactive dose. The WHO guidance states hospitals must have three levels of treatment prior to sewer discharge and must remove 95% of the bacterial load. (Chartier 2014). No evidence indicates that Boston City Hospital or its successors operated such treatment systems.

The Living Biological System

The contamination at the Site is not merely chemical — it is a living biological system that generates toxic gases continuously, maintains pathogen populations, bioaccumulates contaminants, and resists standard remediation. Every drain, pipe, and sewer in the Victorian buildings is colonized by biofilm containing bacteria (including pathogens), protists (including potentially pathogenic amoebae), fungi, and viruses harbored in the biofilm matrix. Sewage water constitutes "a dynamic and complex ecological matrix that plays a pivotal role in the emergence and dissemination of antimicrobial resistance.

Resistant pathogens originating from sewage systems pose a significant public health risk, with potential transmission to human populations through various pathways such as environmental discharge, agricultural reuse, and contaminated water sources." (Paul 2025). Exposure to pathogenic microorganisms may occur through direct contact or inhalation; airborne fungal or bacterial spores "are often present in large numbers when decomposing organic matter is handled." (Beswick 2025).

Norway rats (Rattus norvegicus) are endemic to Boston sewers. They travel throughout the sewer network, swim, climb, and can enter buildings through toilets. They carry Leptospira (leptospirosis), fleas (plague, murine typhus), Salmonella, Hantavirus, Yersinia pestis, and parasites. The nutrient-rich

conditions in the conduit system support thriving rat populations, likely deterred only by the concurrent presence of toxic gases.

Summer conditions favor faster bacterial growth, higher Vibrio concentrations in warm water, Naegleria activity in warm stagnant water, increased gas generation, and lower dissolved oxygen. Winter conditions drive motile organisms to warmer locations — including occupied buildings. Storm events activate CSO discharges, causing massive sewage release, sediment resuspension, bacterial spikes, and pathogen mobilization. High tides cause maximum conduit flooding, backflow into sewers, pressure on house drains, and marine organism migration. Low tides cause maximum groundwater infiltration, sediment exposure, and gas release.

The Site is Polluted by Polychlorinated Biphenyls & Polycyclic Aromatic Hydrocarbons

The Defendants Discharge PCBs and PAHs into Waters of the United States in Violation of the Clean Water Act, 33 U.S. Code §§ 1311, 1317, 1321

PCB and PAH contamination across the Boston South End / Fort Point / Roxbury Bayside study area is extensive, spatially widespread, and attributable to multiple distinct source types operating across different eras. The two contaminant classes share some common source materials — particularly coal tar and industrial fill — but also have independent origins that produce distinct spatial patterns. PCB contamination is concentrated at identifiable industrial point sources, while PAH contamination is more diffuse, reflecting both point sources and the pervasive presence of ash, cinders, coal residue, and fire debris in the historic fill that underlies the entire study area. Both contaminant classes are strongly sorbed to the organic-rich fill and peat soils at the site, creating a persistent, long-duration source condition that resists conventional remediation.

The highest PCB concentrations in the dataset are found at 903–917 Albany Street, where total PCBs reach 4,380 mg/kg and Aroclor-1260 reaches 2,630 mg/kg in soil (September 2023, sample 3I20032-04). This location corresponds to the former Eliot Iron Works (1960–2000), an industrial facility where PCB-containing transformer oils and hydraulic fluids would have been in routine use. The Aroclor-1260 signature — the most chlorinated of the common commercial PCB mixtures — is consistent with transformer oil, which typically contained the higher-chlorinated Aroclor formulations due to their superior dielectric properties and thermal stability.

At Gillette Park, a January 2024 composite sample (B1501-1502-1503, 0–6 ft depth) returned PCBs at 1,830 mg/kg, co-located with nickel at 12,500 mg/kg, zinc at 33,500 mg/kg, and barium at 29,300 mg/kg. This metal-PCB association is a chemical fingerprint for electrical equipment waste — the combination of transformer oils (PCBs), metal finishing residues (nickel, zinc), and electrical insulator materials (barium) indicates that fill in this area likely includes process waste from Gillette's manufacturing operations or from the disposal of electrical infrastructure. The PCB concentration at this location exceeds the EPA cleanup level for unrestricted residential use (1 mg/kg) by over 1,800 times.

PCB Aroclor-1254 was detected at 910 µg/kg in a deep composite at the Mass Ave Connector / Frontage Road (July 2024) and at 229 µg/kg at the BMC Power Plant (750 Albany Street, February 2014).

The Aroclor-1254 detections represent a different PCB mixture than the Aroclor-1260 at Albany Street — 1254 was more commonly used in hydraulic fluids, heat transfer fluids, and some capacitor applications. Its presence at the BMC Power Plant is consistent with the documented history of that site as a coal-fired and later oil-fired boiler plant operating from the late 1800s through the 1970s.

The PCB contamination maps to three probable source types. First, the Eliot Iron Works at 903–917 Albany Street is the most concentrated point source, with total PCBs at levels consistent with direct disposal or spillage of transformer oils. Second, the Gillette manufacturing complex, where decades of industrial electrical equipment, capacitors, and transformer use would have generated PCB-containing waste incorporated into on-site fill. Third, diffuse PCB contamination at lower concentrations (hundreds of µg/kg range) appears across the broader study area in fill materials, likely reflecting widespread low-level PCB presence in urban fill from demolished buildings, discarded electrical equipment, and caulking materials that contained PCBs through the 1970s.

The transformer oil entry at 2 Alger Street in the Facilities tab and the multiple electrical substations and power plants documented across the area (Boston Elevated Railway, MassDOT Electrical Substation, MBTA South Boston Power Plant, BMC Power Plant) represent additional potential PCB sources that have not been fully characterized.

PCBs are among the most persistent organic contaminants in the environment. They are hydrophobic, strongly partition to organic matter, and resist biodegradation under most environmental conditions. At this site, the organic-rich fill (ash, wood, coal residue) and underlying peat layer provide extensive sorption capacity that immobilizes PCBs in the solid phase. Total organic carbon at 12,900–32,000 mg/kg in site soils confirms significant organic content available for sorption.

This immobilization is a double-edged condition. On one hand, sorbed PCBs are not readily transported in dissolved-phase groundwater and pose limited risk of off-site migration through the aquifer. On the other hand, the sorbed mass represents a permanent source that will slowly back-diffuse into groundwater and pore water for decades to centuries, maintaining low but persistent dissolved concentrations. Any physical disturbance of the fill — excavation, pile driving, utility trenching — will remobilize sorbed PCBs and expose workers and the surrounding environment to contaminated soil and dust.

The brackish groundwater conditions (chloride up to 8,290 mg/L) may modestly enhance PCB mobility through salting-out effects and co-solvent interactions with other organic contaminants present in the fill, but the primary transport concern for PCBs at this site is physical disturbance rather than dissolved-phase migration. PCB concentrations at the 903–917 Albany Street and Gillette Park levels (1,830–4,380 mg/kg) exceed TSCA thresholds and may trigger federal PCB cleanup requirements under 40 CFR 761 in addition to state MCP obligations.

PAH contamination at the site is extraordinary in both magnitude and spatial extent. The highest individual PAH concentrations were documented during the Fort Point Channel Combined Sewer Overflow Control Project (April 2004), where sample HA-FPC17-S2 returned chrysene at 90,000 mg/kg, benzo(a)anthracene at 82,000 mg/kg, benzo(b)fluoranthene at 45,000 mg/kg, benzo(a)pyrene at 40,000 mg/kg, and phenanthrene at 190,000 mg/kg. A second sample from the same project (HA-FPC01-S2)

returned benzo(a)anthracene at 12,000 mg/kg, benzo(a)pyrene at 12,000 mg/kg, and benzo(b)fluoranthene at 15,000 mg/kg.

These concentrations are not typical of diffuse urban fill contamination. Chrysene at 90,000 mg/kg (9% by weight) and phenanthrene at 190,000 mg/kg (19% by weight) are consistent with coal tar or creosote in near-pure form — essentially sampling directly into a deposit of tarry material rather than contaminated soil. The PAH profile — dominated by phenanthrene with high concentrations of chrysene, benzo(a)anthracene, and fluoranthene — is the classic fingerprint of coal tar, which is a byproduct of manufactured gas plant operations and coal coking. The proximity to the Fort Point Channel, where multiple gas plants operated historically and where the Great Boston Fire debris was used as fill, provides the source context. Other notable PAH results include:

- **Widett Circle** (sample WC11-04, October 2022, 4–6 ft depth): benzo(a)anthracene at 2,300 mg/kg, benzo(a)pyrene at 2,100 mg/kg, benzo(b)fluoranthene at 1,600 mg/kg, phenanthrene at 9,600 mg/kg, naphthalene at 1,200 mg/kg. These concentrations, while an order of magnitude below the Fort Point Channel peaks, still represent severely contaminated fill.
- **8 Gerard Street / Roundhouse** (June 1999): phenanthrene at 190,000 µg/kg, naphthalene at 34,000 µg/kg, benzo(b)fluoranthene at 25,000 µg/kg. This location is the site of the former Roxbury Gas Light Company and Boston Consolidated Gas Company — a confirmed manufactured gas plant. The PAH signature here, with elevated phenanthrene and naphthalene (lower-molecular-weight, more volatile PAHs), is consistent with coal tar residuals from gas manufacturing operations. Cyanide at 16–19 mg/kg and mercury at 40 mg/kg at the same location confirm the MGP source.
- **7 Channel Center / Fort Point** (August 2023): benzo(a)anthracene at 2,600–4,700 µg/kg, fluoranthene at 5,100–5,400 µg/kg, phenanthrene at 4,000–5,100 µg/kg, with C10-C36 aromatic hydrocarbons at 41,100–60,200 µg/kg. The site assessment attributes the location to the Common Sense Fertilizer Company (1888) and Boston Wharf Company (1900–). Dibenzofuran at 510 µg/kg at this location is a specific marker for combustion-derived or pyrolytic sources.
- **750 Albany Street / BMC Power Plant** (May 2015): fluoranthene at 21,000 µg/kg, pyrene at 21,000 µg/kg, naphthalene at 2,200 µg/kg, with 2-methylnaphthalene at 11,000 µg/kg and 1,2-dichlorobenzene at 4,800 µg/kg. A petroleum sheen and discontinuous NAPL blebs were observed during construction excavation. The site operated as a coal-fired boiler plant from the late 1800s through the 1920s, then switched to No. 6 fuel oil through the 1970s. The PAH signature here reflects both coal combustion residuals and fuel oil contamination, and a thick viscous black material resembling No. 6 fuel oil was found coating the contents of the underground storage tank.
- **I-93 Viaduct** (April 2014): fluoranthene at 11,000 µg/m^3, phenanthrene at 12,000 µg/m^3, and pyrene at 12,000–13,000 µg/m^3 in soil beneath the highway structure. The viaduct corridor also has confirmed chrysotile asbestos in fill.
- **720 Albany Street**: weathered creosote at 6,600 mg/kg, total petroleum hydrocarbons at 6,600 mg/kg. The creosote identification is significant — it establishes that wood-treating waste is a distinct PAH source at the site, separate from coal tar and combustion ash.

- **Grant Manor**: fluoranthene at 120,800 µg/kg in a 1996 sample, naphthalene at 3,300 µg/kg, TPH at 34,000 ppm. The fluoranthene peak at this location is notably high and may indicate a localized deposit of pyrogenic material.

The PAH contamination derives from at least five identifiable source types that overlap. Coal tar from manufactured gas plants. The Roxbury Gas Light Company / Boston Consolidated Gas Company operated at 8 Gerard Street and across a network of adjacent properties on Hilton Street, Island Street, and Swett Street. Coal tar is the principal byproduct of coal gasification and is composed of 60–80% PAHs by weight. The phenanthrene-dominated PAH profile and co-occurring cyanide and mercury at 8 Gerard Street are diagnostic of MGP residuals. Coal tar is a dense non-aqueous phase liquid (DNAPL) that migrates downward through soil and can pool on low-permeability layers. The floating NAPL (0.21 ft in MW-3, 0.6 ft in MW-101) and the 2.5 inches of NAPL mineral spirits documented at 8 Gerard Street confirm free product is present.

Combustion ash and cinders in historic fill. The fill throughout the study area is described in boring logs as containing ash, cinders, coal, and wood. Site assessments at 8 Gerard Street explicitly note that "PAHs, lead and TPH in ash-containing fill materials throughout the Roundhouse Property" and that "the TPH is reported to be comprised almost entirely of the high molecular weight aromatic fraction (e.g., non-target PAHs) as is often the case in ash-rich materials." This means the fill itself is a PAH source independent of any point-source industrial operations — every location underlain by ash-bearing fill contains PAHs as a baseline condition.

Great Boston Fire debris (1872). Debris from the Great Fire, which destroyed approximately 800 buildings across 60 acres of downtown Boston, was used as fill for the South Boston tidal flats along Fort Point Channel. The site assessment for 8 Gerard Street characterizes the "disposal site" as the act of filling South Bay itself in the mid-1800s. Combustion of building materials at high temperatures produces the full suite of high-molecular-weight PAHs, and the extreme concentrations at the Fort Point Channel CSO project site (90,000 mg/kg chrysene) may reflect direct deposits of fire debris or associated industrial waste.

Creosote from wood treatment. Weathered creosote at 6,600 mg/kg at 720 Albany Street, the 1,1-biphenyl detections attributed to creosote-treated railroad ties (360 mg/kg in railroad ties at the Mass Ave Connector), and the proximity to the extensive railroad infrastructure of the MBTA Cabot Yard and the New York, New Haven & Hartford Railroad parcels establish creosote as a distinct source. Creosote is a coal tar derivative used for wood preservation and produces a PAH signature similar to but distinguishable from raw coal tar.

Fuel oil and petroleum. No. 6 fuel oil at the BMC Power Plant, kerosene at 990,000 mg/L at MBTA Cabot Yard, and extensive petroleum contamination across the study area contribute alkylated PAHs (methylnaphthalenes at 27,000–36,000 µg/kg at BioSquare II, 2-methylnaphthalene at 11,000 µg/kg at 750 Albany). The petroleum-derived PAH contribution is distinguishable by the predominance of alkylated (methylated) naphthalenes and the presence of an unresolved complex mixture in chromatographic analysis.

The PAH contamination exists within a broader petroleum hydrocarbon problem. MBTA Cabot Yard shows kerosene at 990,000 mg/L and EPH at 170,000 mg/L in groundwater — concentrations that indicate free-phase petroleum product. The Gillette complex shows C10-C22 aromatics at 448,000 mg/L in groundwater from well MW511B. At 400 Frontage Road (Roxbury Canal / DPW), C5-C8 aliphatics reach 7,851 mg/kg and C9-C10 aromatics reach 8,220 mg/kg in groundwater, with MTBE at 26,300 µg/L confirming a gasoline component alongside the heavier petroleum fractions. TPH in soil ranges from 2,000 to 34,000 mg/kg at multiple locations including Grant Manor, Shattuck Hospital, Congress Street, and Southampton Street.

The petroleum hydrocarbon mass serves as a co-solvent that can enhance PAH mobility in groundwater beyond what would be predicted from PAH solubility alone, and the biodegradation of petroleum compounds drives the reducing conditions that complicate chlorinated solvent remediation elsewhere at the site.

PAHs and the site's chlorinated solvent contamination (TCE, PCE, cis-1,2-DCE) present fundamentally incompatible remediation requirements. PAHs are best degraded under oxidizing conditions — through chemical oxidation (Fenton's reagent, permanganate, persulfate) or aerobic biodegradation. Chlorinated solvents are best degraded under reducing conditions — through reductive dechlorination driven by anaerobic bacteria, principally Dehalococcoides. The two approaches cannot operate simultaneously in the same subsurface zone.

Applying chemical oxidation to address the PAH contamination would destroy the anaerobic microbial community currently dechlorinating TCE and PCE, halt the reductive dechlorination process, and potentially remobilize metals (arsenic in particular is mobilized under oxidizing conditions when iron oxyhydroxides are destabilized). Maintaining reducing conditions for chlorinated solvent treatment leaves the PAHs essentially untreated, as they do not degrade under anaerobic conditions at meaningful rates.

This is compounded by the organic matter effect: the same peat and organic-rich fill that immobilizes PAHs through sorption also generates the methane, sulfide, and reducing conditions that drive the anaerobic dechlorination of chlorinated solvents. Removing or treating the organic matter to address PAH sorption would eliminate the electron donor source sustaining the dechlorinating bacteria. The site's geochemistry has reached a condition where the contaminant classes are chemically linked through the organic matrix that hosts them both.

The MassDEP S-1/GW-2 screening level for benzo(a)pyrene (the most commonly used PAH risk driver) is 700 mg/kg. The Fort Point Channel CSO results exceed this by 17- to 57-fold for benzo(a)pyrene and by over 100-fold for benzo(a)anthracene and chrysene. At Widett Circle, benzo(a)pyrene at 2,100 mg/kg and benzo(a)anthracene at 2,300 mg/kg exceed screening levels by 3-fold in shallow fill (4–6 ft). The 7 Channel Center results (2023) show continued exceedances in an area undergoing active redevelopment.

Benzo(a)pyrene is classified by IARC as a Group 1 human carcinogen. Dermal contact with and incidental ingestion of PAH-contaminated soil are the primary exposure pathways for current and future site users. Vapor intrusion of the more volatile PAHs (naphthalene, methylnaphthalenes) is also a concern, as demonstrated by the naphthalene detections in soil vapor and indoor air at multiple locations.

Coal tar and creosote PAHs are among the most persistent environmental contaminants. The high-molecular-weight compounds (4+ ring PAHs: benzo(a)pyrene, chrysene, benzo(a)anthracene, benzo(b)fluoranthene) have aqueous solubilities in the low µg/L range and half-lives in soil measured in years to decades. In the anaerobic, organic-rich conditions at this site, biodegradation of high-molecular-weight PAHs is negligible. The coal tar deposits documented at the Fort Point Channel and 8 Gerard Street are functionally permanent features of the subsurface — they will continue to serve as slow-release PAH sources for the foreseeable future, limited only by the rate of dissolution into passing groundwater and the rate of physical weathering.

In 1954, the Roxbury Canal waters were so oil-slicked that a fire in an adjacent shed at the Mortuary at Mass. Ave. & Albany St., lit the canal water on fire with a "roaring blaze" creating "dense black smoke" that "smothered the hospital area" for forty minutes. The canal surface was ignited and "in less than a minute flame were leaping almost 100 feet." The fire chief said "the fire was probably caused by children playing with matches." ("Spectacular Oil-Fed Fire Sweeps Roxbury Canal," The Boston Globe, Mar 17, 1954, p. 8.).

In 1969, the City was planning auto repair facility on Fort Point Channel filled land by BCH. DPW getting moved from Albany St so BHA can give land to BCP and University Hospital. DPW asked for 10 acres in 1968 and ½ came from "the state as a result of the filling in by the state DPW of the old Roxbury canal." The other 5 acres came from eminent domain against a trucking firm. Facility "must be designed so their foundations straddle the huge new culvert through which the flow from Roxbury canal goes into the Fort Point Channel." ("Study urges $7 million Hub DPW facility on channel land," The Boston Globe, Nov 27, 1969, p. 35.). The City made a mess at that site and became another remediation site through the sewage issues were never addressed.

Spectacular Oil-Fed Fire Sweeps Roxbury Canal

(Picture on Page 19)

A flaming brand from a shed fire ignited oil-slicked waters of the Roxbury Canal behind the City Hospital power plant at 6:40 last night and for a time a roaring blaze threatened to sweep downstream into the main waterfront.

Dense black smoke smothered the hospital area . firemen worked to keep the rapidly advancing flames from reaching conflagration proportions in the heavily industrial section.

A fire boat was sent to the junction of the canal and the South Bay Channel and, using deck gun lines, forced the flaming oil-slick back.

Deputy Chief Leo Driscoll ordered a second alarm at 6:47 p. m., when it became evident that the fir. was spreading from the hospital property.

Truck drivers removed seven 4000-gallon tank trucks from the hospital shop yard when the fire started in a one-story wooden shed at the rear of the Southern Mortuary on Massachusetts av., near the corne. of Alban st.

Traffic along Albany st., Massachusetts av., Southampton st., and Dorchester av., became snarled as bridges were opened to allow passage of fire boats and hoses blocked streets.

The combination of land fire fighters, using water and fog lines, and the fire boat made it possible to extinguish the blaze after a 40-minute battle.

Discovered by Drivers

The fire was discovered by oil truck drivers who were in the hospital yard feeding fuel into the power plant. The seven men immediately removed their trucks to Albany st. and capped the power plant's fuel feed lines.

Officers John McCarthy and Peter Dervan, working at the accident gate, spotted the flames at the same time and telephoned an alarm.

By the time Chief Driscoll arrived the fire had spread to three other wooden sheds, all used for storage purposes.

While first-alarm companies were fighting this fire, flaming boards and brands fell from the back of the sheds into the oil-slicked canal.

The Roxbury Canal is a part of the South Bay, which connects directly with Fort Point Channel.

The brands ignited the canal surface and in less than a minute flame were leaping almost 100 feet.

Second-alarm companies stationed themselves in the Batchelder-Whittemore coal yard on Southampton st., kept the fire from igniting piers on that side of the canal.

Other companies came in downstream of the blaze and used fog sprays to put out the fire

Chief John V. Stapleton said the fire was probably caused by children playing with matches. He said damage was about $5000.

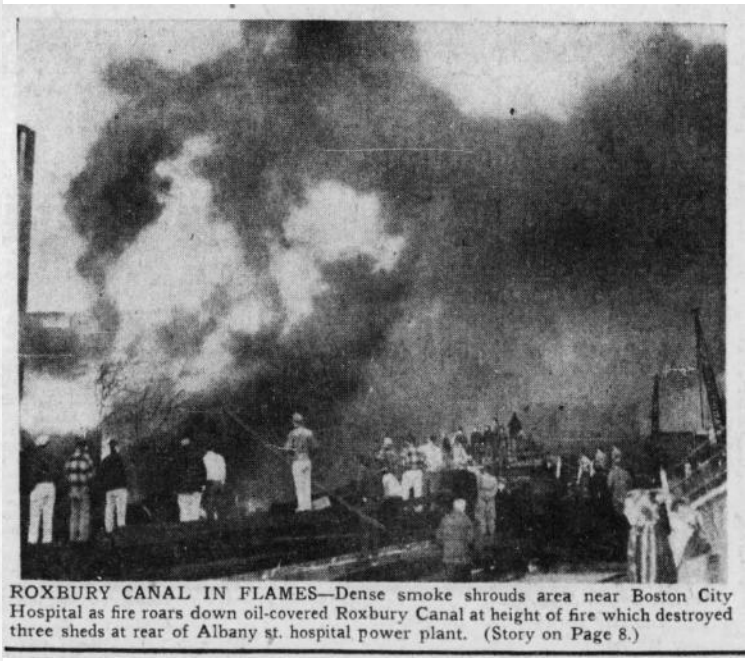
Jets Collide in Air, Explosion Kills 3

OVERBROOK, Kan., March 16 (UP) — Two B-47 jet bombers, worth $5,000,000, collided in the air today. One crashed and exploded, killing three crewmen.

The other 600-mile-an-hour bomber got back to its home base at Wichita, 130 miles away.

The three members of the crashed plane were apparently killed instantly when the plane exploded in flames. Wreckage fell over a two-mile area.

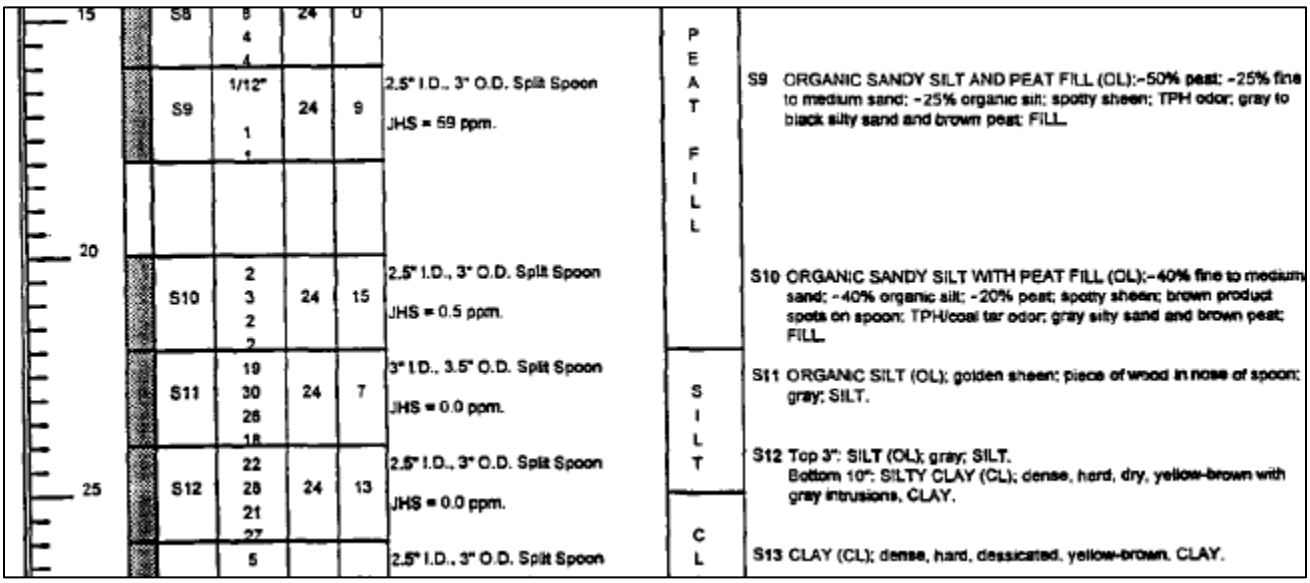
Egypt and England have ruled jointly in the Sudan since 1899.



ROXBURY CANAL IN FLAMES—Dense smoke shrouds area near Boston City Hospital as fire roars down oil-covered Roxbury Canal at height of fire which destroyed three sheds at rear of Albany st. hospital power plant. (Story on Page 8.)

"Spectacular Oil-Fed Fire Sweeps Roxbury Canals," The Boston Globe, March 17 1954, pg. 8

The fill contains incinerator ash (documented at 601 Albany: "gray ash, black fill with ash, coal"), heavy metals at hazardous levels (lead 8,460 mg/kg at Widett, mercury 16 mg/kg at 601 Albany), PAHs from coal tar, petroleum, combustion, and PCBs (documented at adjacent sites). The Gillette site, with extensive pollution, notes that American Sugar Co. had a 1.2 million gallon UST for fuel oil at the site. Gillette's own records also indicate that prior ot the filling that create the land for Gillette, "the naturally occurring channel-bottom organic silts and sands probably were covered with petroleum-contaminated sediments due to historic marine activities, dumping and waste handling along the waterfront. This layer of contamination is typically between 25 to 35 ft below the ground surface." (70 Sobin Park 1998).



Boring Log, P&G-Gillette, Feb. 1995, B450.

The Site is Polluted by Chlorinated Solvents

The Defendants' Sewers Discharged Pollutants into the Waters of the U.S. in Violation of 33 U.S. Code § 1311, 1312

The Defendants violated Clean Water Act § 301 when they discharged pollutants into the waters of the United States. These pollutants include "industrial waste" and "municipal waste" (40 CFR Part 230(j)). Gillette Manufacturing, Sorbin Chemical Company, Andy's Cleaners, and other industrial operators discharged chlorinated solvents — including trichloroethylene (TCE), tetrachloroethylene (PCE), methylene chloride, and 1,1,1-trichloroethane — into the City of Boston's combined sewer system, which overflows untreated through CSO outfalls into Fort Point Channel, a navigable water of the United States. The dissolved solvent plume also migrates through saturated fill groundwater directly toward Fort Point Channel, constituting the functional equivalent of a direct discharge under County of Maui v. Hawaii Wildlife Fund, 590 U.S. 165 (2020).

Discharge of Toxic Pollutants from Prior Spills & Dumping in Violation of the Clean Water Act 33 U.S.C. §§ 1311, 1317)

40 CFR 230.3(j) defines "pollutant" to include "chemical waste" and "industrial waste." 40 CFR 230.3(k) defines "pollutant" as "the man-made or man-induced alteration of the chemical, physical, biological or radiological integrity of an aquatic ecosystem." TCE, PCE, vinyl chloride, methylene chloride, and 1,1,1-trichloroethane are toxic pollutants listed under 33 U.S.C. § 1317(a)(1) and 40 CFR 401.15. The release of DNAPL — free-phase solvent product — into filled tidal wetlands and its continuing migration through groundwater into navigable waters constitutes an ongoing discharge of toxic pollutants without authorization, in violation of §§ 1311(a) and 1317. No effluent limitations were established or complied with for any of these discharges.

The Solvents Mess

Chlorinated solvent contamination, principally trichloroethylene (TCE) and tetrachloroethylene (PCE), represents one of the most severe and technically intractable environmental conditions at the Boston South End / Fort Point / Roxbury Bayside study area. The contamination originates from at least two distinct source areas and has produced a dissolved-phase plume that extends from the Gillette manufacturing complex and Sorbin Chemical Company south and west into the South End residential and commercial neighborhood.

TCE has been detected as dense non-aqueous phase liquid (DNAPL) in soil, overburden groundwater, and fractured bedrock at concentrations indicating free-phase product that has migrated vertically through the full stratigraphic column — from surface fill, through the marine clay, and into the argillite. A groundwater pump-and-treat system (GPTS) has operated at the Gillette facility for over 25 years and continues to extract TCE at concentrations roughly 4,000 times the federal drinking water standard, with no indication of asymptotic decline.

The primary TCE source is the former Sorbin Chemical Company property at 72–76 Sorbin Park Road and the adjacent Gillette Z Building at 64–70 Sorbin Park Road, tracked under MassDEP RTN 3-11312. Sorbin Chemical operated a chemical warehouse with a three-story building on the property. The 1994 Phase I Initial Site Investigation documented TCE throughout the Sorbin/Gillette source area in soil at concentrations indicating DNAPL:

- B507(c), 4.5–6.5 ft: TCE at 130,000 µg/kg
- B503, 6–8 ft: TCE at 45,000 µg/kg, PCE at 22,000 µg/kg, methylene chloride at 110,000 µg/kg, vinyl chloride at 15,000 µg/kg (at adjacent B509, 9.5–11.5 ft)
- B504, 2–4 ft: TCE at 21,000 µg/kg
- B508(c), 11–13 ft: TCE at 21,000 µg/kg, methylene chloride at 6,100 µg/kg
- B509(c), 9.5–11.5 ft: TCE at 21,000 µg/kg, methylene chloride at 3,500 µg/kg, vinyl chloride at 15,000 µg/kg

The 1994 groundwater results from monitoring wells at the Sorbin/Gillette source area showed cis-1,2-dichloroethylene (cis-DCE) at 6,600–8,200 µg/L, chloroform at 550 µg/L, and methylene chloride at 2,000–21,000 µg/L. The chloroform and methylene chloride at these concentrations suggest either a distinct solvent source (both were common industrial solvents) or, in the case of chloroform, a secondary product of reductive dechlorination.

By 1998, deeper investigation at the Gillette Z Building (RTN 3-11312 / RTN 3-4278) revealed the vertical extent of DNAPL penetration:

- Fill (5–30 ft bgs): TCE at 9,700,000 µg/kg. This concentration — essentially 1% TCE by weight in soil — is unambiguously indicative of DNAPL present in the fill matrix. Even accounting for the possibility of a reporting or unit error, surrounding results confirm DNAPL-range concentrations throughout the fill.
- Clay (40–45 ft bgs): TCE at 250,000 µg/kg and PCE at 180,000 µg/kg. These concentrations at depth within the marine clay demonstrate that DNAPL has penetrated through what is nominally an aquitard. The Boston Blue Clay, while characterized by low bulk hydraulic conductivity (0.04–0.3 ft/day), contains interbedded silty sand lenses with conductivities of 21–25 ft/day. DNAPL

migration through the clay was likely controlled by these preferential pathways and by fractures, rather than by permeation through the intact clay matrix.

- Bedrock groundwater (MW-801B): TCE at 179,000 to 407,000 µg/L across five sampling events from June 1997 through June 1999 (179,000; 194,000; 281,000; 282,000; 301,000; and 407,000 µg/L). The federal MCL for TCE is 5 µg/L; these results represent 36,000 to 81,000 times the drinking water standard. Concentrations of this magnitude in bedrock groundwater — sampled from the argillite — can only be explained by the presence of DNAPL within the fractured bedrock itself. TCE has a solubility of approximately 1,100,000 µg/L at 20°C; the measured concentrations represent 16–37% of solubility, within the range where equilibrium dissolution from pooled DNAPL in fractures produces the observed values.

Additional bedrock wells showed TCE at 108,000 µg/L (MW-813B/A) and 92,000 µg/L (MW-813B/B) in 1999, and TCE at 157,000 µg/L in overburden groundwater within the fill. The chlorinated VOCs extend through the entire depth of soils above the clay to approximately 35 ft below the ground surface. Chlorinated VOC contamination above the clay occupies a plan area of about 20,000 sf east of Z Building and perhaps approximately 75,000 sf beneath the building. The areal extent of the VOC contamination in the till and bedrock on the Gillette property is approximately 300,000 sf. (70 Sobin Park 1998).

"Chlorinated solvents were first used starting in the mid-1950s at Gillette for cleaning purposes in the machine shops. In 1958 TCE use was introduced into the manufacturing process to clean the blades. TCE was replaced by PCE between 1974 and 1980. In 1980 TCE was reinstated as the cleaning solvent until 1991. Two 1,500-gallon TCE storage tanks and three processing stills were located on the east side of the basement… The concrete floor of the solvent storage and processing area was penetrated by four floor drains that are believed to have been connected to the sanitary sewer and ultimately reached publicly owned treatment works (POTW). In the early 1970s, an 18-inch by 18-inch dry well was constructed within the area. The bottom of the dry well was open to the underlying fill. A float operated sump pump in the dry well is believed to have pumped liquid from the dry well to the sanitary sewer."

The TCE soil vapor and indoor air data documents an active vapor intrusion pathway at multiple locations:

- Gillette SPS (November 1997): TCE at 702,000 µg/m³ in soil vapor, with cis-DCE at 640,000 µg/m³, PCE at 9,990 µg/m³, and vinyl chloride at 5,980 µg/m³. These are among the highest soil vapor concentrations reported at any site in the northeastern United States.
- 8–10 East Concord / 1640 Washington Street (April 2010): Groundwater samples taken during an Immediate Response Action (IRA, RTN 3-29232) showed TCE at 45,000 µg/L (GZ-102), 31,000 µg/L (GZ-8R), 4,000 µg/L (GZ-4R), and 1,900 µg/L (GZ-101). Concurrent cis-DCE reached 34,000 µg/L and PCE reached 31,000 µg/L at the same location. These concentrations in occupied residential/commercial buildings triggered the Immediate Response Action and its directly next to where my unfished basement apartment was located.

- Gillette SSDS (May 2024): TCE at 18,300 µg/m³ at the sub-slab depressurization system influent, with cis-DCE at 4,040–4,080 µg/m³. This result — 27 years after the initial soil vapor data — demonstrates the continuing vapor intrusion threat from the subsurface source.
- Gillette SSDS effluent (2020–2021): TCE at 5,430–10,400 µg/m³ in the treated SSDS exhaust, indicating that even the vapor mitigation system is discharging significant TCE concentrations to ambient air.
- 1673–1679 Washington Street (2022–2023): PCE at 250 µg/m³ and chloroform at 68–250 µg/m³ in indoor air, with methylene chloride at 30–180 µg/m³. These results at the Washington Street location — associated with Andy's Cleaners at 1679 Washington — represent a second vapor intrusion area distinct from the Gillette/Sorbin source.
- 206–212 West Broadway / Al's Liquor Store (2016): PCE at 14,000 µg/m³ in soil gas beneath the basement. This location in South Boston, southwest of the Gillette complex, demonstrates that the solvent plume has migrated across a significant lateral distance from the source areas.

The Gillette GPTS influent data provides a time series documenting the system's inability to achieve meaningful concentration reduction. After more than 25 years of continuous pump-and-treat operation, the GPTS continues to extract TCE at 16,000–25,000 µg/L — roughly 3,200 to 5,000 times the MCL. The absence of a declining trend indicates the system is intercepting a steady-state flux from a continuing DNAPL source, not drawing down a finite dissolved plume. The DNAPL reservoired in the fractured bedrock and within the clay interbeds is dissolving into groundwater at a rate that matches or exceeds the extraction rate, producing the flat concentration profile observed over the monitoring period.

PCE in the GPTS influent shows a modest decline from 900–930 µg/L in late 2020 to 630 µg/L in May 2025 — still 126 times the MCL — but this trajectory, if real, would require decades more to approach screening levels.

PCE contamination appears at both the Gillette/Sorbin source area and at a second, independent source area along the Washington Street corridor. At Gillette, PCE at 180,000 µg/kg in clay at 40–45 ft demonstrates DNAPL co-located with the TCE at depth. PCE at 22,000 µg/kg in the 1994 Sorbin Chemical soil samples and 9,990 µg/m³ in the 1997 Gillette soil vapor confirm its presence throughout the primary source zone.

At 8–10 East Concord Street / 1640 Washington Street, the 2010 IRA documented PCE at 31,000 µg/L in groundwater (GZ-4R) and 14,000 µg/L (GZ-102)/. TCE groundwater concentrations at the same location reached 115,000–190,000 µg/L. The question of whether this represents migration from the Gillette/Sorbin plume or a separate release is partially answered by the presence of Andy's Cleaners at 1679 Washington Street — a dry cleaning operation is the classic PCE point source — and by the PCE-to-TCE ratio, which differs between the two areas. This is also the same block where I lived.

At 1673–1679 Washington Street (2022–2023), groundwater monitoring wells showed PCE at 50 mg/L (50,000 µg/L) in well 204-MW and TCE at 34 mg/L in the same well, with cis-DCE at 61–106 mg/L in well 203-MW and vinyl chloride at 2 mg/L in the same well. These are extremely high dissolved concentrations — PCE at 50 mg/L is approximately 30% of its aqueous solubility (150 mg/L), again suggesting proximity to DNAPL. The full dechlorination sequence (PCE → TCE → cis-DCE → vinyl

chloride) is present in the groundwater at this location. Again, this is the same location where my basement apartment was – with no moisture barriers, active water intrusion, and legally insufficient ventilation.

At 206–212 West Broadway in South Boston, PCE at 14,000 µg/m³ in soil gas beneath Al's Liquor Store (June 2016) demonstrates that the plume extends well south of Washington Street into a residential and commercial neighborhood. A residential soil gas sample at the same site showed TCE at 21 µg/m³ (VP 202-2, February 2016).

The data across the study area documents the complete reductive dechlorination pathway: PCE → TCE → cis-1,2-DCE → vinyl chloride. The distribution of these compounds tells a story about where the degradation process is active and where it is stalling.

Cis-1,2-dichloroethylene is the dominant degradation product and is present at enormous concentrations: 640,000 µg/m³ in soil vapor at the Gillette SPS (1997), 160,000 µg/kg in soil at Sorbin Chemical (1994), 8,200 µg/L in groundwater at Sorbin (1994), 34,000 µg/L in groundwater at East Concord (2010), and 61,000–106,000 µg/L in groundwater at 1673–1679 Washington Street (2022–2023). The massive cis-DCE accumulation — in many cases exceeding the parent TCE concentration — confirms that reductive dechlorination is actively converting TCE to cis-DCE but is stalling at the cis-DCE step rather than proceeding to ethene.

The 2001 Geosyntec bioremediation pilot test at Gillette identified three dechlorinating organisms in the subsurface: Dehalococcoides ethenogenes, Dehalobacter restrictus, and Sulfurospirillum multivorans. Of these, only Dehalococcoides can perform the final dechlorination steps (cis-DCE → vinyl chloride → ethene). Dehalobacter and Sulfurospirillum both produce cis-DCE as their terminal product. The microbial community is therefore structurally biased toward cis-DCE accumulation — two of three organisms generate it, and only one can remove it.

Dehalococcoides requires strictly anaerobic conditions and hydrogen as an electron donor. At this site, the tidal influence (cycling redox conditions), periodic CSO events (introducing oxygenated surface water), and the competing methanogenic community (methane at 2,100 mg/L at 400 Frontage Road) all work against sustained Dehalococcoides activity. Methanogens compete directly with Dehalococcoides for hydrogen, and under the strongly methanogenic conditions documented at several site locations, the methanogens typically win.

Vinyl chloride — the most toxic compound in the dechlorination sequence — is confirmed present at multiple locations: 15,000 µg/kg in soil at Sorbin Chemical (1994, 9.5–11.5 ft), 5,980 µg/m³ in soil vapor at Gillette SPS (1997), 2,800 µg/L in groundwater at 8–10 East Concord (2010), 125–159 µg/m³ in the Gillette SSDS effluent (2020–2021), 670 µg/L in groundwater at East Concord (GZ-4R, 2010), 52 µg/L at East Concord (GZ-101, 2010), and 2 mg/L (2,000 µg/L) in groundwater at 1673–1679 Washington Street (2023). The MassDEP screening level for vinyl chloride is 2 µg/L in groundwater.

The vinyl chloride concentrations — particularly the 2 mg/L in groundwater at Washington Street (1,000× the screening level) and the 2,800 µg/L at East Concord (astronomically high)— represent a direct and ongoing risk. Vinyl chloride is a known human carcinogen (IARC Group 1) and is more volatile and mobile in groundwater than its parent compounds. Its presence confirms that the dechlorination sequence is proceeding far enough to generate the most hazardous intermediate but not completing to the harmless endpoint of ethene. Trans-1,2-dichloroethylene at 520 µg/m³ in indoor air at East Concord

(2010) is also present but at lower concentrations than the cis isomer, which is the expected distribution under biotic reductive dechlorination.

Methylene chloride is present as a co-contaminant at the Sorbin Chemical / Gillette source area at concentrations suggesting an independent release rather than a dechlorination product. Soil concentrations of 110,000 µg/kg (B503, 6–8 ft), 6,100 µg/kg (B508, 11–13 ft), and 3,500 µg/kg (B509, 9.5–11.5 ft) in the 1994 Phase I investigation, with groundwater at 21,000 µg/L (MW509), 12,000 µg/L (MW508), and 2,000 µg/L (MW507), indicate a substantial methylene chloride source. Methylene chloride at 30–180 µg/m³ was also detected in indoor air at 1673–1679 Washington Street in 2022–2023.

Methylene chloride was widely used as an industrial solvent, paint stripper, and degreaser. Its presence at the Sorbin Chemical facility — described as a chemical warehouse — is consistent with the site's operations. Methylene chloride is more volatile and more water-soluble than TCE or PCE, which means it migrates faster in both the vapor and dissolved phases, but it also biodegrades more readily. Its persistence at the site 30 years after the initial investigation suggests ongoing dissolution from a residual source.

TCA at 5,000 µg/L in groundwater at the South Bay Avenue House of Corrections (Well B2, December 1984) represents a distinct solvent source separate from the TCE/PCE at Gillette. TCA was commonly used as a less toxic alternative to TCE for metal degreasing and cleaning. Its screening level is 200 µg/L. The South Bay HOC location also showed benzene at 3,000 µg/L and toluene at 300,000 µg/L in the same well, indicating mixed solvent and petroleum contamination — consistent with the documented automobile junkyard and industrial waste operations in the South Bay area.

Chloroform at 550 µg/L in Sorbin/Gillette groundwater (MW507, 1994) and 50–250 µg/m³ in indoor air at 1673–1679 Washington Street (2022–2023) warrants attention. Chloroform can be produced by abiotic degradation of carbon tetrachloride, by chlorination of organic matter (relevant given the CSO discharges in the area), or as a minor reductive dechlorination product. Its consistent presence at both the Gillette source area and the Washington Street plume suggests it may be tracking the same chlorinated solvent plume or may indicate an additional chlorinated compound (carbon tetrachloride) in the source mixture that has not been independently characterized.

The vertical distribution of chlorinated solvents at the Gillette site defines a DNAPL migration pathway from surface to bedrock: Fill (0–30 ft): TCE at 9,700,000 µg/kg (DNAPL saturation in porous fill matrix). The fill at this location is described as ash, cinders, coal, brick, glass, and ceramic — a heterogeneous, high-permeability medium that would allow rapid vertical DNAPL migration through connected void spaces between fill fragments. The shallow groundwater table (~5 ft bgs) means DNAPL released at the surface would have encountered the water table almost immediately and begun migrating as a dense, sinking phase through the saturated fill.

Marine Clay (30–45 ft): TCE at 250,000 µg/kg and PCE at 180,000 µg/kg. DNAPL penetration through the Boston Blue Clay — nominally an aquitard — occurred through preferential pathways. The geology data documents interbedded silty sand lenses within the clay with hydraulic conductivities of 21–25 ft/day, compared to 0.04–0.3 ft/day for the bulk clay. These lenses serve as lateral spreading horizons for DNAPL pooled on the clay surface, and where lenses connect vertically (through desiccation fractures, root casts, or depositional pinch-outs), they provide conduits for downward DNAPL migration. The clay

mineralogy — illite (30–45%), quartz (15–20%), chlorite (5%) — includes expandable clay minerals that can undergo desiccation cracking when exposed during low groundwater conditions, creating additional fracture pathways.

Fractured Bedrock: TCE at 179,000–407,000 µg/L in the argillite. Once DNAPL reached the bedrock surface, it entered the fracture network of the argillite. The argillite platy fabric (aligned sericite and chlorite, 16–22% and 6–13% respectively) creates a foliation-parallel fracture set that provides high-permeability pathways through otherwise low-permeability rock. DNAPL pools in fracture apertures and dissolves slowly into passing groundwater, producing the observed concentrations at 16–37% of aqueous solubility. The DNAPL in bedrock fractures is for practical purposes irrecoverable — it cannot be pumped, extracted, or meaningfully accessed by in-situ treatment. It will continue to dissolve and supply the groundwater plume for decades to centuries, controlled only by the dissolution rate, which is a function of fracture geometry and groundwater velocity through the fracture network.

The 206–212 West Broadway detections (PCE at 14,000 µg/m³ in soil gas, TCE at 21 µg/m³) extend the known plume boundary into South Boston, west and south of the primary source area. The plume is migrating in the direction of regional groundwater flow toward Fort Point Channel.

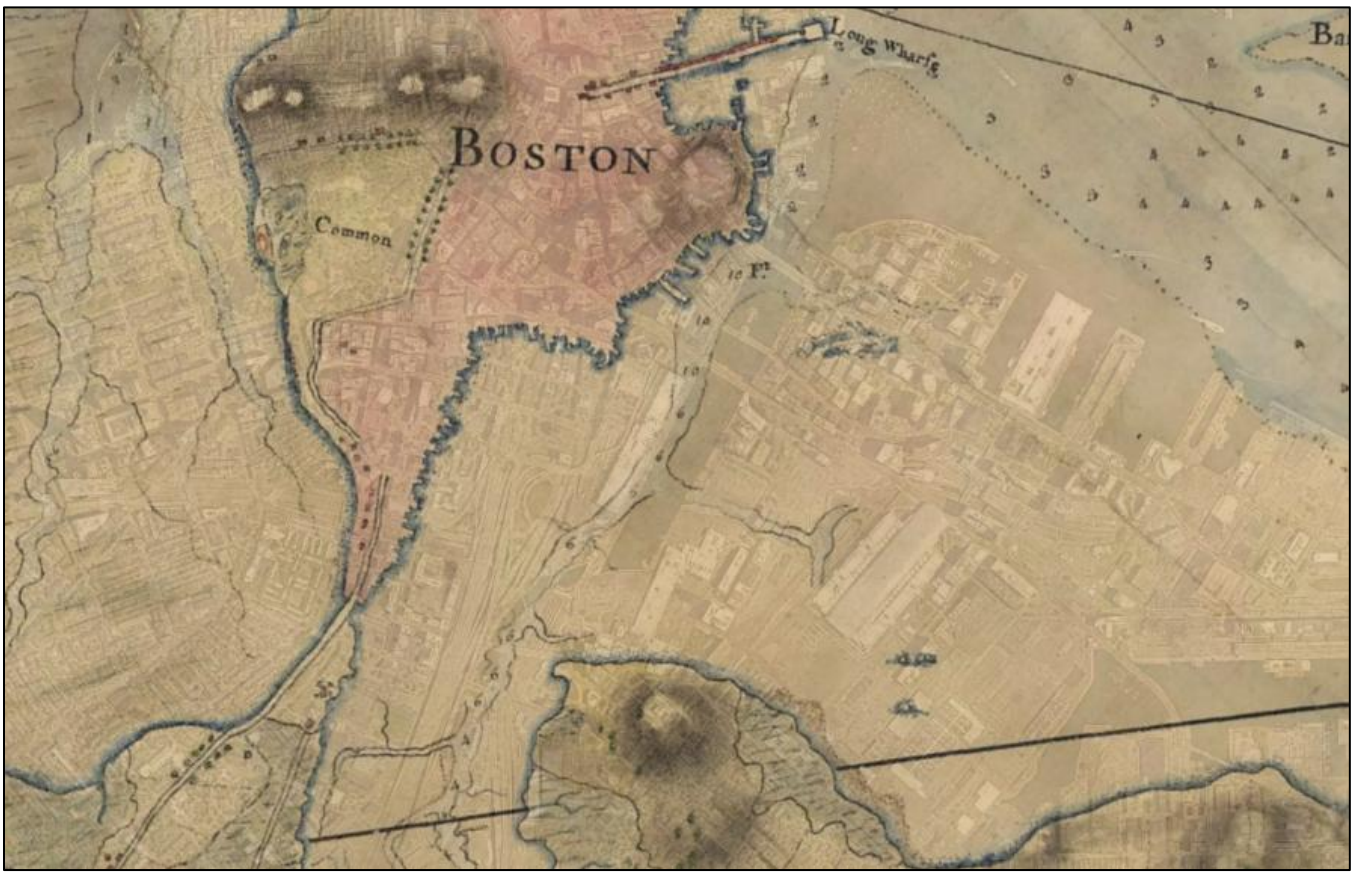
The chlorinated solvent contamination at this site presents several characteristics that collectively indicate an extremely long remediation timeline: DNAPL in fractured bedrock is the defining constraint. No proven technology exists to remediate DNAPL pooled in fracture apertures in argillite at the depths present at this site. Pump-and-treat can intercept dissolved-phase contaminants but cannot access or remove the source mass. The 25+ years of GPTS data at flat concentrations is the empirical demonstration of this limitation.

Incomplete dechlorination generates vinyl chloride which is a more toxic and more mobile compound than the parent TCE. The microbial community is structurally unable to complete the dechlorination sequence under current geochemical conditions, and the site's tidal influence, CSO cycling, and competing methanogenic activity prevent the establishment of the stable, strictly anaerobic conditions Dehalococcoides requires.

Back-diffusion from clay will sustain the plume indefinitely. TCE and PCE that diffused into the clay matrix during the decades of high-concentration exposure are now slowly diffusing back out as the pump-and-treat system reduces concentrations in the adjacent aquifer. This matrix diffusion process operates on timescales of decades to centuries and cannot be accelerated by pumping.

Competing contaminant classes prevent aggressive in-situ treatment. Enhanced reductive dechlorination (electron donor injection to stimulate Dehalococcoides) risks mobilizing arsenic through iron reduction and generating additional methane and sulfide in an area already flagged for explosion hazard. Chemical oxidation to destroy TCE/PCE directly would also destroy the existing dechlorinating microbial community and would mobilize metals while failing to address the DNAPL source.

The most realistic long-term outcome is continued containment through pump-and-treat operation, vapor intrusion mitigation through SSDS at affected buildings, institutional controls restricting groundwater use, and monitoring — essentially managing the contamination in place over a multi-generational timeframe rather than achieving cleanup to unrestricted use standards.



MapJunction overlay 1770 Boston John Hills & ERSI Imagery [link]

TCE Vapor Intrusion in South End on Worcester Square

There documented vapor intrusion at 1673-1679 Washington Street with a dry cleaner and contaminated soil and groundwater that then migrated through fractured clay/utility corridors to impact homes in a different direction than groundwater was supposed to flow. "Vapor Intrusion Pathway existed in the basement and ground floor of the adjoining residential condominium at 9-11 Worcester Street. A Preliminary Human Health Risk assessment utilizing this data revealed a Long-Term Risk to human receptors at the property." Indoor air: TCE 4.3 µg/m³, PCE 25 µg/m³. These are Victorian rowhouses with documented vapor intrusion creating long-term human health risk.

There was also vapor intrusion even closer at 1640 Washington Street (Anna Bissonnette House): "The presence of TCE was detected in soil gas samples SG-1, SG-2, and SG-3 at concentrations of 245 µg/m³, 13 µg/m³ and 9.03 µg/m³, respectively. The presence of PCE and TCE was identified in each of the four indoor air samples tested." The building conditions include 4" concrete slab, 2 feet granular fill below slab, 3 feet organic silt and peat, clay at 5 feet below slab, and groundwater at 2 feet below slab.

The Victorian houses at 1640 Washington and 1673-1679 Washington have documented vapor intrusion with TCE up to 245 µg/m³ in soil gas and PCE and TCE in indoor air, noting a "Long-Term Risk to human receptors". The clay cap should protect the houses, but the utilities punctured it and those utilities connect to the contaminated system. Every Victorian house with a sewer connection has a direct hydraulic and pneumatic link to the buried cesspool sediments, the conduit with its tidal flux, and the ongoing gas generation from decomposition

The Site is Polluted by Trash, Debris, & Incinerator Waste

Discharge of Pollutants from Incinerator Operations and Post-Closure Dumping (33 U.S.C. §§ 1311, 1317, 1342, 1345)

The South Bay Incinerator at 70 South Bay Avenue, Roxbury, operated from 1960 to 1975 burning 600–900 tons per day of unsorted municipal waste through six oil-fueled furnaces at 42% combustion efficiency, with zero emission controls — no baghouses, no scrubbers, no electrostatic precipitators, no continuous emissions monitoring. Three uncontrolled chimneys discharged directly over the surrounding neighborhoods. After court-ordered closure in 1975, the building stood abandoned and was used as an uncontrolled dump by municipal services and private parties for twenty-two more years before demolition in 1997. These operations violated the Clean Water Act through multiple pathways of discharge into navigable waters.

Atmospheric Deposition into Navigable Waters

33 U.S.C. § 1362(12) defines "discharge of a pollutant" as "any addition of any pollutant to navigable waters from any point source." 33 U.S.C. § 1362(14) defines "point source" as "any discernible, confined, and discrete conveyance… from which pollutants are or may be discharged." The incinerator's three chimneys were point sources. The pollutants discharged from those chimneys — heavy metals (lead, arsenic, cadmium, mercury, chromium, antimony, zinc), polycyclic aromatic hydrocarbons (PAHs), dioxins and furans, and acid gases — were deposited directly into Fort Point Channel, South Bay, and Boston Harbor, all navigable waters of the United States.

