UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
25063 CENTER RIDGE ROAD WESTLAKE, OH 44145

February 21, 2023

REPLY TO THE ATTENTION OF:
ECW-W

MEMORANDUM

SUBJECT: Enforcement Action Memorandum – Determination of Threat to Public Health and the Environment at the East Palestine Train Derailment Site, East Palestine, Columbiana County, Ohio (Site ID: C5XR)

FROM: Ralph Dollhopf, On-Scene Coordinator
Emergency Response Section 1

THRU: Jason H. El-Zein, Manager
Emergency Response Branch 1

TO: Douglas Ballotti, Director
Superfund & Emergency Management Division

We are in the process of ensuring this document is accessible to all audiences. If you need assistance accessing this document, or any materials on the EPA East Palestine, Ohio emergency response webpages, please contact the Region 5 Public Information Officer on-call r5_eastpalestine@epa.gov

I. PURPOSE

The purpose of this Action Memorandum is to document the determination of an imminent and substantial threat to public health and the environment posed by hazardous waste and substances, and to authorize expenditures at the East Palestine Train Derailment Site in East Palestine, Columbiana County, Ohio (Site).

There are no nationally significant or precedent setting issues associated with the Site. The Site is not on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

Name: East Palestine Train Derailment Superfund Site (Site ID: C5XR)
CERCLIS ID:
Site Location: East Palestine, Columbiana County, Ohio
Lat/Long: Latitude: 40.8360395; -80.5222838
RCRA ID:
State ID:
Potentially Responsible Parties (PRPs): Norfolk Southern Railway Company
NPL Status: Non NPL
Category: CERCLA Time-Critical

A. Site Description

A train derailment and a subsequent fire occurred at approximately 2055 eastern standard time (EST) on February 3, 2023, in East Palestine, Columbiana County, Ohio, less than a mile from the Ohio-Pennsylvania border. Norfolk Southern Railway Company (Norfolk Southern) reported the incident at 2253 EST to the National Response Center (NRC) (Administrative Record [AR] #9). EPA mobilized to the Site with EPA Superfund Technical Assessment and Response Team (START) at approximately 2330 EST on February 3, 2023. Norfolk Southern, Ohio Environmental Protection Agency (Ohio EPA), Columbiana County, Village of

East Palestine, Pennsylvania Department of Environmental Protection (Pennsylvania DEP), Ohio Department of Natural Resources (ODNR), Butler County Incident Management Team (IMT), Federal Railroad Administration (FRA), National Transportation Safety Board (NTSB), and other agencies also mobilized to the Site. EPA coordinated with IMAAC to provide plume modeling throughout the duration of the derailment fire. EPA was provided with a train consist by Norfolk Southern on February 4, 2023 (AR#10).

At the time of the initial report, the number of derailed cars (of the 149) was unknown but 20 of the cars were listed as carrying hazardous materials (HazMat), as described below:

- Vinyl Chloride, Stabilized (5)
- Sulfuric Acid (5)
- Ethylene Glycol Monobutyl Ether (1)
- Butyl Acrylates, Stabilized (2)
- Combustible Liquids nos (1)
- Isobutylene (1)
- Ethyl-Hexyl Acrylate(1)
- Residue – last contained liquified petroleum gas (LPG) (1)
- Residue – last contained Benzene (2)

The derailment resulted in a large fire affecting numerous rail cars, including HazMat rail cars, although the status (e.g. breached, burning, etc) was initially unknown due to safety concerns associated with the fire as well as the position of the derailed cars, which affected the ability of the responders to identify which rail cars were actively breached and/or burning (AR#11). Initially a shelter-in-place order was recommended, and firefighting efforts were stood down due to safety concerns; however, an evacuation order was enacted by the Village of East Palestine on February 4, 2023. The fire continued to burn throughout the following days.

By February 4, 2023, water quality impacts to Sulphur Run were evident due to runoff from the derailment fire. Containment measures were implemented by Norfolk Southern; however, complete containment was not viable. Containment and recovery resources, including vacuum trucks and aerators, were mobilized to the Site and containment boom was placed within Sulphur Run. Underflow dams (2) were constructed on Sulphur Run on February 5, 2023. Negative impacts, most notably a significant fish kill, were noted due to the release to Sulphur Run and subsequent downstream waterways, including Leslie Run. On February 5, EPA collected surface water samples (3) from Sulphur Run, which showed elevated levels of contaminants of concern. Drinking water intakes were also notified of the spill on February 5, 2023.

On February 6, due to concerns of a catastrophic boiling liquid expanding vapor explosion (BLEVE) after a pressure relief valve failed and internal temperatures were increasing within one of the vinyl chloride rail cars, the East Palestine Fire Chief and the Ohio Governor, in coordination with Norfolk Southern, made the decision to conduct a ‘controlled burn’ of the contents of the vinyl chloride rail car. Norfolk Southern subsequently informed the Incident Commander that all five (5) rail cars containing vinyl chloride would have to be involved in the ‘controlled burn’ due to their proximity to the reacting rail car. Norfolk Southern developed a plan to breach and flare the contents of the rail car within a trench. The Ohio National Guard and State Highway Patrol were mobilized to the Village of East Palestine to control ingress/egress and to ensure all residents were evacuated from their residences prior to, during, and after the ‘controlled burn’ operation pursuant to evacuation orders issued by the State of Ohio and the Commonwealth of Pennsylvania, with an extended evacuation zone of one by two miles. IMAAC and the Ohio National Guard, in conjunction with experts from the Defense Department, provided updated modeling for the anticipated plume of the release. TransCanada Energy stopped and purged their natural gas pipeline within the area as a preventative measure.