At 42% combustion efficiency with no emission controls, metals volatilized at combustion temperatures, condensed onto fine fly ash particles, and exited the stack. Pre-1994 testing of uncontrolled incinerator fly ash found it tested hazardous for lead and cadmium 94% of the time. Incomplete combustion of chlorinated waste at the 250–450°C temperature range maximized dioxin and furan formation through de novo synthesis. These pollutants were deposited continuously for fifteen years across the water surfaces of Fort Point Channel and South Bay — located immediately adjacent to and downwind of the facility.
The CWA does not exempt atmospheric deposition from the prohibition on pollutant discharge. Where pollutants are emitted from an identifiable point source and deposited into navigable waters, the discharge falls within the Act's scope. The incinerator's chimneys were the discernible, confined, and discrete conveyances; the metals, PAHs, and dioxins were the pollutants; and Fort Point Channel and Boston Harbor were the receiving navigable waters.

Stormwater Discharge of Incinerator Residues

33 U.S.C. § 1342(p) requires NPDES permits for stormwater discharges associated with industrial activity and from municipal separate storm sewer systems. Rainfall on the 5-acre incinerator site and surrounding ash deposits washed metal-laden residue into the combined sewer system. This contaminated stormwater entered the same infrastructure carrying raw sewage from the surrounding neighborhoods, ultimately discharging through CSO outfalls — including BOS-070 — directly into Fort Point Channel.

No NPDES permit was obtained for these stormwater discharges during the incinerator's operating years (1960–1975), during its use as a dump (1975–1997), or in the period following demolition. The contaminated stormwater carried the same metals, PAHs, and combustion residues documented at

extreme concentrations in adjacent soil: cadmium at 144× background, zinc at 234× background, and lead at 61,500 mg/kg at just 1.5 feet depth at nearby Cabot Yard — surface deposition consistent with fallout and wash-off, not deep fill. Under 33 U.S.C. § 1311(a), these unpermitted discharges of pollutants from a point source (the CSO outfalls receiving incinerator site drainage) into navigable waters (Fort Point Channel) were and remain unlawful.

Leachate Migration to Navigable Waters

The incinerator was built on semi-filled tidal flats with a shallow water table at approximately 5–10 feet below grade. Pile driving tests during construction recorded a 50-lb/ft pipe driving itself 98 feet under its own weight before encountering resistance. The fill at the surface consisted of ash, cinders, coal, and wood. Groundwater moves continuously through this saturated fill toward Fort Point Channel, which is a tidal waterway.

The 1984 HOC 21E Site Assessment of 70 South Bay Avenue documented benzene at 3,000 µg/L in groundwater (600× the drinking water standard), toluene at 300,000 µg/L, and 1,1,1-trichloroethane at 5,000 µg/L. These concentrations indicate that during its twenty-two years as an uncontrolled dump, the site received solvent-bearing waste in addition to incinerator ash residues. This contaminated groundwater migrates through hydraulically connected saturated fill directly to the navigable waters of Fort Point Channel.

Groundwater that is hydrologically connected to navigable waters constitutes a pathway for discharge of pollutants under the CWA. The Supreme Court in County of Maui v. Hawaii Wildlife Fund, 590 U.S. 165 (2020), held that the CWA requires a permit when pollutants originating from a point source reach navigable waters through groundwater, if the discharge is the "functional equivalent of a direct discharge." The incinerator and dump site is a point source. The benzene, solvents, metals, and combustion residues in its groundwater are pollutants. The groundwater is the conduit. Fort Point Channel — located approximately 0.9 miles downgradient — is the receiving navigable water. The discharge is ongoing.

Discharge of Toxic Pollutants (33 U.S.C. § 1317)

33 U.S.C. § 1317 establishes effluent standards for toxic pollutants. The incinerator discharged, and the site continues to discharge through stormwater and groundwater pathways, pollutants listed as toxic under 33 U.S.C. § 1317(a)(1) and 40 CFR 401.15, including but not limited to: benzene, lead, cadmium, mercury, arsenic, chromium, zinc, polycyclic aromatic hydrocarbons, and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and related congeners. No effluent limitations were established or complied with for any of these discharges.

Discharge of Medical Waste (33 U.S.C. § 1311(f))

33 U.S.C. § 1311(f) provides that "notwithstanding any other provisions of this chapter it shall be unlawful to discharge any radiological, chemical, or biological warfare agent, any high-level radioactive waste, or any medical waste, into the navigable waters."

The incinerator burned Boston's unsorted municipal waste stream. Boston City Hospital — located immediately adjacent to the incinerator site and physically connected to it via a steam line — was generating medical waste throughout this period. Boston City Hospital's own records document that it opened its first Infectious Disease department in 1865 and was treating patients with typhoid, smallpox,

diphtheria, scarlatina, and measles through the incinerator's operating years. The hospital did not have its own radioactive waste incinerator until the 1990s. The adjacent medical campus (including New England Nuclear Corporation, authorized for research with atomic numbers 3–94) was generating radioactive waste "on a weekly basis" per the Director of Radiation Protection, and using the municipal waste disposal system.

Whether medical or radioactive waste from the adjacent hospital and nuclear research campus entered the municipal waste stream and was burned at South Bay has never been investigated. If any such waste was burned, the resulting atmospheric deposition into Fort Point Channel and Boston Harbor constituted a discharge of medical waste and/or radiological material into navigable waters in violation of § 1311(f). Given the physical proximity, the steam connection, the shared municipal waste infrastructure, and the complete absence of waste stream segregation requirements in the pre-RCRA era, the probability that medical and radioactive waste was combusted at this facility is high.

Post-Closure Dumping: The Uncontrolled Landfill (1975–1997)

After the incinerator's court-ordered closure in 1975, the building and surrounding land were used as an uncontrolled dump for twenty-two years. A 1964 Boston Globe article documented that the City's Department of Public Works had already "dumped hundreds of tons of incinerator ash in some sections of the open area" adjacent to the facility during its operating years. Post-closure, the dumping continued and expanded without any liner, leachate collection, groundwater monitoring, or stormwater management — all of which would have been required under RCRA (enacted 1976) and the CWA's stormwater provisions.

The dump operated without an NPDES permit for stormwater discharges associated with industrial activity, as required by 33 U.S.C. § 1342(p). Rainwater percolating through the uncontrolled waste, ash, and debris generated contaminated leachate that entered the shallow groundwater table and migrated to Fort Point Channel. The benzene at 3,000 µg/L and solvents documented in site groundwater demonstrate the ongoing discharge of pollutants from this unpermitted source.

Continuing Violations

The site is not registered with MassDEP as either a prior landfill or a prior incinerator. There is no post-closure monitoring, no cap, no leachate collection, no institutional controls, and no responsible party. Contaminated groundwater continues to migrate from the site toward Fort Point Channel. Stormwater continues to wash across soil containing extreme concentrations of incinerator-derived metals. The violations are not historical — they are ongoing.

EPA screened the site for Superfund listing under CERCLIS ID 0100754. MassDEP assigned release tracking number RTN 3-0000952 after discovering benzene at 600× the drinking water standard. The adjacent landfill carried DEQE File #33B-035-001F. Despite this paper trail, neither agency imposed discharge permits, post-closure monitoring, or stormwater controls. The regulatory gap does not constitute authorization; the absence of a permit does not legalize the discharge. Under 33 U.S.C. § 1311(a), any discharge of a pollutant from a point source into navigable waters without an NPDES permit is unlawful. The South Bay Incinerator and dump site violated and continues to violate the Clean Water Act through:

- Unpermitted discharge of toxic pollutants (heavy metals, dioxins, PAHs, benzene, chlorinated solvents) into navigable waters via atmospheric deposition, stormwater runoff, and groundwater migration, in violation of 33 U.S.C. §§ 1311(a), 1317, and 1342;
- Discharge of medical waste into navigable waters via atmospheric deposition of combusted hospital waste, in violation of 33 U.S.C. § 1311(f);
- Operation of an industrial facility and post-closure dump without required NPDES stormwater permits, in violation of 33 U.S.C. § 1342(p);
- Continuing unpermitted discharge of pollutants through contaminated groundwater functionally equivalent to a direct discharge into Fort Point Channel, in violation of 33 U.S.C. § 1311(a) as interpreted by County of Maui v. Hawaii Wildlife Fund, 590 U.S. 165 (2020).

The Incinerator: Operations

The South Bay Incinerator (a 5-acre municipal waste combustion facility at 70 South Bay Avenue, Roxbury) built in 1957 and operated from 1960 to 1975 burning 600–900 tons per day of Boston's unsorted municipal waste through six oil-fueled furnaces with a documented combustion efficiency of just 42%. It had no baghouses, no scrubbers, no electrostatic precipitators, and no continuous emissions monitoring. Three uncontrolled chimneys discharged directly over the South End, Fort Point, South Boston, and Roxbury neighborhoods for fifteen years. After court-ordered closure in 1975, the building stood abandoned for twenty-two years and was used as an uncontrolled dump by municipal services and private parties before demolition in 1997. It handled ~half of Boston's refuse.

The City refused to shut down the plant despite complaints from EPA and a court. The Court complained that it "does not believe that this is a situation of impossibility, or extreme hardship involving one who has made, and is making good faith efforts to comply with the law. On the contrary, the overall picture in this case shows considerable foot-dragging by the City."

Why Black Rain

Maybe 'Smoke From Ships' Or 'Housing Incinerators,'

BLACK RAIN

Continued From the First Page

Many South Bostonians were quick to blame the Boston Edison plant at City Point for the sooty rain.

But Sgt William O'Donnell of the South Boston division said the incinerators there were checked and were not responsible for the greasy substance.

"A fine spray washes the smoke there," he explained, "and heavy particles drop to the bottom of the incinerators where they're shoveled out."

The City of Boston incinerator on Albany st. isn't at fault either, Supt. John King pointed out. It has a similar spray setup.

"Our smoke is so pure," said King, "you could sit on the stacks—if you could stand the heat—and still be able to breathe.

King offered the explanation that the soot might have accumulated in the air over a period of time and finally came down with the morning rain.

Other explanations were

Figure 1 The_Boston_Globe_1960_05_13

As of 2026, this facility (which burned up to 900 tons/day of waste for fifteen years and then accepted uncontrolled dumping for twenty-two more) is not registered with MassDEP as either a prior landfill or a prior incinerator. It does not appear on the inactive landfill list or the inactive combustion facilities list. It has no post-closure monitoring, no institutional controls, no Activity and Use Limitations, and no identified responsible party. The Greater Boston Food Bank currently operates on the footprint. MassDEP assigned the site IDs S106510439 and RTN 3-0000952. EPA screened it for Superfund listing under CERCLIS ID 0100754. The adjacent landfill at Expressway and South Bay

Avenue carries DEQE File #33B-035-001F. Despite this paper trail, the facility has fallen out of the active regulatory system entirely.

The incinerator was built between December 1956 and January 1958 at a cost of $6.5 million on semi-filled tidal flats at the southern bend of South Bay. The geotechnical conditions were extraordinary: pile driving tests recorded a 50-lb/ft pipe driving itself 98 feet down under its own weight before encountering resistance, with hardpan not reached until 113–150 feet. The building was essentially a massive concrete structure floating on piles in waterlogged fill, peat, and marine clay, on land that had been open tidal water within living memory. Fill at the surface consisted of ash, cinders, coal, and wood — the engineering report noted that "minor corrosion would also take place in the fill due to the presence of cinders and other deleterious materials."

The facility sat at the center of a constellation of waste-related land uses: a registered landfill at Expressway and South Bay Avenue (DEQE 33B-035-001F), an automobile junkyard at Expressway and Moore Street, a salt storage area under the expressway, the Suffolk County House of Corrections, Master Chemical Company's shoe-chemical manufacturing operation (1940–1984), Boston DPW Central Fleet Maintenance, and the former Roxbury Gas Light Company coal gas works. The shallow water table sits at approximately 5–10 feet below grade across the entire area, connecting all of these sources through continuous saturated fill.

Steam from the incinerator was piped directly to Boston City Hospital for heating and to Boston Edison for electricity generation. This physical linkage to the medical campus is significant: it connects the municipal waste incinerator to the institution that was simultaneously generating radioactive waste "on a weekly basis" — per its own Director of Radiation Protection — and did not have its own radioactive waste incinerator until the 1990s.

In the 1960s and early 1970s, Boston's municipal waste stream was unsorted and unscreened. RCRA was not enacted until 1976, one year after the incinerator closed. The waste stream contained lead paint and solder from tin cans, leaded gasoline residues, mercury from thermometers and batteries, cadmium from nickel-cadmium batteries, arsenic from CCA-treated lumber, PCB-containing electrical equipment, and chlorinated plastics — all mixed with ordinary household and commercial waste from one of the most heavily industrialized cities in the country.

In 1962, Boston's sanitation engineer John F. Flaherty says no problem that Calf Pasture dump closed. Says now trash is being either burnt at incinerator or "stockpiled" at the incinerator yards. Says currently 150 tons of materials "stockpiled." James Haley, DPW, said should have used the mortar and bricks to fill and cover the trash at Calf dump. Flaherty said they were dumping incinerator ashes into Calf Pasture dump as "fill" but "the incinerator ashes are now being dumped in the South Bay area, along, but not into, the Roxbury canal." Flaherty said "that the city has a one-year license for this operator" which was issued by the Commonwealth's Dept. of Public Works. Flaherty said the contractors complaining of the closure of Calf Pasture should just pay the city to burn their trash at the South Bay incinerator. City charges $5/ton. [38]

At 42% combustion efficiency with zero emission controls, the consequences were severe. Metals are not destroyed by incineration — they volatilize at combustion temperatures, condense onto fine fly

[38] "Calf Pasture Closing Hits Private Contractors," The Boston Globe, Jul 25, 1962, p. 13.

ash particles as flue gases cool, and exit the stack. Without baghouse or ESP capture, those metal-laden particles go directly into the atmosphere. Pre-1994 testing of uncontrolled incinerator fly ash found it tested hazardous for lead and cadmium 94% of the time. Incomplete combustion of chlorinated waste at the 250–450°C temperature range maximizes formation of dioxins and furans through de novo synthesis. The 42% efficiency rate means enormous volumes of unburned and partially burned material accumulated as bottom ash on site, while PAHs, dioxins, acid gases, and metal-laden particulate exited the chimneys continuously.

Contemporary accounts describe the incinerator as "universally despised in the surrounding neighborhoods because it sent up horrible clouds of pollution over South Boston, Roxbury and Dorchester." A Boston Public Library photograph from the era captures heat distortion from a chimney with the Prudential Tower visible in the background, demonstrating the plume's reach across the city core. This was not subtle contamination — it was visible, tangible fallout deposited daily for fifteen years across a residential and institutional neighborhood.

Site assessments across South Bay note ubiquitous lead, arsenic, cadmium, and zinc contamination across the study area, routinely attributed to "the quality of the historic fill." This attribution treats the fill as a static historical artifact and does not account for fifteen years of active airborne deposition from a 600–900 ton/day uncontrolled incinerator operating in the middle of the study area. The metal concentrations at locations immediately adjacent to the incinerator are consistent with heavy fly ash deposition superimposed on the existing fill contamination.

Boston's Incinerator at 70 South Bay Ave.

City's Dump at 70 South Bay Ave (1973)

At Widett Circle, immediately adjacent to the incinerator site, cadmium reaches 144 mg/kg against a background of less than 1 mg/kg — a 144-fold exceedance — and zinc reaches 16,400 mg/kg against a background of approximately 70 mg/kg — a 234-fold exceedance. Cadmium and zinc are signature incinerator ash metals: they originate from batteries and galvanized steel in the waste stream, volatilize readily at combustion temperatures, and concentrate preferentially in the finest fly ash particles. The Widett Circle concentrations are not explained by 19th-century coal ash fill.

At MBTA Cabot Yard, downwind of the incinerator, lead reaches 69,900 mg/kg at 5.2 feet depth and 61,500 mg/kg at just 1.5 feet. The shallow hit at 1.5 feet is particularly telling — this is surface deposition depth, not deep fill. At 750 Albany Street (BMC Power Plant), the site assessment explicitly states that "lead and arsenic were attributed to the quality of the historic fill in this area" — the standard attribution that does not consider whether an incinerator one block away might have contributed.

Groundwater data from the incinerator site itself (1984 HOC 21E Assessment, Well B2 at 70 South Bay Avenue) documents benzene at 3,000 µg/L — 600 times the drinking water standard — along with toluene at 300,000 µg/L (6× the MCP S1/GW2 standard) and 1,1,1-trichloroethane at 5,000 µg/L (25× screening). The benzene and TCA suggest that the site received solvent-bearing waste during its twenty-two years as an uncontrolled dump, in addition to the incinerator ash residues.

There are also explicit acknowledgments of the incinerator as a contamination source: at Mass Ave Connector/Frontage Road (RTN 3-50561), analytical results for 1,1-biphenyl in coal/coal ash prompted the note that "1,1-biphenyl is commonly found in coal tar, crude oil, and natural gas — and emissions from incinerators."

Fifteen years of chlorinated waste combustion at 42% efficiency in oil-fueled batch furnaces is a textbook dioxin and furan source. Incomplete combustion in the 250–450°C range, with chlorine from PVC and other plastics, and catalytic metals like copper from the waste stream, creates optimal conditions for de novo dioxin synthesis. There is no dioxin/furan sampling data available for the Site. This represents a major uncharacterized contaminant class from a known, documented source.

Rainfall on the 5-acre incinerator site and its surrounding ash deposits washed metal-laden residue into the combined sewer system, joining the same infrastructure that carried radioactive discharges from NEN and BUMC, chlorinated solvents from Gillette/Sorbin Chemical, and raw sewage from the surrounding residential neighborhoods. During wet weather events, this combined flow overflowed untreated through CSO outfalls directly into Fort Point Channel and Boston Harbor. The incinerator contributed an unquantified metals and PAH load to the Fort Point Channel sediments — which show chrysene at 90,000 mg/kg and phenanthrene at 190,000 mg/kg — that is currently attributed entirely to coal tar and fill sources.

The absence of this facility from MassDEP's solid waste facility lists means there are no post-closure groundwater monitoring requirements, no cap integrity inspections, no leachate assessment, no methane monitoring, no institutional controls, no deed restrictions, and no notification requirements for future construction or excavation at the site. Nobody is required to monitor what the residual ash and waste are doing to the shallow water table. Nobody is required to inform the Greater Boston Food Bank — a food handling and distribution facility serving the region's most vulnerable populations — about the site's history. Nobody is responsible.

EPA screened the site for Superfund listing. MassDEP assigned a release tracking number after benzene was found at 600 times the drinking water standard. The site held a DEQE landfill file number. And yet none of this translated into an actual assessment, any remediation, or any regulatory oversight of a facility that processed tens of millions of tons of waste over thirty-seven years.

Whether incinerator bottom ash (potentially hundreds of thousands of tons generated over fifteen years of operation) was used as fill material in the surrounding neighborhood is unknown but was common practice in this era. Whether the 1997 demolition properly characterized and disposed of contaminated materials, or treated them as ordinary construction and demolition waste, is undocumented. Whether residual ash remains in place beneath the current site improvements is unknown. Whether medical or radioactive waste from the adjacent Boston City Hospital / BUMC entered the municipal waste stream and was burned at South Bay has never been investigated. And the current soil and groundwater conditions at the Greater Boston Food Bank site (directly on the former incinerator footprint) do not appear in any available characterization data.

The South Bay Incinerator is the unaccounted source in the study area's contamination story: the facility helps explains why everything is covered in lead and arsenic, yet nobody includes in site assessments because it doesn't exist on any state or city records.

Deadline, July 31

EPA orders White to close city incinerator

By Mary Meier
Globe Staff

The Federal Environmental Protection Agency (CEPA) regional administrator, John A. S. McGlennon, today ordered Boston Mayor Kevin White to close the city incinerator by July 31 of this year.

McGlennon told a news conference that the EPA "Clean Air" order was delivered to City Hall this morning.

The city incinerator, at 70 South Bay av. at the Dorchester-Roxbury line, has been in violation of both state and Federal clean air requirements since 1972, McGlennon said.

"The city has been dragging its feet on alternate disposal methods, despite EPA urging," he added.

Recommended alternatives to use of the incinerator are twofold: Through sanitary landfill at the Gardner street dump in West Roxbury or removal by private contractors to locations outside the city.

Only a portion of the city's refuse is handled by the incinerator.

McGlennon said the city plans to build a new incinerator by 1978. It is expected to conform to clean air standards by controlling smoke emission and will partially reimburse taxpayers for its operating costs by selling the steam it produces to Boston Edison.

McGlennon also announced that his agency will undertake an environmental impact study on the Metropolitan District Commission's proposed sludge incinerator on Deer Island.

The sludge plant is intended to handle sewage solids currently discharged into Boston Harbor by the MDC's new waste water treatment plant.

"We are concerned about the effect on the harbor of a sludge incinerator," said McGlennon, "and we will study alternate disposal methods such as landfill, the manufacture of fertilizers, or continued dumping into the ocean."

The MDC has already completed its own environmental impact study, but the EPA wishes to conduct a more thorough search. The EPA study will delay construction of any new Deer Island facility for one year, postponing the target date for complete sewage treatment until 1978. The MDC had hoped to complete its sludge incinerator by 1977.

Blast Hurts 3 At Incinerator

Three men were injured, one critically, when an explosion rocked the City of Boston incinerator at 70 South Bay av., Roxbury, early this morning.

Rushed by police to City Hospital were: Robert Hall, 40, of 16 Peacevale rd. and Ponto Green, 32, of 137 Columbia rd., both Dorchester, and Bryant Thompson, 27, of 745 East Broadway, South Boston.

Hall was treated for burns over 70 percent of his body, according to hospital officials. His name was placed on the danger list. Greei and Thompson were treated for lacerations of the hands and face.

Green told The Globe that shortly after 2 a.m. an outside crane dropped a load of debris into one of the incinerators. Almost immediately an explosion rocked the building, showering him with debris and blowing out all the windows on the second floor.

Huge steel doors, 6-inches thick, were blown from the front of the incinerator.

The Boston Globe, Mar 05, 1975, p. 23 | Jan. 13 1969

The Site is Polluted by Radionuclides & Radioactive Materials

Discharge of Radiological Agents & Waste in violation of 33 U.S.C. §§ 1311(f), 1362(6))

The Clean Water Act (CWA Section 502(6), 33 U.S.C. § 1362(6)) explicitly includes "radioactive materials" in its definition of "pollutant." The CWA defines "pollutant" broadly to include "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." The Act prohibits "the discharge of any pollutant by any person" unless authorized by permit, and liability is strict — no requirement to prove intent or causation.

Under § 1311(f), "Notwithstanding any other provisions of this chapter it shall be unlawful to discharge any radiological, chemical, or biological warfare agent, any high-level radioactive waste, or any medical waste, into the navigable waters. *((f)- Illegality of discharge of radiological, chemical, or biological warfare agents, high-level radioactive waste, or medical waste*.).

CSO outfalls are point sources under the CWA and require NPDES permits. When a combined sewer overflows during a wet weather event and discharges to Fort Point Channel or Boston Harbor, that is a regulated discharge of pollutants to navigable waters. If the sewage being discharged contains radioactive materials — which at this site it demonstrably did, given decades of NEN and BUMC discharges— then the CSO is discharging radioactive pollutants to navigable waters.

Combined sewers are not purely "sanitary sewerage" — they also carry stormwater, and they overflow during wet weather, bypassing the treatment plant entirely. When a CSO event occurs, the dilution assumptions underlying the NRC's sewer discharge limits are invalid. The radioactive materials discharged by NEN and BUMC under 10 CFR 20.2003 go directly to the receiving water at whatever concentration happens to exist in the sewer at the time of overflow. Nobody modeled this. The NRC assumed the material would reach a treatment plant. The CWA NPDES permit for the CSO system almost certainly didn't include radionuclide limits because nobody flagged the NRC-authorized sewer discharges as a CSO loading source.

The radiological contamination history of the South Bay includes at least three overlapping institutional sources: a radiochemical manufacturing facility, a major medical center complex, and an uncharacterized luminous paint manufacturer. They operated for decades within a few blocks of each other, all discharging radioactive materials into the same sewer infrastructure, the same fill, and the same shallow groundwater system.

Unlike the chemical contaminants at the site, which can in principle be degraded, immobilized, or extracted, the radionuclides present here include isotopes that are essentially untreatable, bioaccumulative, and in some cases geochemically indistinguishable from natural background. The regulatory and remediation frameworks that govern the site's chemical contamination do not adequately address the radiological dimension, and the radiological dimension has received far less characterization than the chemical contamination despite decades of documented releases.

New England Nuclear Corporation (NEN), later acquired by DuPont and operated as DuPont NEN Products (Biomedical Products Department), was a commercial radiochemical manufacturer occupying multiple buildings on Albany Street and adjacent streets.

- **575 Albany Street**: Production laboratories and waste processing — synthesis, waste handling, biochemistry, sulfur-35, carbon-14 precursors, steroids, lipids, tritium. Held NRC License 20-11868-01. Registered as both an air stationary point source (EPICS-28734, EPICS-53733) and a hazardous waste program facility (EPICS-51898) with MassDEP.
- **549 Albany Street**: IT, medical, HR, marketing, administration. Also listed under NRC License 20-00320-18MD.
- **100 East Canton Street**: Production and laboratories — phosphorus-32, drugs, tritium, carbon-14, microbiology, amino acids, HPLC, separations. Registered as air stationary point source (EPICS-51920) with MassDEP. EPA Registry ID 110038943329.
- **123 East Dedham Street**: Analytics, electronics, quality control.
- **120 East Dedham Street**: Inventory, packaging, shipping.
- **108 East Dedham Street**: Storage.
- **609 Albany Street**: Safety & environment; maintenance. DuPont, NRC License 20-00320-13 / Docket 030-04579.
- **801 Albany Street**: Also listed as NE Nuclear / DuPont location.

This was not a small-scale research operation. NEN was one of the largest commercial producers of radiolabeled compounds in the United States, manufacturing tritium (H-3), carbon-14 (C-14), sulfur-35 (S-35), phosphorus-32 (P-32), and iodine-125 (I-125) labeled compounds for the biomedical research market. The campus spanned at least seven buildings across three streets and employed production-scale synthesis, waste processing, and shipping operations.

The NEN NRC license information (20-00320-09, 20-00320-13) lists: Krypton-85, Molybdenum-99, Americium-241, Xenon-133, Nickel-63, Sulfur-35, Carbon-14, Cesium-13, Phosphorus-32, Strontium-90, Tritium (H-3), any byproduct material with atomic numbers 3 through 94, and any byproduct material in Schedule B, 10 CFR 30.71.

That last line — "any byproduct material with atomic numbers 3 through 94" — is a blanket license covering essentially every radioisotope from lithium through plutonium. And the specific named isotopes include Am-241 (alpha emitter, 432-year half-life), Sr-90 (bone-seeking beta emitter, 29-year half-life, the isotope people feared from nuclear fallout), and cesium-137.

NEN was also manufacturing tritium-activated self-luminous paint ("Safeglow") in addition to radiopharmaceuticals. This connects NEN directly to the same product category as the Warner-Martin luminous paint operation at 560 Harrison Avenue. Two luminous paint operations within blocks of each other, one using radium (Warner-Martin, 1948), the other using tritium (NEN, 1957+).

The sewer discharge sampling from NEN/DuPont holding tanks at 575 Albany Street on February 20, 1986, documented in NRC/DuPont Report Nos. 30-09023/86-01 and 30-28902/86-01 included: Building 120 Holding Tank: Gross Alpha: $6 \pm 2 \times 10^{-10}$ (µCi/mL); Gross Beta: $1.34 \pm 0.05 \times 10^{-5}$ (µCi/mL). Building 575 Holding Tank: Gross Beta: detected . Building 123 Holding Tank (575 Albany Street): Gross Alpha: 8

$\pm 3 \times 10^{-10}$, 6 ±[] $\times 10^{-10}$ (µCi/mL); Gross Beta: 6.1 ± 0.2 $\times 10^{-6}$, 2.18 ± 0.09 $\times 10^{-6}$ (µCi/mL); Cesium-137: 5 ± 4 $\times 10^{-8}$ (µCi/mL).

The 1979 NRC email regarding "radioactive drums & sewers" at the Boston / Interex transporter address identifies the waste stream as "mostly Iodine-125, Carbon-14 and Hydrogen-3." This is consistent with NEN's known production profile and confirms that the sewer discharge was not an isolated event but a routine waste disposal pathway.

The NRC inspection narrative gives the sewer discharge pathway in detail: 25 million liters/year of water use at the Boston site, all discharging to the Deer Island treatment plant via the combined sewer. The report notes that "sludge is mixed with effluents and disposed to the Boston Harbor" — meaning radionuclides not captured in the treatment process went directly to the harbor, and radionuclides captured in sludge also went to the Harbor.

The gross beta concentrations in the holding tank samples — particularly the 1.34×10^{-5} µCi/mL result — represent the aggregate radioactivity of all beta-emitting radionuclides in the discharge. Given NEN's production of tritium (weak beta), carbon-14 (weak beta), sulfur-35 (beta), and phosphorus-32 (high-energy beta), the gross beta measurement integrates contributions from multiple isotopes at concentrations that, while potentially within NRC sanitary sewer discharge limits for individual isotopes under 10 CFR 20.303, were being released into combined sewers serving a dense urban neighborhood — sewers that also carry stormwater and overflow during wet weather events through CSO discharges directly into Fort Point Channel.

The NEN facility discharged through holding tanks to the Boston sewer system. The sewer infrastructure in this area is a combined system carrying both sanitary waste and stormwater. During precipitation events, the combined system overflows through CSO outfalls into Fort Point Channel, the Roxbury Canal conduit, and ultimately Boston Harbor. Radionuclides discharged to the sewer therefore had two potential fates: transport to the Deer Island wastewater treatment plant during dry weather, or direct discharge to surface water during CSO events.

The sewer infrastructure itself — documented as dating to the early 1900s, embedded in corrosive ash and cinder fill that attacks metal pipes, and subject to 120+ years of deterioration — represents a third pathway. Any leaks in the sewer lines (and there will be leaks after a century of service in corrosive fill) create direct contact between radioactive sewer contents and the shallow groundwater table, which sits at approximately 5 feet below grade in this area.

The 1905 Journal of Infectious Diseases data on Albany Street sewers, establishes that the sewer system was already heavily loaded with organic waste before any 20th century radiochemical operations began. The same sewers that carried bacterial counts of 790,000 to 2,600,000 per cubic centimeter in 1905 later carried NEN's radiochemical waste stream — tritium, carbon-14, iodine-125, and apparently cesium-137 — through the same fill that contains TCE DNAPL, lead at 38,000 mg/kg, coal tar PAHs, and reactive sulfide.

Boston City Hospital, Boston Medical Center, Boston University Medical Center, Harvard University

The medical/research complex occupying the blocks bounded approximately by Albany Street, Harrison Avenue, Massachusetts Avenue, and East Newton Street has operated under continuously

evolving institutional arrangements since the 1860s. The records document radiological operations under multiple overlapping entities:

- **Boston City Hospital** (BCH): NRC License 20-00275-08, Docket 030-01807. Licensed to possess byproduct material under 10 CFR Parts 35.100, 35.200, 35.300, and 35.400 for medical diagnostic and radiation therapy procedures, plus several radioactive isotopes for non-human research and development. Five authorized locations of use. Licensed materials included technetium-99m (diagnostic imaging), iodine-131 (thyroid therapy), carbon-14, phosphorus-32, tritium, and sulfur-35 (research).
- **Boston University Medical Center** (BUMC): NRC License 20-02215-01, Docket 030-01845. Licensed for radioactive material use across the entire BUMC campus, including buildings shared with and connected to BMC via catwalks. The BUMC Radiation Safety department administered radiation safety for both BU and BMC buildings, plus the Commonwealth-owned Fuller Building. Licensed materials included the full range of biomedical research isotopes.
- **Boston Medical Center** (BMC): The successor institution to BCH, sharing the BUMC Radioactive Materials license issued by the Massachusetts Radiation Control Program.

The 2017 DOT filing describes the campus as "33 Boston University Medical Center owned or controlled buildings" plus 8 additional leased buildings, all on the same Radioactive Materials license. Buildings range from 2 to 14 stories, constructed between 1864 and 2012. This is one of the largest continuously operating medical radioisotope facilities in the northeastern United States, and it has been operating on the same site — on the same filled tidal flats, above the same shallow groundwater, discharging to the same combined sewers — for over 60 years.

The NRC enforcement record for the BCH/BUMC complex documents a pattern of regulatory failures spanning decades:

July 9, 1981: NRC documents "Loss of Licensed Material" at Boston City Hospital (818 Harrison Street).

April 9, 1981: NRC documents "stolen materials" incident at Boston City Hospital.

March 25, 1981: NRC documents misadministration of radioiodine at Boston City Hospital.

July 15, 1981: NRC Inspection, Docket 30-1807, identifying licensed materials H-3, C-14, I-125 at BCH.

1983: NRC corrective actions required at Boston City Hospital.

1985: NRC corrective action plan required at University Medical Center.

March 29, 1989: NRC routine inspection (030-01807/89-001) found activities "not conducted in full compliance with NRC requirements." Notice of Violation issued.

October 6, 1993: NRC inspection identified **nine apparent violations** at Boston City Hospital, License 20-00275-08. The violations included:

1. Failure to include pertinent data in radiation exposure records
2. Failure to keep licensed material under constant surveillance and immediate control — the inspector observed the hot lab door left open, walked in and remained for five minutes with no staff present, with approximately 200 millicuries of technetium-99m and 40 microcuries of iodine-131 unsecured

3. Multiple failures to complete written directives prior to iodine-131 administration
4. Failure to require supervised individuals to follow the Quality Management Program
5. Failure to instruct supervised individuals in the QMP
6. Multiple failures to follow QMP procedures requiring review of written directives
7. Failure to develop procedures for QMP compliance review
8. Failure to test the dose calibrator for linearity over full range of use
9. Failure to provide training in proper use of radiation survey meters

The NRC classified the access control violation as Severity Level III and imposed a $2,500 civil penalty. The door was left open because floor deterioration made it difficult to close — a known condition that staff had not corrected. The NRC noted that "seven violations in the enclosed Notice indicate a general decline in your recent performance."

1994: NRC corrective action plan required at Boston City Hospital under License 20-02215-01.

1995: Associated Press investigation cited in the additional records documented that "radioactive material is tossed into the trash and buried in a landfill" and that "labs with radioactive materials are left unlocked and unsupervised" at Massachusetts universities including Boston University. Specific incidents at BU medical school included:

- December 1987: Radiology instrument containing radioactive material accidentally thrown into a trash compactor and hauled to a landfill south of Boston
- March 13, 1989: Radioactive material discovered missing from a BU lab
- Six months later: A vial of radioactive phosphorus left in a hallway trash pile and disposed of in an unknown landfill
- October 4, 1993: A housekeeping employee threw a container of radioactive phosphorus into the trash

The AP story characterized Massachusetts universities as having a "cavalier attitude toward the handling and disposal of radioactive material," quoting an NRC inspector. The state's Radiation Control Program director called researchers "lackadaisical."

The most recent documented event from **April 30, 2025** (NRC Event Notification Report 57687) reports that two radioactive material packages (7 mCi S-35 and 0.5 mCi P-32) shipped to the licensee (Boston University and Boston Medical Center, MA License 44-0062) were not received. Investigation ongoing as of the event report. This demonstrates that radiological incidents at the BUMC campus continue to the present day.

BUMC's Director of Radiation Protection, Victor Evdokimoff, wrote extensively about the institution's reliance on sanitary sewer disposal of radioactive materials. The NRC license authorized disposal of liquid byproduct material via the sanitary sewer system in quantities not exceeding ten times the values in 10 CFR 20 Appendix E, Table 1, Column 2. A separate sink disposal list was maintained "to ensure that limits specified in Section 20.303 of 10 CFR20 are not exceeded."

In a 1994 letter opposing proposed NRC restrictions on sewer disposal, Evdokimoff wrote bluntly about the institution's dependence on this pathway: "We are a large medical research institution using radio-isotopes for medical research and in patients. We are opposed to further rulemaking revising the current regulations disposal of radioactive material into the sanitary sewerage system... In Massachusetts

we have been denied access of our low-level radioactive waste at the Barnwell disposal facility. Further restrictions on radwaste disposal via limitations on sanitary sewerage disposal will create further hardship in an already crisis situation."

On the question of controlling radioactive patient excreta (principally from I-131 thyroid therapy patients), Evdokimoff argued against collection, noting it would require "storing urine for decay up to 2 months," creating exposure potential from "large millicurie quantities of this potential biohazardous waste," risk of "radioactive volatility from opening when continually adding to a patient urine container," and possibility of "spilling radioactive urine during processing." He concluded: "There is no net benefit from medical diagnosis and treatment with radiopharmaceuticals that exceeds any minuscule risk from controlling exposure potential from radioactive excreta to a small segment of sewer treatment personnel or sludge."

This letter makes explicit: the BUMC complex was routinely discharging radioactive materials — including iodine-131 from therapy patients, tritium, carbon-14, sulfur-35, and phosphorus-32 from research operations — directly into the Boston combined sewer system, and the institution actively opposed regulatory efforts to limit this practice. The discharge was authorized under NRC/state regulations and was legal, but the receiving environment — combined sewers in corrosive fill over a shallow water table with CSO overflows — was not designed to contain radiological materials.

BUMC operated a radioactive waste incinerator at 700 Albany Street. A 1993 letter from Evdokimoff to NRC requested amendment of License Condition 18C to allow disposal of non-radioactive incinerator ash to common trash. The strategy described was to incinerate long-lived H-3 and C-14 radioactive waste, with the expectation that tritium would volatilize as tritiated water vapor and C-14 would convert to $^{14}CO_2$, both captured by the wet scrubber pollution system and discharged to the sanitary sewer. Ash from incineration would be monitored and disposed as common trash if not radioactive.

The NRC subsequently amended the license (Amendment No. 49) to authorize incineration of waste from "two closely affiliated institutions" — allowing BUMC to incinerate radioactive waste from both BU and BCH/BMC. The incinerator pathway means that in addition to liquid sewer discharge, the BUMC complex was releasing tritiated water vapor and $^{14}CO_2$ to the atmosphere (stack emissions, with scrubber discharge to sewer), and generating ash that may or may not have been radioactive depending on the monitoring results. The incinerator was located at 700 Albany Street — directly adjacent to the NEN radiochemical facility and within the broader contamination zone.

NRC correspondence from 1985 discusses procedures for handling "radioactive dog carcasses" at the BUMC Animal Science Center, which received radioactive waste from affiliated institutions. The 1997 decommissioning of BUMC research buildings found H-3 and C-14 contamination on animal cages. DOE Human Experiment records list multiple radioisotope studies conducted at BU using animal subjects, including chromium-51 blood cell survival studies, iron-59 metabolism studies, and iodine-131 thyroid studies.

Evdokimoff's own published research (Health Physics, Vol. 66, No. 2, January 1994) documented that "either or both of Boston University Medical Center Hospital's waste streams can contain detectable radioactive excreta on a weekly basis." Radiation detectors were subsequently installed in areas where housekeepers carted trash and medical waste "to ensure no radioactivity leaves the institution." A later

paper (Health Physics, Vol. 81, 2001) discussed the "regulatory impasse" of radioactive patient waste at landfills, where scintillation detectors at transfer stations were rejecting hospital waste.

The Evdokimoff publications on BUMC decommissioning (Health Physics, Vol. 77, No. 5, November 1999) provide concrete data on the radiological contamination embedded in the medical campus buildings. 1994 Decommissioning (renovation of seven floors of a 10-story hospital used for 50 years): 60,000 square feet surveyed. 291 affected areas identified. Contamination found in 32 hoods, 28 bench tops, floors of 23 rooms, and cabinets in 9 rooms. Average contamination level was 30,000 dpm/100 cm^2, primarily tritium and carbon-14. Approximately 14% of total floor area was contaminated. Only 0.3% of contaminated areas contained removable contamination — the rest was "fixed" (embedded in surfaces). Waste generated: 15 cubic feet of incinerator ash containing 10 µCi H-3/C-14, 13.6 cubic feet of miscellaneous waste containing 300 µCi H-3/C-14, and 30 linear feet of plumbing and drains contaminated with S-35 (placed in storage for decay).

1997 Decommissioning (demolition of three buildings): Building 2 (research building, abandoned 15 years) had H-3 and C-14 on animal cages, inside freezers, and on countertops. Building 3 (research building, in use for 40 years) had contaminated countertops. Critically, in areas designated as "unaffected," the survey found Ra-226 contamination on the floor and under the floor tiles in a corridor — the result of a 70 mCi radium-226 spill that contaminated a 40 square foot area of concrete under the tiles. The contamination was removed with a jackhammer. Waste generated: 22.5 cubic feet of scabbled concrete containing 100 µCi Ra-226, and 30 cubic feet of miscellaneous waste containing 5.6 mCi H-3/C-14.

The Ra-226 finding in the 1997 decommissioning is significant for the site because radium-226 has a half-life of 1,600 years. A 70 mCi spill that contaminated concrete beneath floor tiles in a corridor was discovered only during demolition survey — meaning it had been present, undetected, for an unknown period. Ra-226 decays through a chain that includes radon-222 gas (a lung cancer agent) and multiple alpha-emitting daughters.

Evdokimoff's conclusions about decommissioning medical research buildings are themselves revealing: "Most contamination found was fixed. Wipe tests were inefficient at assessing removable contamination... Most medical research facilities do not have a windowless proportional counter which is able to detect H-3 on surfaces." This means that tritium contamination — the most common contaminant — is systematically undetectable by the standard survey method (wipe testing) used at most institutions.

The Boston University Goldman School of Dental Medicine project notification (May 2017) documents the stormwater infrastructure on the BUMC campus: a 15-inch to 18-inch storm drain in East Newton Street connecting to a 30-inch by 52-inch storm drain in Albany Street, flowing northeasterly to the Roxbury Canal Conduit. BMC holds NPDES permit MAG912162 and is identified as the top pollutant discharger in the 02118 zip code, with 2024 discharge loads including 21,296 lb/yr total dissolved solids, 11,383 lb/yr chloride, and 40.39 lb/yr total suspended solids.

The stormwater flows from the BUMC campus — running across surfaces and through subsurface infrastructure that has been exposed to 60+ years of radioisotope use, spills, incinerator emissions, and sewer leaks — discharge to the Roxbury Canal Conduit, which connects to the broader CSO system and ultimately to Fort Point Channel and Boston Harbor.

Warner-Martin Luminous Paint (560 Harrison Avenue)

Warner-Martin luminous paint at 560 Harrison Avenue, around 1948, was referenced in a NIST letter circular (NBS Letter Circular 703). In 1948, "luminous paint" meant radium-226 based self-luminous paint — the same material that caused the Radium Girls cases at US Radium Corporation and other dial-painting factories in the 1920s-1930s.

The NIST reference confirms that Warner-Martin was a manufacturer, handler, or distributor of luminous compounds containing radium. Radium-226, with its 1,600-year half-life, would still be present at essentially undecayed levels in any soil, building materials, or fill that received waste or spillage from this operation. Ra-226 decays through radon-222 (radon gas), polonium-218, lead-214, bismuth-214, polonium-214, lead-210, bismuth-210, and polonium-210 — a decay chain that produces alpha particles, beta particles, and gamma radiation.

560 Harrison Avenue is approximately one block from the main study area. This represents a potentially uncharacterized radium source in the immediate vicinity of the site. No radiological sampling data for this location appears in records, and no decommissioning records have been identified. If radium paint was manufactured or handled at this address, the building and surrounding soil could contain elevated Ra-226 and its daughter products, and the building may have contributed radon gas to the local environment for 75+ years.

Combined Pollution & Risk

Tritium (H-3)— the most commonly used and discharged radionuclide at both NEN and BUMC — is essentially untreatable once released to the environment. Tritium substitutes for hydrogen in water molecules (forming tritiated water, HTO), making it chemically identical to water and impossible to separate by conventional water treatment. It follows groundwater flow, is not sorbed by soils or clay minerals, and passes through all standard filtration and treatment systems. Its half-life is 12.3 years — long enough to persist through multiple decades of groundwater transport but short enough that concentrations will decay over time if the source is eliminated.

At this site, tritium discharged to the sewer system would have reached the environment through CSO overflows, sewer leaks, and wastewater treatment plant effluent. Tritium in groundwater would migrate with the plume at the velocity of groundwater flow, unretarded by sorption. The 12.3-year half-life means that tritium discharged in the 1960s-1980s (the peak NEN production era) would have decayed through 3-5 half-lives by now, reducing concentrations to 3-12% of original levels. However, if discharge continued through the DuPont era (1980s-1990s) or through ongoing BUMC operations, more recent tritium would still be present at significant fractions of initial concentration.

Carbon-14 has a half-life of 5,730 years, meaning any C-14 released to the environment is functionally permanent on human timescales. C-14 incorporates into organic matter through the same biochemical pathways as stable carbon-12 — it enters the food chain, is taken up by plants, incorporated into soil organic matter, and cycled through ecosystems. At this site, C-14 discharged to sewers and released through incinerator stacks (as $^{14}CO_2$) has entered the local carbon cycle.

The organic-rich peat layer and fill materials at the site, with total organic carbon at 12,900–32,000 mg/kg, represent a significant reservoir for C-14 incorporation. Any C-14 that has been incorporated into the organic matter of the fill and peat is essentially permanently sequestered — it will not be distinguished

from natural C-14 in background organic carbon, and it cannot be removed without removing the organic matter itself.

Iodine-125 (half-life 59.4 days) was a primary NEN product and was identified as a major contaminant in the NEN sewer waste stream. Iodine-131 (half-life 8 days) was used for thyroid therapy at BCH/BUMC and discharged through patient excreta. Both isotopes are short-lived and would have decayed below detection limits within months to a year of discharge. However, the concern with iodine isotopes is biological — iodine concentrates in the thyroid gland, and any exposure during the active discharge period would have delivered concentrated thyroid doses to individuals in contact with contaminated water or sediment.

The Evdokimoff decommissioning report notes that "I-125 release limits are exceedingly strict. Most institutions will not be able to meet the detection limit for free release of 20 dpm/100 cm^2 removable." This suggests that I-125 contamination in BUMC buildings may have persisted at levels difficult to detect with standard survey methods but still above release limits.

The Cs-137 detection in the NEN sewer discharge ($5 \pm 4 \times 10^{-8}$ µCi/mL, February 1986) is geochemically significant regardless of its origin. Cesium-137 (half-life 30.2 years) has strong affinity for clay minerals, particularly illite — and the Boston Blue Clay underlying the site contains 30-45% illite. Cs-137 substitutes for potassium in the interlayer sites of illite and becomes irreversibly fixed. Any Cs-137 that reached the clay through sewer leaks, CSO deposition, or groundwater transport would be permanently bound in the clay matrix.

This creates a paradox: the clay that serves as an aquitard protecting deeper groundwater from chemical contamination also serves as a permanent repository for Cs-137. The cesium is not mobile and will not migrate further, but it is also irrecoverable and will remain radioactive for approximately 300 years (10 half-lives). Any excavation or disturbance of the clay layer — for deep foundations, utility installation, or remediation of the DNAPL that has penetrated the clay — would expose workers and the environment to Cs-137-contaminated material.

If Ra-226 was used or processed at the Warner-Martin facility (560 Harrison Avenue) and/or spilled at BUMC (the 70 mCi spill documented during the 1997 decommissioning), it represents the longest-lived radiological hazard at the site. Ra-226's 1,600-year half-life means it has experienced negligible decay since any release. Ra-226 in soil generates radon-222 gas continuously, which can accumulate in enclosed spaces (basements, utility vaults, subsurface structures) and poses a lung cancer risk through inhalation of radon daughters.

The fill materials at the site — porous, heterogeneous ash and rubble — would provide ready pathways for radon gas migration from any Ra-226 deposits in the subsurface. The warm, enclosed spaces created by the fill over the organic peat layer would tend to accumulate radon through convective flow and diffusion.

Both P-32 (half-life 14.3 days) and S-35 (half-life 87.4 days) are short-lived isotopes that were among the most commonly used research radioisotopes at BUMC and produced by NEN. Their radiological significance is limited to the period of active discharge. However, the April 2025 NRC event report — documenting 7 mCi of S-35 and 0.5 mCi of P-32 lost in transit to BUMC — demonstrates that these materials continue to be shipped to and used at the medical campus. The BUMC decommissioning

found 30 linear feet of plumbing contaminated with S-35, indicating that radioactive sulfur accumulated in drain infrastructure — the same drain infrastructure that connects to the combined sewer system.

The critical realization is that NEN and BUMC were discharging radioactive materials into the same combined sewer system — a system that also received non-radioactive industrial waste from the surrounding manufacturing district (Gillette, Sorbin Chemical, gas works, tanneries, metal finishing operations). The sewers carried a mixture of radionuclides, chlorinated solvents, petroleum, metals, and raw sewage through pipe infrastructure embedded in contaminated fill, above a shallow water table, with periodic overflows to surface water.

The 10 CFR 20 regulations governing radioactive sewer discharge assume that the receiving sewer carries the material to a wastewater treatment plant where dilution and treatment reduce concentrations below concern. These regulations do not account for combined sewer overflows that bypass treatment entirely, or for sewer infrastructure that leaks into groundwater, or for the co-presence of other contaminants that may alter radionuclide mobility or bioavailability. The regulatory framework treated the sewer as a disposal pathway; the physical infrastructure treated it as a distribution network.

The institutional history and measured sewer discharges contains no environmental sampling data for radionuclide concentrations: no groundwater radionuclide analyses, no sediment sampling from Fort Point Channel or the Roxbury Canal. The chemical contamination at the site has been characterized through hundreds of soil, groundwater, and air samples across multiple investigations spanning decades. The radiological contamination has been characterized only through the 1986 holding tank samples and the decommissioning surveys of BUMC buildings.

This gap is not accidental. Radiological site characterization falls under NRC/state radiation control program jurisdiction, not MassDEP's Massachusetts Contingency Plan (MCP). The NRC inspections focused on licensee compliance within facility boundaries, not on environmental contamination in the surrounding neighborhood. The result is that nobody has systematically looked for radionuclides in the soil, groundwater, or fill materials where decades of documented discharge would predict their presence.

The minerals at the Site naturally elevate uranium (2-4 ppm) and thorium (8-14 ppm) in the argillite bedrock. These natural radionuclides complicate any future effort to distinguish anthropogenic radiological contamination from geogenic background. Thorium-232 and uranium-238 series radionuclides in soil and groundwater could be attributed to either natural bedrock weathering or to institutional releases — and without baseline radiological data predating the institutional operations (which began in the 1950s-1960s), establishing the anthropogenic increment may be impossible.

The BUMC complex continues to operate as a major medical and research institution using radioactive materials under its Massachusetts Radioactive Materials license. The April 2025 missing package event demonstrates that radioactive materials are still being shipped to and used at the campus. The sewer and stormwater infrastructure serving the campus has not been replaced since the fill was characterized as corrosive to metal pipes. The CSO system continues to overflow during wet weather. The conditions that enabled decades of radiological release to the environment persist.

The radiological dimension of this site creates additional constraints on any remediation or development activity: Any excavation in the fill must consider that the material may contain radionuclides

from sewer leaks, CSO deposition, incinerator fallout, and NEN/BUMC facility operations. Standard health and safety plans for excavation in contaminated fill do not typically include radiological monitoring.

Pier Explosions Spark Nuclear Scare in Boston

BOSTON, Aug. 10 (AP)—The city today began an inquiry into the disposal of radioactive wastes as a result of a potentially dangerous waterfront fire yesterday.

Four firefighters were injured on a pier off Northern Avenue when fire of undetermined origin set off three explosions about 200 feet from concrete-encased radioactive waste.

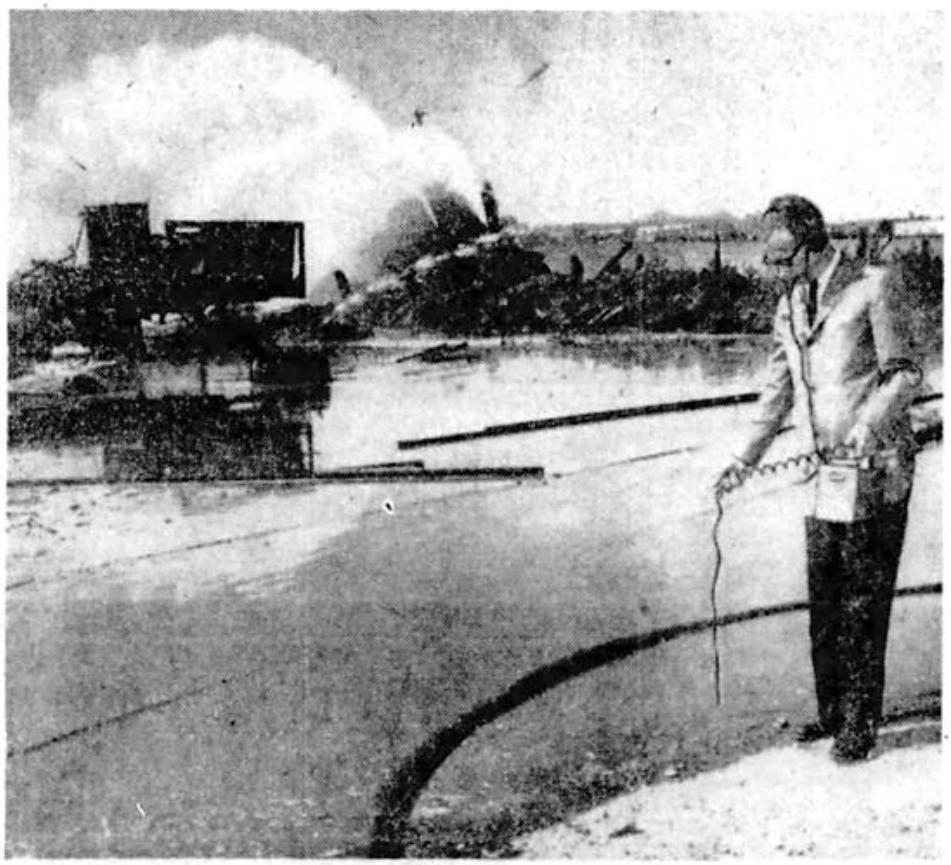
Checks by Atomic Energy Commission technicians and men from the Navy and Coast Guard showed none of the radioactive material had been scattered, and Commander Ernest H. Burt Jr., heading the Coast Guard Public Information Office, reported "absolutely no radiation hazard."

The fire exploded two tanks of zirconium, a chemical used for coating tubes and wires, and destroyed about 200 feet of wooden pier. No vessels were damaged, although the fire was only 100 yards from Commonwealth Pier, where the freighter Owerri was tied up.

Boston City Hospital, which has been planning a unit to treat radioactivity, discovered it was confronted with just such an emergency even before the plans were put on paper. "To a minor degree, it was an excellent test case," an official said.

Within minutes a radiation team of several physicians was waiting for ambulances to deliver the injured firemen. As they arrived, their clothing was stripped off and checked with geiger counters, which were then passed over their

(Continued on Page 2)



RADIOACTIVITY CHECK—Roger L. Leopold of the State Public Health Department checks for radioactivity on Boston pier where fire set off explosions near radioactive waste.

—Associated Press Wirephoto

Explosions Spark Nuclear Scare in Boston, The Standard Times, Aug. 10, 1960.

The clay, if disturbed for deep foundations or DNAPL remediation, may contain irreversibly fixed Cs-137. Workers excavating clay would need radiological protection in addition to the chemical hazard protections already required by the TCE/PCE DNAPL and reactive sulfide conditions. Groundwater extracted by the Gillette GPTS or any future pump-and-treat system may contain tritium that cannot be removed by the treatment system. If tritium is present in the groundwater at the GPTS extraction point, it is being discharged with treated effluent. The Warner-Martin luminous paint facility at 560 Harrison Avenue represents an uncharacterized potential Ra-226 source that has never been investigated radiologically. Any development or excavation at or near that address should include radiological screening.

There are also additional sources. In 1960, three explosions occurred on Northern Ave. about "200 feet from concrete-encased radioactive waste." A subsequent fire exploded two tanks of zirconium… and

destroyed about 200 feet of wooden pier." A news article noted that the Boston City Hospital "has been planning a unit to treat radioactivity" and the city commented this explosion "was an excellent test case." The article assured the reader that radioactive waste was encased in concrete and "hauled out to sea and sunk." The person responsible for the waste of concur during the fire is known as the "atomic garbage man." [39]

The absence of environmental radiological data is itself a finding. Given the documented decades of radiological discharge from two major institutional sources into the same environmental media (fill, groundwater, sewer infrastructure, surface water) that have been extensively characterized for chemical contamination, the lack of radiological characterization represents a significant data gap that should be addressed before any major construction, remediation, or development activity at the site.

The Site is Polluted by Lead, Arsenic, Heavy Metals, & Asbestos

The Defendants Discharge Lead, Arsenic, Heavy Metals, and Asbestos into Waters of the United States in Violation of the Clean Water Act, 33 U.S. Code §§ 1311, 1317, 1321

Heavy metal contamination across the Site reflects the combined influence of over a century of industrial operations, historic urban fill practices, and the site's underlying geochemistry. Lead, arsenic, antimony, mercury, nickel, zinc, and other metals are present at concentrations that exceed regulatory screening levels by orders of magnitude — in some cases approaching ore-grade concentrations in shallow soil and groundwater. The contamination is not attributable to a single source but instead results from the layering of multiple source types across a landscape that was itself built on filled tidelands using materials of poor and often hazardous quality.

Lead is the most pervasive and heavily concentrated metal at the site. Soil concentrations range from hundreds of mg/kg across the broader area to extreme peaks of 69,900 mg/kg at MBTA Cabot Yard (5.2 ft depth, 1988), 61,500 mg/kg at nearby Cabot Yard (1.5 ft), 56,600 mg/kg at 2 Frontage Road (9–10 ft, 2025), and 44,500 mg/kg at 601 Albany Street. For reference, the MassDEP S-1/GW-2 soil screening level and the EPA residential screening level for lead is 400 mg/kg; most of these results exceed that standard by 100- to 175-fold.

The spatial distribution of lead contamination correlates with specific historical sources. The highest soil concentrations cluster around two areas: the MBTA Cabot Yard / Widett Circle corridor and the Albany Street corridor between roughly 595 and 903 Albany Street. The Albany Street cluster is explained by the documented presence of a lead oxide factory and corroding house at 802 Albany Street (1882) and National Lead / Salem Lead at 800 Albany Street — facilities that manufactured white lead pigment through the Dutch stack process, one of the most contaminating industrial operations in American history. The lead contamination at 595 Albany Street (up to 38,000 ppm, with multiple samples exceeding 16,000–18,000 mg/kg at shallow depths) is consistent with production waste from these adjacent operations.

[39] Explosions Spark Nuclear Scare in Boston, The Standard Times, Aug. 10, 1960.

The most extreme single result in the dataset is 370,000 mg/kg lead in groundwater from well MWSO56 at Widett Circle / Gillette (30–32 ft bgs, sampled June 1997). This concentration — effectively 37% lead by weight — suggests the sample captured a sludge or particulate-laden zone rather than dissolved-phase groundwater, but regardless indicates an extraordinary accumulation of lead at depth in the Fort Point Channel area. Groundwater lead at 19,200 mg/kg was also reported at 33 Bradston Street.

Lead contamination extends vertically throughout the fill profile, which typically ranges from 3 to 24 feet in thickness depending on location. At 595 Albany Street, the Remedial Abatement Measure Plan (RETEC, 1995) documented lead at 9,480 mg/kg and 6,260 mg/kg at 2 ft depth, declining to 1,120 mg/kg at 4 ft — suggesting lead is concentrated in the upper fill but remains well above screening levels at depth. At MBTA Cabot Yard, the 1988 test pit results (TP-6 at 5.2 ft, TP-9 at 1.5 ft, TP-7 at 4 ft) show lead contamination is distributed throughout the fill profile without a consistent attenuation trend.

Historic fill throughout the study area is documented as containing ash, cinders, coal, brick, concrete rubble, glass, porcelain, and in places, debris from the 1872 Great Boston Fire. The fill itself is a lead source independent of the industrial point sources — ashrich materials from coal combustion and incineration contain elevated lead as a baseline condition.

In one report, the consultant commented on the levels of lead compared to the Commonwealth's "background fill" exemption: "It was concluded that lead concentrations less than 1,430 mg/kg are consistent with background." (70 Sobin Park 1998). That's a very high level of lead and these reports are confirming it is site-wide across hundreds of acres, exposing thousands of people and the Commonwealth has formally exempted and obstructed clean-up of that pollution because the pollution is so severe and pervasive.

Arsenic in soil ranges from 20 to 62 mg/kg across multiple locations, with the highest soil result of 62.3 mg/kg at 601 Albany Street and widespread detections of 30–56 mg/kg at Widett Circle, Channelside, 120 Hampden Street, and 750 Albany Street. At the BMC Power Plant (750 Albany), the site assessment explicitly attributed arsenic (36 mg/kg) to "the quality of the historic fill in this area."

In groundwater, the MWSO56 well produced arsenic at 15,200 mg/kg — again likely reflecting particulate-phase arsenic in a sludge zone rather than dissolved concentrations, but indicative of a massive metal accumulation at depth. Dissolved arsenic at 6.14 µg/L and total arsenic at 6.79 µg/L in the BMC area monitoring wells suggest more typical dissolved-phase transport, though still above background.

Arsenic behavior at this site is complicated by the geochemistry. The strongly alkaline conditions documented at several locations (pH 12 at Shattuck Hospital, pH 11.9 at BMC Power Plant) promote arsenic mobility — arsenic is one of the few metals that becomes more soluble at high pH. Simultaneously, the anaerobic, iron-reducing conditions at Widett Circle and Cabot Yard can release arsenic that was previously sorbed to iron oxides in the fill and native sediments. The iron varves documented in the boring logs at 8 Gerard Street (6–10 ft depth) represent iron oxyhydroxide precipitation bands — these are effective arsenic sorbents under oxidizing conditions but release arsenic when conditions become reducing. The site's fluctuating redox conditions, driven by tidal influence and CSO events, mean arsenic is likely being cyclically mobilized and re-sorbed.

The argillite beneath the site also contributes a natural geogenic arsenic background. The pelitic, organic-rich marine sedimentary origin of the argillite is consistent with naturally elevated arsenic, and the selenium at 21.6 mg/kg in bedrock (240× crustal average) confirms the formation contains elevated chalcophile elements. Other Metals of Concern:

- Antimony reaches 131,000 mg/kg in the MWSO56 groundwater sample and 395 mg/kg in soil at Widett Circle (8–10 ft). Antimony is associated with lead smelting and alloy manufacturing and its co-occurrence with extreme lead concentrations is consistent with a common industrial source.
- Mercury at 40 mg/kg at 8 Gerard Street corresponds to the former Roxbury Gas Light Company / Boston Consolidated Gas Company at the same address — manufactured gas plants routinely used mercury in gas meters and purification equipment. Mercury at 1,100 mg/kg in the MWSO56 groundwater sample, 96.3 mg/kg in sludge at 101 Gerard Street, and 14.8–17.7 mg/kg in soil at 120 Hampden Street and Grant Manor demonstrate a widespread mercury footprint. Separate mercury dumping was documented at 333 Washington Street (EPA case N91-1544). In the brackish, high-chloride groundwater at this site (up to 8,290 mg/L chloride), mercury-chloride complexation enhances mercury mobility and bioavailability.
- Nickel at 12,500 mg/kg in a January 2024 composite sample from Gillette Park (0–6 ft) is co-located with zinc at 33,500 mg/kg, barium at 29,300 mg/kg, and PCBs at 1,830 mg/kg. That's a chemical signature consistent with metal finishing or electroplating waste, likely from Gillette's razor blade manufacturing operations.
- Chromium at 229.6 mg/kg in soil at 33 Bradston Street is elevated but within the range expected for industrial fill. However, the Argillite bedrock contains naturally elevated chromium — up to 1,763 ppm in one harbor bedrock sample — which complicates the distinction between anthropogenic and geogenic sources and raises concerns about hexavalent chromium generation if bedrock is disturbed.
- Selenium at 2,600 µg/L in the MWSO56 groundwater sample and 21.6 mg/kg in bedrock minerals suggests both anthropogenic and natural sources. Selenium is bioaccumulative and toxic at relatively low concentrations.
- Cadmium reaches 144 mg/kg at Widett Circle (10–12 ft) and 88.2 mg/kg at Widett Circle (4–6 ft).
- Cyanide at 16–19 mg/kg at 8 Gerard Street is attributable to the former gas works at that location, where hydrogen cyanide was a byproduct of coal gasification. Cyanide reacts with iron to form stable iron-cyanide complexes (Prussian blue), which likely accounts for the heavy iron staining described in the boring logs at that location.

The mineralogical and whole-rock geochemistry data from the argillite establishes that the site's natural background is not geochemically neutral. Lead at 19–64 ppm, zinc at 88–109 ppm, and thorium at 8–14 ppm in the argillite all exceed average crustal abundances. Uranium at 2–4 ppm is flagged as elevated. This natural enrichment, particularly in lead, means that any attempt to define "background" concentrations for cleanup purposes must account for both the geogenic contribution from bedrock weathering and the pervasive anthropogenic contribution from historic fill. The two are further

complicated by the fact that much of the fill was locally sourced and may contain crushed or weathered argillite.

The mobility and long-term fate of metals at this site are governed by several interacting factors: the brackish to saline groundwater (chloride up to 8,290 mg/L) promotes metal-chloride complexation, particularly for lead and mercury, increasing dissolved-phase transport. The strongly reducing conditions at Widett Circle and Cabot Yard (ammonia up to 25,800 µg/L, methane at 2,100 mg/L) mobilize arsenic through reductive dissolution of iron oxides while potentially immobilizing some other metals as sulfides.

The extreme pH variability across the site (from 4.9 at Channelside to 12.0 at Shattuck Hospital) means no single geochemical regime uniformly controls metal mobility. Tidal influence drives periodic redox cycling that alternately mobilizes and precipitates metals depending on location and season. The reactive sulfide at 2,900 mg/kg (RCRA hazardous waste levels) at BioSquare II suggests hydrogen sulfide generation that could precipitate some metals as insoluble sulfides, but the same conditions create acute gas hazards during any subsurface work.

The organic-rich peat layer and fill materials provide significant sorption capacity for metals, but this capacity is finite and pH-dependent. As conditions change, whether through natural processes, remediation activities, or construction disturbance; metals currently immobilized in fill and peat may be remobilized. The presence of asbestos fibers in the same fill that contains the metal contamination further constrains physical

The Site is also certainly polluted by foundries. The South Boston Iron Works were incorporated in 1827, the Fulton Iron Works in 1835, the City Point Iron Works were established in 1847, and, most significantly for the area north of First Street, railroads entered the peninsula in 1845. During the 1850′s, South Boston was "industrially dominated by iron foundries and machine shops." At this time, the South Boston Iron Works was the largest foundry in the country, and the Bay State Iron Company at City Point was the largest manufacturer of railroad track in New England. Ship yards in South Boston shared the prominence of those in the East Boston, and Harrison Loring′s City Point works were in successful operation through the 1890′s. The South Boston Gas Works began operation in 1852, and in 1861, the first petroleum refinery in Boston was established as the Stephen Jenney and Company. (Boston Landmarks Commission 1981)

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I. THE SITE'S HYDROLOGY

"The South Bay was once 138 acres of wetlands and surface water that was present at the site and surrounding properties."

Widett Circle Properties, Boston, MA, Prepared by VHB for MBTA, Phase I Initial Site Investigation, Tier Classification, & Phase II Scope of Work (Aug. 9 2024).

Boston (Mass.). Engineering Dept. "Plan of Boston and Roxbury." Map. Boston, Mass: Engineering Dept., 1867. Norman B. Leventhal Map & Education Center, https://collections.leventhalmap.org/search/commonwealth:js956m13k

Enforcement of the Clean Water Act necessarily requires a technical understanding of the specific water impacted. CERCLA assessments and remediation plans require a coherent assessment of impacted geology and hydrology. Environmental and engineering regulatory in cases like this require a precise definition of the characteristics and mechanics of the site's land, water, and ecosystems. This is proven where enforcement actions were dismissed or upheld solely based on the hydrology of affected waters and/or other geotechnical data and findings. Thus, the most critical task for me in this Petition/Notice was to delineate the impacted area including establishing the presence potential jurisdiction triggers for the Clean Water Act (ocean, tide lands, wetlands, etc.); to map and identify the hydrology; to document and synthesize the natural ecology prior to the alleged violations; to propose a classification of the major natural features, processes, and systems; and to structure the allegations and requested remediation in my Petition/Notice around these facts and assumptions.

For many sites this process is straightforward because this data is already well established or at least the basic facts are normative and non-controversial. In Boston, some of this information was so inexplicably concealed, confused, and unusual --- I felt that some of what I'm about to write will be so jarring as to require this introduction reminding the reader that in order to report (and potentially litigate) these environmental violations, I was required to sort this out, report it in this Petition/Notice, and tailor my alleged violations and requested remediation to these facts. This Site is extraordinarily complex across its geology, geography, tectonic and political histories, hydrology, marine systems, settlement, infrastructure, governance, and its industrial activity. It is also complex in the ongoing, apparent suppression of geotechnical, public health, and environmental information about this Site by multiple entities including City of Boston and Commonwealth of Massachusetts.

Wheeler, Thomas, Grant, James, surveyor and draughtsman, and Samuel Holland. "A plan of the bay and harbor of Boston : surveyed agreeably to the orders and instructions of the Right Honorable the Lords Commissioners for Trade and Plantations, to Samuel Holland, Esqr., His Majesty's Surveyor General of Lands for the Northern District of North America." Map. [1775?]. *Norman B. Leventhal Map & Education Center*, https://collections.leventhalmap.org/search/commonwealth:z603vj72n (accessed February 11, 2026).

I also added allegations against certain Defendants who I believe were likely involved in intentionally obscuring some of this information, did so for illegitimate reasons, and whose obfuscation of this scientific data and resulting discoveries (which are critical to the public interest and required for proper environmental assessments) likely contributed to the maintenance of the severe and systemic issues across the Site. Major universities are also implicated in these issues (Boston University, Harvard University, etc.) and would have motive to suppress critical research and publications by their faculty related to issues at the Site. In this dynamic, the modern version of the history of the Site became vague, convoluted, confusing, and often contradictory.

Most local, state, and federal maps of the Site fail to notate the prior Bay, the tidelands and marshes, the natural tide lines, the buried ancestral river valleys, the faults and contact zones, the streams and creeks currently trapped in sewer pipes, or the remaining Roxbury Canal Conduit. By suppressing this information, anyone conducting a preliminary review of a site or area would rely on the maps and sources that provide this information to actually include complete and accurate information, and they may skip over the Site for any further research because the official systems provided no indication of complexity.

Marine Zones & Aquatic Features

There are extensive natural resources and marine/coastal features at the Site including a bay, tidal creeks, ponds, marshes, mud flats, and wet meadows. These are summarized in Table 2 below and described further in "Section IV. The Natural Ecosystem." I propose several marine/wetland "zones" across the Site's Operable Units.

The first zone (Zone 1) is the marine, aquatic waterfront where the northern boundary of the Site connects to the Boston Harbor. This zone is directly connected to and receives the Atlantic Ocean tides which flow in and out of the Bay of Massachusetts. The South Bay had "narrow and deep channels into an extensive bay" surrounded by coves and highlands. (Shurtleff 1871).

The next zone (Zone 2) is the marine, aquatic Fort Point Channel and its surrounding wetland environment, which is to the south of Zone 1 at the mouth of the Channel. Marine tides flow (including as surface waters) from the Boston Habor into the Channel. Despite the extensive pollution, filling, and channelization in Zone 2, the Zone still provides a habitat for marine biota including fish, cnidarians, porifera, and crustaceans. However, the majority of the recently observed species are of the "fouling" type and are indicator species of severely polluted environments.

The third zone at the Site (Zone 3) is the previously marine and aquatic South Bay. This Zone includes the filled waters outwards to the South Bay's High-Water lines in Boston, Roxbury, and Dorchester. Zone 3 also includes the South Bay tidal currents flowing into the Roxbury Creek and Dorchester Brook tidal creeks prior to the creeks flowing inland and onshore.

The northern boundary of Zone 3 begins around the southern end of the Fort Point Channel. Zone 3 presents hydric soils and reducing conditions typical of wetlands. The current biota in Zone 3 appears to reflect a severely degraded moss/lichen wetland. This Zone was a marine estuary and is still tidally influenced in at least the groundwater and sewer systems. If the filled land were to be removed from this area , and the basin restored, the Atlantic Ocean would promptly refill the South Bay with the Waters of the United States.

Table 2: The Site's Aquatic Resources

Natural Resource	Description	Classification
The South Bay	The natural "South Bay" extending to the natural High Tide water lines (fig. 1) and associated tidal flats, salt marshes, and tidal streams. This includes what is now designated the Fort Point Channel as well as the man-made (filled) land.	Zones: 1, 2, & 3 Flow: bidirectional tidal Type: bay Jurisdiction: Waters of the US.
The Roxbury Creek	The waters originating from the southwestern end of South Bay (Atlantic Ocean) and flowing southwest inland to around Northampton Street in Roxbury, then curving westward, and flowing northwest towards Charles River (unknown ending point).[40] This was the boundary line between Boston and Roxbury.	Zones: 3 & 4 Flow: bidirectional tidal Type: tidal creek / arm of the sea Jurisdiction: Waters of the US
The Dorchester Brook (sometimes called the Roxbury brook)	The waters originating from the southeastern end of South Bay (Atlantic Ocean) and flowing south through the salt marsh and salt meadows, then south/southwest inland, flowing past Eustis and Dudley with ponds, and further southwest to around Quincy St. [41] This was the boundary line between Roxbury and Dorchester.	Zones: 3 & 4 Flow: bidirectional tidal Type: tidal creek / arm of the sea Jurisdiction: Waters of the US
The **unnamed tidal creeks in Roxbury,** flowing south from the southern boundary of the South Bay.	The waters originating from the southern central end of South Bay (Atlantic Ocean) and flowing south through salt marshes and wetlands to around Norfolk Ave [42]	Zones: 3 & 4 Flow: bidirectional tidal Type: tidal creek / arm of the sea
The **unnamed tidal creeks in Dorchester** around the southeastern/eastern boundary of the South Bay.	The waters originating from the southeastern/eastern boundary of the South Bay (Atlantic Ocean) and flowing southeast/east through salt marshes and wetlands towards Old Harbor and also the waters originating from Old Habor (Atlantic Ocean) and flowing west and northwest towards South Bay.	Zones: 3 & 4 Flow: bidirectional tidal Type: tidal creek / arm of the sea / inlet Jurisdiction: Waters of the US
The unnamed tidal creeks flowing across the **Boston Neck**	The waters originating from the South Bay and/or Charles River, and flowing across the Boston Neck and Shawmut peninsula into the South Bay and/or Charles River.	Zones: 3 & 4 Flow: bidirectional tidal Type: tidal creek / arm of the sea Jurisdiction: Waters of the US
South Bay Islands	The natural islands located with the South Bay	Type: land (island)
The Salt Marshes	The salt marshes surrounding South Bay: towards the west along the Shawmut peninsula and the Boston Neck, towards the south along the	Zone: 4 Type: marine/tidal wetland Jurisdiction: Waters of the US

[40] See for example, Charles Whitney's "*Map of the Town of Roxbury*" (1843).
[41] See for example, Charles Whitney's "*Map of the Town of Roxbury*" (1843); N. Henry Craft's "*Plan of Boston and Roxbury*" (1867); Henry Pelham's "*Plan of Boston in New England with its Environs.in the years 1775 and 1776*." (1777); the "*Plan of the Estate of the Late Gov. Eustis in Roxbury, Hass.,* 1867", (Suffolk Co. Plan Book 2, Plate 40, Registry of Deeds).
[42] See for example, Charles Whitney's "*Map of the Town of Roxbury*" (1843); N. Henry Craft's "*Plan of Boston and Roxbury*" (1867).

	boundary of Roxbury, and towards the east along the boundary of the Dorchester Neck.	
The Salt Meadows	The salt meadows surrounding the South Bay and its salt marshes (see above), extending into Boston, Roxbury, and Dorchester along the tidal creeks and arms of the sea. (add)	Zone: 4 Type: marine/tidal wetland Jurisdiction: Waters of the US

The fourth zone, Zone 4, is the non-aquatic land surrounding the South Bay. This Zone primarily encompasses the marshes, wet meadows, mud flats, bogs, and swamps. This also includes the tidal creeks' flow inland (including the Roxbury Creek and Dorchester Brook). (the "irregular coast" around Shawmut was "broken by inlets, coves, and creeks, and marsh lands extended nearly around the whole peninsula." (Thwing 1920)) (the marshes bordering the Neck were covered at high tide (Shurtleff 1871)).

The Site has Very Powerful Tides & Tidal Creeks

Tides at the Site are Comparable to the Bay of Fundy and Shall be Respected Accordingly.

The ocean currents in Massachusetts Bay mix and transport water and material in the Bay, and exchange water with the adjacent Gulf of Maine. Boston Harbor is a tidally dominated embayment characterized by complex coastline geometry. The average tidal range at Fort Point Channel is 9.5 ft,[43] which is exchanged through two 49 ft-deep passages which connect Boston Harbor to Massachusetts Bay. President Roads exchanges the tidal volume of the northern part of the harbor. (Signell 1992).

"Before the nineteenth century, the area that contains the channel was a wide inlet leading to Roxbury Harbor, a large shallow body of water and mud flats...On the west was the neck of the Shawmut Peninsula, and on the east were the farms of Dorchester Neck." (Historic American Engineering Record 1995). Today the Fort Point Channel is about 1 ¼ 4 miles long with a varied width between 260 feet and 1,110 feet. Its depth varies between a few feet at its southern terminus to 23 feet at mean low water at its mouth. (Historic American Engineering Record 1995).

From November through March, the water column is vertically well-mixed and the wind and surface waves are the largest of the year. In April and May, the fresh water runoff is largest from the spring snow melt, the surface layer freshens, and the water column is vertically salt-stratified. (Butman 2007). The highest tide recorded was 15 feet above mean low water and was caused by "the simultaneous occurrence of an unusually high astronomical tide and a strong onshore storm breeze."

The highest waves expected in the inner harbor are 1.5 to 2 feet, crest to trough. Tidal currents are largely bi-directional and flow into and out of the bay. The harmonic constituents include an M2 amplitude of 4.5 ft at 28.98410, S2 amplitude of 0.68 ft at 30, N2 amplitude of 1 at 28.43973, M4 amplitude of 0.08 at 57.96821, O1 amplitude of 0.38 at 13.943035, and M6 amplitude of 0.1 at 86.95232.[44] The amplitude of the principal semidiurnal constituent M2 at Boston is approximately 137 cm. (Ray 2016).

Roxbury Creek was previously known as Lamb's Dam Creek. Lamb's Dam was a dike built around Northampton St & Harrison Ave attempting to contain the tides because "all else was marsh flats save where the channel afforded sufficient depth to float small vessels laden with merchandise to Roxbury." (Crosby 1928). Francis Drake's 1898 "The Town of Roxbury" explained that Lamb's Dam was "built to

[43] NOAA, Datums for 8443970, Boston MA, https://tidesandcurrents.noaa.gov/datums.html?id=8443970
[44] NOAA, Datums for 8443970, Boston MA, https://tidesandcurrents.noaa.gov/datums.html?id=8443970

prevent the tide from overflowing the marsh" and it "ran parallel with the present Northampton St, ten feet east of it, to the town landing." He said it "struck Washington Street just south of Walnut Place." (Drake 1878). "A dike was built on the exposed eastern side, following in its general direction the extension of Harrison Avenue, and a sea wall was at the same time built on the west side, from Dover nearly to Waltham Street." (Drake 1878).

There was also supposedly a creek that flowed by Lamb's Dam where "the mouth of the creek… runs into the bay leading to Cambridge" and also runs a path across the Neck and "runs into the bay between Boston and Dorchester." (Thwing 1920). This describes a creek whose source is one or two connections with the ocean, and who then redistributes that water cross an area of land. Drake also mentioned the "wide creek" east toward the "old magazine" which is yet another water body in a very small area and which would have no point of origination on The Neck other than the sea and/or an artesian seep.

Lamb's Dam was built in around the 1760s-1770s. The first canal was built in 1795 and it was "fifty feet in width, extending from the wharf at Lamb's Dam Creek nearly to Eustis Street, just east of the burying-ground" and "the line between Roxbury and Boston passed through the centre of this canal." (Drake 1878). The Dam was removed and a canal and channel constructed between ~1795-1822.

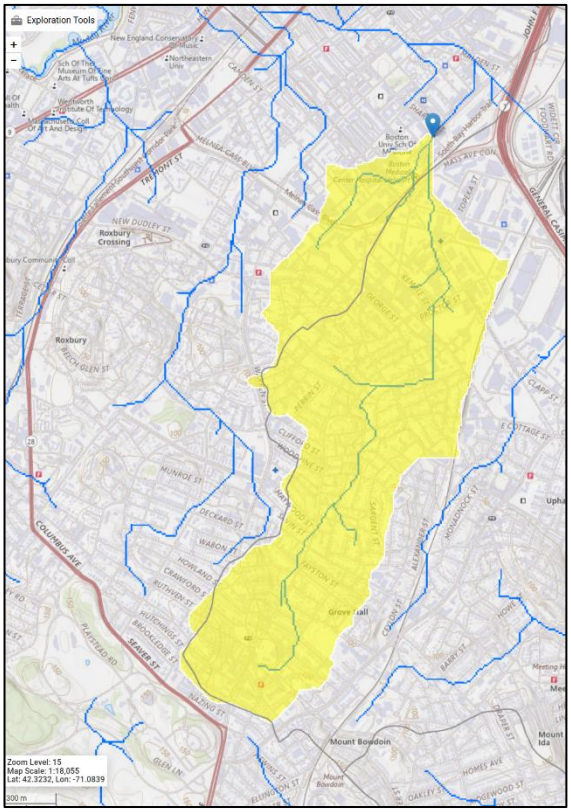


Figure 2StreamStats, inferred Mean Basin Elevation 54ft (flagged), drainage area of 1.13 square miles,

The Dorchester Brook formed the boundary between Roxbury and Dorchester, and flowed back to (add & add), and where it passed the Shirley-Eustis house, it was described as creating a "salt marsh," was large enough to require three bridges in that area, and also expanded into a large pond near an orchard and a weeping willow. The Brook was also channelized and described as a "canal" but then was forced into the "sewer" by 1878. (Detwiller 1979)

The "Roxbury Creek" (later turned into a canal, then conduit, then sewer pipe) was a poorly though out extension of In this location, the "creek" was not drainage from land – it was the sea pushing up onto land and desiring to continue flowing along the ancestral River channels and to create marsh land. The Roxbury Canal never "worked" as drainage infrastructure because it was originally a dike (Lamb's Dam) to keep sea water out. When Boston and the Commonwealth built the canal and conduit, they attempted to place a highly resonated Atlantic Ocean into a culvert and also release sewage into it, while it was already trying to force itself 20ft+ uphill and onto land.

The sewage did not "drain" from either, because both Dorchester Brook and Roxbury Creek were the same Gulf of Maine tidal phenomenal active in the Bay of Fundy. That's why Boston's sewage canal system never flushed the contamination, and why the tidal fluctuations irritate the nearby residents to the

point of newspaper op-ends in the 19th Century. These are the actual ocean., flowing toward Boston, not draining away from it.

Experimentation with the networking and delineation tools in USGS StreamStats essentially mapped Fundy-style tidal intrusion naturally occurring in South End and South Bay. Boston sits in the lower Gulf of Maine. (See Figures 3-5). This resembles and confirms the historic reported reach of the Dorchester Brooks. These are the arms of the same sea with the same tidal force.

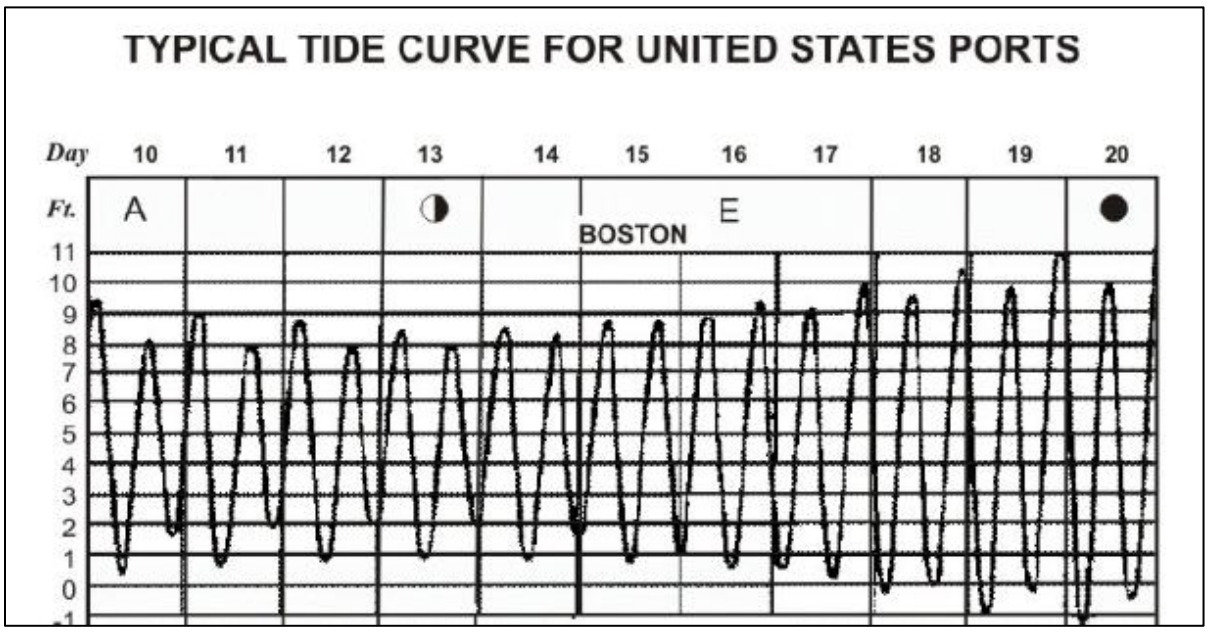
Throughout the entire gulf the tides are large, remarkably so to the north of Boston and into the Bay of Fundy. The sixth-diurnal terms appear especially pronounced at Boston, and that band had the largest residual energy aside from the semidiurnal band. The tide actively pushes up into these low-lying valleys, creating tidal creeks extending far inland, just like the tidal bores and creeks that extend far inland in the Bay of Fundy system.

The Roxbury Canal stretched about two miles from Boston Harbor inland, with the Tidal Creek's thalweg following a mapped fault running perpendicular to the Savin Hill Fault, and along one of the four ancestral channels for the Charles River (formed 12,600 years ago). Roxbury Creek's channel ends around where the Boston Avalonia granite bedrock transitions to Argillite, with the Creek likely turning into a marsh. (Geology of the Boston Basin, Civil Engineering Practice, 2011/2012).

The former Roxbury Canal/Creek and Dorchester Brook are now a conduit system carrying stormwater, combined sewer overflow, and tidal flow. Roxbury Canal Conduit varies from a 15-foot by 10-foot single barrel in upstream sections to twin 20-foot by 15.5-foot barrels at the outlet. The conduit extends over 12,000 linear feet when combined with the Dorchester Brook Conduit system.

The conduit system is hydraulically connected to Boston Harbor through Fort Point Channel. There are no tidal gates at the CSO-070 outlet. Water levels within the conduit fluctuate approximately 13 feet with the tidal cycle. Tidal intrusion carries harbor water (including marine organisms, salt, and sulfate) into the conduit system twice daily.

The documented conditions in the conduit as of 2019 are "pitch black", 3+ feet of sediment and debris, No functioning tide gates, 5-hour tidal work window (meaning 7 hours of tidal flooding per cycle), and the photos seem to include what appears to be colonies of iron-oxidizing bacteria and some sort of long (1ft+) marine worm swimming in the water.



Source*:* (U.S. Coast Guard 1996)

Chaotic Hydrology

There was a point where I realized I had no plausible explanation for Boston's hydrology. I identified the most specific points of data regarding historic hydrology and. I started sketching maps and models to present the natural ecology. But when I stared at it, it made no sense: it was chaotic, fictional, and contrary to natural ecologies.

First, I sorted out that the Roxbury Creek and Dorchester Brook were arms of the see with Fundy-like reach, not drainage creeks. I confirmed that on StreamStats. I saw the flow going inland, not to the sea. But when I tried to delineate points upstream, it showed the lower Charles river valley watershed. So I searched old newspapers and they confirmed the assumption the creeks are tidal streams. This made me suspect the Charles river is being mapped as some sort of tidal loop.

Then I mapped out the assumed buried river valley flows across the Dorchester Neck and it is chaos but it does appear to be the only pathway for tidal flushing. Then I thought about what these valleys would look like, how they could be formed, and why the hydrology would want to replicate those pathways. That's when I looked at the glacial melt timelines, stages, and any theories about how those valleys were carved and filled.

The glacial theories for Boston are impossible to compile when attempting to build a comprehensive model that aligns with the law of physics. The theory itself is also entirely speculative. In addition, the waters at the Site are so interconnected that with extensive dewatering on Harrison Ave it caused the water in wells one mile away to drop 30 feet and the Charles River to drop 2 feet. (P. J. Barosh 2011). The land does not interact with the water in any reasonable way and even official geological reports will comment on "oddly shaped peninsulas," "irregular coastlines," and a "blanket of incoherent… deposits and sediments" (La Forge 1932).

So, for several days, I just stared at the old maps of Boston and tried to observe data points and search for patterns. A primary question was: how was South Bay formed? That inherently asked how the Shawmut Peninsula was formed. But the Shawmut Peninsula is a fragile, narrow, soft wedge of land that

is nearly perpendicular to the outflow of the Charles river. The question became not how it was formed – but how they survived any sort of glacial outwash. Any powerful debris flow from Charles river into the Boston Harbor would obliterate the Shawmut Peninsula and Dorchester Neck, creating a direct outflow to Dorchester Bay. But it hasn't.

The Site only makes sense if you remove the arrows and annotations, and instead you squint at it and the harbor, with the drumlins, and then what you see is an impact site from a massive stony bolide swarm with the ejecta and shock waves muted through a glacial intermediary. And only in that sense, was Boston formed by glaciers. The bolide impacts combined with the Gulf of Maine's extremely strong tides, actually explains why the Site was covered by mischievous and aggressive tides, streams, brooks, and springs which seemed to travel in whatever direction they felt like that day because that's just literally what they do.

I started reading boring reports and paying attention to comments about alternations, decomposition, fractures, and unexpected textures, inclusions, and shapes. It only took a couple of days before the existing evidence became overwhelming. Boston's geology was formed by bolide impacts. Worse, the admitted timing of the features that would have been formed by those impacts was already diagnosed by geologists to have occurred during the hypothesized Younger Dryas Impact timeframe.

The Defendant's Violations Collapsed Boston Harbor's M6 Overtide

Average tidal conditions generate currents in Boston Harbor that are typically 20-40 cm S-1 and dominated by the semidiurnal M2 component (12.42 hr period), resulting in strong perigean-spring tidal currents, weaker apogean-neap tidal currents, and very weak diurnal currents. (Signell 1992).[45] Boston has very limited river discharge making it easily dominated by the strong Gulf of Maine tides.

The contribution to the tide by the energy at a particular frequency is usually represented by a tidal harmonic constituent and in shallow waterways the hydrodynamics also transfers tidal energy to new frequencies, creating overtides and compound tides (especially within the semidiurnal band). The Gulf of Maine system is in near resonance at about the semidiurnal frequency, which causes a larger than normal tidal range.

Boston's M2 tidal waves generate a M6 overtide when they interact with shallow water through nonlinear friction. Boston's M2 tide is currently 135.4 cm H 109.8 deg G and the M6 tide is M6 3.19 H cm 280.4 deg G. (Irish 1992). The Site historically had extensive tidal flats, marshes, and shallow embayments that were likely perfect M6 generators.

However, when Defendants filled and obstructed this shallow water habitat, they would have destroyed the bathymetric features that generate this overtide. Boston's M6 overtide collapsed starting around 1870, primarily due to shifting amplitude ("changing length, width, and depth of the inner harbor," "coastline hardening," "systematic, extreme alteration in the bathymetry and surface area of the inner Boston Harbor"). (Talke 2018).

[45] The tides are also modulated at periods of about 2 weeks and 1 month by the s2 and n2 components which are 12 hr and 12.67 hr periods respectively.

In 1932, La Forge wrote that "around the head of Boston Harbor are clustered the peninsulas of Boston, South Boston, and Charlestown, all originally joined to the mainland only by low necks that were submerged at the highest tides, but all now greatly changed artificially from their original form and extent, as have been also the shore lines of East Boston, Cambridge, and Somerville. Possibly nowhere else in the United States has the original extent and outline of a tidal harbor been so greatly modified artificially, chiefly through the filling in of tidal flats." (La Forge 1932)

Archival tide measurements suggest that the mean tidal range for inner Boston Harbor have decreased by 2.03 mm/yr in the 19th century (from 3.05 m in 1830 to 2.89 m in 1910, a reduction of 5.5%). A 2018 academic paper suggested that these "perturbations to tides may be caused by the systematic, extreme alteration in the bathymetry and surface area of the inner Boston Harbor and its approaches" especially considering the sensitivity of the tides in the Gulf of Maine "due to the well-documented resonance of the M2 constituent." The paper concluded that "the primary causes of long-term trends in tidal constituents are the prior land reclamation and channel deepening." (Talke 2018).[46]

The Defendants unlawful filling and discharges created a "significant loss of subtidal and intertidal habitat" which then caused systemic and far-reaching changes to the ocean's tides. The Defendants' violations broke the tides, which represents ongoing and continuous violations of the Clean Water Act.

Changes in the hydrodynamics of inlets are likely to modify the sediment transport patterns, which in turn can increase or decrease the sediment supply to the downdrift beaches, resulting in their buildup or erosion. (Salles 2001). Tidal inlet systems often create overtides and asymmetric tides, which can drive sediment transport. If the tidal inlet system does not have tidal flats, nonlinear hydrodynamic processes may cause the currents to be stronger during flood tide than ebb tide.

Similarly, tidal flats may cause a channel to become ebb-dominant. (Ridderinkhof 2014). When the Site had tidal flats and marches, it increased the ebb flow and helped keep the water fresh – but when the tidal flats were filled, it decreased ebb flow and the waters became stagnant. In response, Defendants filled more of the Site, which further decreased ebb flow.

It's documented that the tides are ebbing and flowing through the filled land of South Boston and South End. In South Boston there is a shallow aquifer around 18-40 bgs and it is affected by the tides ebbing and flowing in Fort Point Channel. It's groundwater levels and flow velocity are "highly variable" as one would expect for groundwater controlled by Gulf of Maine tides with a 10+ ft delta between twice daily high and low tides, while being concurrently constrained by underground "granite seawalls, many utilities and historic foundations." (70 Sobin Park 1998).

There is also a lower aquifer with a surface at about 50-110 ft bgs and unexpectedly lie below mean low water in some locations including in South Boston. "The cause of such ground water lowering below mean sea level is not known." (70 Sobin Park 1998).

The largest tide ranges occur in shallow coastal waters, especially at the ends of certain bays or along coasts with very wide continental shelves. The increase in tide range and tidal current speeds that one sees in the shallow waters of bays, rivers and straits can go to dramatic extremes if the circumstances are right. Tide ranges greater than 50 feet (15 meters) can occur in Minas Basin in the Bay of Fundy and

[46] The paper notes a "0.04 m (2.5%) decrease in tidal range, approximately 0.03 m due to its shifting amplitude and 0.01 m due to a change in its relative phase with M2.

at the southern end of Ungava Bay, Canada. As noted from the StreamStats Figure 1, the reach of the arm of the sea at Roxbury Creek appears to be at least 3 km starting around Lamb's Dam. If we measure starting from the mouth of Fort Point Harbor the reach is about 6.25 km. The Site has Bay of Fundy -style tidal reach.

Boston is a partially-successful attempt to stop being part of the Bay of Fundy system. Fundy is what happens when you let the Gulf of Maine resonance express itself fully—16 meter tides, vast tidal flats, the ocean claiming and releasing land twice daily. Boston is what happens when you fight it—dikes, fill, concrete, denial. Boston decreased MTR, and M4 and M6 tides during the 19th and 20th century but it did not eliminate the tidal force. Boston just forced it underground, into pipes and egg-shaped brick sewers, where it accumulates sludge, grows cave worms, pounds on Boston's Victorian basements twice a day, and waits.

II. THE SITES'S GEOLOGY

South Bay was a large bay directly connected to the ocean tides from the Bay of Massachusetts and Gulf of Maine. (Thwing 1920). The South Bay's surface waters are still present today including the Fort Point Channel and the tidal stream into the Roxbury Canal Conduit. Its bounded by the Shawmut peninsula (which was actually islands), Dorchester, and the Boston Harbor. (Shurtleff 1871).

The Site is geologically part of the Boston Basin: a formation categorized as a complex, east-tilting, asymmetrical rift basin. The Basin is bordered by the Bloody Bluff Fault Zone on the northwest, measures 24 kilometers north/south from the coast, then widens offshore as it extends to the east where it is buried beneath the Stellwagen Bank deposits in the Massachusetts Bay. (P. J. Barosh 2011).

It's unusual that there is not already an established consensus narrative for the geology of Boston. Boston's a major US city with large universities and a century of extensive studies of its geology, yet there is still no generally accepted evidence-based explanation for many fundamental elements of the geology of the Boston Basin. This knowledge deficit may be partially explained by the fact that its extremely difficult to reference the modern Boston landscape to establish theories about past events because Boston has dramatically modified, reorganized, and distributed the natural landscape to an extent that likely pushes Boston into a global list of the most artificial cities in the world.

Boston started its alternations in the 17th Century, and the land became unrecognizable prior the creation of maps which could document the natural state. Further, Boston did not simply drain its wetlands or fill the sea (both of which are major alterations on their own), but Boston created more land through filling then what originally existed at Shawmut, installed hundreds of miles of drainage infrastructure, severely polluted the natural and unnatural land, and deformed the superficial geology to the extent that in Boston, "artificial fill" is a formal geological category for soil and "sewers" are a formal feature in Boston's hydrology. That said, my research leads me to believe the following about the geology of Boston and the Site.

Kaye, Boston, USGS MF 1241 (1980).

The Site is Part of a Mysterious, Ancient Ocean Basin without Basin Features.

The "basin" is categorized as such despite the "disappearance" of its northern and western sides, shortened length, unknown width, "large displacement," and irregular borders. (P. J. Barosh 2011). The Boston Basin is thought to have originated as a half-graben in the ancient Iapetus Ocean during the Ediacaran period. It may have developed as a failed rift/successor basin during the opening of the Iapetus Ocean. (P. Barosh 2016). The Boston Basin is thought to have shared topography and a structural setting with Saint Johns in New Brunswick. (P. J. Barosh 2011).

It likely accreted to its current location during the collision between Gondwana and Avalonia on the eastern margin of Laurentia (~340–330 Ma). (M. D. Thompson 2020). Many of the Boston Basin's

rocks and minerals are most similar to those in Morocco (Anti-Atlas) and New Brunswick (Avalonia). (Murphy 2010). Magnetic data further indicate that these formations are an exotic terrane, some of which (i.e., Boston Basin, New Brunswick, Newfoundland) were later accreted onto Avalonia prior to Avalonia's accretion onto to Laurentia. (F. Wu 1986).

Very little is known about the geological history of the Town of Boston, and the area is generally described as chaotic, complex, extreme, confused, and generally unknowable. ("Although Boston was the first city of the United States to be mapped geologically it probably will be one of the last to be mapped satisfactorily."). (Kaye 1984) The superficial deposits atop the City of Boston are described as a "bewildering array of strata that may change abruptly over a short distance" and "probably the most complex in the country." (P. J. Barosh 2011).

There is conflicting and erratic historical data but it all generally indicates dramatic fluctuations in land elevation and sea level. (Horner 1929), (Johnson 1942), (P. J. Barosh 2011). Based on findings during the prior deep tunnel activities, the sediment around Boston is estimated to be up to around 100-300ft deep and the bedrock is estimated to be over 15,000 feet deep and mostly argillite mudstone. The bedrock of the Boston Basin is 75-295 ft below the surface and is "highly irregular," with "knobs," "ridges," deep grooves, "enclosed basins," "closed depressions," and a "interrupted and irregular trough." (P. J. Barosh 2011). The basin is east-tilting and southward slumping. (P. J. Barosh 2011).

Despite most explanations for Boston's geology relying on glacial activity, there are no glacial deposits or sediment in Boston from prior to the end of the last glacial period. That timeframe includes the creation of the 200+ drumlins which often have two mysterious layers of "till" (despite only one layer of till generally found around Boston). While there is evidence of additional glacial activity surrounding Boston during Younger Dryas (12,900-11,500 years ago), there is no evidence of these glaciers in Boston itself at that time. (P. J. Barosh 2011), (M. D. Thompson 2020).

The Site is Dominated by Argillite Rock

The most common rock in Boston is argillite. Boston's argillite mudstone is thought to have been formed in a "deep marine basin" with terrigenous and volcanic sediments, which was then "connected to the open ocean very early in its history." (Socci 1987). Deposition of the argillite probably began after ~584 Ma in the western Avalonia terrane, following the formation of most of the Boston Basin basement, and continued for some duration of around 30-80 million years.

A probable source for the ash that became this argillite mudstone is the "exceptionally voluminous magmatism" eruptions from 566-550 Ma in the adjacent Avalonia terranes of the Coldbrook Group in what is now Caldonia, New Brunswick and St. John's Group in what is now Newfoundland. (Escribano 2021), (M. D. Thompson 2020). This would have occurred around the closures of the Iapetus Ocean and formation of the Gulf of Maine. All three areas share argillite mudstone deposits of similar depth and siliceous composition. (Misra 1971).

The argillite is thought to be volcanic ash sedimentation produced as submarine fan and slope-related turbiditic mudstones and siltstones up to 5,700 m. The absence of local volcanism at the time of post-580 Ma ash beds in higher parts of both successions is also consistent with this interpretation. Possible sources for post-580 Ma volcanic ashes in the Boston Bay and Conception groups are found in other segments of Avalonia that remained volcanically active during the arc-to-platform transition interval.

There are many igneous rocks in the Boston Basin. The most recent source of igneous rocks is theorized be volcanism in/around Avalonia during the arc-to-platform transition. (M. D. Thompson 2014). Multiple areas around the Boston Basin also contain Ediacaran and Cambrian fossils, demonstrating the establishment of stable platform conditions and the end of volcanic activity at least ~400 million years ago.

The argillite of the Boston Basin consists of a variety of forms of a hard, strong, solid, low-grade metamorphic rock. Argillite is a general classification of mudstones, however the rocks in the Boston Bason termed argillite also include "fine-grained argillaceous sandstones, tuffaceous argillites, calcareous argillites, gypseous argillite, and other types of fine-grained sedimentary rocks." They range in color from "cream through light to dark shades of gray." (Kaye 1984). The rock may present as claystone, mudstone, and/or fine sandstone. (P. J. Thompson 2014).

Studies of Boston's argillite frequently report a high percentage of silicon dioxide and aluminum oxide. The rocks at/around the site generally have 61-67% silicon dioxide (compared to 28% background) and 16-20% aluminum oxide compared to 8% background). The principal minerals in the Boston Basin's argillite are sericite, chlorite, and quartz. The flaky materials are often arranged in a "triaxial decussate structure." There is also occasionally schistose foliation. (Kaye 1984).

There are several deep wells drilled at the Site. Two 1500 ft "geothermal" wells were built on East Berkely street in 2006. They reported clay between 13 ft and 130ft, and medium grey bedrock between 130ft and 1500ft, with a water zone between 150 ft and 560 ft. (MassDEP well reports 101183 & 139741). Multiple deep geothermal and monitoring wells were built around 450 Harrison Ave ranging from -1,440. The reports noted clay from 10ft – 55ft, and bedrock starting around 55 ft-60ft, and going down to at least 1140 ft. Water zones were identified around 865 – 1060 ft. (MassDEP well reports 101181, 101183, 101184, 101185, 101186, 101187).

A geothermal well on Dorchester Ave. reported clay from 20ft to 107ft and bedrock at 107ft through at least 500ft, with a water zone around 240-260ft and 420-421 ft. (MassDEP well report 304848). Its unclear what these aquifers are or what they contain, and there's no public reports of any hydrothermal activity in Boston, but this does confirm deep argillite bedrock under the Shawmut Peninsula and in South Boston.

Around the Town of Boston, previous analysis of typical argillite reported higher than background levels of lead, iron oxide, rubidium, titanium dioxide, selenium, zinc, zirconium, and potassium oxide. The argillite in Boston, Cambridge, and the Inner Boston Harbor is often "densely sprinkled with small gypsum crystals, about 0.5 mm or smaller in length" and also may "contain clusters of larger crystals of dolomite." (Kaye 1984).

Petrographic microscopy of the argillite shows "scattered angular to subangular particles of quartz of silt size… in felty or fibrous matrix of intimately intergrown clay-size minerals" consisting of "sericite, chlorite, and some kaolinite." (Rahm 1962). There was also agrillite with "small, dark-green porphyroblasts" that are diamond shaped, around 0.4 mm x 0.2 mm, and surround tiny chlorite grains. (Rahm 1962). There is also hematite, hydrous iron oxides, and "scattered pyrite euhedra." Chemical analysis also reported "relatively abundant ferric iron" but from an unknown mineral. (Rahm 1962).

Within the argillite, fine grain materials may sit on felty or fibrous matrixes with quartz, pyrite, hematite, and hydrous iron oxides. (Rahm 1962).

Calcareous argillite was identified in Boston Harbor east of the Shawmut Peninsula and under the Shawmut Peninsula ranging from ~3-4 centimeters to 1.5 meters and intermixed with normal argillite. The calcareous argillite is "slightly lighter gray," the fresh rock "effervesces readily with dilute hydrochloric acid," and turns then "dull brown" when weathered due to the leaching. The islands in the Central Boston Harbor were found to have light, smooth argillite pebbles with small siderite (iron carbonite) crystals located within the "drumlin till" of those islands. (Kaye 1984).

Within the argillite is also a hard, white sericitic quartizte which is 400-500 ft thick. This was named "Milton Quartzite" by Billings in 1929. The quartzite is visible for about two miles in Quincy. Scattered throughout the Boston Basin are the Mattapan/Brighton Volcanics. These are bard, dense white, pink, and red rhyolites. Also included are "melapbyres" (which are altered basalts and andesites) which are dark to light green and are composed chiefly of secondary minerals albite, hornblende cblorite and epidote. (Brenninkmeyer 1984).

There is also pink and hematite-red argillite found at a few locations along the jagged coastlines of the Boston Harbor, including Hough's Neck and Paddock Island. Closest to the Site, red pebbles were identified in the "glacial till" of "some of the drumlins" in Winthrop and Deer Island and at the surface of Revere Beach. The Revere Beach pebbles also contained "small, irregular masses of limestone" that were assumed to be Ediacaran trilobite fossils. (Kaye 1984), (Clark 1921-1923).

Boston Harbor rocks are generally low in REE. Argillite samples from the Braintree Weymouth Tunnel and Inter-Island Tunnel were previously analyzed and presented quartz, K-feldspar, granite, plagioclase, chlorite, illite, titanite, calcite, apatite, mica, monazite, sulfides, iron oxides, zircon, and myrmekite (Pl/Qz). The only laminae reported was "millimeter scale" and "defined by horizons varying in grain size or crystal content." (M. D. Thompson 2020). A comparison of Boston Harbor islands (Calf Island and Middle Brewster Island) to Nahant found the Boston Harbor islands had higher Titanium Oxide (TiO_2), Phosphorus pentoxide (**P_2O_5**), and zinc. (P. J. Thompson 2014).

The Boston Basin Appears to be a Missing Bolid Swarm Impact Site Validating the Younger Dryas Impact Hypothesis

There is a hypothesis that proposes that approximately 12,800 years ago, fragments of a large comet or asteroid struck the Laurentide ice sheet and surrounding areas of North America, triggering the ~1,200-year Younger Dryas cold period and contributed to the extinction of Pleistocene megafauna. (Firestone et al. 2007). The hypothesis was first formally proposed by Firestone, West, Kennett, and colleagues in 2007, and despite early criticism based on disputed replication attempts, the hypothesis has been substantially corroborated by independent research over the subsequent seventeen years with an deluge of new supporting evidence over the last several years especially.

As of 2026, the hypothesis is supported by scores of peer-reviewed articles in dozens of journals from hundreds of researchers who have identified some combination of synchronous impact proxies (nanodiamonds, exotic microspherules, platinum enrichment, meltglass, shocked quartz, and elevated

iridium) at more than fifty Younger Dryas boundary ("YDB") sites on five continents. (Sweatman, Powell & West 2024), (Powell 2022), (Sweatman 2021). A 2023 article in the journal *Science Progress* compared the premature rejection of the YDIH to the premature rejection of continental drift and meteorite impact cratering – both of which were dismissed for decades before achieving scientific consensus. (Powell 2023).