The ’controlled burn’ occurred on February 6 at approximately 1630 EST by Norfolk Southern. The fire in the trench associated with the ‘controlled burn’ was reported to be out by 2100 EST. Derailment rail car fires continued through February 7. EPA conducted stationary and roaming air monitoring surrounding the area throughout the operation. As part of air monitoring, EPA, with support from the 52nd Civil Service Team of the Ohio National Guard, deployed AreaRAE Pro units which monitored volatile organic compounds (VOCs), hydrogen cyanide (HCN), carbon monoxide (CO), hydrogen sulfide (H2S), and lower explosive limit (LEL). Single Point Monitor (SPM) Flex units were also deployed to monitor phosgene and mineral acids. Roaming air monitoring teams screened for particulates (particulate matter [PM] 2.5 and PM 10), hydrogen cyanide (HCN), benzene, phosgene, and mineral acids. During the ‘controlled burn’, low levels of phosgene (23 parts per billion [ppb]) and HCL(0.02 to 1.37 ppb) were observed within the plume but below the screening levels of 0.04 parts per million (ppm) and 1.8 ppm, respectively. One (1) eight (8)-hour SUMMA Canister was deployed at the center of the smoke plume just prior to the ‘controlled burn’ operation which was analyzed for TO-15. EPA’s Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft mobilized to the Site and conducted survey and monitoring overflights on February 7th.

Rail car fires were extinguished, and the Evacuation Order was lifted by the Village of East Palestine on February 8. A ‘Home Safely Plan,’ which included voluntary residential air screening was offered by Norfolk Southern with EPA oversight. Containment measures within affected waterways continued and wrecking equipment was mobilized by Norfolk Southern to begin clearing rail cars and debris from the immediate railway area, with evident gross contamination and areas of free product throughout the derailment area. The railway became active again on February 9, following removal of rail cars and debris in the immediate rail area.

Due to significant contamination of Sulphur Run with spilled product from the derailment, water was diverted from an upstream wetland area to further downstream Sulphur Run in order to bypass the areas of gross contamination within Sulphur Run and to prevent additional contamination from mobilizing downstream (‘Sulphur Run Bypass’).

Work ongoing at the Site to date by Norfolk Southern, with oversight by the Ohio EPA includes:

- Dredging and scraping of grossly contaminated sediment within an unnamed ditch south of the derailment site;
- Removal of grossly contaminated soils at the derailment site;
- Removal of free product at the derailment site;
- Containment and recovery of contaminated liquids and soils;
- Delineation of extent of contamination (multimedia).

EPA issued a General Notice of Potential Liability to Norfolk Southern on February 10., 2023 (AR#14). Ohio EPA issued a Notice of Violation letter on February 10, 2023 (AR#13).

Additional information on Site activities to date is detailed within Pollution Reports (PolRep) #1-10 (AR#12)

1. Physical location

The Site is located in and around East Palestine, Columbiana County, Ohio (80.5215884°W, 40.8360864°N). The Site consists of the East Palestine Derailment area within and around East Palestine, Columbiana County, Ohio and surrounding areas, including Beaver County, Pennsylvania ((80.5215884°W, 40.8360864°N). Norfolk Southern Railway Company owns and operates a Class I freight railroad which transects the Site from eastern Ohio to western Pennsylvania. The areas surrounding the railroad are mixed use commercial, industrial, and residential within East Palestine, OH. Areas outside the Village of East Palestine are primarily residential agricultural use. Darlington Township is located southeast of the derailment location.

An Environmental Justice (EJ) analysis for the Site is contained in Attachment 1. Screening of the surrounding area used Region 5's EJScreen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the Site and determined that there is a potential for EJ concerns at the Site.

2. Site characteristics

The Site consists of the East Palestine Derailment area within and around East Palestine, Columbiana County, Ohio and surrounding areas, including Beaver County, Pennsylvania. Two unnamed ditches lie on either side of the tracks (north ditch and south ditch). Ditches discharge into Sulphur Run, which flows southwest into Leslie Run, a Coldwater habitat designated stream in Ohio. Coldwater habitat is a State of Ohio water quality designation that designates waters capable of supporting populations of native Coldwater fish and associated vertebrate and invertebrate organisms and plants on an annual basis. Downstream of Leslie Run is Bull Creek, North Fork Little Beaver Creek, and the Ohio River.

Local topography lies within a valley approximately 1000 ft above sea level. Valleys and rolling hills in the area slope to the west and south. Surface geology is typically characterized as end moraines and high valley sided terraces. Bedrock geology is composed of Allegheny and Conemaugh groups with a major constituent being sandstone with minor constituents of clay, limestone, shale, and coal.

3. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

A release or threat of release of hazardous substances, pollutants, or contaminants is present at the Site. There is a documented presence of hazardous substances, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), onsite, including vinyl chloride and benzene, and wastes consistent with the parameters likely to be classified as characteristically hazardous including for toxicity; and pollutants and contaminants as defined by Section 101(33) of CERCLA, 42 U.S.C. § 9601(33).

Human exposure can occur from inhalation of toxic ambient air vapors or vapors released into the air via fire; inhalation via fugitive dust generation; dermal contact with spilled contaminants; incidental ingestion of material due to drinking water contamination; and incidental ingestion of material following dermal contact.

Potential human receptors include nearby residents and community members, emergency response workers, and recreators within affected waterways.

Animal exposure has occurred including a documented fish kill of an estimated 3,500 fish of at least 12 different species (AR#15). Additional animal exposure can occur through contaminated waterways via inhalation, ingestion, and dermal contact for aquatic and riparian species.

4. NPL status

This Site is not on the NPL and has not been proposed for listing on the NPL. The Site has not received a Hazard Ranking Score or been referred to the NPL Site Assessment program.

5. Maps, pictures, and other graphic representations

Attachment 1: Site Location Maps

Attachment 2: Derailed Train Figure
Attachment 3: Photographic Log
Attachment 4: Environmental Justice Analysis

B. Other Actions to Date

1. Previous actions

Refer to Section II.A of this Memorandum.

2. Current actions

EPA is coordinating with the identified Potentially Responsible Party, Norfolk Southern, the Ohio EPA, Columbiana County EMA, the Village of East Palestine, ODNR, Federal Emergency Management Agency (FEMA) Region 5, and other agencies to coordinate cleanup efforts and delineate the extent of contamination.

C. State and Local Authorities' Roles

1. State and local actions to date

Refer to Section II.A of this Memorandum.

2. Potential for continued State/local response

Ohio EPA has requested EPA assistance for the ongoing emergency response. Ohio EPA will continue to maintain presence and authority at the response during the remaining response phase at the Site.. Local response agencies are also maintaining presence onsite due to the nature and complexity of the response.

III. THREATS TO PUBLIC HEALTH OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions remaining at the Site present a substantial and imminent threat to the public health or welfare, and the environment, and meet the criteria for a time-critical removal action as provided for in the 40 C.F.R. § 300.415(b)(2) of the NCP. These criteria include, but are not limited to, the following:

40 C.F.R. § 300.415(b)(2)(i). Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Actual and potential exposures to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants has occurred due to the derailment. There is a documented presence of hazardous substances, as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), onsite, including vinyl chloride, ethylene glycol monobutyl ether, ethylhexyl acrylate, isobutylene, benzene, and wastes consistent with the parameters likely to be classified as characteristically hazardous including for toxicity; and pollutants and contaminants as defined by Section 101(33) of CERCLA, 42 U.S.C. § 9601(33).

Human exposure can occur from inhalation of toxic ambient air vapors or vapors released into the air via fire; inhalation via fugitive dust generation; dermal contact with spilled contaminants; incidental ingestion of material due to drinking water contamination; and incidental ingestion of material following dermal contact.

Potential human receptors include nearby residents and community members, emergency response workers, and recreators within affected waterways.

Animal exposure has occurred including a documented fish kill of an estimated 3,500 fish of at least 12 different species. Additional animal exposure can occur through contaminated waterways via inhalation, ingestion, and dermal contact for aquatic and riparian species.

Information on toxicological effects of certain hazardous substances, pollutants, and contaminants identified on site is listed below and referenced in the Administrative Record (Attachment #5):

Vinyl Chloride: Breathing high levels of vinyl chloride can cause dizziness or sleepiness. Breathing very high levels can cause fainting and breathing very high levels can cause death. Studies have shown chronic inhalation of vinyl chloride for several years cause changes in the structure of the liver. Individuals are more likely to develop these changes if they breath high levels of vinyl chloride. Highly exposed workers have also developed liver cancer (angiosarcoma of the liver). The effects of ingesting high levels of vinyl chloride are unknown. Dermal exposure may cause numbness, redness, and blisters. Animal studies have shown that exposure to vinyl chloride during pregnancy can affect the growth and development of the fetus. (AR#8)

Ethylene Glycol Monobutyl Ether: Routes of exposure include ingestion and dermal contact. Ethylene glycol monobutyl ether is a carcinogen. Inhaling Ethylene glycol monobutyl ether can irritate the nose and through. It can also cause nausea, vomiting, diarrhea, and abdominal pain. Exposure can cause headache, dizziness, lightheadedness, and passing out. It may damage the liver and kidneys. (AR#7)

Isobutylene: Acute exposure to isobutylene is associated with the following health effects: irritation of eyes, nose, and throat; dermal contact can cause frostbite; headache, dizziness, lightheadedness, and fatigue. Higher levels of isobutylene can cause come and death. Chronic health hazards include cancer hazard, reproductive hazard, and other long-term health effects. (AR#2)

Benzene: Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Exposure through ingestion can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death. The major effect of benzene from chronic exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance of infection. Benzene may affect menstruation and decrease the size of ovaries in women following many months of exposure to high levels. Benzene is a known human carcinogen according to the Department of Health and Human Services, the International Agency for Research or Cancer (IARC), and the EPA. (AR#5)

Butyl Acrylate: Butyl acrylate can cause health effects due to inhalation and through dermal contact. Contact with butyl acrylate can irritate the nose, throat, and lungs. Butyl acrylate may cause a skin allergy. Exposure to butyl acrylate can cause headache, dizziness, nausea, and vomiting. Repeated exposure can lead to permanent lung damage. (AR#6)

Phosgene: Exposure to phosgene in the air can cause eye and throat irritation. High amounts in the air can cause severe lung damage. Exposure can occur through inhalation, dermal contact, or (less likely) ingestion. Higher levels of phosgene can cause lungs to swell, making it difficult to breathe. Even higher levels can result in severe damage to your lungs that might lead to death. Dermal contact with phosgene can result in chemical burns or may cause frostbite. (AR#4)

Hydrogen Chloride: Hydrogen chloride is irritating and corrosive to any tissue it contacts. Brief exposure to low levels causes throat irritation. Exposure to higher levels can result in rapid breathing, narrowing of the bronchioles, blue coloring of the skin, accumulation of fluid in the lungs, and even death. Exposure to even higher levels can cause swelling and spasm of the throat and suffocation. Some people may develop an inflammatory reaction to hydrogen chloride. This condition is called reactive airways dysfunction syndrome (RADS), a type of asthma caused by some irritating or corrosive substances. Depending on the concentration, hydrogen chloride can produce from mild irritation to severe burns of the eyes and skin. Long-term exposure to low levels can cause respiratory problems, eye and skin irritation, and discoloration of the teeth. Swallowing concentrated hydrochloric acid will cause severe corrosive injury to the lips, mouth, throat, esophagus, and stomach. (AR #3)

40 C.F.R. § 300.415(b)(2)(ii). Actual or potential contamination of drinking water supplies or sensitive ecosystems.

Hazardous substances and pollutants or contaminants released as a result of the derailment have the potential to contaminate drinking water supplies for private drinking groundwater wells within the affected area. Hazardous substances, such as vinyl chloride and other volatile organic compounds released during the derailment, have the potential to migrate from spill areas on soil into the subsurface soil and potentially groundwater, which supplies residential private drinking water wells with potable water. As of February 17, 2023, residents on private drinking water wells within the affected area are being advised to get their water tested by county officials and utilize bottled water until the well water quality can be determined to be uncontaminated.