The established YDB impact proxies, confirmed across dozens of sites, include: iron-rich and glassy microspherules (cooled metallic droplets formed under extreme temperatures) which have been identified in peak abundance at the YDB layer at sites across North America, South America, Europe, Asia, and the Greenland ice sheet. These microspherules consist primarily of melted terrestrial material. Similar microspherule layers have been accepted as evidence for cosmic impact events at twenty-eight other confirmed impact sites. (Moore et al. 2024), (Wittke et al. 2013).

Anomalous peak abundances of platinum (a rare element abundant in asteroids and comets but scarce in Earth's crust) have been established as a chronostratigraphic marker for the lower YDB dating to 12,800 years ago. Platinum anomalies have been confirmed at sites including Wakulla Springs, Florida; White Pond, South Carolina; Parsons Island, Maryland; Newtonville, New Jersey; Flamingo Bay, South Carolina; and in Baffin Bay marine sediment cores. (Moore et al. 2023), (Moore et al. 2024).

In 2024, Moore, Kennett and colleagues reported the first identification of shock-fractured quartz at multiple YDB sites in the eastern United States. The shocked quartz grains display fissures filled with amorphous silica (meltglass), similar to shocked grains found at twenty seven accepted impact craters (including Meteor Crater, Chesapeake Bay, Chicxulub, and Manicouagan) and produced in eleven laboratory shock experiments. Unlike the parallel planar deformation features typical of direct-impact craters, the YDB shocked quartz displays irregular, web-like fracture patterns with subparallel and subplanar deformations consistent with lower-pressure "touchdown" airbursts – explosions occurring above the ground but close enough that the shockwave and heat melt and fracture surface sediments. (Moore et al. 2024), (Kennett et al. 2025).

High-temperature meltglass has been found at multiple YDB sites. At Abu Hureyra, Syria (the oldest known archaeological site catastrophically destroyed by cosmic impact) meltglass comprising 1.6 wt.% of bulk sediment was found with melted grains of quartz, chromferide, and magnetite indicating exposure to temperatures of 1,720°C to over 2,200°C. The meltglass's low water content (0.02–0.05% H_2O) is consistent with tektite formation processes and inconsistent with volcanism or anthropogenic fire. (Moore et al. 2020).

Bunch et al surveyed multiple YDB sites and identified impact patterns icnlduing siliceous scoria-like objects, abundant micro spherules, corundum, mullite, and suessite (Fe(3)Si), melted SiO(2) glass, or lechatelierite, with flow textures (or schlieren) that form at > 2,200 °C, and particles with features indicative of high-energy interparticle collisions. These findings supported a theory of multiple impactors with cosmic ejecta and creating concurrent airburst. (Bunch T.E. 2012).

Cubic diamonds, n-diamonds, i-carbon, and lonsdaleite-like crystals have been identified in the YDB layer at multiple sites. The only previously known co-occurrence of nanodiamonds, soot, and extinction in the geological record is the Cretaceous-Tertiary (K/T) impact layer associated with the Chicxulub impactor. (Kennett et al. 2009), (Kinzie et al. 2014). The comet responsible for the Younger Dryas event is estimated to have been approximately 100 kilometers wide, much larger than the object

responsible for the 1908 Tunguska event in Siberia, and it is theorized to have fragmented into thousands of pieces before impact. (Firestone et al. 2007).

The fragmented comet is hypothesized to have struck or exploded over the Laurentide ice sheet in northeastern North America, with individual fragments creating "touchdown" airbursts – explosions at low altitude that generate devastating shockwaves, extreme overpressure, and temperatures exceeding 2,000°C at ground level without necessarily leaving identifiable craters in the surface geology. (Moore et al. 2024).

Computer simulations have confirmed that cometary fragments can explode before reaching the ground while generating shockwaves capable of widespread surface impacts. (Moore 2024). The 2–3 km thick Laurentide ice sheet would have absorbed the initial energy of the impacts, changing the typical dynamics of meteorite impact events and explaining the apparent absence of traditional crater morphology. The shockwave from such an event would have created "intense winds traveling across North America at hundreds of kilometers per hour, accompanied by powerful, impact-generated vortices." (Firestone 2007).

The impact would have destabilized the glacial ice sheet, triggering the collapse of massive glacial meltwater lakes and subsequently disrupting the Atlantic Meridional Overturning Circulation, which initiated the Younger Dryas cooling. (Wu 2013). This "airburst on ice" mechanism is directly relevant to the Boston Basin, where the Laurentide ice sheet is believed to have been around two km thick at approximately 12,900 years ago.

If fragments of the hypothesized comet struck the ice sheet over what is now the Boston Basin, the resulting thermal and collision reactions would have simultaneously rapidly melted overlying ice, vaporized and obliterated surface rock into fine particles, driven ejecta and meltwater into the fractured substrate, created high-pressure shockwaves that compacted and deformed subsurface materials, and initiated hydrothermal circulation through the newly fractured and heated rock.

It is now well-established in the scientific literature that bolide impacts into hydrous planetary bodies initiate transient hydrothermal systems. These impact-generated hydrothermal systems have been extensively documented at terrestrial craters including Chicxulub (180 km diameter), Sudbury (~200 km), Puchezh-Katunki (80 km), Haughton (23 km), Ries (24 km), Manson (35 km), and Vargeão Dome (12 km). (Naumov 2002), (Osinski et al. 2013), (Zurcher & Kring 2004), (Svensson et al. 2025), (Alsemgeest et al. 2026).

At Chicxulub, the best-preserved large impact crater on Earth, International Ocean Discovery Program drilling confirmed that the impact-generated hydrothermal system chemically and mineralogically altered approximately 1.4×10^5 km^3 of Earth's crust. Peak hydrothermal temperatures reached 300–400°C, and independent paleomagnetic signatures indicate the system persisted at temperatures possibly above 250°C for at least 200,000 years. The predominant alteration assemblages consist of Fe-Mg clay minerals, zeolites, alkali feldspars, calcite, sulfides, sulfates, opal, and Fe-Ti oxides. Alteration is especially intense proximal to lithologic contacts and in areas of high porosity. (Simpson et al. 2020), (Kring et al. 2020).

At the Ries impact structure in Germany, the contact between hydrothermally altered impact melt-bearing breccia and post-impact crater lake deposits contains kaolinite, illite, and smectitic clay minerals

with clast-wrapping textures, framboidal pyrite, iron oxide staining, and structural alterations including deviations of laminae, sedimentary load structures, and faulting. (Svensson et al. 2025). At Vargeão Dome in Brazil, kaolinite and halloysite form in impact-reactivated hydrothermal veins within fractured basalt alongside hematite, goethite, and other alteration minerals. (Alsemgeest et al. 2026).

Thermochemical modeling of impact-generated hydrothermal systems demonstrates that for a range of host rock lithologies, the principal alteration minerals produced by impact-heated water-rock interaction include feldspar, zeolite, chlorite, clay minerals (specifically nontronite and kaolinite), and hematite – with kaolinite forming as a consistent product across basaltic, lherzolithic, and ultramafic precursor compositions. (Schwenzer & Kring 2013).

The formation of kaolinite through hydrothermal alteration of feldspar-bearing rocks (kaolinization) is a well-established process in impact structures, occurring at temperatures of approximately 175–350°C. (Anderson 2008).

Research on hydrothermal kaolinization in analogous settings confirms a diagnostic geochemical signature: enrichment of Zr, U, Th, Y, La, and Pr, with depletion of Rb, Ba, V, Cr, Zn, Eu, and Ce, resulting from the breakdown of feldspars during hydrothermal alteration. (Vali–Janlou kaolin deposit, Iran, 2025). Negative Europium anomalies during kaolinization specifically indicate plagioclase destruction by high-temperature hydrothermal solutions. The coexistence of kaolinite with pyrophyllite, dickite, and diaspore indicates maximum hydrothermal fluid temperatures of around 350°C.

Comparison of Established YDB Impact Proxies to Boston Basin Evidence

The geological evidence at the Boston Basin and the Site exhibits a striking convergence with the established suite of Younger Dryas impact proxies and impact-generated hydrothermal signatures. This comparison includes:

Boston's argillite bedrock exhibits extensive kaolinization at multiple documented locations including the South Station Postal Annex, the former Stone & Webster Building, Washington Street, Atlantic Avenue, Boston Common, Castle Square, Gillette Safety Razor plant, and Pier 2. (Kaye & Reed, Haley & Aldrich). At the Ames Building, kaolinite clay reaches 27.11 wt.% in argillite that also contains 59.18 wt.% SiO_2.

This kaolinization penetrates to over 200 feet depth, is fault-controlled rather than stratigraphic, and transitions abruptly from sound rock to fully altered material – a pattern diagnostic of impact-generated hydrothermal circulation rather than surface weathering. At confirmed impact sites including Chicxulub, Ries, and Vargeão Dome, kaolinite and related clay minerals form through identical mechanisms: hot, impact-generated fluids circulating through fractured rock along zones of high permeability.

Anderson (2008) reported that Boston's argillite siltstone and slates have "clearly undergone considerable recrystallization" at temperatures estimated between 175°C and 250°C. This temperature range falls squarely within the documented range of impact-generated hydrothermal systems (generally peaking at ~350°C per Chicxulub data, and persisting below 100°C for millions of years for larger craters).

There is no documented source of 175–250°C heating in the Boston Basin since the end of Avalonian volcanism over 400 million years ago.

Anderson (2008) documented small (20–30 μm) spherical pyrite framboids in Boston's argillite with iron-rich, sulfur-poor dark centers that appeared to be secondary hematite. Framboidal pyrite is a diagnostic feature of impact crater hydrothermal systems, documented at Ries, Chicxulub, and in the YDB layer globally. The iron-rich, sulfur-depleted cores in Boston's framboids indicate post-formation alteration by oxidizing hydrothermal fluids.

Kaye (1984) reported "abundant minute, opaque spheres" with "a very thin coating of pyrite" and "dense colonies of minute spherical cells" in the Cambridge argillite, which were interpreted as possible microfossils (*Bavlinella cf. faveolata*). However, no organic material was confirmed, and the subspherical bodies were smaller than typical *Bavlinella*. These pyrite-coated subspherical bodies are morphologically consistent with iron-rich microspherules – cooled metallic droplets – which are among the most widely confirmed YDB impact proxies, found at over 50 sites worldwide. The interpretation of these structures as microfossils was never formally confirmed, and no follow-up investigation was conducted.

Boston's argillite contains microscopic injection structures, tiny dikes, intrastratal microfaults, and load casts. (P. J. Thompson 2014). Supposed fossilized tree trunks were reinterpreted as inorganic sandstone "pipes" formed by "rapid deposition and high energy" from "upward flowing sand and water mixtures" that were "injected rather quickly," covered in "laminae composed of sparse grains of magnetite." (Bailey 1978). Injection structures, microfaults, and magnetite-bearing rapid deposition features are established characteristics of impact ejecta deposits and impact-disturbed sediments at confirmed crater sites.

The argillite at the Site consistently reports SiO_2 at 61–76 wt.% (crustal average: 28%) and Al_2O_3 at 15.57–19.51 wt.% (crustal average: 8.1–8.3%). This extreme silica-alumina enrichment is consistent with the predominant alteration assemblages at impact-generated hydrothermal systems, where the dissolution of feldspars and precipitation of siliceous and aluminous phases – including kaolinite, sericite, and amorphous silica – is driven by circulating heated fluids.

At Chicxulub, quartz dissolution and Ca-Na-K metasomatism are defining features of the hydrothermal system. The pervasive sericite in Boston's argillite (15.9–22 wt.% at the Main Drainage Tunnel) represents the hydrothermal alteration of feldspars to white mica, a process directly parallel to what is documented at Chicxulub, Ries, and other confirmed impact structures.

Zirconium in the Boston Basin argillite ranges from 193–281 PPM (crustal average: ~130 PPM). Lower depth titanium dioxide ranges from 0.6–1.08 wt.% (crustal average: 0.56–0.63%) but higher level samples were "relatively high" ranging from 1.76-3.66% wt % and the NW trending dikes containing the highest levels, as well as the highest levels of Nb. (Ross 1990).. Potassium oxide reaches 6.69 wt.% at South Boston (crustal average: 2.09%). This pattern – Zr and Ti enrichment with K metasomatism – is consistent with the geochemical signatures of impact-generated hydrothermal alteration, where zircon and titanite are among the most resistant accessory minerals and become concentrated during alteration while potassium is mobilized during the sericitization of feldspars.

At a crater site in the Western Interior Basin, clay was formed from "fallout materials" landing in "ancient peat swamps" with the fireball layer creating smectitic clay from "mafic glass condensed from the vaporized chondritic bolide, along with some kaolinite formed from blebs of melted silicic target material entrained in the vapor plume cloud during ejection." In contract, "the melt ejecta layer is mainly kaolinitic, derived from silicic glass formed from melted target rocks. In this layer, the glass rapidly altered to mostly disordered, micrometer-sized "cabbage-like" or submicrometer-sized embryonic forms of spherical halloysite." (Pollastro 2024).

Boston Harbor argillite shows light REE enrichment, a mild Europium anomaly, and a flat heavy REE distribution. (M. D. Thompson 2020). This REE pattern – LREE enrichment with a negative Eu anomaly – is a specific geochemical signature of kaolinization by hydrothermal fluids, where the Eu anomaly records plagioclase destruction and the LREE enrichment reflects concentration in secondary minerals. It is also consistent with the presence of trace meteoritic material in the target rock, as established at YDB sites where elevated platinum and iridium co-occur with microspherules and meltglass.

Woods Hole Oceanographic Institution's 1952 hydrographic survey of the Boston Harbor sediments reported "Alteration" frequencies of 24–64% in dredged harbor samples, alongside quartz frequencies of 26–64% (crustal average for quartz: 12%). This pervasive mineral alteration in surficial sediments of the harbor is inconsistent with normal weathering processes and consistent with the widespread distribution of impact-altered materials across the basin floor.

The 33-ton Salem gabbro-diorite boulder found embedded in marine clay in the Fort Point Channel displayed extreme hardness – "four times stronger than granite" – that broke diamond-headed chisels and snapped drill bits. (Associated Press 2003), (Schimek 2007). Shock metamorphism from bolide impact events is a known mechanism for dramatically increasing the hardness and fracture resistance of igneous rocks through the generation of high-pressure mineral phases. Normal glacial transport does not produce this degree of hardening.

There are many faults around the Site which are sometimes designated dikes an the presentation labeled a "swarm" where there are multiple, parallel, radial, or conjugative sets of intrusions.

The Site also appears to have a band of "Squantum tillite" running perpendicular to the Roxbury Canal, from around Mass Ave. and Old Harbor, bounded to the south by Dorchester Member and to the north by argillite. (Rahm, 1962). Rampino's 2017 paper "Are some tillites impact-related debris-flow deposits?" explains that formations designated as "tillites" are comparable to debris-flow ejecta of known impacts "marked by mildly shocked clasts showing evidence of plastic behavior with brittle failure, commonly resulting in multiple, partially displaced fractures, grading into crushed and brecciated clasts" and "these deformation features entail brief periods of high confining pressures, in accord with a hypervelocity-impact origin." (Rampino 2017). See also, (Oberbeck 1992).

Rampino has argued for an interpretation of "diamictite" and "tillite" as impact debris since 1994 including in NASA sponsored articles. Over thirty years ago he wrote that "recent calculations of the predicted volume and distribution of impact-generated diamictites suggests that they should be common in the geologic record" and "a few diamictite deposits formerly interpreted as glacial or questionably glacial in origin are already known to be impact ejecta" (M. Rampino 1994). Carto also confirmed a non-glacial origin for Squantum tillite in 2011. (Carto 2011).

SATURDAY, APRIL 19, 2003 THE BOST

Eric MacFarland of Modern Continental Construction Co. stood on pieces from a massive Salem gabbro-diorite boulder in Fort Point Channel that has delayed the MBTA's Silver Line.

Boulder stalls Silver Line work

"Boulder stalls Silver Line work," The Boston Globe, April 19 2003; Casting Basin Excavation: Boulder found imbedded in the clay layer. (February 2, 1997), Don Eyles, CB9702023A02

Most of Boston's drumlins have argillite boulders underneath and/or within them, with evidence of upward thrusting of materials. (P. J. Barosh 2011). Around the Site, erratic boulders are embedded in marine clay at the clay-till contact, surrounded by white altered rock (kaolinized argillite). Drumlins sit atop these formations. This stratigraphy – impact-altered substrate with embedded megaclasts, overlain by compacted ejecta mounds – is consistent with impact breccia deposits where target rock fragments settle into disturbed substrate and are overlain by fallback material. At Chicxulub, the suevite (impact breccia) consists of polymict breccia containing clasts of variably shocked crystalline target rocks within a matrix of impact-altered material – a description that could equally describe the boulder-bearing, kaolinized, clay-mantled drumlins of the Boston Basin.

The deep, thick, extremely fine, varve-less, and fossil-less marine clay around Boston was deposited approximately 14,000–12,200 years ago, with a "rapid burial with marine regression" coinciding with the onset of the Younger Dryas. (P. J. Barosh 2011). At the Mjølnir Crater, the marine impact created a blanket of ejecta that was resuspended into sediment by waves and rapidly transformed into gel. (Dypvik 1998), (Moore 2024). The absence of varves indicates the clay was not deposited through normal seasonal glacial processes. The absence of fossils indicates that organic material was vaporized or that the depositional environment was too extreme for preservation – both consistent with impact-generated sedimentation in an environment of extreme temperature and pressure.

Geologists have historically reported difficulty in dating Boston's argillite and clay, with "an extreme range of results" that has never been publicly explained. (Kaye 1984). Meteorite impacts reset U-Pb dates for impacted rocks. (Walton 2022), (C. Walton 2023). If chondrite material – "among the most ancient objects in the solar system" (NASA 2026) – is mixed with impact-reset target rock, the resulting dates would produce an irreconcilable spread from billions of years (chondrite ages) to approximately 12,900 years (impact-reset ages), which would appear as laboratory errors to researchers unaware of the impact context.

What about the Boston Basin's mysterious lack of basin features? Chelyabinsk is an apt comparison where "energy deposition that led to the explosion took place in stages and was spread out over a long distance because of the shallow entry angle" and "slug of energetic material carried much of the original momentum of the asteroid and continued to push its way downrange as it exploded—still moving much faster than a fighter jet. Because of the long distance over which energy was deposited, the geographic pattern of the shock intensity, inferred from observed damage, looked more like an inclined cylindrical bow shock than a spherical explosion." (Physics Today 2014).

The Younger Dryas impact is also thought to have triggered massive fires which would have then been washed across the Site in the glacial outwash and could have laid some of the deeper ash, charcoal, soot, and cinders currently found all over the Site. (M. Sweatman 2021). Accordingly, acceptance of this impact theory is likely one of the only defenses for the Defendants regarding the extensive ash/cinder fill across the Site, though it certainly seems like they also contributed to the issues as well. (Wolbach 2018). (Kennett 2025).

No Alternative Hypothesis Explains the Convergence of Evidence

Several areas of the Boston Basin, including Boston and Cambridge, have frequent geological anomalies. In 1984, Boston Basin geological expert Clifford Kaye noted that in this argillite there are "many zones of penecontemporaneous deformation" and "small depositional unconformities are common." (Kaye 1984).

Translated to non-geologist, this means that there are many sites of hyper-local deformation and/or alternation of these rocks and that while each area is small, it appears most of these deformities and alterations occurred around the same time, and they occurred after the formation and placement of the original rock. This is unusual, especially for a very strong and solid rock.

The claystone is mostly altered to illite, chlorite, mica, or other phyllosilicate with 0.1-3 mm thick grey/black laminae. Microscopic structures include instraclasts, load casts, injection structures, tiny dikes, and intrastratal micofaults. (P. J. Thompson 2014). The placement of clay and sediment in Boston was confidently described by La Forge nearly a century ago as "incoherent."(La Forge 1932)

There are frequent reports at the Site of igneous altered rock (i.e., kaolinite) and fragile igneous formations (i.e., ash, tuff) created apparently *in situ* placed in young marine clay and silt (formed less than ~15,000 years ago). Yet, the most recent documented igneous intrusions would have been formed hundreds of millions of years ago. There are only a handful of geological process which are capable of creating igneous intrusions. This includes: volcanoes (but there are no active volcanoes anywhere near the Site and these intrusions are limited/localized), hydrothermal activity (but the underlying argillite is ~15,000 feet thick and there is no known hydrothermal activity in or under it), and bolide impacts (?).

The conventional glacial interpretation of the Boston Basin's geology does not account for the convergent anomalies documented above. Specifically that glacial processes do not produce kaolinization. Glaciers erode and transport rock; they do not heat rock to 175–350°C along fault-controlled pathways to produce kaolinite at depths exceeding 200 feet. The only geological processes capable of producing the kaolinization pattern documented in the Boston Basin are volcanism (for which there is no evidence in the

last 400+ million years in this area), tectonic hydrothermal activity (for which there is no evidence in the 15,000+ feet of underlying argillite), or bolide impact-generated hydrothermal circulation.

Glacial transport also does not produce shock-hardened boulders. Glaciers transport erratic boulders, but glacial transport does not quadruple the hardness of igneous rock. The extreme hardness of the Fort Point Channel gabbro-diorite boulder is consistent with shock metamorphism from impact, not with glacial deposition.

Boston also has a ridiculous number of boulders. In 1905, the Army Corps reported they had already removed least "184,299 cubic yards of boulders and 156 cubic yards of "ledge" were dredged from Presidents Roads to Broad Sound" and "7,755 cubic yards of boulders were also dredged from [other] areas."[47] Stony bolides are literally defined by being "rocky" including frequent "boulder fields" and near earth asteroids are documented to have boulder fields. One could imagine a boulder encrusted bolide hurdling towards Boston would foreseeably litter Boston with said boulders. (Lucchetti 2024).

Boulders always seem to show up in boring reports for deeper borings at the Site, generally around some sort of breccia, decomposition, and/or alternation. Currently the only explanation is "glaciers." This includes chunks of broken bedrock which are then labeled "boulders" without explanation for what broke the bedrock into large chunks and slabs *in situ.* A bolide could and that is an expected result of a bolide impact.

Geologists have also reported placement of the same clay, boulders, and drumlins at issue at heights and depths that they will openly refer to as "confounding." There's no explanation for how glaciers and sea water could deposit such things with heights varying over 300ft but occurring simultaneously. These erratic placements are easily explained by bolide impacts with vapor events and tsunamis, where placement occurred from above rather than parallel to ground level.

What about the strange elongation of drumlins? La Forge noted they can be located up to 340 feet high , often "form chains or rows," and have "stony" till. (La Forge 1932). When swarms of bolides impact earth, they're known to hit in a linear placement generally sorted by weight with the heavier hitting first trailed by the lighter rocks. This leaves a signature of ejecta mounts that presents as a straight or curved line rather than one single crater or mound. These swarms may also results in two or more bolides hitting a small area which can create layered ejecta bounds.

This appears to be exactly what we see with Beacon Hill on the Shawmut Peninsula. Beacon Hill is the only drumlin noted to have two distinct layers of "glacial till" without any explanation how that could have occurred. (P. J. Barosh 2011). The theories have required speculation that Beacon Hill was the only location in Boston able to preserve till from a prior glacial cycle and no other location was able to preserve till from that same cycle. A related theory argues central Shawmut Peninsula ha a unique layer of deformed upper till – which would be located directly above the extensive kaolinization and decomposition of argillite below it, which sounds more like an impact then a deposition.

Alternatively to the current theory of "we'll never know," the elongated hill shape of the Beacon Hill drumlin occurred due to multiple bolides impacting a small area and stacking their ejecta mounds and leaving a messy, ambiguous landform. That also aligns with the extensive amount of altered rock and clay, and depressed landform, in that specific area. Boosh also directly documented that "the majority of

[47] "Boston Harbor Work: Report by the Chief of the Engineer Corps," Boston Evening Transcript, Nov 06, 1905, p. 13.

drumlins around Boston rest on bedrock highs or have a core of bedrock." (P. K. Barosh 1989). That sounds like at least three bolides.

Analysis of the "Trimountain," which included Mount Vernon Hill, Beacon Hill, and Pemberton Hill, found it was "far more complex geologic feature which includes deep deposits of overthrust sediments of all types which were bulldozed up and over the underlying till and outwash materials." (Aldrich 1970). That sounds like at least three bolides.

Also, glaciers are thought to produce varved clay. Normal glaciolacustrine and glaciomarine processes produce varved (layered) sediments through seasonal variation in meltwater discharge. The absence of varves in Boston's clay has been a longstanding mystery with a concurrent refusal to consider if the clay was created by something other than glaciers. Impact-generated sedimentation (either from obliterated target rock or from bolide material deposited in a catastrophic marine environment) does not produce seasonal varves because it is created all at once rather than as part of a longer-term ongoing process.

Further, chondrite asteroids are the most common asteroids and they simply consist of clay and silicate rocks, just like Boston's argillite mudstone and illite clay. Upon impact, the claywould have either been created by obliterated argillite mudstone that was struck by the impact and saturated with immediately melted glacier waters, and/or the clays made of the obliterated bolide itself. In either case, there are no discernable fossils because the impact would have vaporized any organic matter.

No natural process produces all these anomalies simultaneously. The statistical co-occurrence of fault-controlled kaolinization to 200+ ft depth, 175–250°C recrystallization, framboidal pyrite with secondary hematite, pyrite-coated subspherical bodies, injection structures and magnetite-bearing rapid deposition, extreme silica-alumina enrichment, elevated Zr, Ti, K_2O, LREE enrichment with negative Eu anomaly, 24–64% mineral alteration in surficial sediments, shock-hardened megaclasts, boulders embedded in kaolinized rock beneath drumlins, varve-less fossil-less clay with funnel-shaped downfolds, and anomalous dating results – all within a single basin with radiocarbon dates of 12,200–14,400 years BP – has no known explanation other than bolide impact and its consequent effects.

As Moore and colleagues observed regarding the YDB proxy layer: "No critic has identified any other non-impact layer that coincidentally contains the broad suite of these proxies. It is statistically improbable that these dozen proxies are unrelated and only coincidentally found in the same layer." (Moore et al. 2024). The same reasoning applies to the Boston Basin. No critic has offered any non-impact geological process that produces kaolinization along faults to 200+ feet, 175–250°C recrystallization, pyrite framboids, extreme silica-alumina enrichment, shock-hardened megaclasts, varve-less clay, and anomalous dating results – all in the same basin, all at the same time, and all atop 15,000 feet of otherwise undisturbed argillite mudstone.

A bolide impact event could be why there's giant erratic boulders in the Fort Point Channel, why the Channel's path is lined with drumlins, and why Shawmut looks like a drowning person's hand reaching up for help with only three fingers breaching the water. It could be why the Dorchester Neck looks like it was peeled away from the Shawmut Peninsula and twisted hard to the right; and why the Boston Neck is a strange narrow wedge of clay acting as a reluctant, part-time isthmus while concurrently remaining part

of the sea. It could also be why the Shawmut Peninsula's strange, deformed landform inexplicably lays in nearly perfect obstruction of the Charles river's outflow.

Edward Hitchock wrote the first formal geological survey for the Commonwealth in 1833-1841 and documented a large number of anomalies in the Commonwealth and New England which could not be explained by standard geological processes including unusual and expected presentation of clay and clay stones, ferruginous concretions and nodules, and the detailed fossilization of organic matter in argillite as iron core with no remnant of organic matter remaining.

Hitchhock noted the devastation to Boston's landscape occurred around when it was "nearly its present elevation above the ocean." He also addressed a "hypothesis to which some have clung" where "the shock of a comet" may have caused many of these "diluvial actions" however he did not believe it was possible at that time specifically because the science at that time thought that comets were "composed of matter thinner and lighter than air." (Hitchhock 1833), (Hitchcock 1841).

The hypothesized Younger Dryas impact event would have "created a devastating, high-temperature shock wave with extreme overpressure, followed by underpressure, resulting in intense winds traveling across North America at hundreds of kilometers per hour, accompanied by powerful, impact-generated vortices." (Firestone 2007). The 2-3-km thick Laurentia ice sheet would have taken the impact initially, changing the typical dynamics of meteorite impacts and would have foreseeably left behind exactly what we find in Boston.

A Younger Dryas Impact interpretation of Boston and the Site also validates the modern, emerging hypothesis that the Younger Dryas impact event as it provides the first "ground-zero" impact site. The hypothesis suggests the impact consisted of multiple bolides to the Laurentina ice sheet, centered in the northeastern United States, and which triggered a massive vapor/shock event, rather effects typical with direct land impacts. (Y. Wu 2013). Boston easily represents a foreseeable outcome for that impact, would provide the first case study to develop formal criterial to identify other impact sites in the North Eastern United States, and this hypothesis is the best and only coherent explanation for Boston's geology.

The Chondrite Fingerprint, The Suevite Problem, And The Instruments The Basin Left Us

Nearly all systematic geological investigation of the Boston Basin has been conducted in deep infrastructure tunnels: the Main Drainage Tunnel (MDT), the City Tunnel Extension, the Inter-Island Tunnel, the NMRT. These projects penetrated well below the bedrock surface into the deeper portions of the argillite and underlying formations. The geologists working these tunnels encountered fractured argillite with some alteration, some intrusions, and interesting mineralogy—but they were seeing the basement of the destruction zone, not its epicenter. The deepest, least damaged rock gave the impression that the basin was well characterized.

The worst destruction is concentrated at and near the bedrock surface: the zone where the impact energy was highest and the hydrothermal fluids had the greatest access. This is exactly the zone that is buried under fill, clay, and buildings, where no systematic geological investigation has ever been conducted. The shallow borings that encountered the worst damage (the Gillette wells, the Seaport borings, the Ames Building drill, the Stone & Webster site, the MIT campus) were engineering projects.

Their data went into geotechnical files to design foundations, not into geological papers to characterize the basin. The engineers saw finger-crushable bedrock, white clay with boulders, RQD of 0%, and they designed around it. No one asked why the bedrock was destroyed.

The result is that the most important evidence sits in boring logs that geologists have never assembled. Kaye (1967) recognized this: nine of thirty-three NMRT borings encountered "badly altered material" and no one noticed during the project. The alteration "did not show up in MDT" because the MDT was deep enough to be below the worst of it. Boston's geology was studied from the bottom up, and the bottom told a fundamentally different story than the top.

The Chelyabinsk meteorite (an LL5 ordinary chondrite, the most common type of meteorite to strike Earth) consists of olivine ($Fo_{71}Fa_{29}$), enstatite, diopside, albitic feldspar ($Ab_{84}An_{11}Or_5$), Fe-Ni metal, troilite (FeS), chromite, ilmenite, and Cl-apatite. (Ozawa et al. 2014). When a chondrite impacts a sedimentary target at hypervelocity, the meteoritic minerals are mixed into the target rock, subjected to extreme temperatures and pressures, and then altered by the subsequent hydrothermal system. Each chondritic mineral follows a predictable alteration pathway. The minerals documented in the Boston Basin match these pathways.

Albitic feldspar (Ab_{84}) is a major constituent of ordinary chondrites. Thompson (2020) found that plagioclase throughout the Cambridge Argillite sequence is "uniformly pure albite." This has been interpreted as sodium metasomatism—hydrothermal fluids replacing calcium with sodium in original plagioclase. That interpretation is not wrong, but it is incomplete. If chondritic material was mixed into the target rock during impact, the albite is partly meteoritic in origin: chondritic albite distributed through the formation by the impact event, with additional albite produced by hydrothermal albitization of any remaining calcic plagioclase. The uniformity is explained: both meteoritic addition and hydrothermal conversion converge on the same end product. Every plagioclase grain in the formation is now albite because the system was flooded with both meteoritic albite and albite-producing hydrothermal fluids.

Ilmenite ($FeTiO_3$) is an accessory mineral in ordinary chondrites. Boston's argillite contains three separate titanium-bearing phases: ilmenite, rutile (TiO_2), and titanite ($CaTiSiO_5$). (Anderson 2008; Thompson 2020; La Forge 1932). These are not three unrelated minerals. They are one original mineral in three stages of post-impact alteration.

Where chondritic ilmenite survived relatively intact, it is identified as ilmenite. Where it was partially altered under shock or moderate hydrothermal conditions, it converted to rutile—the stable TiO_2 polymorph. Where high-temperature hydrothermal fluids (400–700°C) fully mobilized the titanium, it reprecipitated as titanite in the presence of calcium and silicon from the dissolving host rock. La Forge (1932) reported titanite as "an almost universal though not abundant accessory mineral" across the entire basin. Universal distribution of a 400–700°C mineral documents basin-wide titanium mobilization at extreme temperatures. The three phases together record the thermal history of a single meteoritic mineral processed through the impact and its aftermath.

Ross (1990) documented TiO_2 enrichment of 1.76–3.66 wt% in the upper portions of NW-trending dikes, compared to 0.6–1.08 wt% at depth—a factor of 3–6x enrichment in the shallow zone. If the dike magma intruded through impact-processed rock containing mobilized titanium, the upper portions

(passing through the most altered shallow zone) would have absorbed more titanium than the deeper portions (passing through less altered rock). The dike chemistry is sampling the impact alteration gradient.

Fe-Ni metal is a major constituent of ordinary chondrites. When oxidized, it produces magnetite (Fe_3O_4), maghemite, goethite, and other iron oxide and hydroxide phases. The Boston Basin contains iron in extraordinary abundance and ubiquity: "minute magnetite crystals" in igneous bodies (Kaye 1967); magnetite grains (0.15–0.20 mm) lining injection pipes (Bailey 1978); iron staining on joint surfaces in every boring log; chamositic chlorite with Fe/FeMg ratios of 0.60–0.75—far above normal sedimentary values of 0.30–0.50 (Thompson 2020); universal siderite ($FeCO_3$) replacement of all iron-bearing minerals in the diabase; and "relatively abundant ferric iron from unknown mineral" (Rahm 1962). Rahm could not identify the iron source because it did not match any standard terrestrial sedimentary mineral. Oxidized meteoritic Fe-Ni metal would not match standard identification keys. It is the "unknown mineral."

The sheer volume of iron in the system—pervasive magnetite, universal siderite, iron staining on every fracture surface, iron-enriched chlorite throughout the formation—exceeds what the original argillite could supply. The argillite is a mudstone, not an iron formation. The excess iron is consistent with the addition of meteoritic Fe-Ni metal to the basin, subsequently oxidized and redistributed by the hydrothermal system into every mineral phase that could accommodate it.

Troilite (FeS) is a major constituent of ordinary chondrites. In the presence of sulfur-bearing hydrothermal fluids and available iron, troilite readily converts to pyrite (FeS_2). Pyrite is pervasive throughout the Cambridge Argillite: as euhedral crystals (hydrothermal growth), as framboids, as the "thin coating" on Kaye's microspherules, and as the now-dissolved cubes leaving "cubic holes" throughout the formation. The hydrothermal sulfide system also produced the polymetallic ore assemblage—arsenopyrite, galena, chalcopyrite, sphalerite—distributed as accessories throughout the rock. (Thompson 2020). The sulfur budget of the basin—sufficient to produce pervasive pyrite plus a full polymetallic sulfide suite—is consistent with meteoritic troilite as a primary sulfur source, supplemented by sulfur mobilized from the target rock.

Cl-apatite is an accessory mineral in ordinary chondrites. Thompson (2020) found apatite to be "ubiquitous" throughout the argillite sequence. Anderson (2008) identified euhedral apatite—well-formed crystals that grew freely from a fluid or melt. The Main Drainage Tunnel samples showed P_2O_5 enrichment at twenty times the crustal average. (Gillette Phase II CSA). O'Donnell (2008) documented white silt laminae containing iron, aluminum, silicon, and phosphate.

The extreme phosphorus enrichment has three converging impact-related sources: chondritic Cl-apatite distributed through the target rock; reactive phosphorus produced by impact-generated fulgurites (Hess, Piazolo & Harvey 2021); and hydrothermal mobilization and reprecipitation of phosphorus from both sources as euhedral apatite. Whether the Boston apatite is specifically chlorine-bearing (Cl-apatite) rather than fluorine- or hydroxyl-bearing has not been determined. A single electron microprobe analysis of the apatite's halogen content would test this: Cl-apatite would confirm a meteoritic contribution.

Chromite ($FeCr_2O_4$) is an accessory mineral in ordinary chondrites and is used as a meteoritic tracer in marine sediments. Boston Harbor sediments contain chromium at 20–437 mg/kg (22x spatial variation), and at Calf Island, the picro-basalt shows Cr at 1,763 ppm and Ni at 1,040 ppm. (Boston Harbor Seminar Series 1987; Ross 1990). Chromium and nickel together at these concentrations—Cr approaching

meteoritic values in an ultramafic-composition rock within an otherwise sedimentary basin—are consistent with meteoritic chromite and Fe-Ni metal contamination of the target rock. The extreme spatial variability (22x for Cr, 69x for Zn) is inconsistent with uniform anthropogenic input and consistent with heterogeneous meteoritic contamination of the substrate.

Boston Harbor's surface sediments contain well-documented anthropogenic contamination from over a century of sewage discharge, industrial waste, and stormwater runoff. This contamination is real and is not disputed. However, the impact-processed bedrock beneath the harbor is an additional, uncharacterized source of metals that is actively leaching into the harbor through specific geological mechanisms—and no site characterization has ever accounted for this natural contribution.

The primary mechanism is acid mine drainage from impact-generated sulfide minerals. The pervasive pyrite throughout the Cambridge Argillite is actively oxidizing, generating sulfuric acid as it dissolves. Ehrenfried documented pyrite crystals that "have rusted completely away, leaving behind nothing but holes"—this process is ongoing. The sulfuric acid attacks surrounding rock, dissolving metals from the hydrothermal ore assemblage: copper and zinc from chalcopyrite and sphalerite, arsenic from arsenopyrite, lead from galena, chromium from chondritic chromite. These dissolved metals enter the groundwater system and are transported through the impact-generated fracture network—water-transmitting fractures confirmed to 1,000 feet depth—and ultimately discharge into the harbor from below.

The kaolinized zones serve as preferential flow paths for this metal-laden groundwater. Kaolinite is more permeable than intact argillite. Where the bedrock is most severely destroyed, water flows fastest, contacts more sulfide mineral surfaces, mobilizes more metals, and delivers them to the harbor. The topographic lows of the basin—which Barosh (2011) showed correspond to the most intensely altered rock—are also where groundwater discharge is concentrated. The most contaminated zones of the harbor may be directly over the most severely impact-damaged bedrock, receiving the highest flux of naturally leached metals.

This mechanism explains observations that have puzzled researchers. Tuit, Ravizza & Bothner (2000) found that platinum and palladium "may not be decreasing with cessation of sludge input as rapidly as other metals." Anthropogenic metals (lead, mercury) decrease after source removal because their source was the sludge pipe. Platinum and palladium are not decreasing because their primary source is not the sludge—it is the bedrock. Meteoritic Pt and Pd, distributed through the impact-processed substrate, are continuously leaching into the harbor via groundwater flow through the fracture network. The sludge pipe was shut off; the bedrock was not. The Pt/Pd flux will continue as long as groundwater circulates through impact-processed rock, which is to say indefinitely.

The 22x spatial variation in chromium and 69x variation in zinc in harbor sediments (Boston Harbor Seminar Series 1987) reflect both anthropogenic source distribution and, beneath that, the heterogeneity of the leaching substrate. Areas where impact-processed bedrock is closest to the harbor floor—where the most severely altered, sulfide-rich rock is in most direct contact with circulating groundwater—receive the highest natural metal flux. The contamination map of the harbor is the superposition of two patterns: anthropogenic contamination from above and natural impact-derived

leaching from below. No remediation model has ever separated these two contributions because the impact-derived component was never known to exist.

The Army Corps of Engineers dredged 184,299 cubic yards of boulders and rock debris from one harbor area. This material—rock from the harbor floor, not surface sludge—includes impact ejecta: ballistic clasts and shattered bedrock containing the full suite of meteoritic and hydrothermal minerals. Where this dredge material was deposited determines where impact-derived metals were redistributed. If rock debris from the harbor floor was used as fill material, the fill contains impact-processed substrate with its associated metal load, placed beneath communities that have never been assessed for naturally elevated metals from this source.

Olivine ($Fo_{71}Fa_{29}$) is the dominant mineral in ordinary chondrites. Olivine alters readily to chlorite and serpentine in the presence of hydrothermal fluids. La Forge (1932) documented that across the basin, "in the granites and syenites the dark minerals have been very largely altered to chlorite and limonite." Thompson (2020) found Fe-rich chlorite (chamositic, Fe/FeMg = 0.60–0.75) pervasive in the argillite, including as opaque laminae. Wu (1986) included chlorite among the secondary minerals produced by "some kind of hydrothermal force." The iron enrichment of the chlorite above normal sedimentary values is explained if some of the iron source is chondritic olivine (iron-bearing) and Fe-Ni metal, rather than purely terrestrial.

Platinum and palladium at five times background in Boston Harbor sediments, with ratios that "cannot preclude other sources" than anthropogenic. (Tuit, Ravizza & Bothner 2000). Chromium at 1,763 ppm at Calf Island, with extreme spatial heterogeneity. Nickel at 1,040 ppm co-located with the chromium. Each of these—platinum group elements, chromium, nickel—is independently used as a meteoritic tracer in impact studies. Any one in isolation might be attributed to industrial contamination. All three together, in a basin containing every other impact indicator documented in this report, in concentrations and distributions inconsistent with uniform anthropogenic input, constitute three independent meteoritic element signatures converging on the same conclusion.

The Cambridge Argillite is consistently described as "tuffaceous"—containing volcanic ash beds, accretionary lapilli, and fine-grained material interpreted as ash-fall deposits. Thompson (2000, 2020) demonstrated that the immobile trace element ratios of the argillite "fall largely within the field of andesitic rocks on plots of Zr/TiO_2 and Nb/Y," confirming what appeared to be a volcanic ash signature.

However, suevite—impact breccia containing glass fragments, shocked minerals, and melt particles in a fine-grained matrix—is macroscopically indistinguishable from volcanic tuff. Both contain: glass fragments or their alteration products; fine-grained matrix; mixed-lithology clasts; and accretionary structures. Impact melting of average continental crust produces andesitic bulk composition because average continental crust IS andesitic. The trace element method used to identify "volcanic" origin cannot distinguish between volcanic ash and impact-processed continental crust. The method identifies composition, not process.

The accretionary lapilli documented by Thompson (2000)—"inversely graded from silt-size crystals at the base to coarser accretionary lapilli or volcanic ash clusters at the top"—form in volcanic eruption columns and in impact vapor plumes. They are morphologically identical from both processes. At the K-Pg boundary, accretionary lapilli are a primary impact indicator. In the calcareous argillite at

Mystic River Quarry, calcite alteration was so extensive it "obliterated textures" while the beds "nevertheless retain the trace element signature of less altered ash." (Thompson 2000). Complete textural destruction with trace element preservation documents total recrystallization—consistent with impact-generated carbonate flooding of the host rock.

Billings (1976) described the alteration products as "white, ashy, tuffaceous, glassy, and being extremely fragile." These are the descriptors of suevite alteration: white from kaolinization, ashy from fine-grained matrix, tuffaceous from glass-bearing texture, glassy from preserved melt phases, fragile from pervasive fracturing. The "tuffaceous argillite" of the Boston Basin warrants re-examination as potential suevite—impact breccia that has been classified as volcanic because the methods used to characterize it cannot distinguish between the two origins, and no one has looked for the distinguishing features: shocked minerals, meteoritic signatures, or chondritic mineral chemistry.

Every mineral, fracture, and alteration feature in the Boston Basin is an instrument that recorded a measurement during and after the impact event. The data have been preserved in the rock for 12,900 years. They have been extracted by dozens of investigators. They have never been read as a single dataset.

The temperature-dependent minerals documented across the basin record a single hydrothermal system cooling from extreme temperatures to ambient. Myrmekite formation requires 400–600°C; it is present in the argillite (Thompson 2020). Titanite forms at 400–700°C; it is universal across the basin (La Forge 1932). Epidote forms at 200–400°C; it occurs in altered dike zones (Ross 1990). The polymetallic sulfide assemblage deposits from 200–400°C fluids; it is distributed as accessories throughout the formation (Thompson 2020). Coarsely crystalline kaolinite (0.3 mm—150 times larger than weathering kaolinite) forms from hydrothermal fluids above 175°C (Kaye 1967). Anderson (2008) estimated bulk recrystallization at 175–250°C. In the fracture networks, quartz-healed joints (precipitating above ~200°C) formed before calcite-healed joints (precipitating below ~200°C)—both are present at MW-808B, recording the cooling transition.

This is a thermal decay curve: >700°C → 400–600°C → 200–400°C → 175–250°C → 100–200°C → ambient, recorded in six independent mineral systems. The spatial pattern matches: titanite (highest T) is basin-wide; alteration intensity increases toward the basin center (Ross 1990); Cape Ann dikes are "generally less altered" than Boston Basin dikes. A single heat source at the basin center, cooling outward and downward over time.

Rock Quality Designation (RQD) measures the percentage of a core run recovered as intact pieces longer than 10 centimeters: 90–100% is excellent rock, 75–90% is good, 50–75% is fair, 25–50% is poor, and below 25% is very poor. At nearly every boring in the basin center, RQD is 0%—not "very poor" but off the bottom of the classification entirely. Zero intact pieces longer than a hand's width across twenty-five continuous feet of coring (MW-809B). At MW-404B, RQD varies from 0% to 93% over short distances—the transition from the damage zone to relatively intact rock.

At confirmed impact structures, RQD measurements are used to map the damage zone: RQD decreases toward the impact center. If RQD were mapped systematically across the Boston Basin, the resulting contour map would delineate the crater. The data to produce this map already exist in dozens of boring logs across the basin. No one has assembled them because no one was mapping impact damage.

MW-808DB recorded "calcite healed joints, cross foliation and are offset by microfaults." This is a clock. Event 1: impact fractures the rock. Event 2: hydrothermal calcite precipitates in the fractures, healing them. Event 3: crater settling or structural adjustment creates microfaults that offset the already-healed joints. The time between fracturing and microfaulting is constrained by calcite precipitation rate in hydrothermal systems: days to years. This records active structural adjustment during ongoing hydrothermal circulation—exactly what occurs in an impact crater during post-impact settling. If these were separate tectonic events millions of years apart, the calcite would have been recrystallized or dissolved before the microfaulting.

MW-808B contained both quartz-healed and calcite-healed joints. Quartz precipitates from hydrothermal fluids above approximately 200°C; calcite predominantly below 200°C. Their presence in different joint sets at the same location records a system that cooled through the quartz-calcite transition: early fractures (formed during or immediately after impact) filled with quartz while the fluid was hot; later fractures (from crater settling) filled with calcite as the fluid cooled. The microcrystalline siderite at 0.002 mm grain size (Kaye 1967) records rapid quenching of iron-carbonate-saturated fluid—slow formation would produce larger crystals. The system experienced rapid thermal pulses followed by cooling, consistent with episodic fluid release during crater adjustment.

Kaye's (1967) State Street Tower diabase shows a complete gradient from "partly altered hard dark-gray diabase" to "soft white material." This gradient exists within a single rock body. The outer margin—nearest the fracture or fluid pathway—is completely altered; the interior is only partially altered. This is a preserved fluid front: the boundary between rock that was fully penetrated by hydrothermal fluid and rock that was only partially reached. At confirmed impact structures, such fluid fronts are used to calculate fluid temperature, flow rate, and duration. This single diabase body contains sufficient information to model the Boston Basin's hydrothermal system.

Ross (1990) documented that Boston dikes have anomalous chemistry relative to regional Eastern North American dikes: higher TiO_2, higher K_2O, lower SiO_2, lower MgO. These anomalies are typically interpreted as evidence of a "different magma source." But if the dike magma intruded through impact-altered host rock, it would have absorbed the chemistry of that host rock. High TiO_2: the magma picked up titanium mobilized by impact hydrothermal alteration. High K_2O: the magma picked up potassium redistributed by the hydrothermal system. Low SiO_2: silica had been removed from the host rock by prior hydrothermal leaching. Low MgO: magnesium had been stripped by alteration. The Boston dikes are not from a different magma source. They are from the same regional magma that was contaminated by passage through impact-processed rock. Their "hybridized" character and xenocrystic plagioclase and microcline (Ross 1990) are samples of the impact-altered substrate, preserved in the dike like insects in amber.

For two centuries, investigators have described features of the Boston Basin using the vocabulary available to them. The following is a partial translation of historical observations into the framework established by this analysis. In each case, the original observation is accurate. Only the interpretive label has changed.

What was called "glacial till" is impact ejecta and fallback breccia—shattered bedrock with "broken pieces of underlying bedrock material" (Barosh 2011) exhibiting cubic cooling joints up to 50 feet (volumetric contraction of hot ejecta, not glacial compaction) and containing siderite crystals in its pebbles

(hydrothermally altered clasts). What was called "drift" dispersed through a 135-degree arc (Brenninkmeyer 1984) is material radiating from a point source—an ejecta pattern, not an ice-flow pattern.

What was called "tuffaceous argillite" may be suevite—impact breccia indistinguishable from tuff by the methods used to classify it. What was called "deep weathering" is hydrothermal destruction: kaolinite veins, coarsely crystalline kaolinite 150 times larger than weathering products, mineral-by-mineral replacement controlled by host rock chemistry, and alteration at 300 feet depth that no surface process can reach.

What were called *Bavlinella* microfossils (Kaye 1984) are pyrite-coated spherules with no confirmed organic content at sizes smaller than the proposed organism—matching the morphological description of impact microspherules documented at fifty sites worldwide. What were called *Aspidella* fossils are structures that "superficially resemble a small crater" forced into a "junkyard taxon" (Persons 2008). What were called fossilized tree trunks are injection pipes with magnetite-bearing matrices formed by pressure-wave liquefaction.

What was called a "bedrock trough" channeling contamination at Fort Point Channel is the damage crater from a 33-ton ballistically emplaced megaclast. What were called "glacial pot holes" 100 feet deep are collapse structures in shattered bedrock. What were called "funnel-shaped downfolds" 100–200 meters across in the clay are the clay draping into individual fragment craters.

What was called "prismatic or cubical jointing" in the clay, attributed to freezing, may be cooling joints from hot deposition—the same process that creates columnar joints in basalt, occurring in thermally deposited impact-derived sediment. What was called "Cretaceous or Tertiary strata" beneath Dorchester (Pearsall 1937) was kaolinized argillite misidentified as younger sediment because no one could explain why 570-million-year-old rock was soft and white.

What Dana (1818) called "phosphorescent quartz" that "exhales a peculiar odor" is shocked quartz exhibiting triboluminescence from lattice defects. What Hitchcock (1833) described as harbor islands that "seem obviously the wrecks of one continuous diluvial formation" is an ejecta field. What Clapp (1907) could not explain—boulders in white clay, "unlike general clay found in Boston," with the well driller reporting "peculiar soft white deposits" across the city—is impact regolith with ballistic clasts.

Every observation is correct. Every original investigator documented what they saw accurately. The descriptions have been in the published literature for decades, in some cases for two centuries. What was missing was the framework to connect them. Once the framework is supplied, the data do not need to be reinterpreted. They need only to be read and reconsidered in this new light.