Additionally, the Ohio River was affected by the initial derailment and subsequent release of chemicals from the derailed cars, which migrated from the ditches immediately north and south of the derailment into Sulphur Run and eventually into the Ohio River. Numerous public water utilities located in the Ohio River Basin use the Ohio River as their water source, supplying drinking water to over five million people. Detectable concentrations of n-Butyl Acrylate, known to be associated with the February 3, 2023 derailment, have been identified at fourteen (14) locations on the Ohio River according to the Ohio River Valley Water Sanitation Commission (ORSANCO) (AR #16).

Hazardous substances and pollutants or contaminants released as a result of the derailment have been documented to have negatively impacted aquatic life and/or water quality within Sulphur Run, Leslie Run, Bull Run, North Fork of Beaver Creek, and the Ohio River. A fish kill of 3,500 fish, across 7.5 miles of waterways, occurred as a result of the derailment (AR#15). Portions of the affected waterways are known habitat for the Eastern Hellbender (*Cryptobranchus alleganiensis*), an endangered species. Leslie Run is designated by the State of Ohio as Coldwater Habitat. Coldwater Habitat aquatic life designation is assigned to streams that support either native Coldwater species (e.g., brook trout and certain invertebrate species) or are Coldwater streams managed by ODNR as stocked trout fisheries (associated with more stringent water quality requirements).

40 C.F.R. § 300.415(b)(2)(iii). Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.

Rail cars containing hazardous substances remain onsite and pose a threat of release following exposure to the fire following the derailment. As of February 17th, 2023, hazardous materials rail cars remain onsite containing isobutylene and benzene (residue above RCRA empty) that could be released into the environment (AR# - 10).

40 C.F.R. § 300.415(b)(2)(iv). High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

The derailment caused hazardous substances (including vinyl chloride) free product to spill onto the soil within the area of derailed cars. Grossly contaminated soils within the area pose a risk of migrating with heavy precipitation which could mobilize the contaminants into Sulphur Run or cause additional soil contamination. Grossly contaminated soil, when dry and disturbed, has the potential to disperse contaminated particulates within the air, which could present an additional threat of exposure to humans and the environment.

40 C.F.R. § 300.415(b)(2)(v). Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Weather conditions may contribute to deterioration of temporary containment measures currently in-place, releasing contaminants into the environment. The presence of derailment-related debris and/or contaminated soils presents a threat to the public health or welfare or the environment through migration as windblown particles or suspended in rainwater/snow melt runoff. The 2022-2023 Winter Precipitation Outlook indicates likely 'wetter than normal' conditions in the northeastern Ohio area according to the NWS Climate Prediction Center. Precipitation could result in additional contamination into the environment from the source (derailment) location.

40 C.F.R. § 300.415(b)(2)(vi). Threat of fire or explosion.

The threat of fire or explosion exists due to a rail car of isobutylene at the Site. Isobutylene is a highly flammable gas and dangerous fire hazard (AR # 2). If left unaddressed, the tank presents a threat of fire; containers may explode in fire. A fire could cause an airborne release of poisonous gases produced during combustion of isobutylene.

40 C.F.R. § 300.415(b)(2)(vii). The [lack of] availability of other appropriate federal or state response mechanisms to respond to the release.

The State of Ohio has requested EPA assistance with this Site. There are no other identified response mechanisms to remove the release or threat of release of hazardous substances from the Site.

40 C.F.R. § 300.415(b)(2)(viii). Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

Trust between the citizens affected by the derailment, including the community of East Palestine, and Norfolk Southern has been significantly and negatively impacted by the derailment. It has been communicated to EPA and other local, State, and Federal partners by the community that there is a lack of trust and community members do not have faith in Norfolk Southern to provide reliable and transparent scientific data for critical environmental and public health measurements that aid in personal decisions related to an individual's health and wellbeing. As a result, EPA and other involved agencies have a duty to the affected public to ensure continued access to reliable, accurate, and transparent screenings.

Additionally, the full extent of contamination has not yet been delineated and the full scope of impact is not yet understood. The federal EPA has the experience and the resources to manage a cleanup taking place across state lines and involving multiple local and other federal agencies.

IV. ENDANGERMENT DETERMINATION

Given the Site conditions and the nature of the known and suspected hazardous substances at the Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

Section 104(c) of CERCLA, as amended by SARA, limits the Federal emergency response to $2 million unless three criteria are met. The quantities and levels of hazardous substances at the East Palestine Derailment Site warrant the $2 million exemption based on the following factors:

A) There is an immediate risk to public health or welfare or the environment;

The Site is located within a residential area and is bordered by numerous residential properties. Sulphur Run, Leslie Run, Bull Creek, North Fork of Beaver Creek, and Ohio River all have had documented contamination of chemicals from the derailment. Additionally, a fish kill was documented in Sulphur Run, Leslie Run, Bull Creek, and the North Fork of Beaver Creek by ODNR (AR# - Ohio EMA).

There are few barriers to protect the public from the hazardous substances located at the Site because the affected area is broad, and the extent of contamination is not yet fully delineated.

B) Continued response actions are immediately required to prevent, limit, or mitigate an emergency;
Continued response actions are immediately required to prevent, limit, and mitigate the ongoing emergency at the Site due to the ongoing impact to public health and the environment. Additional delineation of the extent of contamination is needed to be protective of public health and the environment.

C) Assistance will not otherwise be provided on a timely basis;
Due to the size and scope of the emergency response and necessary subsequent remediation activities, including those not yet known or delineated, adequate assistance will not otherwise be provided on a timely basis.