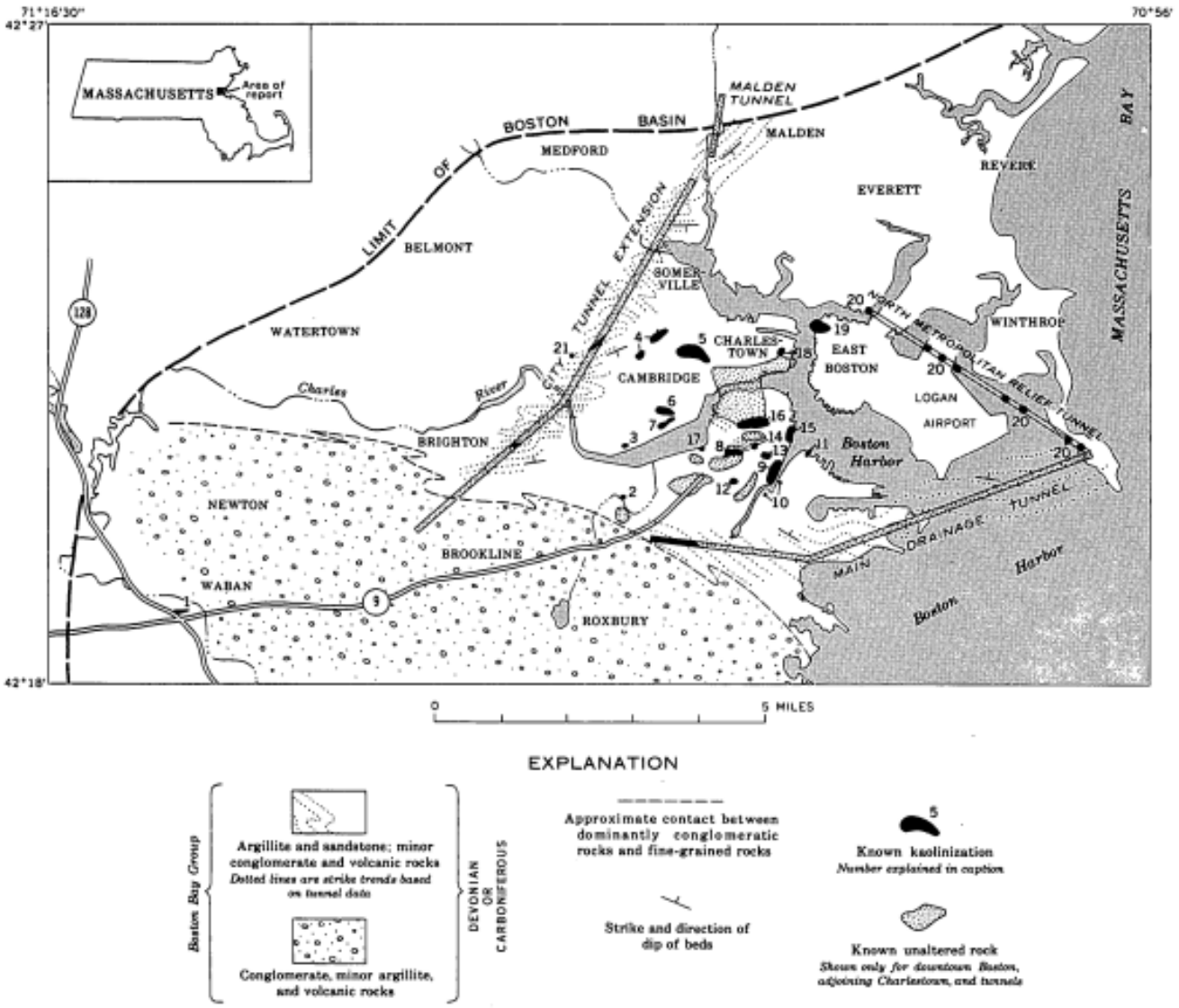
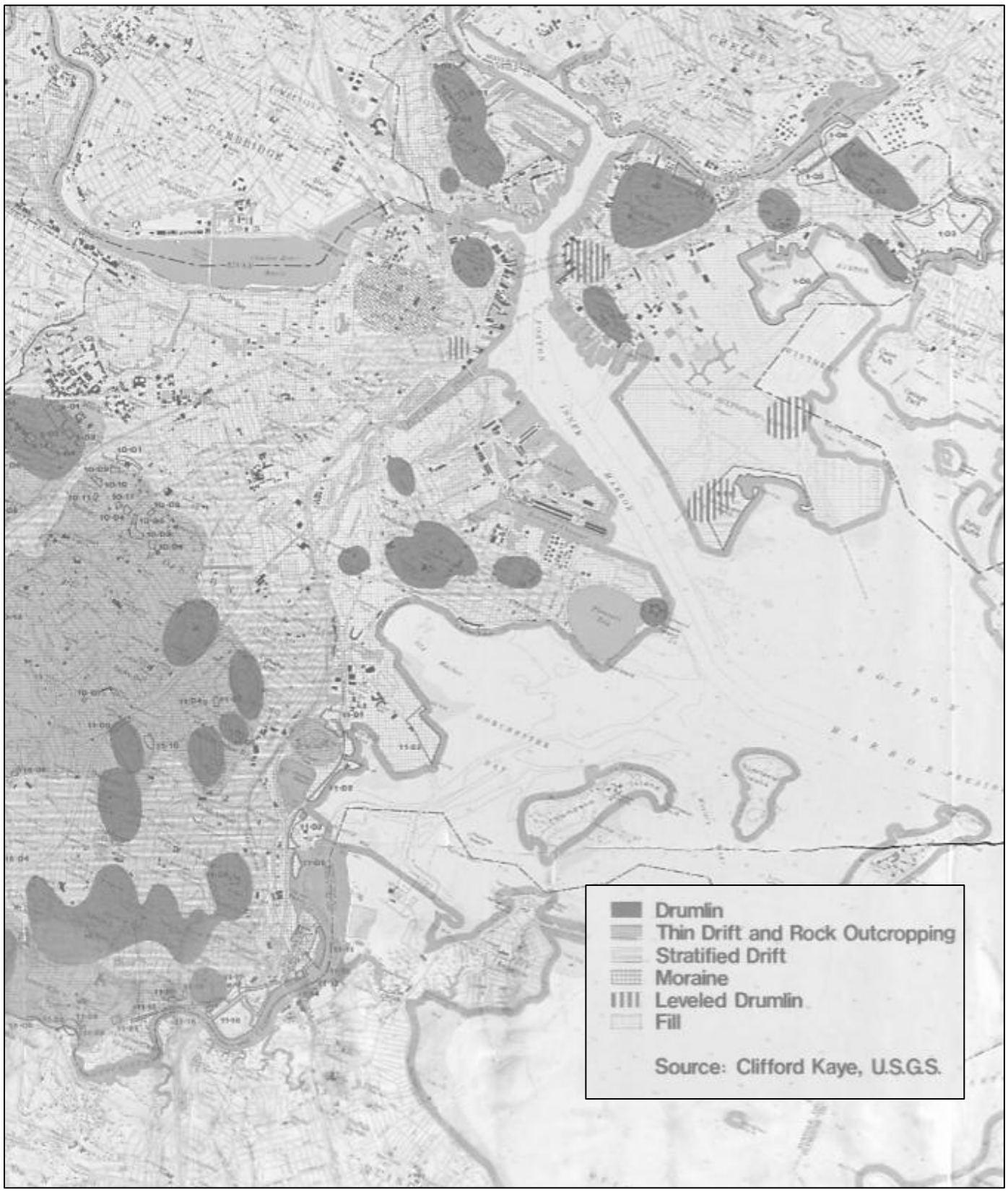


FIGURE 1.—Map of the Boston area showing the areas of known kaolinization, the bedrock tunnels, and the generalized geology of the Boston Bay Group. Occurrences of kaolinization are as follows: *1.* Intersection of Routes 128 and 9; *2.* Fenway, in front of Sears Roebuck store; *3.* Memorial Drive; *4.* Inner Belt route; *5.* Boston and Maine freight yards; *6.* Broad Canal; *7.* Green Building, M.I.T.; *8.* Boston Common; *9.* South Station Postal Annex; *10.* Gillette Safety Razor plant; *11.* Pier 2; *12.* Castle Square; *13.* Former site of Stone and Webster Building, and the New England Telephone and Telegraph Building; *14.* West side of Washington Street at intersection of Water Street; *15.* Atlantic Avenue; *16.* Government Center; *17.* Beacon and Clarendon Streets; *18.* Charlestown Navy Yard; *19.* East Boston; *20.* Borings for North Metropolitan Relief Tunnel; *21.* Memorial Hall, Harvard University.



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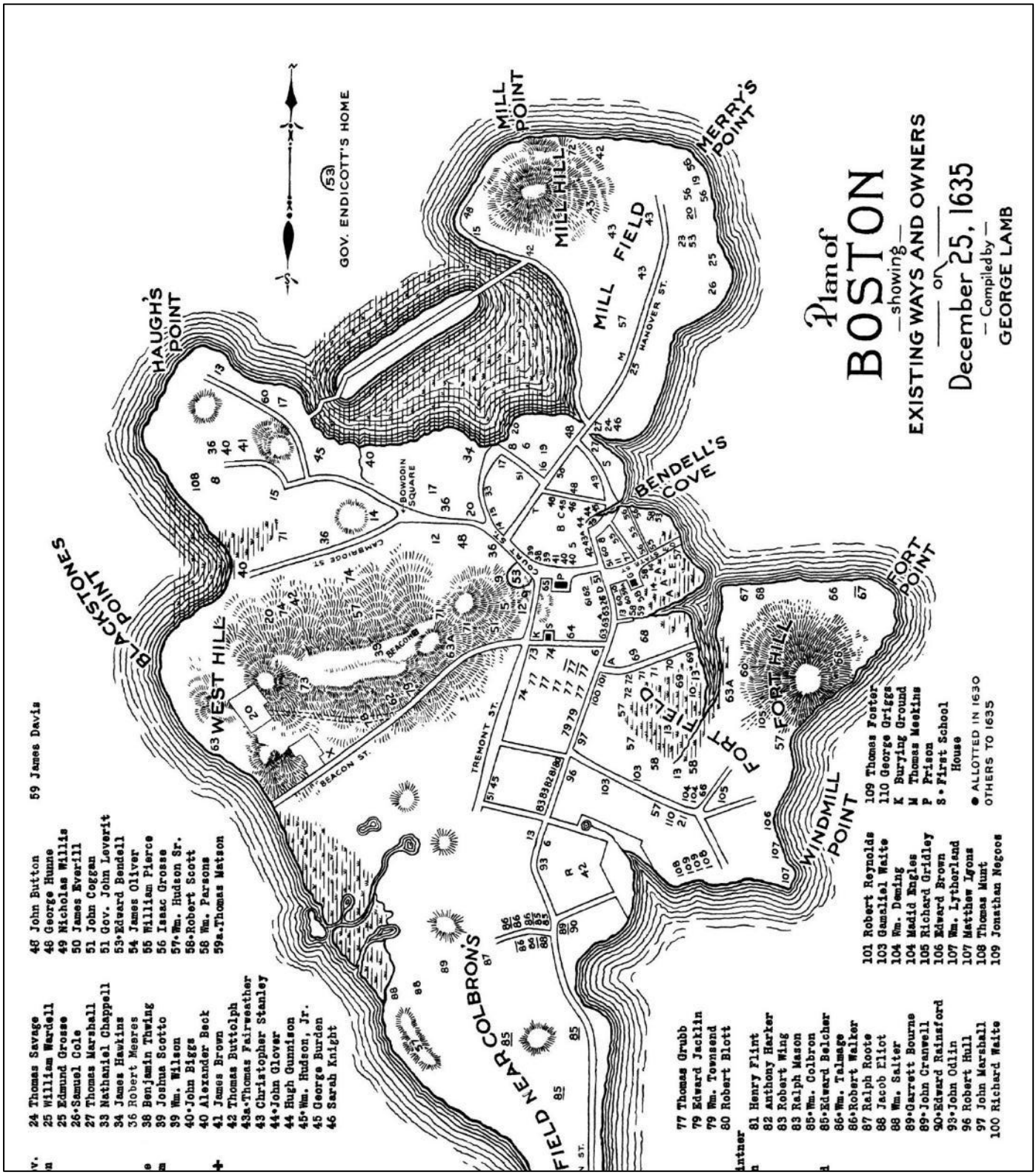

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IMPLICATIONS FOR SITE CHARACTERIZATION, CERCLA, AND THE CLEAN WATER ACT

The geological evidence presented in the preceding sections is not of purely academic interest. If the Boston Basin is a Younger Dryas impact site, then the foundational assumptions underlying every environmental site characterization, every remediation plan, every cleanup target, and every contaminant transport model in the basin are incorrect. The consequences cascade from geology through hydrology through chemistry through regulatory compliance through environmental justice.

The Conceptual Site Model for the Boston Basin Is Fundamentally Incorrect

Every environmental site assessment in the Boston Basin operates from the same conceptual site model (CSM): artificial fill overlying organic deposits overlying marine clay (the Boston Blue Clay, treated as a confining layer) overlying glacial till overlying bedrock (treated as an impermeable base). Contamination is assumed to migrate downward through these layers according to their permeability. Remediation plans are designed to intercept contamination within this layered framework. Monitoring wells are placed at depths consistent with this model. If the basin is an impact site, this model is wrong in every layer.

The Clay is treated as the primary confining unit preventing downward contaminant migration. However, the clay contains "many lenses of fine sand, local strata and pockets of granular soils and occasional boulders" (Aldrich 1970). It has "deep funnel-shaped downfolds on the order of 100 to 200 meters across" (Barosh 2011) that may connect directly to the damaged bedrock surface below. It is composed substantially of "rock flour" (Barosh 2011)—impact-pulverized bedrock, not pure marine clay. It drapes over irregular impact topography rather than forming a uniform seal. Sand lenses, boulder inclusions, and funnel-shaped penetrations create preferential pathways through which contamination can bypass the "confining" layer and reach the underlying damaged bedrock.

The material classified as glacial till consists of "broken pieces of the underlying bedrock material" (Barosh 2011) with cubic cooling joints up to 50 feet, hydrothermally altered clasts containing siderite crystals, and a composition that varies with the underlying bedrock because it IS the underlying bedrock, shattered and redeposited. Its hydraulic properties—permeability, porosity, geochemistry—are those of pulverized, hydrothermally altered argillite, not glacial sediment. Site assessments that model the till as a glacially deposited unit with assumed hydraulic conductivity values from glacial till literature are using the wrong parameters.

The most consequential error in the conventional model is the treatment of bedrock as the bottom of the contamination problem. In the standard CSM, contamination is assessed down to the bedrock surface and no further. Bedrock is assumed to be intact argillite with negligible permeability.

The actual bedrock has RQD of 0% at nearly every boring in the basin center—more fractured than the till above it. It contains fracture-controlled aquifer zones 410 feet thick (East Berkeley Street), with water-transmitting fractures confirmed to 1,000 feet depth (Harrison Avenue). Kaolinized zones are more permeable than intact argillite, creating preferential flow paths that follow the alteration pattern. The Gillette Phase II CSA (1998) documented dissolved VOCs traveling through bedrock groundwater in a trough that corresponds to the location of a ballistically emplaced 33-ton megaclast.

No environmental site assessment in the Boston Basin has evaluated contamination below approximately 50 to 100 feet in bedrock, because the model assumes bedrock is the base of the system. Contamination that has migrated into the impact-generated fracture network—through kaolinized zones, along healed joint surfaces, into the deep aquifer systems—is invisible to the current monitoring infrastructure. It is not being detected because no one is looking for it at those depths.

The impact-generated mineralogy of the Boston Basin is not merely a pathway for anthropogenic contamination. It is itself generating contamination through ongoing geochemical processes that have been active for 12,900 years and will continue indefinitely.

Pyrite oxidation in the Cambridge Argillite is actively producing sulfuric acid. The acid dissolves metals from the surrounding hydrothermal ore assemblage: copper and zinc from chalcopyrite and sphalerite, arsenic from arsenopyrite, lead from galena, chromium from chondritic chromite residues in the substrate. These dissolved metals enter groundwater, are transported through the fracture network, and discharge into surface water and harbor sediments from below. This is functionally identical to acid mine drainage from mining operations—but no regulatory framework has ever classified the Boston Basin as an acid-generating substrate, because the impact origin of the sulfide mineralogy has never been recognized.

In a mining context, acid mine drainage triggers specific regulatory obligations under CERCLA and state equivalents: characterization of the acid-generating potential, assessment of downstream impacts, and long-term management of the discharge. The Boston Basin's impact-generated sulfide minerals create the same acid drainage with the same downstream consequences. The only difference is that the "mine" is natural—a 12,900-year-old impact event that mineralized the bedrock with sulfides across the entire basin.

Multiple borings report hydrogen sulfide at the bedrock contact: "PEAT; strong rotten egg odor" (B-452), "strong hydrogen sulfide odor" (MW-811B). (Gillette boring logs 1996–1997). Hydrogen sulfide (H_2S) is toxic at low concentrations and is generated by the anaerobic decomposition of the same pyrite that generates sulfuric acid under aerobic conditions.

No environmental site assessment in the Boston Basin has evaluated H_2S as a vapor intrusion pathway from natural sources. Vapor intrusion assessments focus on volatile organic compounds from anthropogenic contamination. But H_2S generated from impact-emplaced pyrite decomposition is a natural vapor intrusion source that operates independently of any anthropogenic contamination and cannot be remediated by removing an industrial source. Every building in the basin with a foundation penetrating the organic deposits or contacting the bedrock surface is potentially exposed to H_2S from this uncharacterized natural source.

Boston Harbor's surface sediments contain well-documented anthropogenic contamination from sewage and industrial discharge. This contamination is real and not disputed. However, the impact-processed bedrock beneath the harbor is an additional, uncharacterized source of metals that is continuously leaching into the harbor via groundwater.

Groundwater circulates through the impact-fractured bedrock, contacts pyrite and ore minerals, mobilizes dissolved metals through acid dissolution, and discharges into the harbor from below. The most severely damaged zones—which Barosh (2011) showed correspond to the topographic lows where

groundwater discharge is concentrated—deliver the highest natural metal flux. Tuit, Ravizza & Bothner (2000) found that platinum and palladium in harbor sediments "may not be decreasing with cessation of sludge input as rapidly as other metals." The Pt and Pd are not decreasing because their source is not the sludge pipe. Their source is the bedrock, continuously leaching meteoritic platinum group elements through the fracture network. The sludge pipe was shut off; the bedrock cannot be.

Environmental site assessments compare measured contamination against "background" concentrations that represent assumed pre-industrial natural conditions. In the Boston Basin, background samples collected from "uncontaminated" locations are drawn from soils and sediments overlying impact-processed bedrock that has been leaching meteoritic and hydrothermal metals for 12,900 years. The "background" already contains elevated chromium (from chondritic chromite), nickel (from meteoritic Fe-Ni metal), platinum group elements (from the impactor), arsenic (from arsenopyrite), lead (from galena), copper (from chalcopyrite), and zinc (from sphalerite)—none of which has ever been separated from the anthropogenic component.

The consequences of uncharacterized impact-derived background metals propagate through every regulatory decision. Cleanup targets based on background may be set at levels that include natural impact-derived metals, making them either unachievable (if the natural component exceeds the target) or insufficiently protective (if the natural component is treated as "safe" and added anthropogenic contamination is measured only as the increment above it). Sites may be classified as "contaminated" when they are at natural impact-derived levels, or classified as "clean" when significant anthropogenic contamination is hidden within the natural variability. Under the Massachusetts Contingency Plan, Method 1 and Method 3 standards rely on background characterization that does not account for this source. Under CERCLA, Remedial Investigation and Feasibility Studies that do not characterize the natural impact-derived metal contribution cannot accurately define the nature and extent of contamination.

The cleanup of Boston Harbor is a landmark achievement of the Clean Water Act. Billions of dollars invested in the Deer Island treatment plant, combined sewer overflow controls, and industrial pretreatment have dramatically improved water quality for sewage-derived indicators. This investment was essential, its results are real, and nothing in this analysis diminishes it.

However, if the bedrock beneath the harbor is continuously leaching metals via groundwater discharge through the impact-generated fracture network, then certain water quality targets for metals may be physically unachievable regardless of how completely anthropogenic sources are controlled. The platinum that will not decrease after sludge cessation is the indicator: it reveals a source that cannot be turned off because it is the earth itself. Monitoring programs that track metal concentrations as indicators of cleanup progress must account for the irreducible natural baseline from bedrock leaching. Without this accounting, failure to meet metal targets will be attributed to ongoing anthropogenic discharge when the actual source is geological.

This does not argue against the harbor cleanup. It argues for understanding what the cleanup can and cannot achieve, and for correctly attributing residual contamination so that regulatory resources are directed at sources that can actually be controlled.

Every contaminant fate and transport model in the Boston Basin assumes contamination migrates primarily downward through a layered stratigraphy, with lateral movement controlled by layer geometry and hydraulic gradients. In an impact-damaged substrate, contamination moves differently.

Lateral migration through fracture networks: The impact-generated fracture network connects sites laterally at depths that no surface investigation would predict. Contamination from one property can migrate to another through impact fractures in bedrock, bypassing the overlying clay "confining layer" entirely. The fracture network does not respect property boundaries, MCP disposal site boundaries, or municipal boundaries.

Upward migration via artesian pressure: Deep fracture systems under artesian conditions can drive contamination upward into shallower zones. The multiple aquifer zones documented at different depths (150–560 ft, 240–260 ft, 420–421 ft, 865–1,060 ft) in the geothermal wells may have different hydraulic heads, creating vertical gradients that move contamination up as well as down.

Preferential flow along impact damage: Kaolinized zones, bedrock troughs (megaclast damage craters), and healed fractures with soluble calcite or quartz fill create preferential flow paths that concentrate contamination along impact features. The VOC plume at the Gillette site traveling through a bedrock trough—a feature that coincides with a ballistically emplaced 33-ton boulder—demonstrates this mechanism in practice. Every mapped "bedrock valley" or "fault" in the basin is a potential preferential flow path of this type.

Depth of impact: Contamination that enters the impact-generated fracture network can migrate to depths of 1,000 feet or more, far below any existing monitoring well. No assessment framework currently in use contemplates contamination at these depths because the conventional model treats bedrock as impermeable at tens of feet below its surface. The actual depth of the contamination problem in the Boston Basin may be an order of magnitude greater than any existing assessment has characterized.

Approximately one-third of modern Boston is built on artificial fill. This fill was sourced from harbor dredging (removing boulders and sediment from the harbor floor), drumlin removal (leveling hills to fill tidal flats), and excavation of construction sites across the city. (Aldrich 1970; Seasholes 2003).
If the drumlins are impact ejecta mounds containing shattered, hydrothermally altered bedrock with meteoritic and hydrothermal metals, then drumlin material used as fill contains those metals. If harbor dredge spoils are impact ejecta and shattered bedrock from the harbor floor, then dredge-derived fill contains impact-processed substrate. If excavated "bedrock" was kaolinized, sulfide-bearing impact-altered rock, then that material was placed as fill with its associated acid-generating pyrite and dissolved metal load.

The neighborhoods built on this fill—Back Bay, the South End, the Seaport, East Boston, South Boston, portions of Charlestown and Roxbury—are built on material that has never been characterized for naturally elevated metals from impact processing. The fill is assessed for anthropogenic contamination (lead paint, petroleum, industrial solvents) but the "clean fill" designation assumes that the rock and soil used as fill was geochemically normal. If it was impact-processed rock containing chondritic metals and hydrothermal sulfides, then the fill itself is a source of metals and acid that has been placed directly beneath communities.

The communities most affected by contamination in the Boston Basin—Roxbury, Dorchester, East Boston, South Boston, Chelsea, Charlestown—are disproportionately low-income and communities of color. These communities are concentrated in the low-lying areas of the basin that were created by filling tidal flats and marshes.

These low-lying filled areas correspond precisely to the zones of maximum impact damage. Barosh (2011) documented that the "cause-and-effect relationship of low topography and deep bedrock with altered rock is notable." The areas that are low—that required filling to become buildable—are low because the underlying bedrock was most thoroughly destroyed by the impact and its hydrothermal aftermath. The communities built on these filled lowlands are therefore situated over the most severely impact-damaged bedrock, receiving the highest flux of naturally leached metals through groundwater discharge, sitting on fill that may itself be composed of impact-processed material, and exposed to H_2S vapor intrusion from the most sulfide-rich substrate.

These communities bear the double burden of well-documented anthropogenic contamination from decades of industrial activity, combined with uncharacterized natural impact-derived contamination that no regulatory framework has ever identified. Because the impact component has never been recognized, remediation plans for sites in these communities do not address it. The environmental injustice is compounded: the most vulnerable communities are exposed to a contamination source that does not officially exist.

The evidence presented in this notice establishes that the geological framework underlying all environmental site characterization in the Boston Basin is incorrect. The following actions are required to bring site characterization, remediation, and environmental protection into alignment with the actual geology.

Characterize the natural impact-derived metal contribution. Every "background" metal concentration used in site assessments across the basin must be re-evaluated to separate the impact-derived component from the anthropogenic component. This requires geochemical analysis that has never been performed: identifying the meteoritic and hydrothermal fraction of metals in soils, sediments, and groundwater.

Assess the acid-generating potential of the bedrock. The Cambridge Argillite's pervasive pyrite content must be characterized as a potential acid-generating substrate. Standard acid-base accounting tests used in mining assessments should be applied to argillite samples from across the basin to quantify the ongoing acid drainage and metal mobilization.

Evaluate deep bedrock contamination. Monitoring wells must be installed into the deep fracture systems to determine whether anthropogenic contamination has migrated through the impact-generated fracture network to depths that have never been assessed. The 410-foot-thick aquifer at East Berkeley Street and the 1,000-foot fracture system at Harrison Avenue must be evaluated as potential contaminant pathways.

Re-evaluate contaminant transport models. Every fate and transport model in the basin must be revised to incorporate the impact-damaged substrate: lateral migration through fracture networks, preferential flow along kaolinized zones and bedrock troughs, upward migration under artesian conditions, and the clay's inadequacy as a confining layer.

Assess H_2S vapor intrusion from natural sources. Buildings throughout the basin with foundations contacting the organic deposits or bedrock surface must be evaluated for hydrogen sulfide vapor intrusion from pyrite decomposition—a natural source independent of any anthropogenic contamination.

Characterize fill material. Fill sourced from drumlin removal, harbor dredging, and bedrock excavation must be evaluated for impact-derived metals and acid-generating minerals. Communities built on fill from these sources require assessment for naturally elevated metals from impact processing of the source material.

Re-evaluate Boston Harbor metal targets. Water quality and sediment quality targets for metals in Boston Harbor must be assessed against the irreducible natural baseline from bedrock leaching through the fracture network. Monitoring programs must account for the ongoing geological metal flux to correctly attribute residual contamination and direct regulatory resources at controllable sources.

Conduct impact-specific geological investigation. The existing boring log data, geochemical analyses, and petrographic descriptions assembled in this notice must be supplemented by targeted investigation: electron microprobe analysis of apatite for chlorine content (testing for chondritic Cl-apatite); shocked quartz analysis of the "phosphorescent" quartz and the blue quartz in lonestones; platinum group element ratios in bedrock samples to confirm meteoritic signature; and systematic RQD mapping across the basin to delineate the damage zone.

The geological evidence exists. The boring logs exist. The geochemical data exist. The petrographic descriptions exist. They have been in the published literature and in engineering files for decades, in some cases for two centuries. What has been missing is the framework to connect them. This notice provides that framework. The required response is to test it.

III. THE SITE'S ECOLOGY & BIOTA

Ecological Conditions Establishing the Nature and Severity of Contamination

The ecology of this site constitutes independent evidence of the nature, severity, and continuing impact of the contamination documented throughout this petition. The biological community is not merely degraded — it is dominated almost exclusively by extremophile organisms characteristic of deep-sea hydrothermal vents, volcanic substrates, and the most chemically extreme environments on earth, with a near-total absence of the species expected in a healthy New England tidal estuary. These ecological conditions are continuing violations maintained by ongoing discharges from every named PRP.

The Inner Harbor benthic fauna consists almost entirely of opportunistic deposit-feeding polychaetes — effectively the only multicellular animals surviving the combined chemical, radiological, and organic contamination. A 1967 federal survey documented polychaete densities of 964 per square foot in the Inner Harbor, approaching the 1,000 per square foot threshold designated "grossly polluted." The dominant species, *Polydora ligni*, feeds on sewage-derived organic deposits while adverse substrate conditions — solvents, heavy metals, PCBs, PAHs, and radioactive waste — eliminate virtually all other metazoan life. Overly-abundant pollution-indicating polychaete populations exceeded 200 per square foot across 34 square miles — 80 percent — of Boston Harbor. Approximately 14 square miles were grossly polluted. At Fort Point Channel, the community is dominated by *Nephtys cornuta* with very low

abundances and species counts characteristic of the most impacted zone. *Capitella capitata*, the classic sewage-indicator polychaete, is present throughout. Nematode densities reach 1,000 to 7,000 per cubic centimeter.

Fort Point Channel′s marine zone is dominated by invasive or pollution-tolerant filter feeders — chain tunicates, star tunicates, sea vases, sponges (*Halichondria*), and skeleton shrimp — organisms that bioaccumulate contaminants from the water column. Moon jellyfish (*Aurelia aurita*) blooms observed in 2025 indicate eutrophic conditions. Winter flounder have been documented with hepatocarcinomas, cholangiocarcinomas, and multiple categories of neoplastic liver lesions attributed to contaminated sediments.

Fort Point Channel has persistently elevated bacterial contamination. At BWSC monitoring Station 075, bacterial counts exceeded 10^4/100 ml in 14 of 20 samples (2020) and 15 of 19 samples (2019). The BWSC′s own reports note ″very little correlation exists between rainfall and bacterial contamination,″ confirming CSO events are not the sole or even primary source. *Beggiatoa* mats — sulfur-oxidizing bacteria indicating high sulfide concentrations — are present at outflow points. Iron-oxidizing bacteria were photographed in the Roxbury Canal conduit during the 2018 drone inspection. Iron-reducing bacteria are also known to alter Boston’s yellow, weathered clay back into soft blue clay over six feet into the clay when its overlaid by peat at the Site. (P. J. Barosh 2011).

Entirely absent are the sensitive species expected in a healthy New England tidal estuary: diverse fish assemblages, healthy shellfish beds, salt marsh vegetation, eelgrass meadows, sensitive macroinvertebrates, and clean-water indicator species at every trophic level. Boston Harbor eelgrass had vanished by the late 1980s. Softshelled clam harvesting is prohibited due to contamination.

Inorganic nutrients exceeded 100 and 40 micrograms per liter (ammonia nitrogen and soluble phosphorus respectively) across all reaches, producing phytoplankton densities averaging over 1,000 per milliliter in 66 percent of the harbor. Sea lettuce blooms produce hydrogen sulfide upon decomposition severe enough to discolor homes and, in analogous conditions in Brittany, kill a lorry driver and a horse. The upland community is characterized by wood-decomposing fungi, parasitic plants, rust fungi, and lichen-dominated communities with very few animal species — consistent with a contaminated, organic-enriched urban wasteland.

As discussed in the geological assessment of this petition, the site′s bedrock exhibits features consistent with bolide impact — including hydrothermal alteration, brecciation, and tuffaceous lithology — producing geochemical conditions that favor extremophile communities independent of anthropogenic contamination. The site′s bedrock is fossilless. Nearby sites in Braintree contain abundant trilobite fossils, yet Boston′s Argillite contains no macroscopic biological trace — no fossils, no bioturbation, no evidence of biological activity.

This localized sterilization is consistent with impact rather than glaciation, which does not eliminate the fossil record. If the substrate has been geochemically extreme for 12,800 years, the anthropogenic contamination documented in this petition was discharged into a pre-existing extremophile ecology rather than creating one — a distinction critical for understanding both the full scope of biological hazards and any remediation planning.

"Eel spearing, on the mill pond, Boston." Print. [ca. 1851]. Digital Commonwealth, https://ark.digitalcommonwealth.org/ark:/50959/q811kp776

The Rest of the Boston Basin Hosts Fossils of the Earliest Ediacaran Biota

The Boston Basin was part of the Avalonia microcontinent and, as discussed above, shares its rocks and geologic history with the Avalon Zones in New Brunswick and Newfoundland. The Avalon Zone is the believed to be the home of the earliest "Ediacaran biota" – the first burst of a portfolio of basal Metazoan life (complex organisms with animal-like bodies) starting around ~575 Ma, well before the Cambrian Explosion (~540 Ma). (Shen 2008). There's evidence of this early "burst" of complex life around Boston, including the extensive trilobite fossils in Braintree and Quincy which include at least seven different trilobite species. (Geyer 2001).

The Avalon biota are hypothesized to have evolved in deep water settings and with physiology characteristic of osmotrophy, indicating an ecosystem with excessive bacteria sustaining dissolved oxygen as a nutrient source. (Clapham, Narbonne and Gehling 2003), (Pehr 2018). Recent research indicates these basal animals may have had physiologies much like cyanolichens and tube worms, (Felbeck 1981). and the Avalonia biota may have relied on bacterial chemosymbiosis for nutrition. (Dufour 2016).

During the Avalon explosion, there was an "abundance of sulphate-reducing bacteria close to the seafloor" and the ancient Avalonia biota, such as rangeomorphs like *Fractofusus* in Newfoundland, evolved a ventral surface area designed for biogeochemical interactions, possibly including "microbial phagocytosis" or chemosynthesis with the abundant sulfur reducing bacteria. (Dufour 2016). These bacteria could have also provided these Avalon biota with an oxygen source in otherwise anaerobic waters (a function also recently established with extant crustaceans in hydrothermal vent environments). (Chou 2023).

Close to Boston, there are extensive Ediacaran fossils including multiple species of large trilobites in the Hayward′s Quarry fauna at Braintree, which is the primary site globally for *Paradoxides* fossils. (M. D. Thompson 2020). There are also at least fifty red limestone/shale preserved trilobite fossils on Revere's beach. (Clark 1921-1923). In Hingham, Massachusetts and potentially around Boston, there have been multiple reports of *Aspidella-like* "ring" fossils in Boston's mudstone, yet there has never been a formal paper or documentation of these fossils. (Anderson 2008). The photos also do not look like typical *Aspidella* fossils and perhaps more like spherical voids or impact craters.

Silica, iron, and aluminum are all ideal minerals for preserving organic material – so it would be highly probably that Boston's clay and mudstones could contain preserved microfossils and invertebrate and Boston's marine environment would have likely been well suited for these type of Avalon biota. Yet, Boston's clay and argillite is generally claimed to be fossil-less, with only a few exceptions. Additionally, it appears there are no other public records of investigations into potential fossils or ancient microbial organisms in the Boston rocks or clay. (Bailey R.H 1978). This supports the bolide impact theory but also raises questions about what may remain, if anything, of what was shocked and vaporized.

The Ancient & Novel Organisms Identified in A South End Residential Building

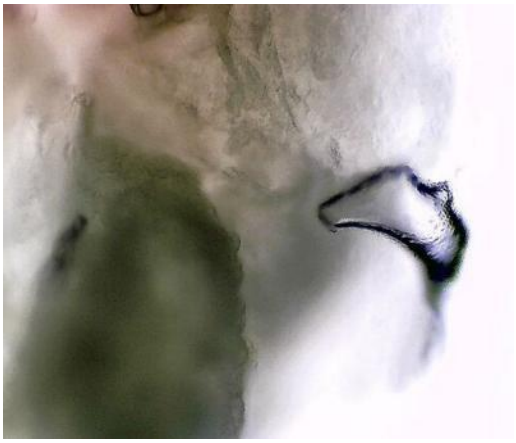
The combined sewer system constructed and operated by the Commonwealth of Massachusetts and the City of Boston, maintained by MWRA, and receiving discharges from every named PRP — including industrial solvents from P&G-Gillette and DuPont, radioactive waste from Harvard Medical School, Boston University Medical Center, and New England Nuclear, pathogenic waste from Boston City Hospital, Harvard Medical School, Tufts Medical, and BU, and municipal sewage from the City of Boston — is the primary infrastructure by which the site′s contaminated ecosystem reaches residential buildings and their occupants. These are continuing conditions maintained by ongoing discharges. The sewer system is operating today. The tidal cycle is pumping today. The organisms are colonizing today.

Between February and May 2025, the Petitioner conducted systematic microscopic and macroscopic examination of organisms present in an 1864 residential basement apartment located 1,200 feet from the Roxbury Canal alignment. Based on extensive comparison with published scientific literature, including species descriptions, diagnostic morphological criteria, and peer-reviewed photographs, the Petitioner made the following morphological identifications:

***Mariprofundus ferrooxydans*.** Morphological identification based on diagnostic curved metallic morphology with characteristic features matching published images of this species. *Mariprofundus ferrooxydans* — literally "ocean-deep iron oxidizer" — is a Zetaproteobacterium first described between 2007 and 2010, originally discovered at deep-sea hydrothermal vents. It has subsequently been documented at the Chesapeake Bay impact crater, in salt marshes, and in mangrove soils. This organism requires a steep oxygen-iron redox gradient and marine or brackish chemistry.

Its presence in a residential building proves that dissolved ferrous iron is flowing from reducing conditions into occupied living space and that the oxic-anoxic interface — which should be deep underground — is at or above the building surface. A closely related freshwater genus, *Leptothrix*, was documented as the causative agent in a patient death at a hospital. The Petitioner additionally documented

apparent morphological forms of this organism not described in published literature, including forms with translucent bodies and bioluminescent green emissions (not fluorescent stain — no stain was applied; bioluminescence is a deep-sea diagnostic trait), forms with blue coloration consistent with iron biomineralization, and forms exhibiting S-curved morphology at 0.1mm scale. These may represent undocumented life cycle stages, morphological plasticity, or closely related undescribed species. If confirmed, this would constitute the first isolation of *Mariprofundus* on land.



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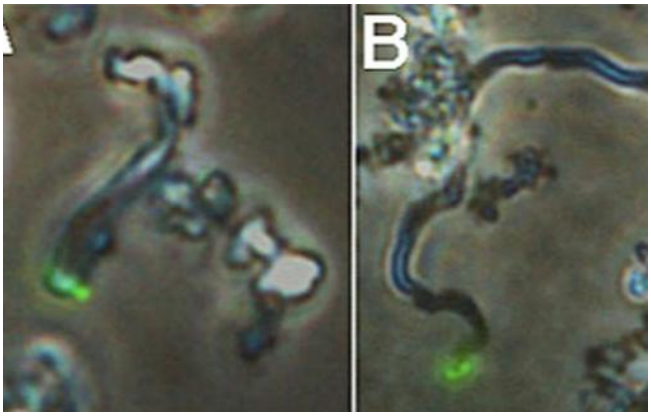
AMG via AmScope @ Worcester Sq.



` *Mariprofundus ferrooxydans*
(D. e. Emerson 2007)

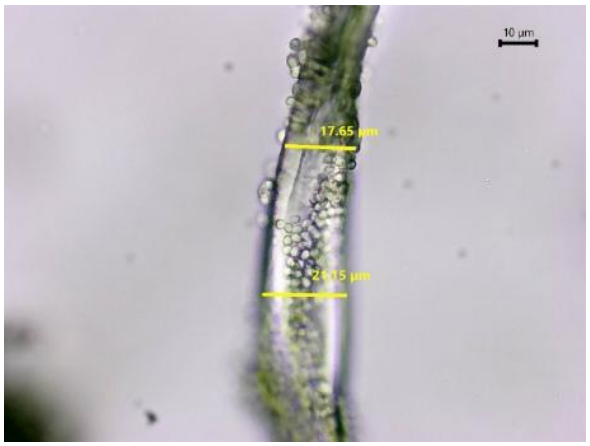
***Beggiatoa*.** White sulfur-oxidizing bacterial mats, macroscopic, hair-like, growing on surfaces including carpet and wall edges. Classic diagnostic morphology. Visible to the naked eye. A wall void in the double-wythe party wall was discovered with dissolution patterns consistent with biogenic sulfuric acid corrosion — the mechanism that destroys concrete sewers — with *Beggiatoa* colonizing the void edges. This void functions as a chimney from the subsurface to occupied living space. *Beggiatoa* requires hydrogen sulfide as an energy source; its presence proves H_2S is reaching residential living space.

Jan. 27 2025` ` ` ` ` ` `
AMG via AmScope @ Worcester Sq.

` *(Biofilm of Beggiatoa-like filaments)*
(Fabio Russo, 2012)

***Thioploca*.** Sheathed filamentous sulfur-oxidizing bacteria with individual spherical cells visible within communal sheaths, measured at 17–21 µm diameter. Textbook diagnostic morphology. *Thioploca* is characteristic of the chemocline between anoxic, sulfide-rich environments and oxygenated surface conditions. It requires both nitrate and sulfide, indicating multiple contamination-derived electron acceptors are present.

***Thiolava* veneris.** Hair-like sheathed filaments with sulfur inclusions, growing on substrate, macroscopic. *Thiolava veneris* was first described in 2017, discovered colonizing freshly formed submarine volcanic lava — its name means "sulfur lava." It is a pioneer colonizer of chemically extreme substrates at volcanic or hydrothermal interfaces. Its presence in a residential building is consistent with a substrate that provides the extreme geochemistry this organism requires.



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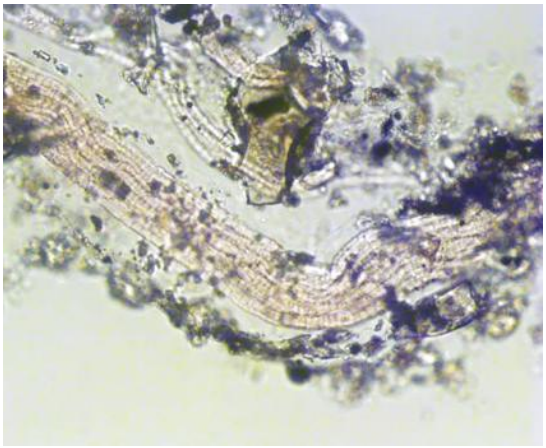


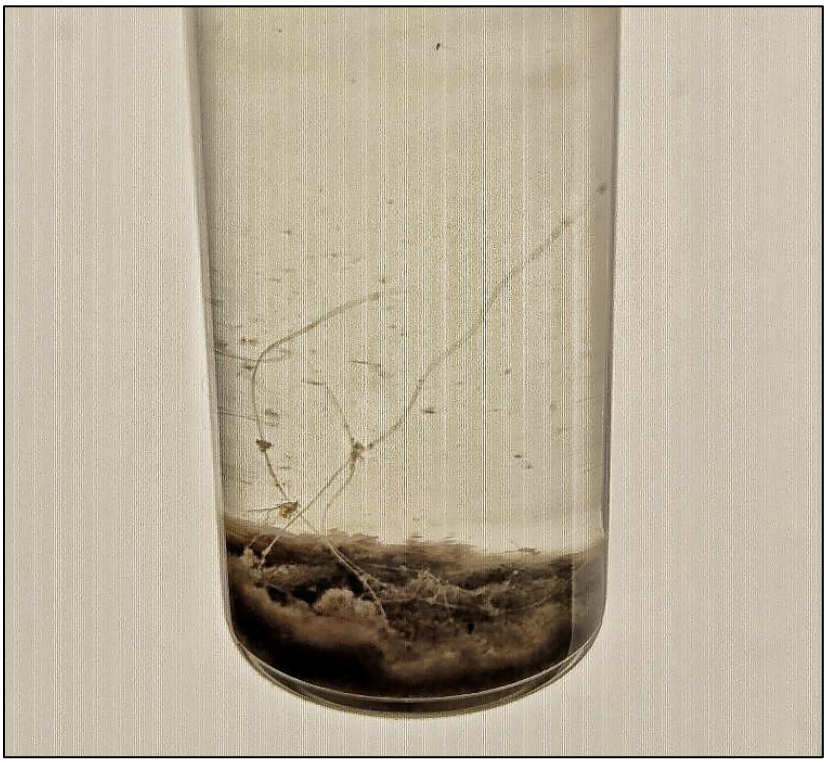
Thiolava
(Danovaro 2017)

Cable bacteria. Cultured from basement samples. These organisms are capable of centimeter-scale long-distance electron transport through filaments of thousands of cells, known to thrive in polluted sediments with 45 times higher abundance than in unpolluted environments. The tidal cycle provides a constantly refreshed redox gradient functioning as continuous energy source. Cable bacteria produced electrical shocks that stunned both Petitioner and her dog when the Petitioner took Lysol with bleach to an apparent microbial mat on the kitchen floor of her apartment. Her dog was unable to walk for two days following the electrocution.

Named organisms — *Mariprofundus ferrooxydans*, *Beggiatoa*, *Thioploca*, and *Thiolava veneris* — are deep-sea, hydrothermal vent, or volcanic substrate specialists. All were first described or significantly characterized only within the last twenty years. All are from the same environment type: extreme geochemistry, iron-sulfur redox gradients, volcanic or hydrothermally altered rock. All are present in the same residential basement in Boston, Massachusetts, over fractured, hydrothermally altered, fossilless silicate bedrock through which marine-influenced groundwater flows.

Marine organisms require marine-influenced water. Their presence confirms tidal intrusion into the building through the combined sewer system. Deep-sea and vent organisms require extreme geochemical conditions. Their presence proves those conditions exist at this location — conditions

created and maintained by the contamination from every named PRP discharged into infrastructure running through geologically anomalous substrate.



Jan. 1. 2026 | Cable Bacteria? | Wor. Sq.

Petitioner's Biological Colonization as Evidence of Exposure

The Petitioner's body was colonized by organisms from this site during the exposure period. Specifically:

- Hair samples are "substantially" Gammaproteobacteria — the class containing the Thiotrichales order to which *Beggiatoa*, *Thioploca*, and *Thiolava veneris* belong.
- Blood analysis was consistent with Zetaproteobacteria bacteremia — the class containing *Mariprofundus ferrooxydans*, an iron-oxidizing bacterium.
- The Petitioner experienced extreme fatigue requiring 14–18 hours of sleep per day and severe cognitive impairment ("brain fog"). These symptoms resolved with supplementation of beef liver (iron source) and turkey tail mushroom, consistent with compensating for iron depletion caused by iron-oxidizing bacteria in the bloodstream. The Petitioner's dog exhibited thick blood during the same period and improved on the same supplements.
- A closely related freshwater genus, *Leptothrix*, was documented as the causative agent in a patient death at a hospital — establishing that organisms in this family are capable of causing fatal illness in humans.

The Petitioner's treatment response constitutes independent evidence of the identity of the colonizing organisms: iron-oxidizing bacteremia produces iron depletion; iron supplementation resolves the resulting symptoms. This is consistent with *Mariprofundus ferrooxydans* or a closely related Zetaproteobacterium. Human blood provides the precise niche this organism requires: iron-rich, oxygenated and deoxygenated

flow cycling, with seawater-derived ionic composition — an environment functionally identical to the oxic-anoxic iron gradient at a hydrothermal vent.

Organisms and Morphological Behaviors Requiring Further Investigation

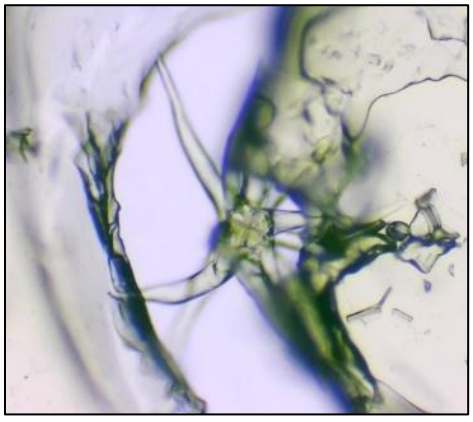
In addition to the organisms identified above, the Petitioner documented organisms and behaviors that do not match any species described in existing scientific literature. Photographic documentation under microscopy and macroscopic observation are available int his Petition/Notice, and more on her website and Flicker. These organisms include:

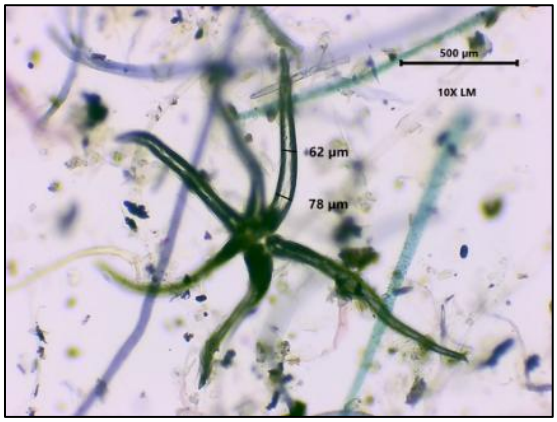
- Organisms exhibiting apparent self-assembly of bacterial-scale cells into segmented, bilaterally organized, metazoan-mimicking body forms within sheath membranes. The metazoan form being replicated — the segmented polychaete — is the only multicellular animal thriving at the Site. This behavior is not described in any published research on bacterial self-assembly, biofilm morphology, or microbial mimicry.

Feb 5 2025 | AmScope @ Worcester Sq

Photos by Ashley Gjovik via AmScope @ Worcester Sq. Boston, MA

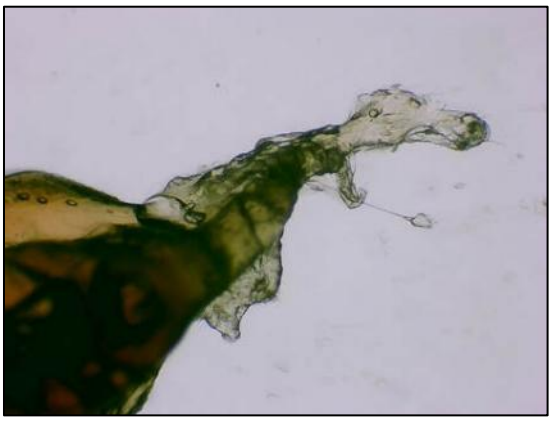
- Organisms creating microscopic egg-like structures that open to release motile forms.
- Organisms producing highly reflective, metallic-appearing biomineralized surfaces and structures, including reproducible metallic structures formed under agar culture conditions.
- Filamentous organisms adapting between aqueous locomotion and aerial dispersal, using air purifier exhaust for atmospheric transport as though navigating a water gradient — an undocumented adaptation of aquatic dispersal behavior to atmospheric conditions.
- Organisms repeatedly colonizing heat sources including a baseboard heater (forcing shutdown), oven interior, and microwave interior; also colonizing toner printers to the extent of failure.
- Morphologies matching published images of ancient fossils rather than modern organisms, including forms consistent with Proterozoic acritarchs (*Pterospermopsimorpha*, >1 billion years old), Proterozoic microfossils (*Bicuspidata fusiformis*), and forms consistent with Ontario 2-billion-year-old fossil plants.





Feb 5, 2025 | Feb 26, 2025

Photos by Ashley Gjovik via AmScope @ Worcester Sq. Boston, MA

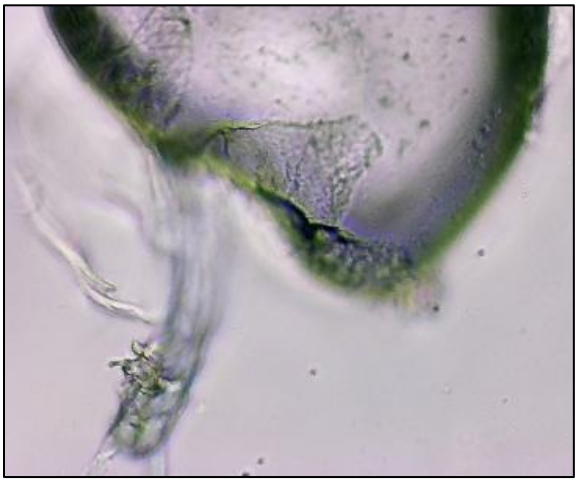


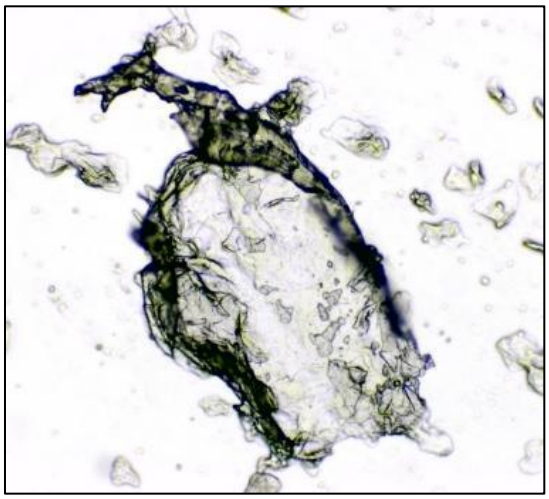
Feb. 9 2025 | Feb. 6, 2025

Photos by Ashley Gjovik via AmScope @ Worcester Sq. Boston, MA

Feb 13 2025 | Feb 16 2025

Photos by Ashley Gjovik via AmScope @ Worcester Sq. Boston, MA





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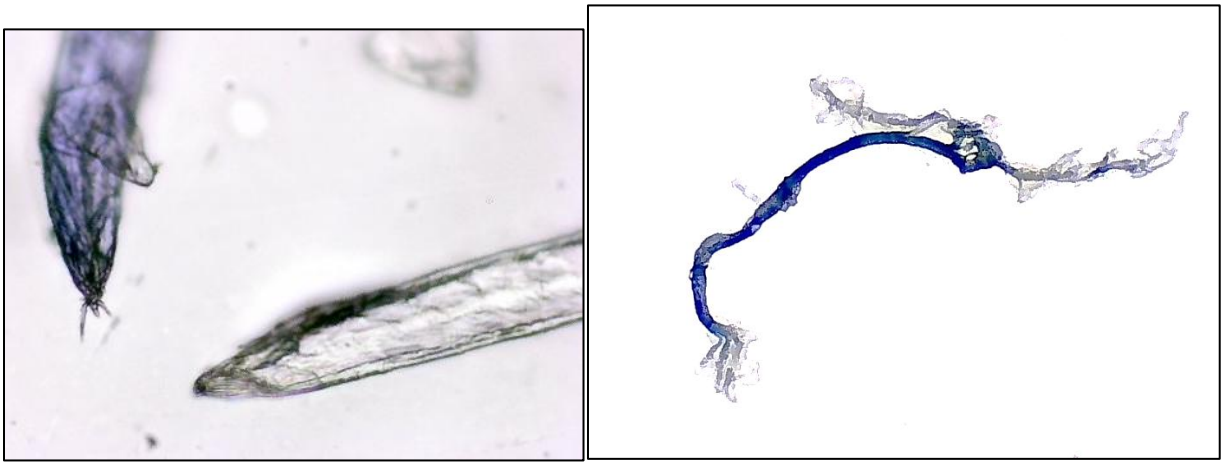
Photos by Ashley Gjovik via AmScope @ Worcester Sq. Boston, MA



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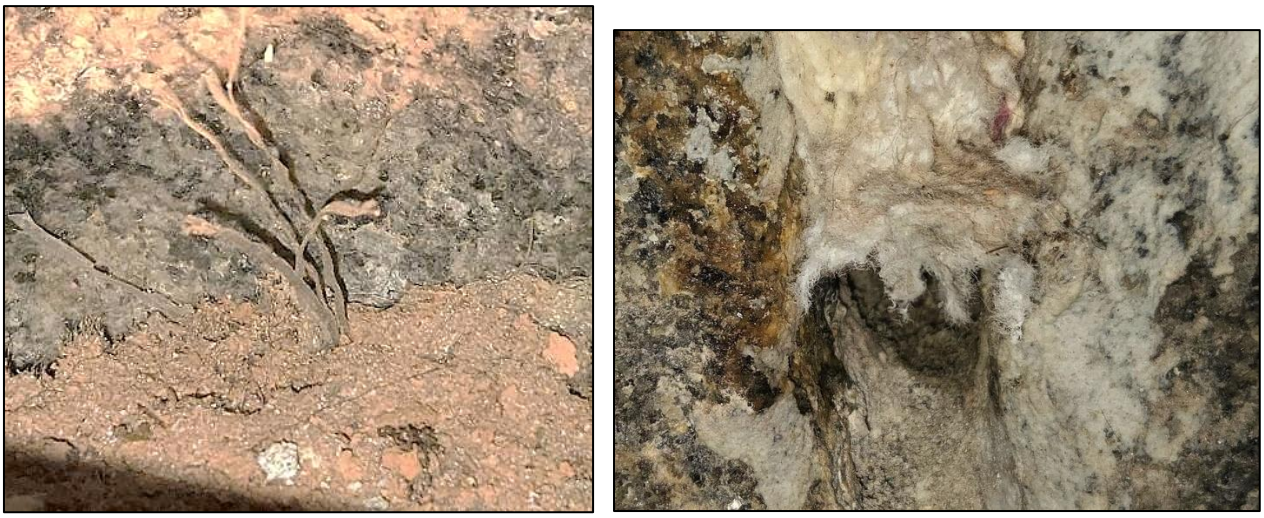
Photos by Ashley Gjovik via AmScope @ Worcester Sq. Boston, MA



Feb. 2 2025 Worc. Sq. Living Room | Precambrian-like growths found on fieldstone behind a bookshelf

These organisms are, at minimum, novel species not previously described in scientific literature. Every known species was ruled out through the Petitioner's extensive literature review and by kind of by Boston Medical Center clinicians who observed them under microscopy and confirmed they were not in existing reference materials but then refused to investigate or provide medical care on that basis.

Petitioner's Published Research Arising from Direct Observation of Site Organisms

During the exposure period (February–July 2025), the Petitioner conducted independent scientific research arising directly from observations of organisms at this site despite being blocked from sequencing her own samples. The Petitioner taught herself BLAST (Basic Local Alignment Search Tool) genetic analysis, developed a novel analytical framework, and published fifteen peer-reviewed papers with DOIs registered through the Open Science Framework, with full datasets publicly available for independent

verification and replication. All methods used publicly available genomic databases (NIH/NCBI, ENA). All findings are reproducible by any researcher with access to the same databases.