VI. PROPOSED ACTIONS

A. <u>Proposed Actions</u>

1. Proposed action description:

- In conjunction with other federal, state and local agencies, EPA will participate in all required elements of the Site's response organization structure (Incident Command System) as established and coordinated by the OSCs;
- Develop and implement a Security Plan;
- Develop and implement an air monitoring and sampling plan for:
    - Indoor air of occupied structures;
    - Perimeter community air monitoring at any remediation areas;
- Develop and implement a plan for the identification and delineation of the extent of contamination for:
    - Surface and subsurface soils;

- Surface waters and sediments;
- Groundwater;
- Drinking water sources;

- Develop and implement a plan for the containment and remediation of contaminated surface and sub-surface soils, surface waters and sediments, groundwater (including private, municipal, agricultural wells);
- Clean up dust and debris in interior and exterior of buildings resulting from the train derailment fires upon request

- Expected boundaries for work identified above are described below:

    - For air, surface soil, interior and exterior home cleaning (1 mile x 2-mile evacuation area);

    - For surface water and sediments (length of the contaminated surface waters from unnamed ditch to the Ohio River);

    - For subsurface soils and groundwater (perimeter of and within the areal extent of derailment location); and

    - Drinking water sources (1 mile radius from the derailment and a 250-foot buffer from the center line of the contaminated surface waters from unnamed ditch to the Ohio River).

- Remove, secure, stage, consolidate, package, transport, and dispose of identified hazardous substances, pollutants, and contaminants at EPA-approved disposal facilities in accordance with the EPA's Off-Site Rule 40 C.F.R. § 300.440; and
- Taking any response action to address any release or threatened release which EPA determines may pose an imminent and substantial endangerment to the public health or the environment.

2. Contribution to remedial performance:

The proposed action will not impede future actions based on available information.

3. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable.

4. Applicable or relevant and appropriate requirements (ARARs)

All applicable, relevant, and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable considering the exigencies of the circumstances.

Federal

Federal ARARs for the Site may include, but are not limited to:

a) 49 U.S.C. § 5101 *et seq*. which regulates the transportation of hazardous waste and hazardous substances by aircraft, railcars, vessels, and motor vehicles, further defined at 49 CFR Parts 171-179;

b) Resource Conservation and Recovery Act (RCRA) requirements concerning manifesting, waste packaging, labeling, waste analysis and notification to treatment, storage and disposal facilities (40 CFR 262.20 – 262.23 and 262.30 - 262.32, and 40 CFR 268.7)

c) RCRA standards applicable to transporters of hazardous wastes found at 40 CFR Part 263.

The following may apply to drum and container storage on-site, as applicable:

a) Containers of RCRA hazardous waste must be maintained in good condition; compatible with hazardous waste to be stored; and closed during storage (except to add or remove waste) (40 CFR § 264.171-172);

b) Containers must be placed on a sloped, crack-free base, and protected from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system (40 CFR § 264.175);

c) Containers of ignitable or reactive waste must be kept at least 50 feet from the facility's property line (40 CFR § 264.176); and

d) Incompatible materials must be kept separate. Incompatible materials stored near each other must be separated by a dike or other barrier (40 CFR § 264.177).

State

As an emergency response, the OSC attempted and will continue to identify and comply with applicable, relevant, and appropriate requirements (ARARs) of Federal and State law.

5. Project Schedule

The response action described in this Action Memo will require an estimated 127 working days to complete.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented on-site, and the potential exposure pathways to nearby populations described in Sections II, III, and IV above, the actual or threatened release of hazardous substances and pollutants or contaminants from the Site may present an imminent and substantial endangerment to public health or welfare or the environment if this action is not taken. Non-action will increase the potential that hazardous substances will be released, thereby threatening public health and the environment. Delayed or non-action may result in increased likelihood of external exposure, inhalation, ingestion, or direct contact to human populations at or near the Site.

VIII. OUTSTANDING POLICY ISSUES

None identified.

IX. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Enforcement Confidential Addendum.

X. RECOMMENDATION

This decision document represents the selected removal action for the East Palestine Train Derailment Site located in the Village of East Palestine, Ohio, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the Site (Attachment #5). Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal, and I recommend your approval of the removal action and $2MM statutory exemption proposed in this Action Memorandum.

You may indicate your approval by signing below.

Approve: DOUGLAS BALLOTTI Digitally signed by DOUGLAS BALLOTTI Date: 2023.02.21 09:09:05 -06'00'

Douglas Ballotti, Director
Superfund & Emergency Management Division

February 21, 2023
Date

Disapprove: _____

Douglas Ballotti, Director
Superfund & Emergency Management Division

_____
Date

Enforcement Addendum

Attachments:

I. Site Location Maps
II. Derailed Train Figure
III. Photographic Log
IV. Environmental Justice Analysis
V. Administrative Record Index