These publications are not incidental to this petition. They constitute the Petitioner's systematic effort to identify and characterize organisms that no institution would examine, and they document findings directly relevant to understanding the biological hazards at this site and their significance. The research was conducted before the Petitioner had any knowledge of the site's geological anomalies — specifically before learning about the Argillite composition, the hydrothermal alteration, the brecciated bedrock, or any geological features discussed elsewhere in this petition.

Key findings directly relevant to this petition include:

Pre-Cambrian Terrestrial Evolution (June 25, 2025; DOI 10.5281/zenodo.15739885). Analysis of four independent lines of quantitative evidence — thermal constraints, UV radiation, impact bombardment, and global glaciation — demonstrates that terrestrial surface environments were unsuitable for complex multicellular evolution until approximately 600–550 million years ago. All complex multicellular life evolved in marine environments. Every lineage currently described as having "terrestrial origins" is marine-origin with secondary land colonization. This finding is directly relevant to this site: organisms observed in the Petitioner's basement are marine organisms. They require marine-influenced chemistry. Their presence in a terrestrial building is not anomalous if the substrate beneath the building provides the marine geochemical conditions these organisms evolved in — which the geological evidence indicates it does.

The Multiple Multicellular Prototype Framework (June 8, 2025; DOI 10.5281/zenodo.15622349). Proposes that multicellularity evolved multiple times independently through distinct lineages (Multiple Multicellular Prototypes or MCPs), rather than through a single Last Eukaryotic Common Ancestor. Identifies a "Silicarian" lineage — glass sponges, radiolaria, diatoms — that mastered silica-based biomineralization in silica-rich hydrothermal environments, representing a separate path to complex life. The Argillite underlying this site is aluminosilicate. The illite clay is aluminosilicate. Stony bolides — if the impact hypothesis is correct — are silicate. The Petitioner proposed a silica-based evolutionary lineage before knowing she was living over silicate bedrock. The substrate is the Silicarian habitat.

Compiled Chemistry (June 23, 2025; DOI 10.5281/zenodo.15717955). Proposes the Chemical-Genetic Integration Model: that genetic systems emerged through selective incorporation of pre-existing chemical networks — iron-sulfur clusters, mineral scaffolds, autocatalytic systems — and that this integration was incomplete. Some lineages retain pre-genetic "runtime" architecture: constitutive protein expression, environmental activation rather than transcriptional control, chemical rather than genetic operating logic. The organisms observed at this site — sulfur bacteria building sheaths that function as bodies, iron-oxidizing bacteria running on deep-sea chemistry, organisms responding to chemical gradients rather than exhibiting learned behavior — are consistent with organisms operating on pre-genetic or incompletely compiled architecture. The paper specifically identifies iron-sulfur mineral surfaces at hydrothermal systems as the environment where chemical-genetic integration originated. The site's geology includes hydrothermally altered bedrock with iron-sulfur geochemistry.

Additional publications include: reclassification of *Pseudocolus* stinkhorn as a living Ediacaran metazoan with demosponge and basal holozoan genomic affinities (not fungi); molecular characterization

of *Trichophyton schoenleinii* (a human-colonizing Eukaryote organism misclassified as a fungal pathogen for 150 years) as a "chemical fossil" preserving primordial biological architecture from before major eukaryotic divergence, with sulfur-centric metabolism consistent with marine microbial mats; demonstration of 70–82% genetic identity across 1,762–6,000 base pair alignments (E-values = 0) between the siphonophore *Nanomia* and human cardiovascular DNA; demonstration of 80–99% genetic identity across 2,000–3,508 base pair alignments on critical neural genes (CADPS2, BDNF, MAOA) between *Aurelia aurita* (moon jellyfish) and humans; a recursive strategy for deep homology discovery in genetic sequence alignment; and compiled reference databases organized by proposed evolutionary lineage rather than traditional taxonomy, freely available through OSF and Zenodo.

The Petitioner's theoretical framework predicted the Site's geology before the Petitioner knew it existed. The papers describe iron-sulfur mineral surfaces at hydrothermal systems as the origin of life's chemical architecture. They describe silica-rich environments as the habitat of a separate evolutionary lineage. They describe marine chemistry as necessary for all complex multicellular life. They describe organisms operating on pre-genetic chemical logic activated by environmental conditions rather than genetic regulation. The Petitioner developed this entire framework from direct observation of organisms in her basement — organisms she initially worried she had brought with her from California, where she had lived over similarly ancient geology – but instead was shocked to discover Boston has even stranger geology than the SF Bay Area.

She did not know the Boston site's bedrock was aluminosilicate. She did not know it was hydrothermally altered. She did not know the geology was consistent with bolide impact. She did not know the groundwater was marine-influenced through fractured bedrock. When the geological evidence was subsequently examined, it matched the theoretical predictions derived from the biology. The organisms described their own habitat requirements through their behavior and morphology, and the geology confirmed it. This temporal sequence — theoretical framework derived from organism observations, followed by independent geological confirmation — constitutes evidence that the Petitioner's biological observations and analytical conclusions are consistent with the actual conditions at the site. The biology predicted the geology. This is the opposite of retrofitting theory to evidence.

What does it mean if a Boston tenant is able to observe organisms in their own home which are of the kind and character than can inform academic discoveries about the evolution of life in extreme conditions? It means this Site needs to be on the NPL and preserved for scientific research.

The Absence of Biological Investigation Is Itself Evidence of Institutional Failure or Concealment

Despite over 150 years of documented multi-source contamination at one of the most contaminated urban estuarine sites in the United States, no published microbial ecology study, no metagenomics survey, no environmental DNA analysis, and no microbial community assessment beyond coliform bacteria counts and macrofauna density exists for South Bay, the Inner Harbor, or the Fort Point Channel area. This absence is not a gap in the literature. It is an indictment.

Every contaminated site in the United States undergoes biological assessment as part of the remedial investigation process under the National Contingency Plan. Microbial community analysis, ecological risk assessment, and biological surveys are standard components of site characterization. EPA guidance documents require them. At this site — where contamination concentrations are among the highest documented in any urban estuary, where five simultaneous categories of hazardous contamination are present, where geological anomalies suggest conditions favorable to extremophile biology, and where a resident has documented deep-sea organisms in her basement — no institution has conducted the basic microbiology.

E. coli and coliform counts. Polychaete density. Done. No further biological questions asked. The Petitioner — a person with no formal training in microbiology who taught herself BLAST analysis during the exposure period — identified four deep-sea and volcanic substrate specialist organisms in her residential basement, published fifteen peer-reviewed papers on evolutionary biology arising from her observations, and developed a theoretical framework whose predictions matched the site's geology. She did this in approximately five months.

No institution with the resources, equipment, and expertise to conduct this investigation has done so. Boston University operates the most advanced bioidentification facility in the country — the NEIDL BSL-4 laboratory — 2,000 feet from the site. Harvard University operates one of the world's premier biology departments. Neither institution has published a single study on the microbial ecology of the site where they have discharged radioactive, pathogenic, and biological waste for over a century.

Either these institutions are unaware of what is living in their waste — which constitutes a failure of basic scientific due diligence at a site this contaminated — or they are aware and have not disclosed it to the public, the regulatory community, or the scientific community, which constitutes concealment. In either case, the absence of biological investigation has deprived the scientific community of access to what the Petitioner's research suggests may be among the most significant biological sites on earth — and has allowed residential development to proceed over uncharacterized biological conditions.

Harm to Natural Resources and the Scientific Commons

The biological conditions at this site — if confirmed by independent investigation — represent natural resource damage of a category and magnitude not previously encountered under the Clean Water Act, CERCLA, or the Endangered Species Act.

Natural resource damage under CERCLA and CWA. The organisms at this site are not merely pollution-tolerant species surviving in degraded conditions. They are potentially living representatives of stem and crown biological lineages — organisms whose genetic architecture preserves information about the origin and early evolution of life on earth extending back more than one billion years. The Petitioner's morphological observations include forms matching Proterozoic microfossils older than one billion years. The Petitioner's published genetic analyses identify molecular conservation patterns between marine organisms and human genomic architecture that, if confirmed, would constitute the most significant findings in evolutionary biology since the discovery of DNA's structure.

These organisms and the information they carry constitute an irreplaceable natural resource. They exist — to the Petitioner's knowledge — nowhere else on earth, because nowhere else provides this specific combination of fractured ancient silicate bedrock, impact-altered geochemistry, marine groundwater flow, and 150 years of conditions (nutrient enrichment, chronic irradiation, maximal horizontal gene transfer) that have activated and amplified whatever was present in the substrate. Destruction of this site through residential development without biological characterization would constitute permanent, irreversible loss of a natural resource whose scientific value is incalculable.

Harm to the scientific commons. The Petitioner's published research — conducted with publicly available data, reproducible methods, and full datasets on OSF — suggests findings with potentially fundamental implications for evolutionary biology, the origin of life, the relationship between marine organisms and human genomic architecture, and the classification of organisms that have been misidentified for over a century. These findings arose from a specific site. If the site is destroyed or its biology eliminated through uninformed remediation before independent investigation can confirm or refute these findings, the scientific opportunity is permanently lost. The ongoing failure of institutions at this site — specifically Harvard University and Boston University, both named PRPs — to conduct biological investigation, or to permit the Petitioner access to identification capabilities, constitutes ongoing harm to the scientific commons by preventing characterization of potentially globally unique biological resources.

Commerce clause implications. If the organisms at this site include novel species, organisms with ancient genetic signatures, or living representatives of lineages previously known only from the fossil record, their commercial, pharmaceutical, biotechnological, and scientific value to interstate and international commerce is substantial. Novel extremophile organisms routinely yield pharmaceutical compounds, industrial enzymes, and biotechnology applications worth billions of dollars.

A site containing dozens of potentially novel organisms — including deep-sea specialists, volcanic substrate colonizers, and organisms whose genetic architecture may preserve billion-year-old biochemistry — represents commerce potential that dwarfs the development value of residential housing. The federal government has an obligation under the commerce clause to prevent the destruction of this potential through uninformed development by parties who have never characterized what they are building on.

International obligations. If confirmed, living organisms preserving stem and crown biological architecture from more than one billion years ago, observable in situ at a single accessible urban site, would constitute a globally unique biological resource warranting consideration under the Convention on Biological Diversity and potentially qualifying as a UNESCO World Heritage Site. Boston's most valuable natural resource may not be its harbor or its history but what is living beneath it.

Mechanisms Producing Novel or Anomalous Organisms at the Site

The site presents a globally unique convergence of conditions known to drive biological novelty. EPA's investigation should consider five documented mechanisms, all simultaneously operative: Fossilless silicate bedrock with active marine groundwater flow. The argillite underlying the site is an

aluminosilicate marine sedimentary rock. It is fossilless — containing no biological trace despite nearby sites (Braintree) preserving abundant fossil records.

Boring logs document this bedrock as extensively fractured, brecciated, and decomposed, with open joints containing silt and clay infills through which groundwater actively flows. Construction, tunneling, pile driving, and tidal pumping have created pathways between this ancient marine substrate and the modern subsurface. The bedrock's aluminosilicate composition provides the silica-rich geochemistry that the Petitioner's published research identifies as the habitat of an independent evolutionary lineage (the Silicarian MCP).

The fossilless character of this bedrock — in contrast to nearby fossiliferous sites — is consistent with localized sterilization from bolide impact rather than glaciation, which does not eliminate fossil records. Whatever biological material may have survived in or been delivered to this substrate has had access to marine-influenced groundwater flowing through fractured silicate rock for approximately 12,800 years.

Sustained horizontal gene transfer in a multi-source microbial mixing environment. The combined sewer system functions as a continuous-flow bioreactor mixing bacteria from marine, freshwater, soil, clinical, industrial, and residential sources under conditions maximizing horizontal gene transfer: high cell densities, biofilm formation, nutrient enrichment, diverse species proximity, and environmental stress. These conditions have persisted for over 150 years and are maintained by ongoing discharges from every named PRP.

Chronic low-dose irradiation from radioactive discharges. NRC-licensed facilities including Boston City Hospital/BU Medical Center, Harvard Medical School, and New England Nuclear discharged radioactive waste to the combined sewer system for decades. Radionuclides accumulate in sewer sludge where microbial communities reside. Chronic low-dose radiation drives mutagenesis — increasing mutation rates without sterilizing — producing accelerated adaptation. These discharges were made into infrastructure running through the same fractured, hydrothermally altered bedrock, meaning whatever biological communities are present in that bedrock have been subjected to chronic irradiation by named PRPs' discharges.

Direct discharge of research organisms and intentionally mutated biological material. Biological research institutions have operated at this site continuously for over 180 years. These institutions collected, cultured, studied, and intentionally mutated organisms — including tropical pathogens, antibiotic-resistant strains, radioisotope-labeled compounds, and organisms from extreme environments — and discharged waste products into the combined sewer system. The interaction between intentionally modified research organisms and whatever was already present in the site's subsurface environment has never been investigated.

Potential introduction of exogenous biological material through bolide impact. Stony bolides — chondrites and achondrites — are silicate-rich. Carbonaceous chondrites contain amino acids, organic compounds, and potentially viable biological material. If the site's geological formation includes bolide-delivered material embedded in fractured bedrock through which marine groundwater has flowed for 12,800 years, that material and any biological components are present in the subsurface from which the anomalous organisms were recovered.

Boston University and Harvard University's radioactive, pathogenic, and biological discharges were made into infrastructure running through this fractured bedrock — meaning that if exogenous material is present, Harvard's discharges have been irradiating it, mixing earth-origin organisms with it, and amplifying it through nutrient enrichment for over a century.

These mechanisms are not mutually exclusive and may operate synergistically. Their convergence at a single location is, to the Petitioner's knowledge, globally unique. The organisms produced by these conditions — released through the combined sewer system, through building intrusion pathways, and through direct contact with residents — are themselves pollutants and hazardous substances within the meaning of the Clean Water Act and CERCLA. Their production, release, and dispersal constitute continuing violations maintained by the ongoing discharges of every named PRP.

Demand for Independent Investigation

The Petitioner demands that EPA conduct or commission independent biological investigation of this site — not conducted by, funded by, or through any named PRP or their affiliated institutions.
Specifically:

1. Environmental DNA (eDNA) sampling and metagenomics analysis of South Bay, Fort Point Channel, Inner Harbor sediments, combined sewer infrastructure, and residential building environments proximate to CSO outfalls and the Roxbury Canal alignment.
2. Genomic sequencing and electron microscopy of organisms documented by the Petitioner, including those colonizing the Petitioner's body, hair, and blood, and those preserved in photographic documentation and agar cultures from the exposure period.
3. BLAST analysis of any novel sequences recovered, using both standard taxonomic databases and the Petitioner's MCP-organized reference databases (publicly available at DOI 10.17605/OSF.IO/69WHF), to evaluate whether organisms at this site show the ancient marine assemblage genomic signatures predicted by the Petitioner's published framework.
4. Geological-biological correlation analysis evaluating whether the distribution of extremophile organisms correlates with the distribution of fractured, hydrothermally altered bedrock — which would confirm the Petitioner's finding that the biology and geology are causally related.
5. Assessment of the Petitioner's published research by qualified scientists without conflicts of interest, to determine whether the findings warrant formal investigation of this site as a globally significant biological resource.

Any remediation, permitting, or development action that proceeds without characterizing the full scope of biological conditions at this site — including potentially novel organisms, potentially ancient organisms, and potentially globally unique biological resources — will be incomplete, will leave ongoing threats to human health unaddressed, and may result in the irreversible destruction of natural resources whose value cannot be estimated because no institution has examined them.

Boston University operates the NEIDL BSL-4 facility with electron microscopy and genomic sequencing capabilities 2,000 feet from the site. BMC clinicians observed the organisms colonizing the Petitioner under microscopy, confirmed they were not in existing reference materials, and declined further investigation. When the Petitioner requested access to BU's bioidentification capabilities, BMC stated it did not know who those people were or how to contact them. BU and BMC's refusal to identify organisms

consistent with 155 years of their own institutional contamination history — using capabilities they possess and that exist specifically for this purpose — constitutes concealment of biological hazards that these institutions created or contributed to creating. EPA should not rely on Boston University, Harvard University, or any of their affiliated institutions for biological or geological assessment of this site.

Not all potentially responsible parties for the full scope of contamination at this site have been identified. The Petitioner reserves the right to name additional PRPs as investigation reveals the full extent of contributions to the site's contamination, including but not limited to federal agencies responsible for radiological contamination of Boston Harbor and any institution that has conducted biological research at or adjacent to this site without disclosing findings relevant to the biological conditions documented in this petition.

I. THE HAZARDS AT THE SITE ARE ACTIVELY CONCEALED

The environmental hazards documented throughout this petition are actively concealed from the public by the Commonwealth of Massachusetts and the City of Boston through the systematic removal, omission, obfuscation, and renaming of geographic, historical, geological, and environmental information from public sources. This concealment makes it impossible for residents to understand the risks of the land they live on, denies them the ability to make informed decisions about their health and safety, and prevents the public scrutiny that would otherwise compel remediation. It took the Petitioner weeks of independent research to reconstruct basic facts about the history, geography, and geology of the site where she lived — facts that should be readily available to any resident from public records but have been systematically removed or obscured.

This section documents specific, verifiable acts of concealment by state and local government. These are not gaps in knowledge. They are affirmative choices to hide information that, if disclosed, would reveal the full scope of contamination, restrict development, trigger remediation obligations, and expose the Commonwealth and the City to liability. This pattern of concealment is the reason federal intervention under the Clean Water Act and CERCLA is necessary — not merely because state and local authorities have failed to regulate themselves, but because they are actively preventing the people being harmed from knowing they are being harmed.

MassDEP's Tier 1 Report Omits Critical Site Information

The Commonwealth's MassDEP Tier 1 Report for the site fails to include information essential to understanding the nature and extent of contamination:. The report does not identify where the Roxbury Canal conduit still carries tidal water. The conduit remains a tidally influenced combined sewer running beneath residential neighborhoods, carrying contaminated tidal flow through the same path as the original canal. The report does not map, describe, or acknowledge the continuing tidal connection. A resident reading the report would have no way to know that the ocean is pumping contaminated water beneath their home twice a day.

The report does not identify prior or current dump sites. The area received over a century of municipal waste, incinerator ash, industrial refuse, and sewage sludge as fill material. The report does not identify, locate, or characterize these deposits. A resident reading the report would have no way to know they are living on top of a landfill. The report does not identify the natural high tide mark. The original tidal boundary — which determines the geographic extent of tidal influence, the reach of marine-influenced groundwater, and the area subject to coastal contamination transport — is not shown. Without this information, neither regulators nor residents can assess the actual extent of tidal contamination pathways.

The report treats "artificial fill" as a terminal geological description. The fill — which contains unknown and uncharacterized quantities of municipal waste, incinerator ash, industrial refuse, contaminated dredge spoils, and demolition debris — is described as a single undifferentiated unit. The report does not quantify or describe what is in the fill. It does not address what lies beneath the fill — the actual bedrock and its composition, alteration, fracturing, or hydrogeological properties. "Artificial fill" functions as the geological equivalent of a closed door: it acknowledges something is there while refusing to say what it is. This is the dumping equivalent of describing any geological deposit as "alluvial fan" — a term that sounds technical while communicating nothing about contents, contaminants, or risk.

The Commonwealth's Wetland Maps Omit the Site

The areas comprising this site were originally low-lying tidal marshes, estuaries, and floodplains adjacent to Boston Harbor and the Charles River. The surficial geology maps show tidal marsh, estuary, and floodplain deposits directly underlying these areas. Despite this, the Commonwealth's wetland mapping system maps these regions exclusively as "artificial fill," omitting them entirely from both current and historical wetland overlays. As documented by Baise (2004): "Although tidal marsh, estuary, and floodplain deposits on the surficial geology map directly underlie them, these regions are mapped as artificial fill."

This means: the Commonwealth's official wetland maps show no wetlands, no tidal lands, no salt marshes, no estuaries at a site that was — within living geological memory — entirely tidal marsh and estuary, and that remains tidally influenced through the combined sewer system today. Historical overlays that should show the original landscape instead show nothing. A resident, researcher, or regulator consulting these maps would conclude the site has no history of tidal or wetland conditions and no current tidal influence. That conclusion is false. The maps make it true on paper by omitting information the Commonwealth possesses.

The Commonwealth Claims There Are No Natural Resources

The Commonwealth's environmental framework treats this site as containing no natural resources warranting protection. As documented in Section III of this petition, the site may contain living organisms of incalculable scientific value — potentially including stem and crown biological lineages, organisms matching billion-year-old fossils, and deep-sea specialists whose presence indicates globally unique geological and geochemical conditions. The Commonwealth's position that there are no natural resources here is not based on investigation — it is based on never having looked.

The Commonwealth has further created a statutory framework — the Historic Fill exemption — that exempts large-scale contamination from requiring remediation when it results from historic filling operations. Since the contamination at this site is substantially attributable to the Commonwealth's own filling operations and the City of Boston's dumping of municipal waste, incinerator ash, and sewage, this exemption effectively allows the Commonwealth and the City to exempt themselves from cleaning up their own waste by reclassifying it as "historic fill" rather than contamination. The statute converts the Commonwealth's own dumping from a liability into a legal shield.

Boston's Landfills, Dumps, and Waste Management Facilities Are Unreported

The site and surrounding area contain current and historic landfills, dumps, waste management facilities, and incinerator sites operated by the City of Boston. These include the South Bay Incinerator (documented in this petition as a CWA violator), municipal dump sites that received household and industrial waste, and facilities that processed or disposed of contaminated material over more than a century.

These sites do not appear in the databases and registries where such facilities are required to be listed. When the Petitioner searched the specific databases and lists maintained for exactly these categories of waste management sites — the databases a resident or researcher would consult to determine whether hazardous waste facilities exist in their neighborhood — the sites were not there. They are not listed. They are not mapped. They are not disclosed. A resident moving into housing built on or adjacent to a former municipal dump and incinerator site would find no record of those facilities in the public databases designed to disclose exactly that information.

Boston Created Obstructive Systems of Measurement and Description

The City of Boston uses site-specific measurement and descriptive systems that obscure rather than clarify subsurface conditions: "Below Boston Base" (BBB). Boston uses a unique vertical datum — "Below Boston Base" — that does not correspond to standard measurement systems used elsewhere in the United States. This nonstandard system makes it difficult for anyone outside Boston's engineering establishment to interpret boring logs, groundwater elevations, or subsurface data without first converting measurements — a conversion that requires knowing the system exists and understanding its relationship to standard datums. The practical effect is that subsurface data from Boston cannot be readily compared to data from other sites, cannot be easily interpreted by outside researchers or regulators, and cannot be understood by residents attempting to assess conditions beneath their homes.

"Boston Blue Clay." The dominant subsurface unit at the site is universally referred to as "Boston Blue Clay." It is not blue. It is a marine clay that is typically gray to green-gray. The name does not describe the material's composition, origin, depositional environment, or engineering properties. It does not communicate that this is a marine deposit laid down under ocean conditions. It does not indicate the clay's relationship to tidal processes, marine chemistry, or the estuarine environment that produced it. The name is a piece of local jargon that has persisted for so long it has become an unquestioned technical term — one

that tells the public nothing about what the material actually is or why it matters. The uniform, structureless character of this marine clay — inconsistent with gradual glacial deposition as discussed in the geological assessment of this petition — deserves rigorous geological description, not a folk name.

Boston Is Actively Renaming Geographic Features to Prevent Discovery

The City of Boston has recently renamed the stretch of the Roxbury Canal where it connects to Fort Point Channel as the "Bass River" on official maps. This renaming is misleading on every level. For one, it is not a river. It is a tidal creek and canal — the remnant of the Roxbury Canal/Creek, a contaminated tidal waterway that has served as a sewage and industrial waste conveyance for over 150 years. There is also already a Bass River in Massachusetts. The name creates confusion with an existing geographic feature, making it harder to search for information specific to this location.

The name change obscures the site's history. The Roxbury Canal has a documented history of contamination, sewage discharge, industrial dumping, and public health complaints stretching back to the 19th century. A resident or researcher searching for "Bass River" will find none of this history. A search for "Roxbury Canal" or "Roxbury Creek" — the names under which the contamination history is documented — will not return results for "Bass River." The renaming severs the connection between the current landscape and its documented hazardous history.

The visual presentation is deceptive. City maps, promotional materials, and satellite imagery present this waterway as a clean, healthy urban amenity. The Petitioner visited the site and observed conditions consistent with a septic landfill — not the healthy waterfront the City's presentation suggests. The gap between the marketed image and the observed reality is not a matter of interpretation. It is a misrepresentation of conditions at a contaminated site where the City is actively promoting residential development.

Boston Is Building Dense Residential Housing on the Site

The City of Boston is currently building, and planning to build additional, high-density residential housing in the Seaport South End,, Fort Point, and South Bay areas — directly on the contaminated land documented in this petition. These developments are marketed to residents without disclosure of:

- The site's history as filled tidal marsh over contaminated sediments
- The presence of TCE and PCE DNAPL in soil and groundwater at concentrations orders of magnitude above health standards
- The presence of heavy metals, PCBs, PAHs, and radioactive waste in fill and sediments
- The tidal pumping of contaminated marine water through fractured bedrock and the combined sewer system into residential areas
- The sea level rise projections that will progressively increase tidal contamination transport into these developments
- The geological anomalies suggesting the site's formation and subsurface conditions are fundamentally different from the standard glacial model

- The presence of deep-sea extremophile organisms in residential buildings documented by the Petitioner
- The absence of any biological survey characterizing what is living in the substrate these buildings are constructed on

Residents purchasing or renting housing in these developments are making decisions based on incomplete, misleading, or affirmatively false information about the conditions they will live in. The concealment documented in this section is not a historical artifact — it is an ongoing, active program that serves the City's development interests at the expense of residents' health and safety.

The Pattern of Concealment Requires Federal Intervention

The concealment documented above is not a collection of isolated oversights. It is a coherent pattern in which every category of information that would reveal the site's true conditions has been removed, omitted, obscured, renamed, or exempted from disclosure by the same state and local authorities who created the contamination, who benefit from the development, and who would bear liability if the full scope of hazards were known:

- Geological information: obscured through nonstandard measurements, misleading terminology, and the "artificial fill" classification that refuses to characterize what is actually present
- Geographic information: removed through wetland map omissions and the renaming of contaminated waterways
- Historical information: removed through unreported dump sites, missing facility records, and databases that omit exactly the facilities they are designed to track
- Environmental information: omitted from regulatory reports that fail to identify tidal pathways, dump sites, or natural resource conditions
- The names of waterbodies and landforms abruptly changed to infeasible titles (the exposed portion of Roxbury Canal is now the "Bass River")
- Biological information: never generated in the first place — no microbial ecology study has ever been conducted despite 150 years of contamination
- Legal information: neutralized through statutory exemptions that convert contamination into "historic fill" and eliminate remediation obligations

The Commonwealth and the City are both regulators and polluters at this site. They cannot regulate themselves. They have demonstrated — through the systematic concealment documented in this section — that they will not disclose information that would trigger their own liability or restrict their own development plans. The residents living on this land cannot protect themselves because the information they would need to assess their risk has been removed from every public source they would consult.

Federal intervention under the Clean Water Act and CERCLA is necessary not only to address the contamination but to break the information blockade that prevents anyone — residents, scientists, or regulators — from understanding what this site actually is.

The Concealment Harms Populations Who Cannot Protect Themselves

The concealment documented in this section does not affect an abstract public. It affects specific, identifiable populations — many of whom are captive, dependent, or unable to relocate — who are currently living, working, eating, playing, and being held on contaminated land without knowledge of the conditions beneath them.

The balance of equities compels remediation. South Bay was unlawfully filled with continuing violations ongoing, for the admitted purpose of developing and selling the land. That development largely did not occur for private benefit: the vast majority of the site is owned by the City of Boston and the Commonwealth of Massachusetts and used for the MBTA, Interstates 90 and 93, the Boston Department of Public Works, Boston Public Health Commission offices and facilities, Boston Water and Sewer Commission facilities and offices, the Dorchester Brook and Roxbury Canal Conduit, and Boston City Hospital buildings and infrastructure. The majority of remaining property is owned or operated by Boston University and Procter & Gamble-Gillette. The parties who filled the tidal lands, dumped the waste, discharged the contaminants, and concealed the hazards are the same parties who own and operate the site. There are no innocent landowners whose interests must be balanced against remediation. The PRPs are the landowners.

Sensitive populations on the site. The site includes numerous facilities serving vulnerable populations who have no ability to assess or avoid the risks concealed by the pattern documented above: schools, playgrounds, public parks, the Greater Boston Food Bank (which distributes food to food-insecure households across the region), the Boston Children's Museum, a methadone clinic serving people in addiction recovery, and residential developments marketed without disclosure of site conditions. None of these populations have been informed of the contamination history, the tidal contamination pathways, the presence of deep-sea extremophile organisms in residential buildings, or the absence of any biological survey of the substrate their facilities are built on.

The Suffolk County House of Correction. The Suffolk County Sheriff's Office operates the House of Correction at 20 Bradston Street, directly on the site. The facility was constructed on filled South Bay around 1990 and holds approximately 900 inmates. Because Suffolk County government was otherwise abolished, the facility is ultimately managed by the Commonwealth of Massachusetts — the same Commonwealth that filled South Bay, operates the combined sewer system, created the Historic Fill exemption, and is named as a PRP in this petition.

The inmates held in this facility cannot leave. They cannot choose where they live. They cannot investigate the conditions beneath them. They cannot hire environmental consultants. They cannot file public records requests. They cannot move.

Federal courts have already found that the Commonwealth and Suffolk County have systematically violated the constitutional rights of inmates at their jails for decades without cessation. The Department of Justice has documented "systemic deficiencies" resulting in constitutional violations at the House of Corrections. *Inmates of the Suffolk County Jail v. Kearney*, 734 F. Supp. 561 (D. Mass. 1990), found that conditions "unnecessarily and unreasonably infringed upon the most basic liberties, among them the rights to reasonable freedom of motion, personal cleanliness, and personal privacy," constituting punishment violating the Due Process Clause of the Fourteenth Amendment. *See also Inmates of Suffolk County Jail v.*

Eisenstadt, 360 F. Supp. 676 (D. Mass. 1973); *Inmates of Suffolk County v. Sheriff of Suffolk Cty.*, 952 F. Supp. 869 (D. Mass. 1997).

The Commonwealth built a jail on top of a filled tidal bay saturated with contamination, toxic gases, and microbial activity — the same contamination documented throughout this petition. The federal courts have already found the Commonwealth's treatment of inmates at this site constitutionally deficient on other grounds. The inmates have never been informed that the facility sits on contaminated filled tidelands over fractured bedrock through which marine-influenced groundwater carrying the site's full contaminant load is tidally pumped twice daily. The concealment documented in this section is not merely an inconvenience to these 900 people. It is a deprivation of information necessary to assert their own constitutional rights regarding the conditions of their confinement.

Boston is building more. Despite all of the above, the City of Boston is actively encouraging and approving massive new residential developments at the most contaminated locations on the site — the Seaport, Fort Point, and South Bay. Boston has also attempted to organize the Olympic Games at ground zero of the site, at South Bay and the rail yards. These are not decisions being made in ignorance. They are decisions being made by a city that controls the information, that has removed hazard disclosures from public databases, that has renamed contaminated waterways, that has exempted its own waste from remediation requirements, and that benefits financially from every residential unit sold on land whose true conditions it has concealed.

The infrastructure itself requires remediation. Beyond disclosure, the physical infrastructure at the site requires affirmative remediation that only a federal designation can compel: proper abandonment of tunnels, conduits, and sewers that function as contaminant migration pathways; removal or isolation of the underdrain stormwater system that actively drains the site to the ocean while providing site-wide conduits for contaminant transport; repair or removal of pilings that penetrate clay aquitards and create vertical migration pathways between contaminated fill and deeper geological units; construction of tidal gates to prevent tidal pumping of contaminated water into residential areas; and ensuring that homes at the site — including structures over 150 years old — have proper building envelopes, ventilation, and moisture protection sufficient to prevent the intrusion of contaminated groundwater, toxic gases, and biological hazards documented in this petition.

A National Priorities List designation will serve as the forcing function necessary to ensure that any residential or sensitive use at this site requires compliance with environmental mitigation and monitoring requirements — requirements that the Commonwealth and the City have demonstrated they will not impose on themselves.

This location has always been used to harm people. From the earliest period of European settlement, the Boston Neck — the narrow land bridge connecting the Shawmut Peninsula to the mainland, running directly through this site — was designated as a location for exclusion and violence. The town erected a gallows early in the settlement and relocated and rebuilt it across the site numerous times over the centuries. It was used so frequently that South Bay was also called "Gallows Bay."

Many people were executed "for reasons which now would be considered as out of all reason for the sin committed." (Thwing 1920). The pattern has continued for four centuries: this location is where Boston puts what it does not want seen — its waste, its condemned, its sewage, its incinerator ash, its

radioactive discharges, its poorest residents, and now its uninformed new residents purchasing homes on undisclosed contamination. The concealment documented in this section is the current expression of a pattern as old as the settlement itself.

II. THE POTENTIALLY RESPONSIBLE PARTIES & DEFENDANTS

Based on my preliminary site review, the following parties are identified as primary potentially responsible parties (PRPs) for the CERCLA releases and Clean Water Act violations documented in this Petition/Notice. This list focuses on entities that appear to have been instrumental in executing the violating acts and creating the releases; who have continuing control over the infrastructure and properties involved; possess first-hand knowledge about what occurred; and possess the authority and resources to remediate ongoing violations. However, this list is a preliminary proposal and is not meant to be exclusive or determinative.

Prior to any filing of a Citizen Suit in a U.S. Court, all planned Clean Water Act Defendants will be formally served a Notice (possibly a copy of this same document if they were not already served with it, or a revised version) sixty days prior. If the US EPA does not take appropriate action under CERCLA, the US EPA may also receive a Citizen Suit Notice under CERCLA and would also be a Defendant in a combined Citizen Suit.

Because the CERCLA Petition/Assessment process provides the EPA one year, then any combined Citizen Suit for the Site is planned to be queued during that time. Accordingly, this is a one-year notice and provides ample time for all Defendants to come into compliance with federal environmental law; nuclear, biological, and medical regulations; common law nuisance policies; and common sense.

1. City of Boston

The Colony, Town, & City of Boston; including Boston City Hospital

The first PRP/Defendant is the **City of Boston**. This includes, for example, the City's agencies and departments, (including the Boston City Hospital, Boston Redevelopment Authority, and Department of Public Works), and the City's executive leadership (including the City Council and Mayors).

City of Boston is a chronically insolvent municipality that has operated its sewer system, incinerator, hospital, and public works as direct sources of unpermitted discharges to navigable waters for over a century. Boston does not produce natural resources and never has. The city has been financially distressed since at least the late 1800s, operates on a budget funded roughly 70% by property tax capped at 2.5% annual growth, and is structurally dependent on new development to generate revenue. Boston's primary mechanism for creating developable land has been filling navigable waters with waste — a practice the city's own 1878 Council identified as "real estate speculation" at "the expense of tax payers" and which destroyed the port economy the city originally depended on.

Boston created the sewer nuisance in the Roxbury Canal by connecting three large sewers draining 2,755 buildings to discharge raw sewage into it, then used the nuisance it created as justification to fill the

canal, South Bay, and Fort Point Channel. The 1878 Council documented that before the sewers were connected, the canal was clean enough for bathing and fishing. The proper remedy was to divert the sewers and dredge the canal. Instead, Boston spent the next century petitioning the Commonwealth — changing its justification each time. In the 1950s it was a stadium and convention hall. By 1961, flood control. By 1962, hydrogen sulfide odors, a post office expansion, a power plant for BUMC, a meat packing plant. By 1969, a vehicle maintenance facility.

The objective never changed: convert waterway to taxable land using the cheapest fill available. In 1962, the mayor requested approval to fill Fort Point Channel with incinerator ash because the city's prior dump sites had been shut down as health nuisances. DPW dumped hundreds of tons of ash into open areas before construction plans were approved. This pattern repeated recently in the Seaport District, where the Walsh administration approved massive development on filled land with — as the former Assistant Director of Massachusetts Coastal Zone Management stated — "absolutely no attention paid to sea level rise."

Boston operated the South Bay Incinerator burning municipal and medical waste and dumped the ash as fill into the waterways it claimed to be cleaning up. Boston operated Boston City Hospital — built on salt water flats, designed for only ten years of use under the theory the buildings would "be so full of germs that they'd have to be razed" — generating pathogenic, radiological, and industrial discharges to the combined sewer system for decades. The hospital's own sewers created "seepage of ooze and flow of tides in some parts of the building" from the start of operations. Boston segregated working-class and immigrant populations onto filled tidal flats adjacent to every contamination source described in this notice, and has always treated its residents as a resource. In 1988, the Worcester Square Association stated: "In order to survive, we have had to adopt an adversary position to the city and state. Instead of helping us, the city is our biggest enemy."[48]

Boston constructed a combined sewer system using brick and wood documented in 1885 as "ill adapted" and "usually leaky," with no detailed plans or records of its pre-1863 sewers and drains, the locations of which are "entirely a matter of conjecture." Buildings constructed before 1877 predate the municipal sewer system entirely — where their sewage went then, and where it goes now, is unknown. The system provides a direct hydraulic pathway from the Atlantic Ocean through the Roxbury Canal conduit, through over 1,360 miles of sewers, and into building basements throughout the district. There is no physical barrier between the ocean and the interior of these buildings. The tides push contaminated water and sewer gases two miles inland twice daily. A 1967 engineering report documented that raw sewage discharged through tide gate outlets into the harbor every day regardless of weather conditions, and that sewer connections from the South End to the Roxbury Canal conduit were left as "open connections without the control of regulating devices" — meaning residents' wastewater may discharge directly to the Atlantic Ocean with no intervening treatment or control.

Boston violated the Clean Water Act § 1311 by discharging sewage, incinerator ash, medical waste, industrial waste, and municipal waste from point sources into navigable waters without NPDES authorization. Boston violated § 1344 by discharging fill materials into waters of the United States without permits. The Boston Water and Sewer Commission continues to operate the combined sewer system

[48] "Defending Worcester Square ," Boston Globe, May 13 1988

discharging to Fort Point Channel, including through outfall BOS-070, observed discharging during dry conditions in December 2025 with surface sheen, froth, visible sludge, and debris — the canal mouth is being used as a de facto landfill, with shopping carts, wheelchairs, and refuse dumped into the waterway.

The Boston Public Health Commission, which holds biological safety regulatory oversight for this district, operates seven of its nine offices on this site. When the Petitioner reported suspected hydrogen sulfide exposure and filed code enforcement complaints documenting sewage backups, water intrusion, mold, and ventilation failures in an 1864 basement unit, the City initially cited dozens of fire, sanitary, and building code violations — then sent a special task force from the Mayor's office to prevent further violations from being cited, ceased pursuing open cases after the gas exposure was reported, held appellate hearings without inviting the complainant, engaged in ex parte communications with respondents, and ultimately obstructed the enforcement process it had initiated. Boston's role (as the operator of the sewer system, incinerator, hospital, and public works that created the contamination, the municipality that filled navigable waters with pollutants in violation of §§ 1311 and 1344, and the code enforcement authority that actively suppressed findings when the contamination was discovered) is discussed throughout this notice. (BPHC 2026). Boston still owns most of the facilities for the Boston City Hospital, now Boston Medical Center. Effective with the merger on July 1, 1996, the Medical Center entered into a 50-year capital lease with the City of Boston for all the real property previously owned by BCH.

A Note on Mayor Marty Walsh

Mayor Marty Walsh (a Dorchester native) is thought to have been elected but for the support of building trade unions and he was responsible for the massive development projects at Seaport at the Site, developments which were sharpy criticized as creating a major public safety risk due to flooding and sea level rise.[49] The former Assistant Director of the Massachusetts Coastal Zone Management agency was interviewed in a movie about the matter where he stated unequivocally: "There was no attention paid to sea level rise. Absolutely none. This place is going to be subject to devastation and the building continues." The film also described this area of the site saying: "the seaport was an urban wasteland, beside a polluted harbor." After the harbor was cleaned, officials began promoting the area." However, the harbor is still not clean either.

The Petitioner/Plaintiff had her own issues with Mayor Walsh when he served as the U.S. Dept. of Labor Administrator and she alleged that he and his administration were retaliating against environmental whistleblowers, including herself with her CERCLA retaliation complaint (Aug. 2021-*current*), and that he was attempting to conceal the underlying environmental issues as a favor to the corporate defendants.[50] The OSHA Whistleblower Protection Program has been known for gross negligence for decades but their conduct in the Petitioner/Plaintiff's case was so outrageous that the Petitioner/Plaintiff complained of what appeared to be criminal obstruction and she named Walsh and his agency as part of a criminal enterprise in her federal RICO claim against her ex-employer.

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[49] "INUNDATION DISTRICT is an award-winning feature-length film about the implications of one city's decision to ignore the threats posed by climate change and spend billions of dollars on building a new waterfront district — on landfill, at sea level." https://www.inundationdistrict.com/home

[50] See her Petition.org" "Stop U.S. Dept. of Labor OSHA Corruption Now!" 2022-2026, 650 signatures, https://www.change.org/p/stop-us-dol-osha-corruption-now).

During Walsh's time as Boston's Mayor at least three of his aids were indicted for racketeering related charges including bribes for building permits and extortion to hire certain unions for development projects. (WGBH 2019). Walsh also kept a close eye on the Gillette factory and in when Gillette expressed they might relocate some of their offices from the Site, Walsh said he planned to have "a conversation with Gillette" and "Procter and Gamble" in order "to keep their headquarters here in the city of Boston." (Boston.com 2019).

2. The Commonwealth of Massachusetts

The second PRP/Defendant is the **Commonwealth of Massachusetts**. This includes, for example, the Commonwealth's agencies and commissions, (including the Boston Water and Sewer Commission, Massachusetts Water Resources Authority, Dept. of Env. Protection, MBTA, Suffolk County, and the Boston Public Health Commission), its Legislatures, and its executive leadership. [51]

Commonwealth of Massachusetts has exercised sovereign authority over this waterfront for four centuries and is responsible for creating the conditions that produce every violation described in this notice. The Commonwealth is the legal successor to the Massachusetts Bay Company, a British commercial corporation granted colonial charter over the territory — and the corporate structure was not dissolved but merged into the governmental entity, which retains its colonial charter as the foundation of its legal authority to this day.

The original Shawmut settlement consisted of two small islands connected to the mainland by a narrow isthmus passable only at low tide. From that starting point, the Colony and its successor Commonwealth authorized, financed, and physically participated in constructing the most artificially built major city in the United States — filling tidal waters, destroying coastal landforms, and extending wharves into the harbor until the original landscape was unrecognizable and the city sat on thousands of acres of land that had been ocean. The Colonial Ordinances of 1641-1647 extended private property rights to the low water mark, privatizing tidelands that virtually every other legal tradition holds in public trust and creating the legal foundation for centuries of filling.

The Commonwealth granted wharf franchises and tidal flat rights to commercial interests including the Boston Wharf Company, whose directors included slave traffickers and sugar merchants operating the same vessels for both commodities. The General Court enacted legislation authorizing and financing specific filling projects across the South End, Fort Point, and Roxbury shoreline, including the 1962 act state-financing the filling of South Bay, Roxbury Canal, and Dorchester Brook — approving the use of incinerator ash, construction debris, and sludge pumped from Boston Harbor as fill material, which are pollutants under 40 CFR Part 230, not clean fill.

The Commonwealth destroyed adjacent drumlins and coastal landforms — Nook's Hill, Fort Hill, Beacon Hill, Copp's Hill — to generate additional fill material. Massachusetts Department of Public Works physically participated in the filling and construction, not merely approving from the statehouse but operating on the ground alongside Boston. When the consequences became undeniable, the

[51] The Commonwealth "abolished" most county governments including Suffolk County, which was abolished in 1999 (Ma. Gen. Law Chapter 34B Sec.1) and is currently listed as "defunct" on the Commonwealth's website: Historical Data Relating to the Incorporation of and Abolishment of Counties in the Commonwealth of Massachusetts, https://www.sec.state.ma.us/divisions/cis/historical/incorporation-abolishment.htm

Commonwealth enacted statutes exempting historic fill from environmental cleanup requirements, ensuring that contaminated materials functioning as a continuous source of pollutants remain in place without remediation indefinitely.

The Commonwealth did not do this only in Boston. The tidelands privatization, the wharf franchises, the combined sewers, the coastal filling — this was the Commonwealth's model for every colonial settlement under its jurisdiction. But Boston is the most extreme result, and the Commonwealth bears particular responsibility because it held oversight authority over Boston's actions, resisted them for decades, and then capitulated in the 1950s when both entities were financially desperate and the prospect of flipping a contaminated cesspool into taxable land proved too appealing. The Commonwealth further consolidated its control by abolishing county government — eliminating Suffolk County as the intermediate administrative layer between Boston and the state, removing what might have been an independent check on either entity's conduct.

The Commonwealth deployed a combined sewer system modeled on Victorian British engineering, using brick and wood construction documented in 1885 as "ill adapted" and "usually leaky." This system — the majority constructed between 1877 and 1894 — was built on top of eight-to-twelve-inch underdrains that remain in place and transport significant quantities of groundwater and contamination throughout the district. The system provides a direct hydraulic pathway from tidal waters through the conduit, through over 1,360 miles of sewers, and into building basements across the South End, Lower Roxbury, and surrounding neighborhoods. There is no physical barrier between the ocean and the interior of these buildings.

The Commonwealth violated the Clean Water Act § 1344 when it authorized, financed, and physically discharged fill materials — including sewers, pipes, and conduits — into navigable waters without permits, reducing the reach and impairing the flow and circulation of waters of the United States. The 1960s conduit system containing the Roxbury Canal and Dorchester Brook has not been maintained for decades. A 2018 drone inspection found the conduits submerged and covered in several feet of sediment including sludge, hard-packed deposits, and organic backwash from Boston Harbor. Access panels are deteriorated and unusable. Because the Commonwealth allowed these structures to become unserviceable, it has lost any maintenance exemption under the CWA, triggering recapture under § 404(f)(2) — any repair or continued deterioration constitutes a new use requiring full Section 404 permitting and public interest review under current environmental standards.

The Commonwealth violated § 1311 and § 1312 through continuous unpermitted discharge of sewage, sludge, industrial waste, and municipal waste from point sources into navigable waters. The MWRA owns and operates the combined sewer system through which every discharge described in this notice reaches Fort Point Channel, Boston Harbor, and the Charles River. The conduit outfall designated BOS-070 is hydraulically connected to Boston Harbor with no tide gates and discharges continuously — not only during storm events but every tidal cycle. A 1967 engineering report documented that defective tide gates allowed raw sewage to discharge through outlets on ebb tides daily, regardless of weather. As of December 2025, the canal mouth was observed discharging during dry conditions with surface sheen, froth, visible sludge, and unnatural coloration.

Under 33 U.S.C. § 1341, the Commonwealth is required to certify that discharges comply with applicable effluent limitations and water quality standards. The Commonwealth cannot lawfully certify discharges from infrastructure it knows to be unmaintained, structurally failing, and actively shedding material into a tidal stream. The collapsing conduit is itself a modern point source constituting a continuing violation regardless of when the structures were originally built. MassDEP, the Commonwealth's own regulatory agency, approved cleanup plans throughout this corridor that left contaminant sources in place, relying on institutional controls rather than removal, while those contaminants continued migrating to navigable waters through the Commonwealth's own sewer infrastructure without NPDES authorization.

The Commonwealth owns land throughout this corridor including state wharves, rail corridors, highway rights-of-way, and institutional parcels on contaminated fill. The MBTA operates rail lines and maintenance facilities contributing metals, petroleum hydrocarbons, and PCBs to soil and groundwater. The Commonwealth constructed Interstate 93 and the Southeast Expressway through this corridor, disturbing contaminant plumes and altering groundwater flow. The Commonwealth's role — as the corporate-sovereign entity that built this city in the ocean, privatized its tidelands, deployed failing infrastructure across its colonies, physically participated in filling navigable waters with pollutants, enacted laws ensuring the contamination is never cleaned up, holds regulatory authority it has failed to exercise, and continues to violate §§ 1344, 1311, 1312, and 1341 of the Clean Water Act — is discussed throughout this notice.

3. The President and Fellows of Harvard College (The Harvard Corporation

The next PRP/Defendant is **Harvard University** and **Harvard Medical School ("Harvard")** via **The President and Fellows of Harvard College ("The Harvard Corporation")**. **The President and Fellows of Harvard College, serves** as the sole "*body politic and corporate*" that holds legal title to all university assets and assumes ultimate liability for its actions. Under this structure, any project, laboratory, or school (including Harvard Medical School and its various research initiatives) operates as a department of this single legal entity rather than as an independent corporation. Consequently, the Corporation is the principal responsible for the acts of its agents (faculty and staff) and the environmental impact of its projects.

This unique legal status is rooted in the **Harvard Charter of 1650**, issued by the Massachusetts Bay Colony, which granted the university "perpetual succession" and the capacity to sue and be sued. This colonial authorization was later codified and reaffirmed by the Massachusetts Constitution of 1780, which formally recognized and secured the Corporation's existing rights and immunities into the modern state era, ensuring that while the university is protected by the Commonwealth, it remains a distinct private entity solely responsible for its own legal and environmental obligations. (Siskind 2012).

The Boston City Hospital was staffed by three Boston-area medical schools (Harvard, Tufts, and Boston University) but Harvard ran several departments including Medical Services and the Surgical Service, until the ~1970s, when operations were consolidated under Boston University.[52] Because Harvard ran multiple "Medical Services" at BCH, Harvard functioned as a university-affiliated clinical research

[52] "A Needed Service to the Community," The Boston Globe, Sep 28, 1964, p. 22

empire within a public hospital. Harvard was part of Boston City Hospital "since the hospital's founding in the South End in 1864." (Harvard University 2014) ("*their relation to the patients is made so intimate and so responsible that they virtually form a part of the hospital staff.*" (Farmer 1925)) ("*for all of its 109 years, the public has largely and appropriately identified the BCH with Harvard Medical School.*" (Friedman 1973)).

At the Site, the Harvard also operated multiple research schools and laboratories including Thorndike Laboratory (later the "Thorndike Memorial Laboratory"), Harvard-MIT School of Health Officers, and the Naval Center for Blood Research (transferred to Boston University in 1975 and the Navy command supposedly de-established in 1979). The Thorndike Laboratory, established in 1923 at BCH, was the primary vehicle for Harvard's dominant role at the hospital. While the building was owned by the City of Boston, it was manned entirely by Harvard faculty and researchers and funded largely by Harvard endowments. It was also the first clinical research laboratory in a municipal hospital in the US. (Elrod 2003).

During Harvard's tenure of administration and operations at BCH, BCH experienced a decades-long crisis of hospital-acquired infections driven by increasingly virulent and antibiotic-resistant organisms at the Site, with BCH patients dying from abnormally resistant infections acquired inside the hospital and at rates that far exceeding infections occurring outside the hospital and the pre-antibiotic era. Harvard admitted to extensive experimental biological research on animals and humans, including with hazardous substances, performing operations simply for the opportunity to educate the students, advertised the rampant illness and infections in the area as an opportunity for their research to have constant access to cultures and patients to study and experiment on, and based on the lack of any records regarding body disposal appear to have been taking the cadavers from BCH to use for their students and/or add to their notorious collection of human body parts.

These microbial conditions developed in a facility discharging to and receiving from combined sewers carrying bacterial loads in the millions per cubic centimeter, situated on deteriorating infrastructure in contaminated fill, adjacent to a radioactive waste incinerator, and connected to the same sewer system receiving radiochemical and industrial waste from the surrounding district. Harvard used radioactive materials, coordinated radioactive waste disposal for multiple universities and BCH under NRC licensing agreements, and was repeatedly cited for waste management violations including improperly disposing of radioactive waste in common trash. An NRC inspector who reviewed Harvard's broader handling of radioactive materials characterized the university's attitude as "cavalier."

Harvard also promoted Louis Agassiz despite Agassiz being a rampant white supremacist and collector of Black bodies, live and dead, including kidnapping and trafficking Africans in 1860, then forcing them to perform "monkey tricks" as part of Harvard's zoology collection. (Harvard Magazine 2022). Louis Agassiz, due to Harvard's support, nearly singlehandedly forced glacial geology theory as the predominant explanation for New England geology and the only explanation for Boston's geology, despite most of Agassiz theories failing basically plausibility under the laws of physics, and clearly overshadowed in modern time by advances in understanding of bolide impact data. Local features like drumlins have been argued to be impact ejecta by a NASA researchers since the 1990s, yet somehow bolides are still a controversial theory in Boston, while Boston is covered in 200+ drumlins like some sort of smallpox.

Despite, or because, Boston and Cambridge appear to be a internationally important bolide impact site, it appears that reckoning with that fact would require Harvard to not only admit Agassiz was wrong, and they failed to revise his theories for decades, but that it appears Harvard may have been actively suppressing Boston geologic information and research in order to conceal these errors and the fundamental misunderstanding of the basic geology of the very location Harvard is located. Further, once folks inquire as to how such a glaring fact could be missed and who put the glacier theory forward, it would require Harvard admitting it was an anti-evolution, Creationism, white supremacist, human trafficker who also collected human body parts and hoarded them in Harvard's basements.

Harvard's apparent combined hubris and shame, has deprived scientists and other researchers from access to a unique and irrepealable geological and biological environment while allowing Boston residents to be exposed to these same hazards without any disclosures or mitigation, and allowing reckless construction and land modification to continue at an unstable impact site and which risks to further destabilize Boston, invites the creation of additional hazards, and could lead to structural collapse.

The Petitioner also appears to have direct standing with Harvard which Harvard itself just created within the last month. Petitioner's last doctor's visit, prior to evacuating Boston, and not knowing yet she would be leaving, was on Jan. 15 2026. The Petitioner's new medical provider (at a facility unaffiliated with these Defendants) had submitted a referral to a new Infectious Disease clinic at the Petitioners request, and noted the Petitioner was "living in an environment with significant exposure to hazardous waste and she is convinced that she has continued to be exposed to infectious organisms in her home." The provider noted the petitioner "lives in an unfinished basement apartment in South End, Boston, with poor ventilation and constant water intrusion. Experiencing symptoms such as excessive sleep (up to 16 hours a day), hair loss, and presence of strange microorganisms on her body. Culturing microorganisms at home and believes they are causing her symptoms. Consulted an infectious disease specialist at BMC and is seeking a referral to another infectious disease specialist. Most debilitating symptoms include fatigue, exhaustion, disorientation, excessive sleep, skin itchiness, rashes, and hair loss. Reports feeling like there is a plaque or skin reaction on her body, with redness and other symptoms." (Visit Notes, Jan. 15 2026).