cc: S. Ridenour, U.S. EPA, 5104A, (Steve Ridenour/DC/USEPA/US)
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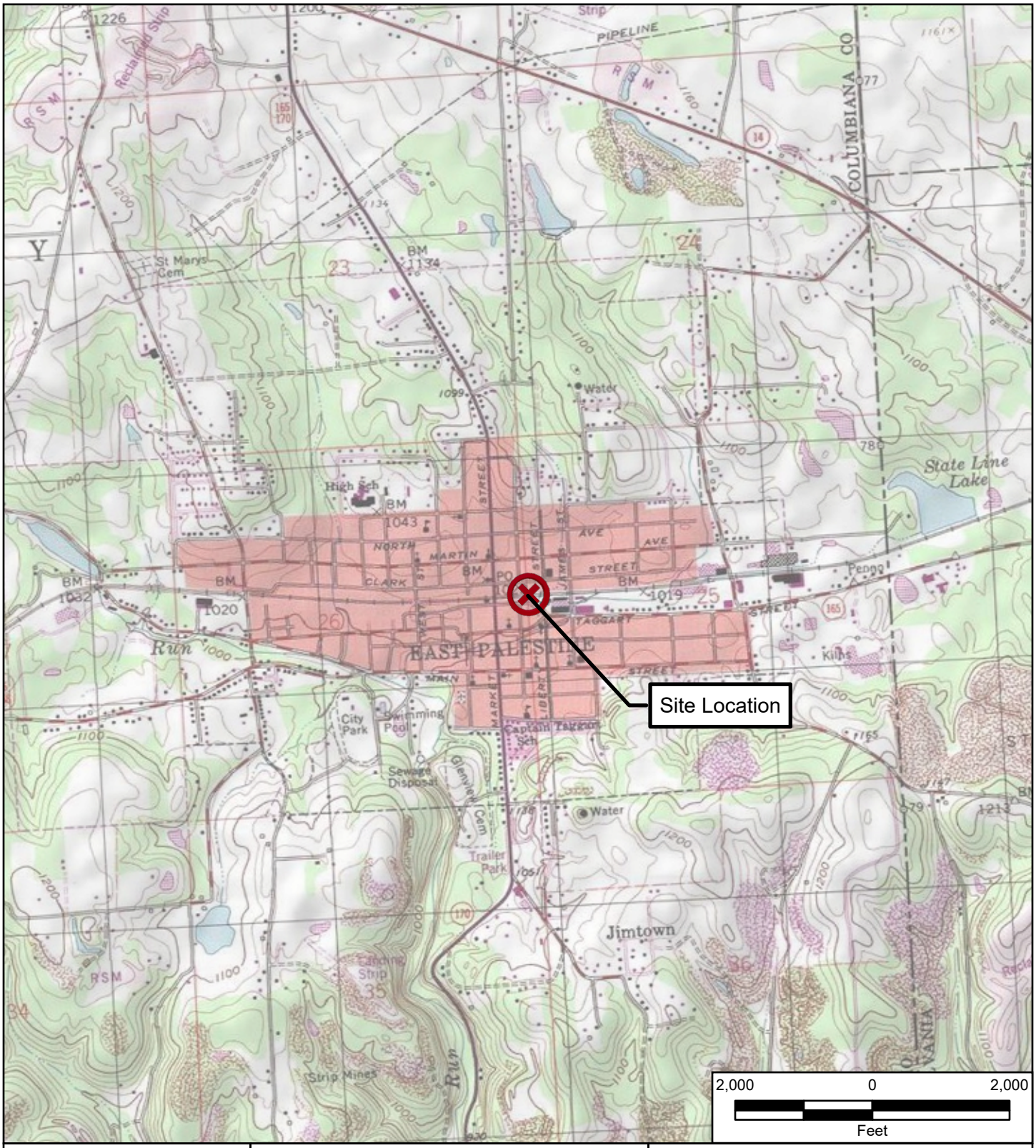
Attachment 1

Site Location Maps



Reference Map

Legend

⊗ Approximate Ste Location

N

East Palestine Derailment ER Site
75 E Main St
East Palestine, Columbiana County, OH 44413

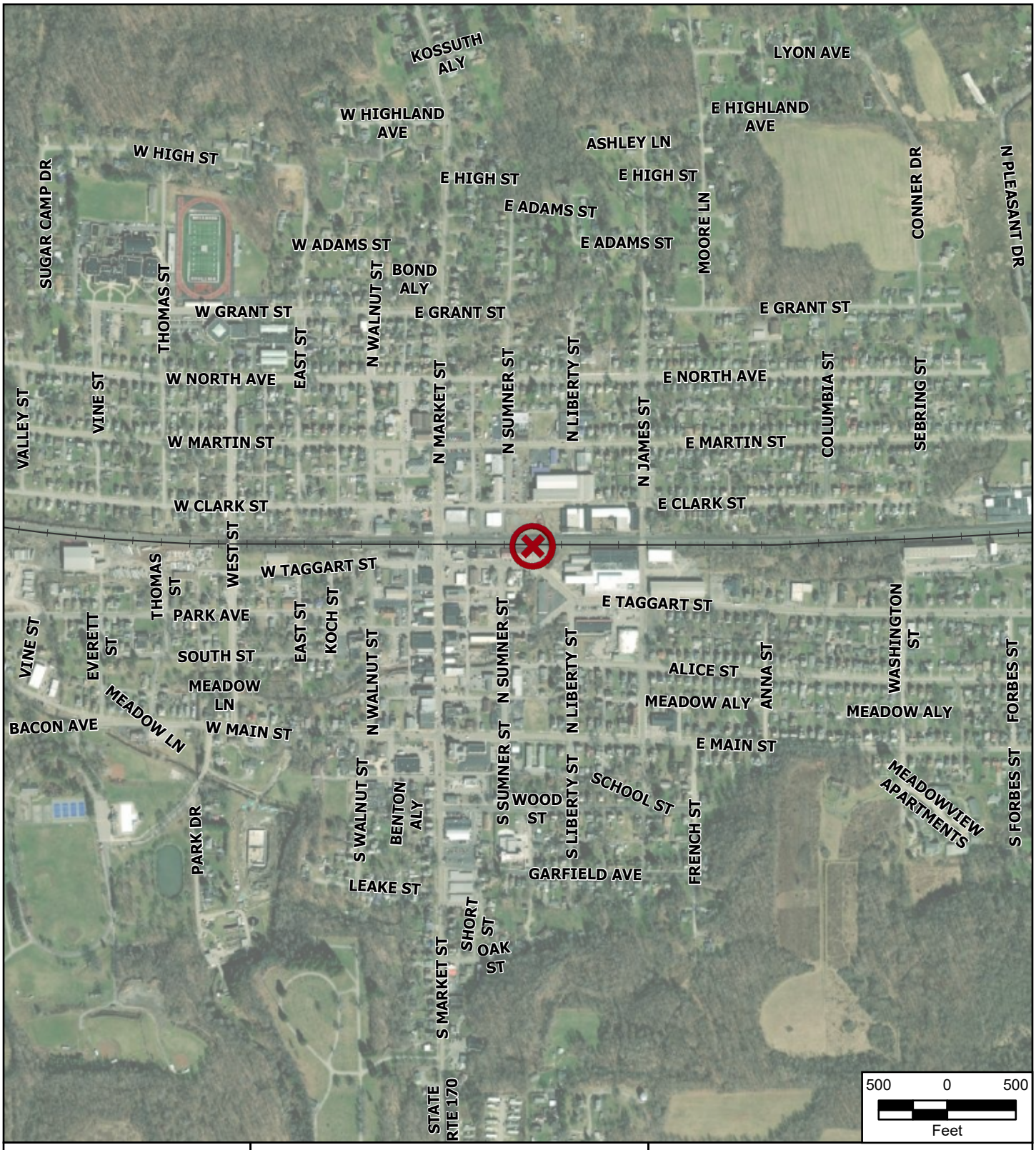
Figure 1
Site Location Map

TETRA TECH

Prepared For: EPA	Prepared By: Tetra Tech Inc.

File Path: C:\Users\hong.sun\Documents\ArcGIS\Projects\PalestineDerail\PalestineDerail.aprx

Date Saved: 2/4/2023



Reference Map

Legend

- Approximate Ste Location
- Railroad

N

East Palestine Derailment ER Site
75 E Main St
East Palestine, Columbiana County, OH 44413

Figure 2
Site Layout Map

TETRA TECH

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Prepared By: Tetra Tech Inc.

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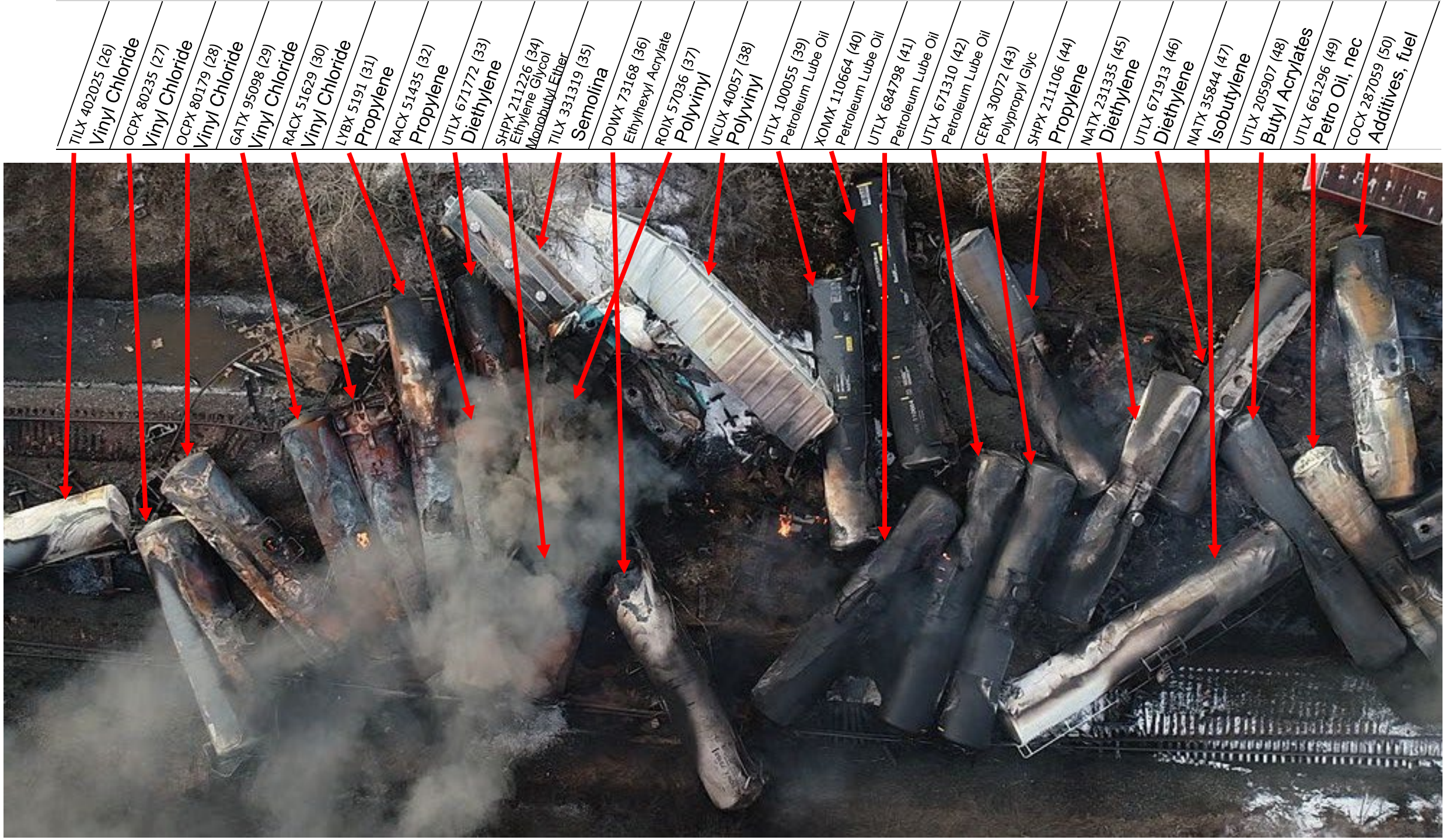
Date Saved: 2/4/2023