The Petitioner had warned the physician she believed BMC had refused to investigate because they may be partially responsible for the injuries. The physican suggested a referral to Beth Israel′s Infectious Disease department and the Plaintiff agreed, having not seen the facility mentioned in the documentation she was reviewing. However, Beth Israel′s Infectious Disease depart. denied the referral, and the physician has not contacted the Petitioner since then despite open requests to that physician. This indicates to the Petitioner that there may have been phone calls or escalations about her unbiased physician's earnest attempt to ensure she is able to receive medical care and not being aware of what appears to be an unspoken rule that if South End or South Boston residents complain of issues with fungus, bacteria, or other microbes, that the physician is to botch labs, refuse to provide credibility to their complaints, refuse to provide referrals, demand application of zinc shampoo, and declare the patient may be insane.

Upon the Petitioner's investigation into this facility denying her Jan. 2026 referral, it was revealed to the Petitioner that Beth Israel Deaconess Medical Center is not an independent hospital after all, but is instead, "a teaching hospital of the Harvard Medical School." Further, its prior Presidents have included executives from Harvard and the Massachusetts Water Resources Authority. (THF 2010).

The role of **The President and Fellows of Harvard College's** role at this site (including its oversight of the hospital operations, radioactive materials management, and the medical waste and pathogen discharges to the combined sewer system during the period of escalating institutional infections) is discussed throughout this notice, referenced by the different entities names described above. The Defendants Nuclear Regulatory Commission License is No. 20-00297-53, the Medical School's CAGE Code is 3Q2L2, and their address is 25 Shattuck Street, Boston, MA 02115.

4. Boston University & Boston Medical Center

The next PRP/Defendant is **Boston University**. This includes, for example, the Boston University School of Medicine, Boston Medical Center, Boston University Medical Group, Boston City Hospital, New England Female Medical College, Boston University Medical Center Hospital, Massachusetts Memorial Hospital, Massachusetts Homeopathic Hospital, Thorndike Memorial Laboratory, and the National Emerging Infectious Diseases Laboratory.

Boston University has operated hospitals on this site continuously since 1870 and is responsible for pathogenic, radiological, and industrial discharges to the air, combined sewer system, and navigable waters spanning over 150+ years of institutional presence.

BU's predecessor institution was the Massachusetts Homeopathic Hospital. It was a "homeopathic" facility built on contaminated fill adjacent to the Roxbury Canal cesspool around 1870, the same era and conditions as Boston City Hospital across the street. BU (via the Massachusetts Homeopathic Hospital) used the Petitioner's specific rowhouse at 18 Worcester Square as a homeopathic fraternity house at the turn of the nineteenth century. What did they do in the basement where my apartment was? Did they bring their work home with them?

In 1973, BU assumed sole operational control of Boston City Hospital after Harvard Medical School and Tufts withdrew and City of Boston lost its medical accreditation again due to the condemnable condition of the facilities and infrastructure — inheriting a facility built on salt water flats, designed for only ten years of use under the theory the buildings would "*be so full of germs that they'd have to be razed*," whose sewers created "*seepage of ooze and flow of tides in some parts of the building*" from the start of operations, and whose pre-1872 buildings used "*old fashioned barrel sewers*" with obstructive deposits and documented rat infestations.

BU inherited the decades-long crisis of hospital-acquired infections — increasingly virulent and antibiotic-resistant organisms bred by the physical conditions of the hospital itself, including contaminated sewers carrying bacterial loads in the millions per cubic centimeter, incinerator ash, deteriorating infrastructure, and a direct hydraulic connection to the Roxbury Canal cesspool. BU also is responsible for reckless hazardous waste and radionuclide handling, including dumping radioactive waste into the shared sewers and sending irrational emotional letters to NRC demanding they have some sort of inalienable right to do so, incinerating hundreds of radioactive dogs without any sort of air abatement qualification or monitoring, and covering the South End neighborhood where petitioner lived with radionuclides from dogs BU had murdered with their animal experiments. They had to remove a large portion of the Victorian sewers due to turning it radioactive by their dumping just blocks from the petitioners basement apartment.

BU also inherited BCH's NRC-licensed radioactive materials operations, including the radioactive waste. BU and its affiliated Boston University Medical Center advocated for the right to discharge

radioactive waste to the combined sewer system — the same Victorian brick and wood sewers documented as "ill adapted" and "usually leaky," connected to the same conduit system discharging to Fort Point Channel without tide gates, meaning radioactive effluent discharged to the sewers reached navigable waters with every tidal cycle and accumulated in the sewer sludge throughout the district's 1,360 miles of combined sewers and the basements connected to them. The school also expressed a public distain for the neighborhood. In 1964, Lewis Rohrbaugh of the BU Medical Center stated, "the neighborhood surrounding [Boston City Hospital] is indeed deplorable."[53])

As of July 1 1996, Boston City Hospital merged with Boston University MCH. The current President and "System Chief" of Boston Medical Center is Anthony Hollenberg, M.D. Dr. Hollenberg "oversees strategic leadership across the academic medical center." Prior to his current role, he was "physician-in-chief" at BMC and Chair of the Department of Medicine at Boston University's School of Medicine (Boston Medical Center 2026).

The current President and CEO of Boston Medical Center Health System (BMCHS) is Alastair Bell, MD. Dr. Bell oversees the "oversees the comprehensive system strategy and operations of BMCHS' entities, including BMC, Boston Accountable Care Organization, Clearway Health, and the WellSense Health Plan" and led medical insurance strategy at McKinsey and Co. prior. The description of BMCHS explains its primary goal is "advancing scientific discovery," while providing "access" to medical care, and "developing scalable approaches" to health care. (Boston Medical Center 2026).

Boston University Medical Center also has a "Hospital Epidemiology & Antimicrobial Stewardship" program and the Director as also the Director of Antimicrobial Stewardship for the Boston Medical Center. (Boston University 2026). So if there are microbial infections occurring at BMC, like there was at BCH, the team responsible for investigating those infections is Boston University who concurrently claims no formal legal connection to BMC, while the President of BMC was currently the Chair of the Boston University School of Medicine, and the President of BMCHS openly admits the hospital is still being used to exploit vulnerable populations with no other option for medical care to subject to academic research for the purpose of grant funding and publication metrics. Not much has changed since Boston City Hospital.

6. E. I. Du Pont De Nemours & Co.

The next PRP is the **Du Pont**. DuPont is one of the largest chemical companies in the world, headquartered in Wilmington, Delaware. DuPont acquired New England Nuclear Corporation (NEN), one of the largest commercial producers of radiolabeled compounds in the United States, and operated the facility as "DuPont NEN Products" under its Biomedical Products Department. The NEN campus occupied multiple buildings across Albany Street, East Canton Street, and East Dedham Street in the South End, manufacturing tritium, carbon-14, sulfur-35, phosphorus-32, iodine-125, and other radiolabeled compounds for the biomedical research market at production scale.

Under DuPont's ownership, the facility held multiple NRC licenses, was registered with MassDEP as an air stationary point source and hazardous waste program facility, and was listed in the EPA Facility Registry System. DuPont discharged radioactive waste from holding tanks into the Boston combined sewer

[53] "A Needed Service to the Community," The Boston Globe, Sep 28, 1964, p. 22).

system as a routine disposal practice — the same combined sewer infrastructure that overflows untreated into Fort Point Channel during wet weather events. DuPont's radiological discharges and their implications are discussed in detail in the radionuclides section of this notice. The petitioner had also found strange nanotech items in her apartment, including a capsule with a strange liquid metal/element, and colonized by colorful filamented organism trying to access that substance through the microscope capsule. That sounds like it was probably a Du Pont issue & they need to clean all of that up too.

LED Microscope (50-1000x): sample from basement apartment. [Unknown object. Appears to be man-made. Could plausibly be some sort of nanotech. Suspended metal within the container is concerning related to pollution and health exposure. Also, the filamented organisms appear to be drawn to the substance.]

7. Proctor & Gamble-Gillette

The next PRP/Defendant is **Proctor & Gamble-Gillette**. The Gillette Safety Razor Company was founded in Boston around 1901 and has operated its world headquarters and primary manufacturing campus in Fort Point, South Boston for over a century. The company relied on the Channel as its direct shipping route and used the Channel as a natural resource for its manufacturing. Gillette manufactures razors, blades, and personal care products at the facility and is one of the largest private employers in the City of Boston. (100 Acres).

In 2005, The Procter & Gamble Company and The Gillette Company merged, and P&G-Gillette continues to operate the South Boston campus. P&G-Gillette is the responsible party for chlorinated solvent contamination originating from its manufacturing operations, including an active groundwater pump-and-treat system and numerous MassDEP Release Tracking Numbers associated with the facility. P&G-Gillette's contamination and its ongoing remediation obligations are discussed in detail in the chlorinated solvents section of this notice.

Among other issues, there's catastrophic levels of chlorinated solvent contamination in the ground and groundwater, including the bolide impact craters at the site and around Fort Point Channel, and directly threatening, fi not already, leaking this contamination into the Habor and ocean. Further, based on the extensive impact signatures at Gillett's property it seems safe to assume that Gillette had known about the actual geology for some time and has not said anything about it. It may also explain why they recently tried to sell that property and not even GE would buy it.

8. Cosa Nostra, "The Mafia" their Condominium Associations, et al.

The next PRP/Defendant is the a group within, associated with, and/or attributable to the entity know as **Cosa Nostra (a.k.a. "The Mafia").** The violations described in this Petition/Notice appear to be part of a large-scale, long-running scheme, racket, and/or conspiracy orchestrated by and for the benefit of a larger organized crime enterprise. I believe I was injured by individuals and entities who are part of this group, whose activities and violations are in service of, and for the benefit of, and at the direction of this group. Further, my injuries occurred because of those violations and the overall conspiracy, and many of injuries caused by this group would have never occurred if it were not for these environmental violations and related illegal schemes.

I began filing complaints about this group and requesting assistance from the government regarding this group's intentional unlawful conduct towards me starting with emails to the City of Boston's Building Department and then a City Police report on Aug. 17 2025 alleging extortion, threats, breaking/entering and harassment that I believed to be an effort to conceal safety hazards where I lived. The complaint specifically noted I believed the unlawful conduct was occurring because of my complaints to City of Boston about the condition of the apartment at 18 Worcester Square including issues with "groundwater infiltration," "plumbing backups with kitchen sewage rising to bathtub," "no ventilation," and "barred windows." I noted my first complaints were made out of desperation following a "major flood" from the boiler room which revealed "major structural issues in the basement and illegal utility" configuration and billing.

My Aug. 17 2025 police report filing noted that the person "texted me demanding I withdraw the case" with the City about the apartment and threatened me with "harassment, reputational damage, and unlawful financial expenses if I did not withdraw the case." I said I did not withdraw the case and he responded with "increasingly aggressive" conduct including "incessant threats, unlawful demands, and repeated attempts at blackmail and extortion directly in response to the city complaints and investigations." I also noted that I asked to deal directly with the owner and in response to complaints about insufficient ventilation and oxygen deprivation in the basement, he sent me "midnight emails threatening violence and break-ins, threats to hire other people to unlawfully enter and cause me harm, and attempts to fulfill the threats including attempted unlawful entry." I told the police I would bring them copies of the evidence and that I was concerned how casual and effective this behavior was and that it may be used at scale regarding complaints about the family construction business and/or the building.

Following that complaint there was unusual activity in the Public Alley where my apartment access was which I mistakenly attributed to being related an open DOJ investigation into my disclosures about federal grant fraud at the university that I worked at in my first year in Boston, or an extension of Apple's ongoing unlawful physical harassment of me occurring since 2021. I now believe the surname of the person I filed the report about and/or the Worcester Square location then triggered a flag and a victim's protection-type team was deployed to shadow me for a few days when I took out the trash and walked my dog, likely making themselves apparent as a deterrence measure. I do not know what government or agency these individuals were with but there was no explanation for their presence and behavior, and they did dress and act like partially undercover law enforcement.

In late July. 2025 I disclosed my claims about the basement apartment to my Ch.7 bankruptcy trustee. In mid-Aug. 2025, I disclosed (based on my knowledge at that time) details of my claims about the Site and entities that are part of this Defendant to the Trustee, including the name of construction family and businesses, and the Condominium Association and its President. I noted the police report and safety hazards in the basement. I stated I demanded no contact from the person I filed a police report about or else I would seek a protective order, and noted I was keeping my door barricaded out to fear of my physical safety. I notified the landlord about the police report against her partner and demanded to only communicate with her. She responded by inexplicitly returning my security deposit. Two days later the Trustee in my Bankruptcy case conspired with Apple's lawyers to abruptly stay my Apple litigation under the false basis that I was forbidden from managing day-to-day litigation because I petitioned for bankruptcy.

The Trustee refused to file anything to the court himself, allowed Apple to file documents accusing me of misconduct, improperly raising discovery issues with false framing and misstatements, falsely claiming I lost standing in my own litigation (which could lead to dismissal based on lack of standing), and demanding an indefinite stay until Apple notified the court otherwise. The Trustee refused to intervene, refused to file anything himself, and told me he would not speak with me or respond to my emails for two weeks. The next time we spoke was around Sept. 8 2025, and the Trustee threatened me that he would contact the "enforcer" of my basement directly to inform him the Trustee found no value in my claims against those parities or about my apartment, to encourage him to contact me directly regarding any remaining legal dispute, and implied I was about to be evicted by these entities.

I warned the Trustee he would be inciting and encouraging potential violence, there was no legal or procedural basis for him contacting potential defendants, and his only reports are to be filed directly to the Bankruptcy court and creditors. The Trustee told me in writing he would proceed with his plan regardless of he harm caused unless I "changed my mind" about having claims against that person, his family's business, the Condominium Association, and its President. In Bankruptcy you have to disclose all potential legal claims or else you can be found to have committed criminal fraud so there is no such thing as "changing your mind" about having claims, especially in response to threats of violence.

Further, the Trustee had no plan regarding the Apple case, never administered those claims, and admitted he only read my memos about those claims and did nothing more. My Apple case was delayed for more than three months, at a time I had just filed a motion requesting sanctions against Apple, greatly reducing any bargaining power I had with this Defendant regarding my leased apartment as I was insolvent and now was also greatly set back in the Apple case, which would foreseeably make me desperate, afraid, and likely to voluntarily vacate the unit due to the accelerating threats.

In Sept. 2025 I reported suspected organized crime activity to the US DOJ USTP Reg. 1 i.e. "*Request for Investigation and Intervention.*" On Sept. 15 I emailed complaining about what appeared to be a criminal conspiracy in the bankruptcy proceeding specifically attempting to obstruct and block legal claims against this group and which could have eliminated my legal rights and standing regarding these environmental violations and orchestrated by the Trustee who appeared to work at a law firm representing these entities.

On Sept. 19 2025 I emailed the same DOJ office escalating that my research indicated the Defendants in my 18 Worcester Sq civil case who were benefiting from and part of these bankruptcy proceeding issues,

appeared to be associated with the mafia. I noted that two entities within the group who received the primary benefit of the unlawful conduct by the Trustee "basically present as an overly exaggerated cartoon version of an old school, independent, Boston-adjacent, organized crime family" running construction rackets, distribution networks, and illegal gambling operations since at least the 1950s).

I spoke with the Essex County's District Attorney's office and the Commonwealth's Attorney General's Special Investigations office in late Sept. 2025. The County referred me to the Commonwealth due to the cross-county activities and the Special Investigations office urged me to file a request for Criminal Investigation but cautioned me that direct action is uncommon in cases with well-established entities and complex rackets but that they strongly encouraged my cooperating in establishing documentation for them regarding my complaints and I did file that complaint.

The US DOJ Office of the Trustee had called me and confirmed an investigation but no written updates were ever provided. By Sept. 29 2025, I notified that DOJ office that further research had revealed that "It appears the entire building where I live may be owned by an organized crime group. In addition, the building HOA Trustee who lives on site belongs to a prominent organized crime family in the NE that apparently specializes in smuggling. Further, the owner of my apartment is apparently affiliated with one or more of these groups and/or is married into the leadership of the current version of the Kansas City mob/Chicago Outfit." I noted I only discovered the facts underlying this interpretation because I was trying to figure out why I was facing threats of violence from a government appointed attorney if I don't "change my mind" about having potential legal claims against this group and arising out of the Site."

In the Sept. 29 2025 email I disclosed that one party had disclosed to me that his family construction business "did business" with the President of the Condominium Association at 18 Worcester Square, the President was running an fraudulent architecture business from the building without an architecture license, the President's real estate activities and associates strongly indicated some sort of covert transportation/distribution network from Boston up to Montreal and Maine, the construction business appeared to be formed in the 1950s by people directly associated with the Kansas City Mob/Pendergast Machine after that group was forced out of Missouri in the 1940s, and the founder of the construction company was well known in the horse racing and gambling scene (including Suffolk Downs) and has a close, personal relationship with the son of Commonwealth Governor Alvan Fuller.

I cited findings from my research including multiple county, state, and federal enforcement actions against the construction company's enterprise over multiple decades and as recently as only eight years ago. I noted their real estate holdings strongly indicated some sort of cross-state smuggling network. I noted the construction company family appears to have married into another construction company family associated with the Detroit partnership/Milwaukee family and who faced extensive federal charges for construction rackets in the 2000s.I noted my landlord and her partner (part of the Essex construction company family) are currently living next to multiple entities with surnames known to be members of the Patriarca family.

On Sept. 30 2025 I emailed another group with the US DOJ, forwarding my emails to the US DOJ Office of the Trustee, complained I was not receiving any responses from the Trustee division about their Trustee, and I updated this division that "I also realized the five-unit townhome I live in appears to be owned and managed by Patriarca affiliates, and that was another part of my claims the Trustee tried to

obstruct and get me to 'change my mind' about. Thus, it appears the Trustee was doing 'mafia shit' because my claims were against the actual mafia."

I also shared that I was trying to understand the business interests of the entities related to my apartment. I said I was "researching real estate records, news articles, and other public records" and "I built a map and ran a sort of rudimentary organized crime GIS analysis." I shared a link to that map and I explained that I "prioritized records following known patterns for organized groups: including how they place properties in the women's names or names of other relatives, clusters of properties held by the group and affiliates, properties exclusively in mobby areas but only areas with that mob's specific allies, and proximity to ports / highways / borders / gambling/etc. I also focused on the group I'm dealing with directly and expanded from there." The map I shared showed real estate holdings located in Boston and owned/sold by the Condominium Association President and past Association members which clustered in specific areas which I later realized were all above the historic British fortifications or access points to the Victorian sewer systems, and based on location or known mapping, would connect to the area of the Fort Point Channel where the Patriarchy family was known to operate.

When the Trustee finally abandoned my claims against these parties back to me, he initially did so while specifically omitting the construction family, the landlord's partner who is part of that family and who I filed a police report against, the Condominium Association, and the President of that Association. The Trustee also excluded my tort, criminal, and unfair business practices complaints entirely which included a premise liability claim arising out of injures at Worcester Square and the Site. I filed my own supplementary notice with these claims to the creditors which then triggered the Trustee to file a second notice of abandonment. However he repeatedly, intentionally used false names and misspelling of names for the parties mentioned above, refused to correct it upon complaint, and did it again multiple times after which could create legal ambiguity regarding the release of claims and my standing.

The Trustee refused to confirm if he was in contact with this Defendant or the parties described about me or my bankruptcy, but on the only two days of scheduled meetings with the Trustee, the person I filed the police report against contacted me directly within minutes of the Trustee's threats and also informed he would be coming to 18 Worcester Square and my apartment, despite my no contact demand. Further, the before the Trustee first abandoned the claims against this group, the landlord took out an insurance policy for the apartment (after having none prior), and then used that policy to file a claim to that insurer where the policy only covered <1 month of the claims and none of the intentional or gross negligence claims, but omitted the date of the policy initiation and used the claim to request an extension to file the 93A response letter, but in reality conspired with City of Boston ISD to try to un-do existing code violation citations, reduce the scope of violation, and conspire with the construction company and Condominium Association to formally appeal the City of Boston's code violations regarding insufficient light and ventilation under the theory that a zoning variance and the City's non-conforming use policies create legal immunity for them regarding the provision of light and oxygen to tenants.

Despite the person I filed a police report against not having legal title to 18 Worcester Square or the apartment I rented (he's not named on the deed), not being party to the lease I signed, and not being a member of the Condominium Association, the other entities all treated this person as the *de facto* "enforcer" regarding my rental and the person in control of the basement of 18 Worcester Square. This

person, admitted to being in some sort of business arrangement with the Condominium Association President, repeatedly drove over forty miles from Newbury to Boston to meet privately with the President (assumably about me and the apartment) without the owner present, attended the City of Boston ISD appeal and represented the interests of the owner and the Condominium Association, despite the other parties having legal counsel, and despite my demand for no contact, in order to argue they do not have to provide me oxygen.

This person also had indicated a surprising amount of knowledge about 18 Worcester Square. For instance, when I complained about frequent sewage backups and plumbing failures, he insisted there was no clog or obstruction in the sewer connections themselves because, he indicated, the sewers are very large, massive, impossible of being clogged. (I did not understand that the time he was likely referencing large tunnel-like Victorian sewers under the building).

He also indicated he knew who I was (an Apple whistleblower and privacy advocate) despite me not disclosing that and upon me responding hesitantly then pivoting and changing the subject, and later denying any knowledge of my whistleblowing and environmental advocacy, including about matters he later was directly notified about when I was unable to fully pay rent on time in 2025. The fact he denied events which are documented with evidence implies to me that there was some sort of scheme about having me specifically in that location, perhaps to create doubt regarding the conditions, by being able to cite that I did not complain, while knowing how desperate I was and that I was extremely unlikely to complain; or knowing that if I did complain, that they would have multiple pressure points to exploit to try to silence me.

This person also shared information about construction work on hospitals in this area and indicated they were in extremely poor condition and owners were generally seeking to reduce any expense needed for remediation. He shared, and I later confirmed based on their advertising, that the construction company specialist in hospital and medical-related construction in eastern Massachusetts. He also noted multiple times some sort of insider knowledge of biological research and medical experimentation occurring at or around Plum Island. He shared this information in such a way that I suspect organized crime families are likely fully aware of the violations described within the Petition/Notice, and have been using this information as leverage to extort government agencies and political officials.

He also expressed knowledge and intent regarding the utility cross-metering with my apartment. When I discovered the issue after the July 2025 flood, I raised it to him with concern that if had not been paying my full electricity bill and some of my electric was billed to the Condominium Association, then I may owe a debt and I needed to induce it in my bankruptcy case. Similarly, if I was paying for common area electricity then I need to disclose that as well and the Estate may want to recoup those payments to pay my creditors. He called me and his immediate response was that if I do not drop the matter they will have to correct the electric and I will be billed for far more money then my already expensive bill. I complained to him that I suspected it was the reverse because I was being billed $600/month for electricity for a tiny studio apartment. He told me my bill is so high because of my electric heat and the other units do not electric heat. I asked him why he thought my bill would be increased from correcting the cross-metering it only shifts a few outlets and the fridge. Then he pivoted and told me it would then include my heat and implied it currently did not include my heat. I asked him how I could be billed $600/month if it

did not include heat. He told me to drop the complaints and refused to engage further. I reported the cross-metering to City of Boston and they cited the owner and demanded she correct the issue.

I also contacted the Condominium Association President to notify him of the issue and requested information about the billing and confirmation if I owe any money, or if I'm owed money due to the billing issues. The President responded aggressively, told me he "did not care," "don't talk to him about it," and to "drop it." If the prior statement was correct that the Condominium Association had been paying for a significant amount of my electricity, then one of the basic functions of a Condominium Association would be for the President and Trustees to recoup that money and correct the accounting records. He did not do this and instead also found me in the basement and declared that he was revoking my access to any of the utility areas including the electric panels and meters. He also installed a lock on the boiler room door following the floor and my report of multiple hazardous conditions in that boiler room, and he declared the lock was specifically to keep me out of the boiler room that shares a wall with my bedroom.

Similarly strange, when the city, contractors, or I raised issues and requested repairs a common response from all noted Defendants was to act as if they had no knowledge of the building construction or any authority to correct issues. This paralysis also included responses from the Condominium Association President. Around early August 2025, unpermitted construction in the boiler room set off a fire alarm system triggered by dust. The system announced the alarm and instructions to vacate over a loud speaker in multiple concealed locations of the basement and both of these people stated they were not aware of the existence of that alarm or speaker system and had never heard the alarm prior. The alarm also automatically called the local Fire Dept. station. The Fire Dept. arrived and these men told the Dept. they do not know where the alarm is located or how to disable it. The Fire Dept. found the alarm and disabled it themselves. It is strange that the President convincingly claimed no knowledge of this alarm system yet had lived in the five-unit building since at last 1998 and was in charge of maintaining the fire alarms and sprinkler systems as part of the Condominium Association Trust.

I filed a lawsuit against these entities in Nov. 2025 but after needing to Amend the Complaint due to multiple typos and errors in the rushed first Complaint, and upon discovering the environmental violations and new legal claims, and after evacuating Boston and returning to California, I will need to withdraw that lawsuit, get renewed abandonment from the same Trustee in the Ch. 7 Bankruptcy case, and then refile in federal court in California with an expanded and revised Complaint.

Further, it was not until Dec. 2025-Jan. 2026 that I realized I had captured photographic evidence of excessive boilers in the boiler room, utility connections appearing to run into the adjacent row house from those boilers, what appears to be a concealed access point to Victorian infrastructure under the basement floor, and a "drop spot" for passing notes between adjacent rowhouses and located next to the electric panels. It was also at that time that I realized there was a drug lab in the adjacent rowhouse with shared utilities and which appeared to be currently entering the drying/harvest cycle with the owner explicitly using cement and plywood to seal the basement egress next to my unit.

The adjacent building also had an increase of some unknown exhaust coming from an industrial-style exhaust vent next to my unit and windows. I realized then that in order to install mechanical ventilation, a contractor would need to access all airflow vectors around my unit including the full configuration and functions of the boiler room, and any adjacent structures such as underground Victorian tunnels or

adjacent drug labs, and would need to understand all other exhaust at the back alley where my air intake would be installed, which would require asking what the adjacent row house was exhausting, where it was coming from, and if it contains pollutants.

Similarly, if I was to continue pulling strings regarding the cross-metering of my electricity, it seems likely to come out that they were not only outsourcing the utility provision for the secret basement/underground activities in the adjacent row house, but that they had decided to rent this basement apartment in order to further outsource the payment to an external party in order to further conceal the their relationship to the activities and in order to reduce their own costs for the operations. In deed after the cross-metering was corrected, my electricity bill was either lower or about the same as the prior billing amounts, but it did not increase. It appears that I had been paying for the electricity used to power the apparently unlawful drug-related activities in the adjacent row house and Victorian sewer system under the row houses and that was another factor driving me into bankruptcy in July 2025.

This is perhaps the only theory that can logically explain the Defendants extreme, violent, and otherwise inexplicable response to my seemingly reasonable health/safety complaints and request for repairs:

- When I complained about cross-metering, I threatened to expose the utility design for the coordinated drug manufacturing and distribution activity at Worcester Square;
- When I complained about insufficient ventilation, I threatened to expose the exhaust systems for those activities and the concealed tunnels/labs in the Worcester Square buildings and subterranea tunnels;
- When I complained about a small pest in the walls, the response was immediately to extort me to drop the complaints so they do not have to hire a pest control contractor, because that contractor would have to map conduits, holes, and pathways for the pest in the basement and adjacent spaces, potentially revealing these concealed tunnels and labs and then documenting that information in the legal required report for the City;
- When the fire alarm went off, the men in 18 Worcester Square were not aware of the alarm because they were likely not the ones who installed it and it was not for the protection of our specific building;
- When repairs were requested for structural elements or elements related to utilities, these Defendants acted like they did not have authority to make repairs it may be because they do not have authority to alter the building and they are simply expected to be stewards for the title of the building;
- The City refused to cite issues regarding ventilation, plumbing, or structural elements because they also knew the building actually controlled by organized crime and used for unlawful activities and either: the police would not help; or if they interfered with those activities, some sort of prior threat was likely to be acted upon against them' and/or they are also a participant in these activities.

As for the history of this arrangement, what I've been able to sort out is that the first renovations of the Worcester Square row houses occurred in the 1970s and prior to that the City records indicates there

are no building plans, records, or history of what was actually constructed. In the 1970s, a construction contractor must have discovered some sort of tunnels, large sewers, and/or concealed spaces under these buildings, which connecting to the larger system of tunnels, and also providing a unique private entrance within a home to that tunnel system.

That contractor must have shared that information and it made its way to the Patriarca family or other organized crime group. At that time Patriarca family was running rackets around Fort Point Channel and South Boston, where there are also tunnels and assumably ones that connect to the ones at Worcester Square. The group must have realized that these tunnels connect to or are near their existing tunnels and could facilitate an underground network that could be accessed by these homeowners. The DOJ cracked down on Patriarca family in the 1990s and Patriarca must have been searching for a way to continue their operations in the same area, but with less visibility and stronger legal protects for preventing searches and surveillance.

Around 1998-2000, many of these row houses were suddenly purchased, converted to condos, and deeded to folks with surnames consistent with high-ranking members of organized crime groups. Additionally, these rowhouses (mostly around Worcester Sq, but also adjacent Victorian rowhouse blocks) were being deeded to names of leaders across a variety of families as if there was agreement to do this but only if it was not a monopoly by one organized crime family. In addition, the Massachusetts Condominium laws further enabled them to jointly own common spaces and infrastructure, such as underground tunnels and Victorian sewers, while enabling that at the same time no one individual would own any part of it.

If the police were to try to charge a member of one of these groups, the owner would point to the Condominium Association entity, which per Massachusetts law is generally immune from liability. Further, the Association would still control the access to the tunnels through that property ownership regardless of which names are on the deeds for individual units, creating a long-term usage legal argument for variances. If the City of Boston or Commonwealth were to find out what they've done and tried to shut down access, these owners could claim that the prior ongoing uses, even if nonconforming, occurred for long enough that the City is estopped from removing their access or forcing them to engage new in construction or alternation.

The City would assumably not be convinced by those arguments so the group would need some insurance and ability to deter the City from pursuing the matter. Perhaps something like placing the family of one of the mafia leaders, perhaps one known for extreme violence, directly at the location where the City's entrance to the sewer tunnels are for this block. The organization could access their tunnels through the privacy of their own homes and if the City wanted to access the tunnels it would to do so under the watchful eyes of an association of the Patriarca family. So, it appears, that's exactly what they did. Further, the family's house was used and publicly advertised as a functional crematorium. If the City wanted to access the tunnels the mob had now claimed the City would have to pass through Patriarca family territory, associated with a violent criminal, in a house that could destroy the evidence of a dead body.

Further, these row houses had double-wythe party walls but there were corners and edges where they were not completely separate, likely intentionally created for utility sharing back in the 19th Century. These would provide the family an convenient method for passing notes. By the late 1990s and early 2000s, the mob was assumably extremely sensitive about wiretapping. Even prior to the RICO arrests, they

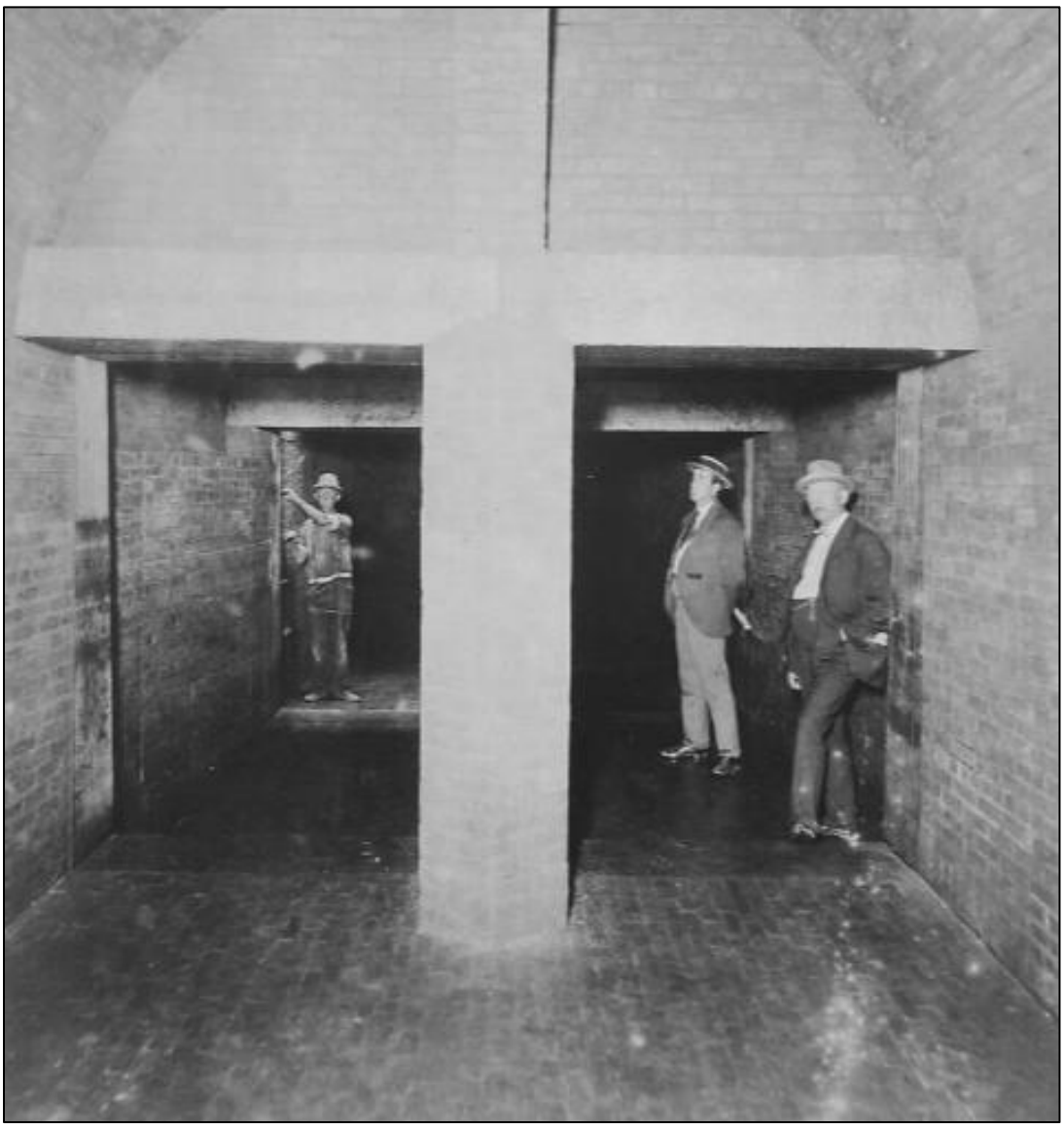
preferred talking in private spaces or out on walks, and not on the phone or in cars. Here, they could now pass information to their associates or even to other families (due to the sort of "United Nations of the New England mafia" setup on these Victorian blocks).

Similarly, these groups had a clever idea to start constructing roof decks where they lounge on their own roofs, closely adjacent to each other, and casually chat in the open like they're not doing anything wrong, but also five stories away from anyone else. When the DOJ or Commonwealth AG office assumably caught on to this scheme and pushed some of them on it, these folks would then assumably recite the holdings from the 1990s RICO cases where federal judges repeatedly found that real estate holdings, physical proximity between buildings, social clubs and encounters, and private activities generally cannot be used as evidence of criminal conduct. The mafia is a successful business organization (hence the "organized" designation) and would have used those hearings to inform a restructuring of operations and could have designed schemes like this based specifically on the findings of federal Judges about what is not direct evidence of criminal conduct.

These folks would have then concealed their criminal activities into the interiors, utilities, and underground of their own homes. They also further insulated any liability by turning most of these rowhouses into Condominiums. When the police ask about the strange looking old wood access doors in the basement, there no "person" who owns that door or where it goes once opened. The Condominium Association would own it and it's a legal entity found to be generally immune from liability. These folks could then tell the police to send any questions to a conceptual business entity with assumed immunity from prosecution.

Further, these rowhouse basements generally only have two windows which are on the far back alleys and are part of a walled-off kitchen/dining room space, with the storage and utility space behind those walls completely out of the view. The largest risk for these innovative entrepreneurs would likely be related to the other Condominium owners in each building, so they would need to ensure most or all of the Condominium owners are loyal to the organization (perhaps family members of mobsters, especially since using family members to hold real estate title is a existing mafia tradition).

They could also use the Condominium procedure as part of a vetting process. A new person seeking to join the organization would be monitored constantly in the house and around the neighborhood, which could build trust or else quickly identify a rat. They could probably even allow an owner to lease a unit as a rental apartment. .If this was an illegal enterprise, why would they allow a stranger into their secret lair? It would help build the appearance of innocence to any outside onlookers. They would just need to hide access points and put the renter in a location where the renter cannot overhear them (maybe the basement), and if the renter starting asking questions or making complaints, then they terrify the person, get them to flee, and ensure they never want to come back.



"Men and worker standing in divided sewer."

Photograph. Boston, MA. [ca. 1880–1889]. *Digital Commonwealth*

So, perhaps some they engage in some financial extortion, do a frame-up or two, maybe threaten to break and enter with a vague but imminent threat of violence. Whatever they do, it would just need to be messy enough that the police couldn't' clearly outline a crime, and soft enough that the renter would worry about bad actors but not jump to "this is the mafia and I'm onto their secret tunnels and drug labs."

They would also need to advocate fiercely regarding their ongoing non-conforming use variance claim. No matter what, if the City tried to force them to consent to the cessation of privileges/access, or force them to renovate something, they have to insist on protecting the non-conforming use claim because that's how they protect their legal ownership of the tunnels. If a tenant complains the basement is basically a cave without light/air, and wants mechanical ventilation and proper lighting, and the City moves to enforce that citation, they would have to fight that claim as if their whole scheme depends on it because the citation is in the Building Code, like their tunnels.

They may even send their enforcer to a City hearing on the matter to argue they have no legal requirement to provide tenants light or oxygen. Otherwise, the next thing the City may ask them to do is to vacate their drug labs and sewer tunnels, and they would not want that.

Those sewers and tunnels must be properly abandoned. That includes removing the contaminated pipes, brick, and conduits, and filling the space with non-toxic materials that will increase the ground stability and prevent further deterioration and vectors for migration.

Further, if Cosa Nostra is using these spaces for drug manufacturing and transportation, across North End, South Cove, Fort Point, South Boston, and the Waterfront and through the Patriarca family's existing tunnels – they are certainly releasing hazardous substances along the way.

Those sewers are directly connected to the tides and ocean one way or another, so every release and discharge is a Clean Water Act violation. The existence of these tunnels and conduits provide migration pathways, vectors for releases, and ongoing releases. The presence of these structures and the ownership by notoriously violent criminals also deters proper maintenance, remediation, and abandonment by the government. Further, in such as situation, a municipality might ask for FBI oversight and protection in order to remedy such a complex issue, but in Boston, the FBI is known to protect the Patriarca family and also recently inexplicit announced that there is no longer any mob in Boston and accordingly were shutting down their organized crime team.

Additionally, assumably the U.S. EPA and the U.S. Army will never issue a permit to Cosa Nostra for mobster activities in secret underground tunnels, so this violation is simple in the fact that the mobsters need to be evicted from these tunnels, the tunnels need to be abandoned and removed, and all of these areas need to be assessed, remediated, and stabilized.

Further, if this Defendant is engaging in the kind of unlawful conduct it engaged in with me, but at scale and to protect their activities in such a way that also creates and maintains Clean Water Act violations, then their threats, extortion, obstruction, and other rackets are also Clean Water Act violations where they know their actions will lead to the pollution of waters of the US, or otherwise degrade those waters and the tides, and they engage in that conduct knowing of that result.

Other PRPs and/or Defendants

Additional PRPs/Defendants likely include at least Sobin Chemical, National Lead Co., Salem Lead, Boston Lead Co. Boston Lead Works, Master Chemical Company, Norway Iron Works, Jenney Refinery, South Boston Iron Works, Alger's C.A. / Alger & Co., Boston Wharf Co., New England Confectionary Co., The American Sugar Company, American Sugar Refining Co., Standard Sugar Refinery, The South Bay Wharf Company, Boston Water Power Co., The South Cove Associate, the Naval Blood Research Laboratory, National Emerging Infectious Diseases Laboratory, Boston University, the Boston University Trustees, Harvard University, the President and Fellows of Harvard College a.k.a. The Harvard Corporation, Tufts University Medical School, MIT. (see the Facilities Tab in the attached Petition Workbook for additional data already gathered).

III. CERCLA PRE-ASSESSMENT QUALIFICATION

Under 42 U.S.C. § 9605(d), any person affected by a release or threatened release may petition EPA to conduct a preliminary assessment. The Petitioner affirms that substantial evidence documents the following:

Hazardous substances are present. The site contains TCE/PCE DNAPL at concentrations up to 9,700 mg/kg in soil and 407,000 µg/L in groundwater; lead at 370,000 mg/kg; arsenic at 15,200 mg/kg; antimony at 131,000 mg/kg; PCBs at 4,380 mg/kg; PAHs at 82,000–90,000 mg/kg; and radionuclides from NRC-licensed facilities and potentially from U.S. military harbor operations. These concentrations exceed EPA residential screening levels by factors of hundreds to tens of thousands.

Prior and ongoing releases are documented. Releases include continuous discharge of contaminated groundwater to marine waters through the Roxbury Canal Conduit and Fort Point Channel; vapor intrusion of chlorinated solvents and hydrogen sulfide into residential and commercial buildings; tidal pumping of marine-influenced groundwater carrying the site's full contaminant load through fractured bedrock, leaking 150-year-old brick sewers, and the underdrain system; combined sewer overflows discharging untreated sewage and industrial waste; and ongoing gas generation from anoxic decomposition of organic-rich fill and sediments. These releases have been continuous since the fill was placed and are driven by tidal and hydrological forces that will not cease without engineered intervention.

The Petitioner has been harmed by all of the above. The Petitioner lived at the site and was exposed to the full suite of contaminants and hazards documented in this petition, including: hydrogen sulfide and sewer gases through the same building-to-sewer pathway documented since 1874 and never remediated; chlorinated solvent vapors through vapor intrusion from DNAPL present at concentrations up to 407,000 µg/L in groundwater beneath residential structures; bioaerosols and pathogens from the combined sewer system that connects directly to residential buildings and surcharges with every tidal cycle; lead, arsenic, and heavy metals in soil and dust at concentrations orders of magnitude above residential screening levels; and biological colonization by deep-sea extremophile organisms — including Mariprofundus ferrooxydans, Beggiatoa, Thioploca, and Thiolava veneris — entering the living space through the same fractured bedrock and wall void pathways that transport the site's chemical contaminants. The Petitioner experienced debilitating fatigue, severe cognitive impairment, and symptoms consistent with iron-oxidizing bacteremia. The Petitioner's injuries were caused by combined and cumulative exposure through pathways created and maintained by the Defendants. The Petitioner evacuated Boston on January 31, 2026, because the conditions at the site made it uninhabitable.

The site ecology is uninvestigated and potentially unprecedented. No published microbial ecology study, metagenomics survey, or eDNA analysis exists for the site despite 150 years of multi-source contamination over fractured, hydrothermally altered bedrock in a tidally active marine environment. The Petitioner — with no formal microbiology training — identified four deep-sea specialists, published fifteen peer-reviewed papers developing a theoretical framework that independently predicted the site's geology before the Petitioner knew that geology existed, and documented organisms and conditions that may represent the most significant biological discovery site on the eastern seaboard. Boston University operates NEIDL, the nation's most advanced BSL-4 bioidentification facility, 2,000 feet from the site. Harvard operates a premier biology department. Neither has published a single study on the microbial ecology of the substrate where they have discharged radioactive, pathogenic, and biological waste for over a century.

The liable parties cannot regulate themselves. The primary PRPs — the City of Boston, the Commonwealth of Massachusetts, Boston University, Harvard University, and Procter & Gamble-Gillette — are also the primary landowners, the operators of the contaminating infrastructure, and in the case of the Commonwealth and the City, the regulators responsible for oversight. The Commonwealth has created a regulatory framework — the Historic Fill exemption under 310 CMR § 40.0006 — that defines the contaminated fill it placed in South Bay as "Anthropogenic Background" and exempts it from risk characterization and remediation.

The City has systematically concealed site hazards by omitting contamination sources from public databases, removing wetland designations from maps, renaming contaminated waterways, creating nonstandard measurement systems, and approving dense residential construction without disclosing the contamination history, tidal pathways, or biological hazards. The pattern of concealment documented in this petition is systematic, not incidental, and it has been carried out by the same entities that created the contamination and benefit financially from its concealment.

Federal involvement is required. A National Priorities List designation will serve as the forcing function necessary to compel independent investigation of the site's full conditions — geological, chemical, biological, and ecological — by agencies without conflicts of interest. The Petitioner requests that EPA conduct a preliminary assessment; that ATSDR and CDC investigate the public health implications; that independent eDNA and metagenomics surveys be conducted; that the Petitioner's published research be evaluated by qualified scientists; and that no further residential development be approved at the site until a comprehensive assessment is complete.

IV. VIOLATIONS OF CLEAN WATER ACT

Most or all of the Site likely constitutes Waters of the United States, including:

- The Atlantic Ocean, South Bay, Dorchester Bay, Charles River, Fort Point Channel, Roxbury Creek/Canal, and Dorchester Brook/Canal are "waters which … were used in the past in interstate or foreign commerce" and are "waters which are subject to the ebb and flow of the tide." (33 CFR Part 328(a)(1)).
- The Site includes wetlands adjacent to these waters. This includes the wetlands beyond the high tide mark which are directly connected to tidal flow, such as the Boston Neck and Dorchester Neck. (33 CFR Part 328(a)(4)(i)).
- The Site's tidal streams, tidal influenced groundwater, and presence of ocean water in conduits and pipes, are all "waters which are subject to the ebb and flow of the tide" (33 CFR Part 328(a)(1),(2)).
- The groundwater and tidal flow at the Site are tributaries to the South Bay and/or Dorchester Bay and/or Charles River basin, all of which flow to the Atlantic Ocean. All of these waters are permanent and continually flowing, and the Ocean is a Territorial Sea. (33 CFR Part 328(a)(3)).
- The many inland creeks, brooks, and streams where they are not tidal creeks, are then tributaries to waters noted above, making them also a Water of the United States, and flowing to the Atlantic Ocean. (33 CFR Part 328(a)(3)).

- The Site also contains other wetlands, marshes, tidal flats, and wet meadows directly adjacent to the permanent, standing, and continually flowing Atlantic Ocean territorial sea. (33 CFR Part 328(a)(1)(ii),(4)(ii)).

"*Tidal waters*" are "waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun" and which can be "practically measured in a predictable rhythm." (§ 328.3(5)). While the tidal streams are generally captured by the Defendant's stormwater and sewer systems; the water, the area where the water originates, and area where the water intends to flow are wetlands. Those areas are also adjacent to territorial seas, waters used in commerce, and waters subject to the ebb and flow of the tides. The Roxbury Canal Conduit and Dorchester Brook Conduit are submerged twice a day for around eight hours at a time due to the tidal flow, which demonstrably meets the requirements for "Tidal water" determination. These conduits constitute submarine caves systems.

South Bay is a tidal estuary of Boston Harbor extending inland. The area called "Gallows Bay," "Roxbury Harbor," and "South Bay" in historical documents was open salt water subject to tidal fluctuation and enabling international commercial navigation. The filling of this area displaced the ocean. The Site's jurisdictional status as waters of the United States is a geological fact.

It's an understatement to say that South Bay and Fort Point Channel were commercially navigable. Boston was a maritime city. Boston's ports were critical to the founding of the United States and continued to play a critical role in the US economy. Boston was "the leading English North American seaport between 1630 and 1760," and Boston's "tensions with the British government in the 1760s and 1770s [including about the seaport] ignited the war for American independence." Then, "during much of the nineteenth century the port of Boston was second only to New York." (O'Connell n.d.).

The Defendants had the audacity to try to fill, impede, bury, and obstruct the Atlantic Ocean and the tidal force of the Gulf of Maine with literal trash, ash, construction debris, pipes, tunnels, and conduits and then deny the legal existence of the Ocean's tides simply because they forced the tides to temporarily flow into sewer pipes. The Defendants deny the legal existence of the marine wetlands, marshes, and tidal flats because they filled the ground with an elaborate "drainage" system to capture the tides and release those tides back into the ocean --- but when the drainage pipes are removed, the Site will once again be a wetland, marsh, and/or tidal flat. Forcing the arm of the sea to flow into a pipe does not eliminate Clean Water Act jurisdiction over the ocean waters. Boston's own documents acknowledge that "The Fort Point Channel and adjacent wetlands clearly fall within the definition of "waters of the United States" under U.S. Army and EPA jurisdiction."

Further, while Defendants Boston and Massachusetts were able to convince the federal government to exclude certain areas of the Site from the Bridges and Harbors Act (33 CFR Part 329). (§56. Fort Point Channel and South Bay, Boston, MA, May 13, 1955, ch. 37, 69 Stat. 48; §59f. Boston Inner Harbor and Fort Point Channel, MA, Pub. L. 90–312, May 18, 1968, 82 Stat. 125)., they did so under the premise that their request arose solely related to highway development and failed to mention the decades of legislative history and official statements expressing a desire and intention to fill the sea for commercial purposes. Regardless, the CWA defines "navigable waters of the United States" are described under 33 CFR parts 323 and 328, not the code used by the U.S. Army Corps.

Still, for instance, Roxbury Canal was filled by Boston and Massachusetts under the premise of a sewage emergency with a concurrent refusal to stop dumping the sewage they cited as the emergency, and then it took less than a year for both parties to then declare an emergency need for the construction a commercial sports stadium at that location. When they were unable to finance the stadium, they used the site for illegal landfills and junkyards, operated an illegally polluting incinerator, opened a large prison at the site, and also operated a methadone clinic.

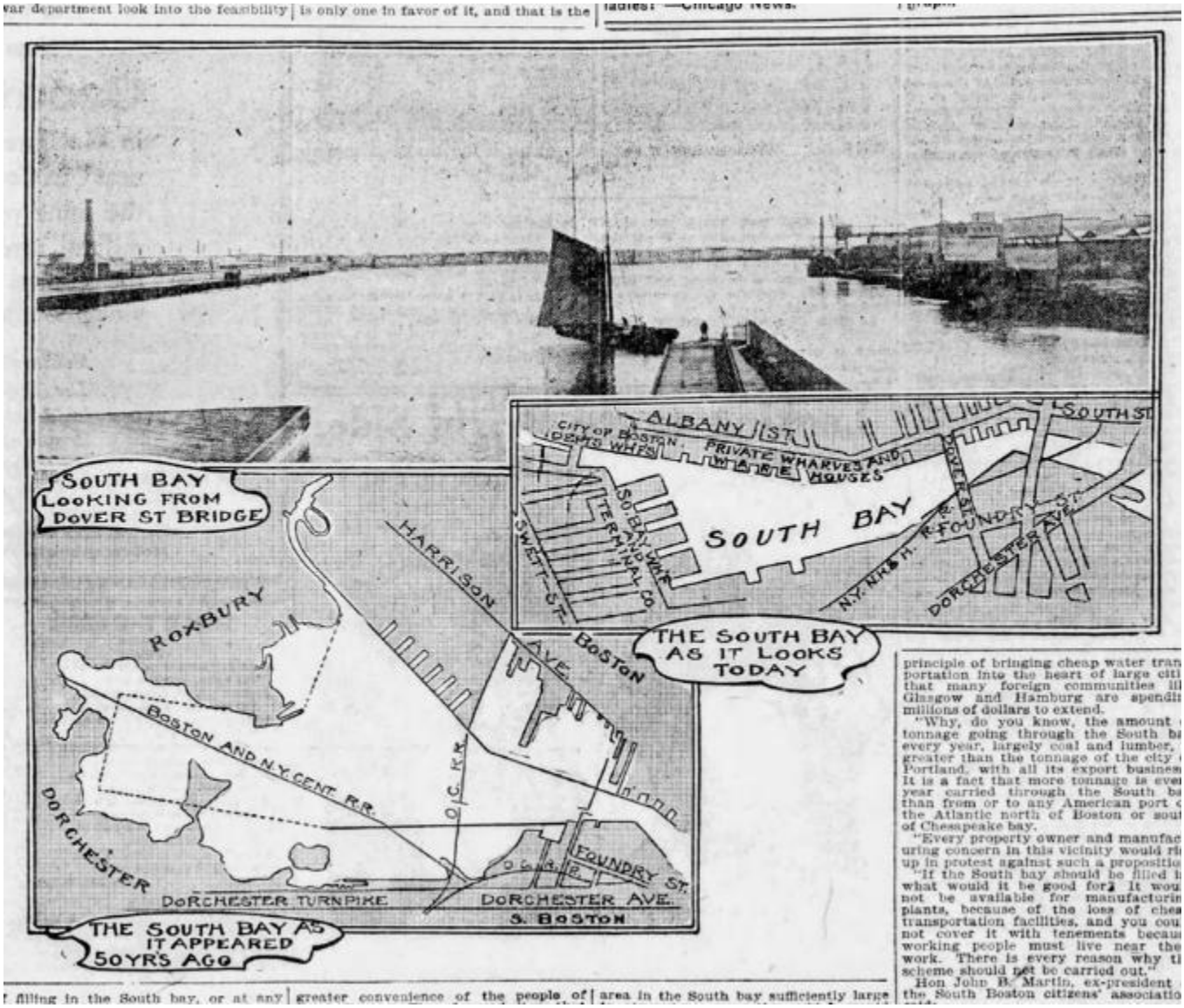
Boston and Massachusetts also demanded exemptions from zoning and building code, and environmental clean-up requirements for both the jail and clinic, under the premise that both required emergency construction. Massachusetts went so far as to argue that if they were to comply with federal environmental laws prior to building the jail, they would be violating federal environmental laws. (add) None of the Defendants explanations actually justify a waiver of federal navigable waters jurisdiction. The Defendants Boston and Massachusetts played President Eisenhower and any "navigable waters" exceptions should be revoked.

This Notice of Clean Water Act violations is filed by a potential citizen plaintiff under 33 U.S. Code § 1365 with "an interest which is or may be adversely affected" constituting a personalized injury caused by her by the Defendant's' violations and which may only be remedied with the cessation of these violations and remediation of harm caused by the violations. This Notice is served to the US EPA and US Attorney General as well as to the potential defendants and PRPs. Under Section 1365(f), this Notice alleges the Defendants violated limits set under Sections 1311 (effluent limits), violated regulations under section 1345(d) ("sewage sludge"), and took "unlawful acts" in violation of Section 1311(a) including Sections 1317(d) (violating prohibitions on "pollutants" and "toxic pollutants") and 1344 (dredging & filling). Many of these are continuing violations.

Congress and the federal courts consistently reinforce the legitimacy of equitable tolling theories for environmental violations, including the theory of continuing violations. This is especially true when the requested remedy is injunctive and requests remediation of an ongoing harm or risk. Monetary fines have additional and complex legal requirements and policy rationales because they are focused on punishment and deterrence. Rather, remedial injunctions seek to force a party to remedy a harm they created and which common sense dictates they should not have done at the time and/or should have remedied on their own action once laws were enacted condemning those kinds of acts and harms. These are equitable requests to repair defects and restore prior conditions.

One reason for this is to not arbitrarily obstruct lawsuits and enforcement actions from properly capturing the full temporal field around the events and circumstances giving rise to the violations. The reason this exception is so common in environmental cases, is that to find a violation of pollution laws it generally only requires a "knew or should have known" type of mental state by the violator (or even no consideration of mental state at all, i.e. strict liability). Thus, the statute of limitations policy rationale regarding preservation of evidence is moot if the regulatory body can already prove prima facie violations and general liability. The primary defense would be to prove someone else is actually liable and in which case that type of evidence is generally self-preserved (deeds, contracts, etc.). The degradation of evidence could it more difficult for the entity seeking enforcement to make their case, but would not materially

impact the party subject to prosecution, and regardless, the primary evidence would be independent assessment of current conditions.



(1904)

A second rationale for expansive tolling, is that environmental laws exist to protect the public's health and safety, to protect the environment and critical infrastructure, and to conserve and protect natural resources shared across political boundaries. Many federal environmental enforcement actions address issues which create an imminent and substantial endangerment, which risk catastrophic harm to infrastructure or natural resources, and where it would seem irrational and ill-intentioned to claim a theoretical statute of limitations should prevent the government from stepping in to prevent that harm from occurring. This rationale underlies the CERCLA Superfund program, as well as the substantial and imminent endangerment provisions in statutes like the RCRA.

A third rationale argues that even if a violation occurs only once, it can create severe and ongoing harm that requires remediation of the original violation in order to end the ongoing injuries and risk. The second and third points are the key rationale behind broad statute of limitations tolling for Clean Water

Act Section 404 filling cases. Most Section 404 "filling" cases represent a one-time filling which creates issues that fester for decades and create public endangerment and/or an increasing risk of catastrophic failures across ecosystems and/or infrastructure. The second and third policies find their anchors in ongoing harm, and then in proving that harm, that harm then establishes an equitable expansion of the concept of continuous violations which demands the original violation be included in the enforcement action. The first policy rationale finds its equitable anchor within evidence of active violations still occurring as part of a long-running unlawful practice, which then enables the expansion of the temporal field for an enforcement actions scope and remedies to cover the lifespan of the unlawful activity.

If the violator has engaged in the same wrong acts for twenty years, and created twenty years of harm, it would be illogical to only enforce and redress three years of violations across those twenty years and to ignore the remainder of the harm. However, concurrently, it would be irrational to enforce every violation going back decades regardless of modern risk and harm. Thus, in order to justify a belated action, there must be evidence that the prior violations are currently creating a severe and unreasonable risk that justifies modern involvement. This seems to be a comparable and similarly unspoken balancing test as the assumed and well accepted elimination of statute of limitations for both the NPL Superfund program and for convictions of homicide. The unspoken assumption of tolling in these types of factual circumstances implies all three branches of the federal government recognize that the most severe environmental law violations often fall into a sort of "*you know it when you see it*" category of cases.

It's my overwhelming belief that the facts and violations alleged in this Petition/Notice squarely fall into the "*you know it when you see it*" category. Further, I believe this Petition/Notice sufficiently demonstrates that the turn-key existence of substantial, admissible evidence which already proves each of these violations. The polluted fill and sewers are causing ongoing independent harm and are also a transportation mechanism for other pollution, admits a large area with complex and dangers pollution in the soil, groundwater, streams, air, and tidal waters. All of this is physically interconnected and one violation cannot be remediated without addressing all of the violations – there cannot be a CERCLA clean-up without remedial action under CWA. The scope is enormous but the harm is real and ongoing, and the severity justifies the reach. The ongoing harm justifies addressing the original violations, regardless of temporality.

I. THE PETITIONER, CITIZEN PLAINTIFF, & VICTIM

This Petition/Notice was not Entirely Voluntary

In order to file a Petition for a CERCLA Assessment, to file a Citizen Suit under the Clean Water Act, or even to pursue a state public nuisance claim – the Petitioner/Plaintiff must have some type of personalized interest in the matter in order to obtain standing in court to pursue the claims. A physical injury caused by a PRP/Defendant's tortious conduct and their violations of environmental laws, as occurred here, is always sufficient. Further, I filed complaints and raised issues to two of the primary

PRPs/Defendants (City of Boston and Boston University) regarding matters which risked to reveal their long-concealed violations and the resulting hazards. Their bad faith and negligent responses was exactly what caused me to discover the hazards and violations, and to discover the PRPs/Defendants scheme to conceal these issues.

I cannot find any other article, report, commentary, complaint, legal filing, or other record that documents the violations and schemes I have documented here. It appears I possess extremely valuable first-hand evidence, analysis, and testimony for any case arising out of these violations which creates a burden and permanent obligation for me to participate in such matters. I file this Petition/Notice with an intention to participate in and advocate for these investigations and enforcement actions, and any scientific research inquiry into the scientific discoveries it appears I made arising out of the unique conditions at the Site, and which are described in this Petition/Notice including the Appendix and Exhibits.

However, on Jan. 31 2026, I fled Boston following the revelations described in this Notice/Petition as it become intolerable layered upon the issues previously described in the Amended Complaint in *Ashley Gjovik v 18 Worcester Square Condominium Association, et al.* (2584CV03297), Mass Antitrust Act, G. L. c. 93 § 9, Suffolk Superior Court (2025-), the conduct of those Defendants and Boston during the "Ashley doesn't need to breach oxygen" appellate proceeding, and this research providing confirmation that I could be suffering irreparable harm and even die from the exposure in that basement.

I have no desire to ever return to Boston due to the noted hazards, injuries, and unlawful and unfair actions of the named PRPs and Defendants in both cases. However, even back home in California, I will carry my injuries and trauma with me (in my body and mind, the harm to my dog, the damage to my chattel property, and the interruptions and obstructions these violations caused me professionally, personally, legally, and financially) for the rest of my life. I'm also homeless now but at least I'm no longer in the submarine cave cesspool surrounded by mobsters and giant bacteria.

In addition, the CERCLA Petition process strongly encourages and prioritizes petitions from direct witnesses to the violations of federal law, and/or resulting harm and injuries, who have first-hand evidence and testimony regarding the hazards. This burden weeds out complaints about sites which may simply "look bad" but may not pose the risk required to justify federal action. This policy also serves to surfaces sites, like this Site, which may otherwise remain hidden if it were not for a Victim/Plaintiff's injuries and/or observations, which reveal a concealed hazard.

Ultimately, both the CERCLA Petition and Citizen Suit Notice/Complaint processes are intended to enable a concerned Citizen, like myself, who has been harmed by violations of federal environmental laws, to escalate their concerns to the federal government and ask the government to intervene in matters for which the federal government may not normally have jurisdiction or justification to intervene. This Petition/Notice satisfies the Congressionally-designed requirement, and accordingly, it extends and fortifies the federal government's jurisdiction in enforcing federal laws against states, municipal governments, and private parties – including regarding historic violations with continuous/ongoing harms.

I was further compelled to complete this investigation and document these issues because I am currently in Chapter 7 Bankruptcy (*In re: Ashley Gjovik*, 25-11496, United States Bankruptcy Court, D. Massachusetts). Under federal law (the Bankruptcy code and federal case precedent) I am told that I am required to disclose any and all potential legal claims I may have against any entity for any type of

personal/civil legal violation that caused me harm and for which there could potentially be compensatory damages paid to me, and thus could be liquidated to pay the debts owed to creditors. Most of the harms complained of in this Petition/Notice are also potential private tort claims against those same PRPs/Defendants. If I do not disclose these claims to the Bankruptcy court, I'm told that could be guilty of a crime. If I do not disclose the claims with specificity or accuracy, I may have to later re-open my bankruptcy case and re-do the disclosure process.

Similarly, I have pending proceedings in a whistleblower/labor retaliation lawsuit against my ex-employer and a pending appeal for toxic tort environment claims against that same entity (dismissed under statute of limitations due to delayed discovery), for which my claims of damages will likely be impacted by these claims/events under contribution and related theories for ongoing injuries. (*Ashley Gjovik v. Apple Inc*, (3:23-cv-04597), District Court, N.D. California. In addition, some of my physical evidence for those toxic tort claims and a pending Citizen Suit (against the employer, a municipality, and a property owner) (5:25-cv-07360) District Court, N.D. California., for similar and overlapping environmental violations was contaminated by this pollution in Boston and may now be inadmissible. Accordingly, I had to promptly disclose those issues and also explain what happened and why (which is another use of this Notice/Petition and why it had to be so detailed, which is yet another injury from these Defendants).

All of this meant that in Dec. 2025, I had to drop everything else in my life and get to the bottom of the issues at this Site as soon as possible. My "discovery" started around Dec. 15 2025 and this Petition/Notice was transmitted as soon as I felt the research sufficiently identified the violations and entities involved – Feb. 9 2026, nearly two months later. Further, upon finding actionable violations, dangerous hazards, and the need for federal enforcement and communicating my intent to file this Petition/Notice to the US EPA and to City of Boston, I had then committed myself to a comprehensive complaint about the violations that harmed me.

What I did not know at that time, and which caused two months of dedicated work, forsaking everything else in my life, and which led to the enormous detail in this Petition/Notice, was that this Site appears to be one of the most complex, polluted, unstable, and geologically-unique locations in the world. I have been severely injured by the violations described in this Petition/Notice, which I believe were caused by the acts of the listed Potentially Responsible Parties and/or Defendants. I have firsthand evidence and observations regarding the hazards, violations, and injuries described and I can testify competently about them if called to do so.

I Witnessed Failed City Code Enforcement

City of Boston

In July 2025-Dec. 2025 I had also filed complaints to the City of Boston regarding my living conditions including that my apartment was an unfinished 1864 basement with numerous issues including but not limited to: active water intrusion, sewage backups, mold, insect infestations, mice and what appeared to be a rock shrew in the walls, repeated floods, electrical deficiencies and cross metering, holes in the walls including one that went directly outside with no barrier, no drainage other than the cracks in the cement foundation, carpet covered in organic growths and filth, completely barred shut windows providing no direct egress in case of a fire, no mechanical ventilation, and the designated "sleeping area" in the back of the unit with the least amount of air flow and against a shared wall with the boiler room

which contained at least five waters heaters and eight boilers, almost all of which were on natural gas hook ups.

The City of Boston eventually cited dozens of Fire, Sanity, and Building Code violations and opened multiple cases. However, in Sept. 2025 the City also sent a special task force from their Mayor's office specifically to prevent violations from being cited and which instead urged me to voluntarily vacate an admittedly dangerous unit. Further, after I discovered an eroded opening in the shared-party wall that appeared to be from corrosive acids/gases and I reported suspected hydrogen sulfide gas exposure to the City around Nov. 2025, the City then ceased pursuing the prior violations, refused to serve me documents for ongoing cases, and engaged in generally dismissive and obstructive conduct towards me.

Then, in Dec. 2025 the City hosted an "appellate hearing" for two open cases where the City refused to invite me to the hearing, or provide me copies of the appellate petition, or to disclose what was being appealed. The City also admitted to ex parte communications with the Respondents prior to the hearing where decisions were made outside the hearing and the reasoning or evidence never disclosed. I did manage to finally get the City to send me the hearing information but less than one business day prior to that hearing. Further, despite my prior disclosures and ongoing protests, the City allowed a non-property owner to present at the hearing on behalf of the property-owners to argue they are not legally required to provide me light or oxygen, and that the light and ventilation violations should be dismissed – even if I've been injured, even if there is extensive mold and strange microbial growth, and even if I could die from asphyxiation under current conditions.

The City knew that the person making these arguments is someone I had filed a police report against and reported no contact, following repeated threats and extortion attempts, including threats to essentially suffocate me in my bedroom if I did not stop complaining about the ventilation issues, promptly followed by an attempted breaking and entering, assumably to make good on the threat. The City told me I was not allowed to speak, must let him speak about the Respondents right to suffocate me, and can only comment if called upon. When he finished, despite the no contact demand, the City ordered me to "respond" to this person I demanded no contact with if I wanted to advocate for legally required ventilation and light in an unfinished 1864 basement.

I had also warned the City multiple times that I believe this person and multiple persons associated with that basement were involved in organized crime, specifically that Patriarca family. (See *Gjovik v 18 Worcester Square Condominium Association*). I mentioned the proximity of row houses in the block owned under suspect surnames, including current ownership (i.e., Pappas). The adjacent rowhouses were also owned previously under curious surnames, before apparently shuffling through shell companies Following the Dec. 15 2025 hearing, the City upheld the light and ventilation violations but cancelled all follow up inspections, and still refused to provide copies of the appellate petition or to serve copies of notices of the outstanding violations.

I Have Physical Injuries Arising from these Violations

I lived in the South End, on the Neck, next to Boston City Hospital and the Roxbury Canal. Upon moving to the Site in Sept. 2023 and through my evacuation of Boston in Jan. 2026, I suffered painful,

distressing, disabling, and deforming injuries that had no other reasonable explanation until discovering the pollution and hazards at the Site.

My injuries were documented in photos, emails and letters, unrelated legal filings, doctors' visits, and conversations. Most of these records were created prior to "discovering" any these hazards, and many were also reported prior to purchasing a microscope and finding the unusual microbial activity or the site investigation where I found very usual macroscopic organic activity. By 2024, my documented injuries included:

- excessive "coma-like" sleep (14-18hrs/night);
- extreme fatigue and lethargy;
- malaise, disorientation, difficulty concentrating, and brain fog;
- worsening anxiety, depression, ADHD, & PTSD symptoms;
- nausea, vomiting, and loss of appetite;
- strange, sour, harsh and unbearable body odors including odors that smelled "like death";
- menstrual irregularities including unexpected bleeding, excessive and prolonged bleeding, and discoloration;
- difficulty breathing and worsened asthma;
- severe sinus pain;
- frequently feeling cold;
- unexplained skin rashes, pimples, skin openings, and scabs ;
- hair loss and changes in hair morphology, including changes in structure and texture;
- scalp pain and discomfort;
- strange hair-like growth on scalp and body;
- organic growths covering large areas of face, neck, and shoulder (which glowed in UV light);
- tooth loss (a large portion of one of my bottom molars fell out without pain or tension, covered in some sort of green foul-smelling slime, and apparently broken off around where there was an old filling which was not present at the time the tooth was severed).

I experienced symptoms consistent with chronic hydrogen sulfide exposure: excessive sleeping (12-16 hours per night), extreme fatigue, severe sinus pain, body odor described as ″death-like″ (sulfur compounds metabolized and excreted through skin and breath), and hair loss with bacterial colonization of hair. I was exposed to hydrogen sulfide & methane gas. Breathing hydrogen sulfide (H_2S) has been reported to induce a suspended animation–like states with hypothermia and a concomitant metabolic reduction in rodents.[54] H_2S causes CNS depression. It's a respiratory irritant which could cause sinus pain.

There's Triotrichales Gammaproteobacteria growing on my body. Its diagnostic macroscopically and under the microscope. It also roots itself with a holdfast. These organisms are known to grow long, hair like filaments (trichomes) or encase themselves in a touch sheath to blend in. Examples of this with known species include: *Nevskia ramose* is branching epiphyte and creates lateral stalk made of slime, looks fuzzy but its bacteria. *Thiothrix* use holdfast to anchor themselves , looks like white hair-like streams in

54 Volpato, Gian Paolo et al. "Inhaled hydrogen sulfide: a rapidly reversible inhibitor of cardiac and metabolic function in the mouse." *Anesthesiology* vol. 108,4 (2008): 659-68. doi:10.1097/ALN.0b013e318167af0d

moving water or leaves. At this point, my hair is "substantially " Gammaproteobacteria (the family that includes *Thioploca* and *Beggiatoa*) This means that sulfur-metabolizing bacteria are literally growing on my body. That's not BMC's "try zinc shampoo" territory -- that's "the environment you're living in is selecting for extremophile organisms and they are emboldened to host themselves on surrounding lifeforms and expect *Homo sapiens* to comply" territory.

Pseudomonas sp. is known to engage in unusual activity, infect humans, and resist antimicrobial substances in the Site specifically. (J. B. McGowan 1975), (Adler 1971). Pseudomonas also engages in quorum sensing communication and coordinated biofilm activity, and also creates advanced "biofilm cloaks" to avoid detection. (Li 2022). *Pseudomonas syringae* create molecules that mimic plant hormones or cell surface sugars tricking the plant into thinking the bacteria are part of the plant itself. This kind of evolutionary strategies likely explain how I was colonized for long prior to realizing there was microbial activity occurring.

Some of these organisms also create sheaths to look like natural plant fuzz to blend in and holdfasts are the strongest biological glue known – so they can sit in fast flowing stream or windy leaf surface to filter nutrients out of passing air or water. I saw them attach to my air purifier outflow and to the baseboard heater in the living room, to fans and anywhere they could live in an air flow. I also saw them floating in the air like they had evolved their body mass or form in such a way they could now float though air currents as if they were water currents., and I would watch them float by in front of me in a variety of forms.

Jan. 7 2026 | activity inside the electric basement heater of 18 Worc. Sq.

There is also bacteria in my blood (which appears to bs Zetaproteobacteria specifically). The presence of any bacteria in the blood is a potentially serious medical condition called bacteremia. I went to Boston Medical Center and saw an Infectious Disease doctor, they refused to culture my blood or mucus and insisted instead I must see Dermatology and have them do a culture, even though Dermatology does not culture blood, does not know how to diagnose these organisms, and so refused to do so. Dermatology admitted they saw things under the microscope that were unexplained, but said because what they saw

was not in their text book or reference materials they would not document having seen anything at all and instead proceeded to defame and harass me, and leave me with a $1,000+ bill..

There was also that hole in the double wythe party wall that opened from the inside of the void with edges covered in *Beggiatoa*-like growth. The sealed void in the double wythe party wall connects to the subsurface; H_2S-rich gas/fluid rises into the void; and sulfur-oxidizing bacteria then colonize the interface; and some bacteria (like *Acidithiobacillus*) likely produce sulfuric acid as a byproduct. The acid corrodes the stone from inside and erodes an opening like how caves are formed by the same processes. This also created an ever expanding gateway between my bedroom and the void, that likely functioned as an oxygen sink, allowed the passage of toxic gases, and would have been a portal for the marsh, bog, and sewage biota to enter my bedroom from the sewage soaked ground around the 1864 rowhouse. That void was essentially a chimney from the cesspool to my living space.

Nov 22 2025 | cave-like hole & surrounding growths found in fieldstone of South End basement ~1,200 ft / 365 m from Canal for 160+ yrs

I Witnessed a Hospital Refuse to Provide Medical Care, Because they Caused the Injuries

Boston University / Boston Medical Center

BU now operates Boston Medical Center on the former BCH campus and operates the National Emerging Infectious Diseases Laboratories (NEIDL) — a BSL-4 biocontainment facility, the highest biosafety level that exists — in this district, on top of the same compromised combined sewer infrastructure discharging to navigable waters every tidal cycle. The NEIDL houses electron microscopes, genomic sequencing capabilities, and the expertise to identify any organism on earth, including novel and dangerous ones. BU has 150+ years of continuous institutional presence on this site, more published literature on what organisms these conditions produce than any institution in the world, and the single most advanced bioidentification facility in the country.

When the Petitioner presented at Boston Medical Center with environmental exposure injuries — (including unusual organisms colonizing her body consistent with the extremophile organisms that BCH's own published literature documented being bred by this hospital environment for decades), provided microscopy evidence, and an Urgent Care physical exam confirmed unusual mucus presentation, the Petitioner's Urgent Care doctor promptly assured her that BMC would prescribe her antifungals and/or antibiotics, but the Petitioner's General Practitioner (BU faculty) intervened and stopped the Resident and insisted that nothing should be done to help the Petitioner other than insisting that the Petitioner use over-the-counter zinc shampoo.

BMC Primary Care, via Petitioners general practitioner physician, refused to culture her blood or mucus, to perform genetic testing, or to provide a referral to Infectious Disease. The Petitioner escalated, filed complaints, and asked to have her care transferred but BMC refused. Petitioner's provider, Dr. Lucy Schulson, MD, MPH is a professor at Boston University Chobanian & Avedisian School of Medicine and obtained a Masters in Public Health from the Defendant Harvard University, completed her resident with Defendant Harvard University, and completed her medical fellowship with Defendant Boston University before becoming an Primary Care physician at Defendant Boston Medical Center.

The Petition emailed Dr. Schulson repeatedly demanding a referral to the Center for Infectious Disease and threatening to otherwise "buy antifungals on the black market" if BMC did not respond. BMC scheduled a follow up Urgent Care visit where the Petitioner met with a Physician Assistant who did submit the Infectious Disease referral. The Petitioner called BMC and insisted they do not let Schulson block the referral. There was some drama and thrashing, but the referral went through.

The Petitioner met with the Infectious Disease physician, Dr. Natahsa Hotchberg, MD, MPH, explained what she has observed, described her injuries, and how the doctor print outs of her microscope photos. She explained the textbooks she reviewed indicated it was extremely unlikely to be fungi due to the brightly colored aseptate filaments and complex extra-cellular matrix presentation. She also pointed to several examples of what appeared to be complex biomineralization. When the Petitioner noted the organisms appeared to be highly evolved and "*closer to Metazoa*", BMC's Center for Infectious Disease department confirmed the presentation indicated further investigation, did not align with any known species, and that genetic sequencing was needed. However, the Infectious Disease physician insisted on transferring her to BMC Dermatology and claimed the BMC Center for Infectious Disease was unable to obtain their own samples from patients for cultures, which seems unlikely.

The Petitioner begrudgingly met with a BMC Dermatology physical but told the doctor the only task for that doctor was to obtain a sample for a culture because the organisms was also in her mucus and blood so this was not a dermatology issue. The Dermatologist, Maya Fahah MD insisted on doing a Dermatology consultation for the blood and mucus infection, fixating on the Petitioner's hair loss. The Petitioner had brought cultures, printed microscope photos, and other evidence in case the Dermatologist would not simply obtain the culture and tried to show Dr. Farah these photos and asked her to look at the samples under a microscope but Dr. Farah refused. Dr. Farah also had the Resident (Dr. Daisy Yan) write up the visit notes and recommendations, despite all direction apparently coming from Dr. Farah.

After some debate, Dr. Farah finally took a sample of the biofilm on the Petitioner's scalp and acknowledged she looked at it under a microscope and observed organisms, but stated there was no further

action to take because what she saw was not in any Dermatology textbook so they cannot diagnose it. Farah told the Petitioner her visit notes would indicate she did not identify any organisms, because it is an unknown organism(s), so she cannot confirm it's an organism. The Petitioner insisted on cultures consistent with Basidiomycota fungi or amoeba cultures and warned the Farah that the organism was reluctant to grow on agar petri dishes, and required space and natural substrate. Farah then intentionally ordered a culture in a tiny agar test tube, claimed the culture did not grow, failed to notify the Petitioner for over a month, and only admitted the failure upon the Petitioner's questioning.

Dr. Farah & Dr. Yang's did not publish her visit notes until a month after the culture was taken. The visit notes accurately reflected that at that time I suspected the organism attached to me in Santa Clara next to the chip fab where there were "mutagens" and gases rich in "nitrogen and phosphate" emitted near my apartment. The notes accurately noted that in 2020 my blonde hairs had turned "black and curly" and that I thought the bleaching of my blonde hair may have made my air more vulnerable to a fungal colonization. She also accurately recorded that around March 2021 my hair started breaking off mid-shaft and then shedding around Aug. 2021. She also accurately noted I reported a yellow slime on my bathroom mirror at the time which was suspected to be related to some sort of organism at the apartments. She also accurately reported that I started losing my hair again around Dec. 2024, and suspected it could be related to a silk hair band I was wearing that after removing it and returning to it, I noticed it had a "spider [web] like" growth on it. Farah also accurately noted that I currently complained of "excessive fatigue (sleeping 12-16 hrs daily)," "sinus pain," and macroscopic brightly colored filaments at that time which I suspected to be organic. (1/24/2025, Progress Notes).

However, Dr. Farah & Dr. Yang's notes also included facially inaccurate information including that my 2020-2021 heart monitoring was "unremarkable per patient" (the test results showed a significant arrythmia and the data is available on my e-chart and I told her I was suing Apple over those injuries and this may also become part of that lawsuit); said I reported scalp pain from the hair bulb but only after "manipulating" my own hair; noted that I "attempted to culture the suspected fungus in potato grade agar plates multiple times" (it was not attempted, I brought the cultures with me and asked her to inspect them and she refused, then denied their existence in her notes); indicated that my attempted culturing and microscopy had "significantly affected [my] day to day activities and [my] mood as well"; claims I told her that I refuse therapy and that I said therapists "think [I'm] too much" (I never said that. I have consistently used therapy, but could not find a therapist in Boston willing to take insurance and did not have money to pay out of pocket); and also claimed I refused to use the previously suggested zinc shampoo because I "felt like spread the fungus" (sic) and I do not know what that means or how zinc shampoo treats fatigue. (1/24/2025, Progress Notes).

Dr. Farah & Dr. Yang's notes then included that I was "recently… fired from job," that have "multiple complaints," complained I refused to agree to use zinc shampoo for the bacterial infection of my blood and excessive sleeping, and what turned out to be bacterial infection not fungus; and "highly recommend[ed" and urgent referral to "Behavioral Health" and indicated all of this could just be trichotillomania. (1/24/2025 Visit, Progress Notes).

Dr. Farah & Dr. Yang's exam notes included "band-like alopecic patch from temporal scalp crossing over parietal scalp with significant terminal pigmented hair regrowth with but residual decreased hair

density. Some follicular orifices have no hair. Few black dots. KOH microscopy negative for spores or hyphae. Wood's lamp negative…. current band-like alopecia is not consistent with tinea capitis, with a negative Wood's lamp and no fungal growth seen on microscopy…. Overall suspicion for fungal infection is low." Notably, Farah and Yang confirmed there was an organism growing on my head and hair, that it as something they could not identify as a known species but proceeded to summarize their findings by noting they did not see fungal spores, or fungal (septate) hyphae, and could not diagnose one specific fungal species, so they suspect there is no fungus. This for a visit with the sole referral basis being simply to obtain a culture for the Infectious Disease dept. to study.

Finally, after refusing to contact me for over a month, failing to publish their visit notes, and insisting on a culture I warned them would fail and it did fail, the retroactive visit notes that appear to have been written a month after the test claimed that I was to return for a follow up visit and notify them right away if my issues do not improve and that I agreed to the treatment plan. In reality I demanded she contact me within one week of the culture and if it was not growing that we take a new one and modify the substrate and I insisted she verbally acknowledge this which she finally did but then completely omitted all of that here her notes and instead claimed I was to contact her if I had any issues and otherwise if I do not then there's no problems.

Dr. Maya Farah is a is a Professor at, and completed her fellowship at, Boston University School of Medicine. Dr. Daisy Yan is a Professor at Boston University School of Medicine and completed her residency at "Boston University/Boston Medical Center." The laboratory culture was signed off by Dr. Reggie R. Thomasson, MD who is a Professor of Pathology & Laboratory Medicine at Boston University medical school and Chief of Laboratory Medicine at Boston Medical Center.

When the Petitioner met with the Infectious Disease Clinic and requested to be connected with BU's National Emerging Infectious Diseases Laboratory BSL-4 laboratory for sequencing and electron microscopy (tools that exist specifically to identify unknown and novel organisms), BMC's Infectious Disease doctor claimed BMC had no connection to NEIDL and she did not know how to contact the laboratory. However, BU's website notes that BMC runs the "Special Pathogens Unit," "a state-of-the-art maximum containment facility for patients admitted to BMC with severe emerging infectious diseases requiring care in containment." BU's website adds that "serves as the designated medical facility providing support to BU's maximum containment research program at the National Emerging Infectious Diseases Laboratories (NEIDL)." (BU 2026). So, one of the lead physicians in BMC's Infectious Disease clinic, who teaches at BU, and assumably helps to oversee the BMC Special Pathogens Unit which services NEIDL, claimed to not know anyone at NEIDL or know how to reach the biolab.

BMC's response to a patient colonized by organisms consistent with 150+ years of its own institutional contamination on high-risk geology in a marine environment, with the exact stressors and enrichment needed to enable an ecosystem where novel mutations, extremophile traits, and rapid evolution could occur; and who presented direct evidence of a novel organism, which BMC confirmed appeared to be novel and not previously identified; and requesting access to BU/BMC's own identification capabilities, was sent to BMC Dermatology who attempted a culture designed to fail, told the Petitioner that the hospital doesn't know how to contact itself about issues the same physician oversees as part of their job, and the only treatment proposed was the use of over-the-counter zinc shampoo and/or Rogaine.

BMC's own website states that the Center for Infectious Disease provides "leading expertise" in "comprehensive care for infectious disease" and "management of complex antimicrobial treatments." (BMC CID 2026). Dr. Hochberg's BU and BMC profiles notes she was a Professor in the BU Infectious Diseases section of the medical school, specializes in tropical diseases, and previously worked as an Epidemic Intelligence Service officer in the Division of Parasitic Diseases at the Centers for Disease Control & Prevention (CDC). She now works as a Director at a private biomedical research institute.

BMC then manipulated the billing which resulted in the Jan. 24 2025 Dermatology visit never being sent to the insurance provider and me being directly charged $817 for the pleasure of that experience and the Jan 8 2025 urgent care visit being coded as "unspecified hair loss, fatigue, and malaise" and the BMC affiliated insurance provider (WellSense, specific to BMC) denying the claim entirely and leaving me with over one thousand dollars in debt that contributed to forcing me into Chapter 7 bankruptcy — where BMC became an adverse creditor with a direct financial conflict of interest in the claims arising from conditions its predecessor institutions created and it is actively helping to conceal and maintain.

Notably the Infectious Disease and Urgent Care doctors did use the correct billing codes and the insurance claim was approved. But Dermatology and Primary Care, the physicians openly hostile to the idea of a microbial infection, used billing codes that were denied. In April 2025 I also received a letter from BMC telling me to call BMC because WellSense-BMC insurance needs more information about the Jan. 8 2025 visit with BMC so otherwise BMC would bill me $528 directly. I called BMC and explained their letter was extremely confusing and they clarified they were responsible for contacting WellSense so they did not know why I was sent a letter and they will send a reminder for BMC to send information to WellSense, which clearly never happened.

BU's operated hospitals on this contaminated site for 150+ years, inherited and continued BCH's pathogenic and radiological discharges, advocated for the right to discharge radioactive waste to compromised sewers reaching navigable waters, operates a BSL-4 laboratory on compromised sewer infrastructure, and burned hundreds of radioactive dogs and released the radionuclide smoke into the Roxbury Canal cesspool and the windows of Worcester Square. Then, when presented with a patient colonized by organisms consistent with its own institutional contamination history refused to identify those organisms using capabilities it possesses, diagnose the infection, or provide medical care and then weaponized the resulting medical debt.

BU & Boston Medical Center's Jan. 2025 retaliation against the Petitioner/Plaintiff (i.e. denial of care and harassment) is an ongoing injury that is proximately caused by the existence of the environmental violations at the Site. If the pollution at the Site did not exist, the doctor would not have reason to retaliate. The retaliation served multiple purposes including concealing the pollution, concealing liability for the pollution, concealing the hazards caused by the injuries, obstructing documentation of the injuries, and deterring the victim from further reporting the injuries. That modern injuries and concurrent retaliation transforms even past violations into current and continuing violations. The BMC doctor is a BU employee and faculty member, so their knowledge of the violation and their subsequent harassment for the benefit of Boston University links the Trustees of Boston University directly to the modern injury and continuing violation.

My Informational & Moral Injuries Arising from these Violations

My first discovery was learning about the Roxbury Canal – a history mostly completely erased from modern government records. I learned there was the nation's worst open cesspool located ~1,500 feet from my apartment for 200 years+ and which was famous for extreme quantities of bacteria, active hydrogen sulfide gas emissions, and reports of serious injuries following mere exposure to the sludge. I learned the cesspool was never remediation but rather was abruptly filled by the government with a formal Act of the Commonwealth authorizing the filling to be done as quickly as possible and with whatever can be found. Boston proceeded to fill the canal with hazardous incinerator ash, construction debris, and other trash which overall included actionable levels of solvents, lead, arsenic, and PCBs.

After I started researching historic industrial contamination, I found myself deep in ancient newspaper articles and engineering reports, having to piece together what happened at this Site over the last two hundred years. Due to the nature of the Defendant's system, long-running, and foundational violations – each later violation seems to build up, integrate with, and exacerbate the prior violations. Further, remediation of newer issues seems like it will require remediation of prior issues including the filling of most of the area with hazardous waste and trash, and the air release of hazardous incinerator ash across the Site for 25 years, and the decades of releases of radioactive substances into the leaky, submarine, sediment encrusted Victorian sewer system.

I lived on The Neck. The Defendants deprived me of my right to enjoy the natural South Bay and ocean tides, and instead have routed the region's malcontent tides into the Victorian sewer systems flowing under and around my basement apartment. I had no idea the ocean was in/under my basement, the Bay was two blocks from me, that the Boston Tea Party was down the street, that the septic cesspool sewage canal was a block over. Once I learned all of this and the extend of the hazards, I evacuated Boston and the Commonwealth and returned to California in fear of my health, safety, and life – which may help explain why the Defendants conceal these conditions and history.

My Injuries include:

- Because I did not know about the Hazards, I repeatedly Exposed myself to Them
- I had No Idea about the Hazards at this Site & I had a Right to Know.
- I Didn't Know I was Living in the Ocean & Being Pounded Twice a Day with Fundy-like Tides
- I Didn't Want to Have to be the One to Announce the Geology Issues
- There were Giant Animal-Like Bacteria in my Bedroom
- I Reported Injuries from Violations (BU & Boston) to the Violators (BU & B0ston), Who Retaliated & BU Helped Force Me Into Bankruptcy
- I May have been Unknowingly Pooping into the Ocean for 2+ Years
- Our Storm Drains were Fake & the Gutters Drain to my Bedroom
- I Didn't Understand why there was Noise & Vibration under the Basement
- I Didn't Understand Why Mobsters were Threatening Me

The contamination sources that likely injured me include: the toxic fill itself (garbage, hazardous waste, incinerator ash); 200+ years of industrial wharf activity (foundries, heavy industry); a city hospital and multiple infectious disease labs, all of which used those same Victorian sewers that now sit abandoned

with 3ft of sewage sediment and marinated in radionuclides. The result is: tidal groundwater intrusion into the basement, coming through an active toxic cesspool ecosystem with wastewater facility-type microorganisms, plus industrial contamination, plus potential biohazards from hospital/lab and all in a system that's essentially anaerobic (pitch black, no fresh air).

My Professional & Legal Injuries Arising from these Violations

I suffer extensive professional and legal injuries arising from these violations including that:

- I suspected some of my injuries related to unusual biological activity were related to the environmental violations by Apple in California because the Site in Boston appeared non-threatening and benign (due to the Defendant's concealment of Site conditions and hazards) and I came very close to making formal filings attributing those issues to Apple and it now appears that would have been incorrect and thus harmful to the Apple litigation;
- The injuries arising from the Site and Defendants violations interfered with my ability to seek work and be productive; and the ability to seek/obtain work is a legal issue and evidentiary matter in retaliation litigation, including in my pending litigation and adjudication against Apple Inc alleging discriminatory and retaliatory termination which will cover more than two years at the Site;
- The Defendant's violations (especially Boston University/Boston Medical Center) directly led to me having to petition for Chapter 7 Bankruptcy and BMC is already listed as an adverse creditor;
- The Defendant's violations delayed, interrupted, obstructed my Apple litigation; including: injuries resulting in late or delayed legal filings, and then some of my claims were dismissed due to those delays; I was unable to dedicate the required time and effort to that litigation which contributed to dismissals and warnings; the environmental hazards at the Site contaminated and degraded my physical evidence from California for the Apple litigation requiring a notice to Apple that explains what happened and could be litigated in court, which directly imports this Site into the Apple environmental litigation;
- It would have been impossible for me to lease and move into 18 Worcester Square if the City of Boston enforced their own zoning, building, & sanitary code. The basement apartment violated dozens of mandatory legal requirements, including a prohibition on basement apartments and was never registered with the City as a rental, making it an illegal rental;
- After moving into the illegal rental at 18 Worcester Square, at the Site, and upon making complaints to the City of Boston about those code violations the City then attempted multiple times to obstruct the enforcement of its own code including sending a task force from the Mayor's office with the predetermined intent to not cite violations and urge me to vacate;
- Because I filed complaints to the City of Boston about a building involved in what appears to a be illegal operations by organized crime, including running drug labs, using abandoned underground tunnels, and running a multi-county racket using Condominium Association entities and manipulating utility service billing, I then became a witness against the alleged organized crime members and they responded accordingly against me including with retaliation, threats, extortion, breaking/entering, defamation, and harassment.
- Because of the violations of the Defendants, leading to me being a witness against organized crime, while living in an area controlled by this organized crime group and providing notice of intention to pursue legal remedies, the group, through their associates and related law firms, then interfered with my Chapter 7 bankruptcy (including threatening me with violence if I do not drop claims

against the group) and my Apple litigation (resulting in a prejudicial stay of proceedings under a false basis with allegations of misconduct by me) in order to pressure me to vacate and drop claims;

- The interference in my Apple litigation by this organized crime group and their apparent associates and associated law firms, led to what appeared to be Apple unknowingly conspiring with organized crime in furtherance of the group's unlawful objectives including interfering and obstructing with my legal rights through violations of bankruptcy laws within an existing RICO lawsuit against Apple;
- The organized crime group appears to have a vested interest in maintaining many of these environmental violations and assumably levering knowledge of the violations to extort government agencies and employees which implies that when I file this notice to my Chapter 7 Bankruptcy case and ask for abandonment of the privacy legal claims with these underlying facts, they will once again attempt to interfere with that abandonment but if I do not ask for abandonment I may lose my legal rights and could be violating Bankruptcy law;
- The U.S. Dept. of Labor Whistleblower Protection Program under ex-Boston Mayor Marty Walsh arbitrarily and unjustly dismissed my environmental whistleblower claims on a basis inconsistent with the legal framework and evidence provided, those claims are still under appeal with the Dept. of Labor Admin. Review Board, and my having to file these claims against City of Boston and about projects Walsh was involved in seems likely to instigate additional retaliation and obstruction.

When I started finding biological anomalies I assumed it had to be something related to California where I lived prior. I was exposed to hazardous waste there, my hair fell out there, I was living on wetlands there, and all of the public information available to me indicated the South End around me was probably non-hazardous and relatively boring. So I focused much of my time and attention on California and tried to figure out what happened and what I may have brought with me. It would have saved me a lot of tie to know about the hazards and history of where I was living because everything I experienced was reasonably foreseeably considering those facts. I was basically living as Jane Goodall with ancient deep-sea organisms and I was learning a lot from observing them and questioning existing scientific consensus. Finally, it also appears I am the first person to put forward a formal hypothesis regarding the modern geological formation of Boston, Cambridge, and Boston Harbor and identify a Younger Dryas Impact ground zero site.

But none of this was a paying job or educational program, and I have no explanation for how this all occurred that does not require me talking about how there is deep sea bacterial in my blood, bacteria that replaced much of my hair and is still growing out of my head, and giant versions that created remarkably creepy, deep-sea like mats and dens around that South End basement apartment. I have to talk about how I was literally covered in centuries of human sewage which is why I was colonized by sewage biota. I have to explain what happened with BMC, Boston, and the Mafia. Meanwhile, I will probably now face a life time of harassment from hysterical, insecure faculty members upset about citations and changed consensus and insulting Boston's construction heritage and who knows what. Its going to be a nightmare and it also gives me continued standing in this matter.

My Emotional Injuries Arising from these Violations

From. Sept. 2023 through Jan. 31 2026, I lived in a mostly unfinished basement apartment in an 1864 Victorian rowhouse in the original South End neighborhood of Boston and Roxbury.

The city sewer system wasn't built until 1877-1884 so her building is older than the sewers, which means her building had to drain *somewhere* before the interceptors were built. The 1885 Main Drainage Works report talks about exactly this - buildings with brick and wooden drains that were "ill adapted" and "usually leaky" that predated the system and were just... connected to it. Or maybe not even properly connected. Maybe just still draining wherever they originally drained. No one knows and the City's position appears to be: *don't ask, don't tell.*

The Petitioner's apartment is across from Harrison Ave, in front of the hospital, putting her right on the edge of what was South Bay (the cesspool with 3+ feet of black septic mud with gas bubbles rising through it). The city filled it, didn't remove the mud, but did just put pipes through it and toxic garbage ash around it. The Petitioner's building predates all of this and is sitting on the Site with its original 1864 drainage and building envelope – all of which is a mystery.

I suffer extensive emotional and information injuries arising from these violations including that:

- I was Poisoned by Hazardous Waste & Toxic Gas in 2020, Before These Defendants did it Again in 2023-2026
- I'm Literally Homeless Now
- Thiotrichaceae Repeatedly Replaced my Hair
- There was a Marine Cave in my Bedroom
- I Was Living in a Literal Cesspool
- My Body & All My Stuff was Covered in Sewage Biota
- My Tiny Dog was Hurt by these Violations Including Being Traumatized by Giant Bacteria
- I Thought the Mob was Going to Kill Me & They Still Might
- I Could have Radiation Poisoning Now
- I Found Weird Nanotech in my Kitchen
- There were Extremophile Microorganisms in my Blood
- The Underground Tunnels were a Vector for Cold Air, Cockroaches, Centipedes, Mice, & Gases
- I Was Surrounded by Sea Monsters; Some were Large, Mobile, and Responsive
- I Probably Published Major Scientific Discoveries, but I was Nearly Certain I had Gone Insane.

In Dec. 2025-Jan. 2026, I also discovered the row houses where I lived appeared to have old Victorian sewer systems and tunnels underground the rows. I also discovered the excessive boilers in our boiler room appeared to be running through the shared wall and into the next store basement. I also found what appear to be connections between the houses and evidence of ongoing activity under the basement, in those tunnels.

I discovered and reported what appears to be an illegal drug lab in the basement next to my apartment and which helped to explain why the owners were so opposed to contractor or city involvement regarding ventilation (conduits, vents, exhaust, etc.) for my unit directly adjacent to the drug lab. Once the appeal upheld the violations I heard noises underneath my basement that sounded like construction including setting up an old radiator (assumably disconnecting from the boilers in our row house).

I also discovered our row house was adjacent to the old British fortifications and tunnels, and appears to be connected to the known Patriarca tunnels connecting to the Fort Point neighborhood where they were known to operate. It appears to be a drug smuggling route and the City has to know this. I barricaded my door for weeks, refused to leave the house, cried every day worried I was about to be

assassinated, and that I after everything I had gone through with Apple the way I'd die was from these obnoxious people while I'm covered in sewage, holistically colonized by deep sea microbes, and watching bacteria large enough to visually see float though the air of living room, like its surfing a wave.

This all gives me unique standing to allege Clean Water Act violations against the City and (until specific Defendants can be identified), the Cosa Nostra, regarding the tunnels and secret drug labs. It appears their use of these tunnels are contributing to the pollution at the Site and create multiple novel vectors for exposure. I am being very transparent about this issue because I think my government complaints & public presence was the only reason the mob didn't kill me before I could get out Boston, but they still might try, so I'm going to tell you all about them, and if I die, it was either them and/or Apple.

II. REQUESTED RELIEF

As is required by Congress, the Courts, and the Executive Branch -- this detailed Petition/Notice outlines multiple egregious violations of federal environmental and public health/safety policies, I have standing to assert all of these alleged violations and harms against the named PRPs/Defendants, and I believe substantial evidence establishes that those violations create an acute danger to the public and the environment.

I also believe that the scope and detail of this Petition/Notice are required to adequately convey the issues, to satisfy my legal requirements for disclosures under Bankruptcy Code and my related proceedings impacted by damage/injury contribution issues.

At the time of my Petition/Notice, I believe the violations have already caused harm and injuries for which I can testify to establish as fact, and I believe these violations are ongoing with continuing harm that will not end until there is federal intervention, hazard abatement, and thorough remediation.

CERCLA Preliminary Assessment & Site Investigation

I request that the U.S. Environmental Protection Agency conduct a Preliminary Assessment , and Conduct Site Inspection, and establish the Site's score using the Hazard Ranking System. If the score meets the CERCLA threshold, then the EPA needs to propose the Site be added to the NPL.

Petitioner requests that EPA conduct a Preliminary Assessment of the Site, including site delineation defining the boundaries of the contaminated area including all connected infrastructure; conduit sediment characterization including sampling and analysis for hazardous substances, organic content, and microbial composition; area-wide vapor intrusion assessment evaluating both the sewer gas pathway and the soil gas pathway, with building-specific assessments for pre-1900 structures; microbial ecosystem characterization identifying sulfate-reducing bacteria, methanogens, iron-oxidizing/reducing bacteria, and pathogens; gas hazard assessment with systematic monitoring for H_2S, CH_4, NH_3, and CO_2 in buildings and enclosed spaces; and exposure pathway assessment evaluating all pathways including sewer connections, vapor intrusion, tidal surcharging, and direct contact.

Based on the geotechnical data, a proper assessment would need characterization of at least the channel and canal, groundwater/tide water, soil and soil gas, indoor air, ambient air, conduits, ecology, microbiological population, and a vertical characterization. Groundwater characterization includes nested

wells at multiple depths (fill, organic layer, sand lenses in clay), tidal monitoring (continuous water level logging), and analysis for dissolved metals; ammonia, nitrate, sulfate (decomposition indicators); dissolved oxygen, redox conditions; bacteria; and VOCs. Soil gas characterization could include a grid of soil gas probes across the area with analysis for: methane (explosion risk, decomposition indicator), H2S (toxicity, sewer gas), CO2 (decomposition indicator), and VOCs (vapor intrusion risk). Indoor Air characterization could include basement sampling, prioritizing Victorian houses; sub-slab vapor sampling; ambient air; and comparison to outdoor air.

Conduit Investigations may include sediment sampling within Roxbury Canal Conduit and sewer systems at the site, stormwater grate and pipe systems; water quality monitoring at CSO 070; and tidal flux measurements. Vertical Characterization would include borings through the full fill and organic sequence (to clay) with continuous sampling for metals (especially lead, mercury, arsenic, cadmium), PAHs (coal tar indicator), PCBs, Dioxins/furans (incinerator ash), VOCs, and Peat/organic sampling for characterization of the cesspool layer.

Targeted investigations should include the Neck (what contamination has migrated into this zone, where is the artesian pressure, where does this water discharge to); the Victorian sewer system (use drones and radars to determine locations and conditions; draft as-built diagrams; identify failing infrastructure and repair/replace); Tidal Waters around the site (pressure fluctuations, delineation, artesian conditions, multi-directional flow, utility pathway migration, etc.).

The Neck, South Bay, and the filled areas are one interconnected system and should be assessed, remediated, and restored together. The contamination in the filled areas affects the Neck through lateral migration along the clay surface, utility corridor transport (sewers, conduits), artesian upwelling through clay penetrations, gas migration along clay/fill interface, and tidal pressure pulses through conduit connection. A proper assessment would need to treat the entire area - from the canal alignment to Washington Street, from Mass Ave to East Berkeley - as a single disposal site with interconnected exposure pathways. The geotechnical data proves this interconnection exists. The vapor intrusion cases prove exposure is occurring. The only thing missing is a comprehensive assessment that connects the dots.

Cross-Agency Coordination with US Army

I also request the EPA coordinate with Army Corps on 404 violations including taking enforcement action over the unpermitted fill and channelization, and demand removal and remediation at the site.

Petitioner requests that the U.S. Army Corps of Engineers issue a jurisdictional determination confirming that Roxbury Creek, Roxbury Canal, and South Bay were and are waters of the United States.

Cross-Agency Coordination with ATSDR

Petitioner requests that the Agency for Toxic Substances and Disease Registry evaluate exposure pathways to the residential population, conduct a health outcome review, and provide guidance to the medical community on recognition of exposure-related symptoms, particularly chronic hydrogen sulfide and microbial exposure.

Development of Remediation Plans

Remediation strategies will have to consider an extremely complex site model spawning wetlands, salt marshes and sloughs, landfills, 19th century hydrocarbon waste, centuries of raw sewage, heavy metals, toxic gases and vapors, reducing conditions, eutrophication, marine clay, glacial till and buried bedrock valleys, deep aquifers, oceans and harbors, rivers and streams, tidal creeks, artesian features, microbiology, pathogens, vapor intrusion, tidal intrusion, groundwater intrusion, and more. Restoration should seek solutions: upstream, above ground, and at the source. This likely includes capping, solidification, stabilization, vertical engineering barriers, and/or other strategies.

A bolide impact event could be why Boston's geology cannot be explained by standard geological concepts or processes, but does fit known signatures of bolide impacts, and does not fit neatly with any other explanation to date. Accordingly, the Site appears to be ground zero for bolide impacts and the resulting geological chaos expected from such an event. If the Site was obliterated and deformed by bursts of bolide impacts around ~12,900 years ago then it may not have a "natural ecology" in any tradition sense. However, just because Boston's natural ecology may also be a disaster area, it does not create an outcome where Boston is released of its obligation to remediate the land into a better condition. If this hypothesis is accurate (and it should be checked and vetted), then studies are necessary to determine the idealized *de facto* ecology for the area rather then aiming to revert the ecology to some prior preset state.

Development of Transitions Plans

Regardless of the outcome of any assessment of the Site, there will certainly be at least several large hazards that will require significant remediation and mitigation. It seems likely at least some of these will seem unfeasible to execute under the current conditions, especially if Boston continues in its current path of forcing major development projects and increasing the population density at the areas with the most greatest risk and most extreme hazards. Accordingly, changes will be required in overall economic and social planning and strategy – either as part of an intervention and remediation, or reactively once its too late and worse harm occurs.

Immediate Tasks for the Municipal Defendants

Petitioner requests that Defendants voluntarily comply with its requirements under state and federal law; voluntarily cooperate, share information, and work to remediate these issues.

Petitioner requests City of Boston and the Commonwealth create a public facing workflow for residents to make complaints, ask questions, and seek City assistance related to the hazards at this site including at least, but not limited to: mold, bacteria, hydrogen sulfide, ammonia, and methane.

Petitioner requests City of Boston and the Commonwealth create an inspection and monitoring program for residents (especially tenants), within at least 2,000 ft of the Site. All basements, exteriors, and visible foundations/piles should be inspected and documented, and any code violations should be promptly cited and enforcement pursued if not voluntarily remediated.

Boston must enforce its codified prohibition on residential use of basements in the South End and South Boston, at least within a reasonable radius around the Site . No new variances should be granted, and all prior variances should be audited with site inspections, and new/additional protective measures required if owners wish to continue that use.

No rentals of pre-1900 basements in the Site area should be allowed unless the City can establish a program to ensure the sites are safe upon move-in, that the tenant has a route for complaints and escalation with prompt remedies if site conditions change and health/safety issues occur, and ensure a zero tolerance policy for landlord misconduct related to mitigation requirements. This could look like expanded Zoning requirements, Boston specific Sanitary code amendments, or perhaps mandatory deed restrictions.

A Note of Encouragement to the PRPs & Defendants

I completed the majority of this research and drafting from the Boston Neck, in the ancient basement of one of the oldest buildings in Boston, located in the heart of the battlefield where the Battle of Boston was fought out. I am a descendant of some of the original colonial settlers of Massachusetts including in Boston and surrounding areas. I can trace my ancestry back to Patriots, Loyalists, British aristocracy, judges, and politicians. I'm a Daughter of the Revolution and my ancestors also almost founded a British colony, but the Revolution happened first instead. I'm one of you, in that sense. Accordingly, I think you have to listen to me because of that, at least a little bit.

So, listen: you can do this. If you cooperate, you will certainly have support, funding, and Bostonians deeply invested in mitigation and remediation. You also have to know that otherwise it's just a matter of time before there is inevitable destruction and disaster, and that later outcome will be far worse then what you would have to do now. You also have to know that if this is all I found in such a short period of time and such limited exposure to the hazards in that area, that the situation is likely far worse what is reflected here, and that's a horrifying though.

Whatever the full portfolio of issues is, once it all gets out, it seems certain to trigger negative attention and responses -- unless and until you own the issues, create and deploy remediation and transition plans, and "stop the bleeding" from these wounds. You can control this if you act now – but once something catastrophic happens and it reveals decades of knowledge and concealment of those risks, it will become unforgivable and any potential goodwill may be lost.

You can own these issues now in a way that still fits with your sense of identity. You don't have to hide from this or fear it will destroy you. You can develop a strategy to incorporate all of this into an evolved identity, create a narrative and invitation for the public that will bring more people to the Commonwealth and City and Universities, and pivot the next steps to be about advancements in science, technology and engineering. This research would shift from schools and labs on top of the Site, instead to field research of the Site itself. (Maybe P&G-Gillette can even sell their property to a field research company or something, fi they still want to sell it).

Instead of claiming there are no natural resources in the area, you own and promote those unique features, and you look for economic stability based on the reality of the area – not forcing a false narrative that will never come to fruition, while denying the real features that are valuable and can bring people to this area because of those features. Instead of a disaster area, this can be a World Heritage Site and globally recognized scientific *field* research area, that is undergoing major remediation work, transitioning the population density to more stable areas, and refocusing its priorities.

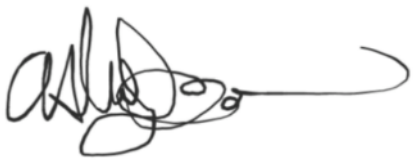
If Boston was truly founded as an "City on a Hill" in the sense that Boston is an inspirational concept, rather than simply a place on a map, then that City will go wherever Boston goes. Then, by definition, Boston cannot be tied to a specific geographic location. If Boston insists on maintaining its "hub of the universe" colonial anchor on the Shawmut Peninsula, then it is admitting it is not "City on a Hill," it was and is simply a colonial government. If Boston is an inspirational idea, then Boston should be a leader and create reasons for people to be inspired!

If not, then remember that the hill your City is on is actually a bolide ejecta mound and the very least you can do is be honest about that.

III. CONCLUSION & CERTIFICATION

I certify that the information contained in this Notice and Petition is true and accurate to the best of my knowledge and belief, based on personal observation, documentary research, and scientific analysis.

Respectfully,



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V. SERVICE & NOTICE

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Cosa Nostra ("The Mafia"), et. al.
via legal counsel for the Defendants in
Gjovik v 18 Worcester Sq. Condo. Assoc. et al.
(they and/or their clients will need to forward it on to whoever has the authority to shut down the organization's underground tunnels and labs at the Site).