Attachment 2

Derailed Train Figure


TILX 402025 (26)
Vinyl Chloride
OCPX 80235 (27)
Vinyl Chloride
OCPX 80179 (28)
Vinyl Chloride
GATX 95098 (29)
Vinyl Chloride
RACX 51629 (30)
Vinyl Chloride
LYBX 5191 (31)
Propylene
RACX 51435 (32)
Propylene
UTLX 671772 (33)
Diethylene
SHPX 211226 (34)
Ethylene Glycol
Monobutyl Ether
TILX 331319 (35)
Semolina
DOWX 73168 (36)
Ethylhexyl Acrylate
ROIX 57036 (37)
Polyvinyl
NCUX 40057 (38)
Polyvinyl
UTLX 100055 (39)
Petroleum Lube Oil
XOMX 110664 (40)
Petroleum Lube Oil
UTLX 684798 (41)
Petroleum Lube Oil
UTLX 671310 (42)
Petroleum Lube Oil
CERX 30072 (43)
Polypropyl Glyc
SHPX 211106 (44)
Propylene
NATX 231335 (45)
Diethylene
UTLX 671913 (46)
Diethylene
NATX 35844 (47)
Isobutylene
UTLX 205907 (48)
Butyl Acrylates
UTLX 661296 (49)
Petro Oil, nec
COCX 287059 (50)
Additives, fuel

Attachment 3

Photographic Log

East Palestine Train Derailment

Photo Log

Description: U.S. EPA contractor carrying air monitoring equipment for indoor air screening on Feb. 9, 2023
Category: Site Photo
Latitude:
Date Taken: 2/9/2023
Longitude:
Tags:

Description: Norfolk Southern contractors removing a burned tank car (benzene, residual) from the crash site
Category: Site Photo
Latitude: 40.8353888888889
Date Taken: 2/7/2023
Longitude: -80.5230555555556
Tags:

Description: Oil product leaking from an upside-down damaged tank car and pooling on the ground
Category: Site Photo
Latitude: 40.8356444444444
Date Taken: 2/7/2023
Longitude: -80.5229861111111
Tags:

Description: Crash site recovery operations
Category: Site Photo
Latitude: 40.8360555555556
Date Taken: 2/7/2023
Longitude: -80.5241777777778
Tags:

Description: Real-time air monitor (yellow) next to a canister used to collect air samples.
Category: Site Photo
Latitude:
Date Taken: 2/7/2023
Longitude:
Tags:

East Palestine Train Derailment

Photo Log

Description: Photo taken by EPA's ASPECT (Airborne Spectral Photometric Environmental Collection Technology) system on Feb. 7, 2023.

Category: Site Photo | Latitude:

Date Taken: 2/7/2023 | Longitude:

Tags:

Description: Photo taken by EPA's ASPECT (Airborne Spectral Photometric Environmental Collection Technology) system on Feb. 7, 2023.

Category: Site Photo | Latitude:

Date Taken: 2/7/2023 | Longitude:

Tags:

Description: Photo taken by EPA's ASPECT (Airborne Spectral Photometric Environmental Collection Technology) system on Feb. 7, 2023.

Category: Site Photo | Latitude:

Date Taken: 2/7/2023 | Longitude:

Tags:

Description: Photo of Air Monitoring Equipment

Category: Site Photo | Latitude:

Date Taken: 2/7/2023 | Longitude:

Tags:

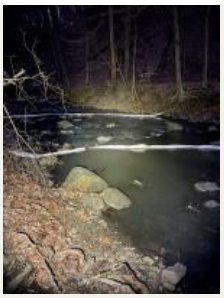
East Palestine Train Derailment

Photo Log

Description: Air Monitoring Equipment Deployed
Category: Site Photo
Latitude:
Date Taken: 2/6/2023
Longitude:
Tags:

Description: Photo from Drone overflight
Category: Site Photo
Latitude: 40.8358123611111
Date Taken: 2/4/2023
Longitude: -80.52295975
Tags:

Description: Boom at Leslie Run near Jimtown Rd
Category: Site Photo
Latitude:
Date Taken: 2/5/2023
Longitude:
Tags:



Description: Aeration pump set up along Sulphur Run
Category: Site Photo
Latitude:
Date Taken: 2/5/2023
Longitude:
Tags:

Description: Photo of Ambient Air Monitoring Equipment
Category: Site Photo
Latitude: 40.8338361111111
Date Taken: 2/5/2023
Longitude: -80.5385138888889
Tags:

East Palestine Train Derailment

Photo Log

Description: Photos from drone overflight
Category: Site Photo
Latitude: 40.8358547222222
Date Taken: 2/4/2023
Longitude: -80.5238628055556
Tags:

Description: Photos from drone overflight
Category: Site Photo
Latitude: 40.8358547222222
Date Taken: 2/4/2023
Longitude: -80.5238628055556
Tags:

Description: Photos from drone overflight
Category: Site Photo
Latitude: 40.8358529444444
Date Taken: 2/4/2023
Longitude: -80.5238617777778
Tags:

Description: Scrap metal staging pile near rail line
Category: Site Photo
Latitude: 40.83505
Date Taken: 2/11/2023
Longitude: -80.5273583333333
Tags:

Description: Containment ditch and collection tanks along rail line
Category: Site Photo
Latitude: 40.8358805555556
Date Taken: 2/11/2023
Longitude: -80.5272916666667
Tags:

East Palestine Train Derailment

Photo Log

Description: Image of rail car staged for cleanup
Category: Site Photo
Latitude:
Date Taken: 2/11/2023
Longitude:
Tags:

Description: Excavators moving box car at derailment site
Category: Site Photo
Latitude:
Date Taken: 2/11/2023
Longitude:
Tags:

Description:
Category: Site Photo
Latitude:
Date Taken:
Longitude:
Tags:

Description:
Category: Site Photo
Latitude:
Date Taken:
Longitude:
Tags:

Description: Water sampling on the Ohio River
Category: Site Photo
Latitude:
Date Taken: 2/10/2023
Longitude:
Tags:

Attachment 4

Environmental Justice Analysis

EJScreen Report (Version 2.1)

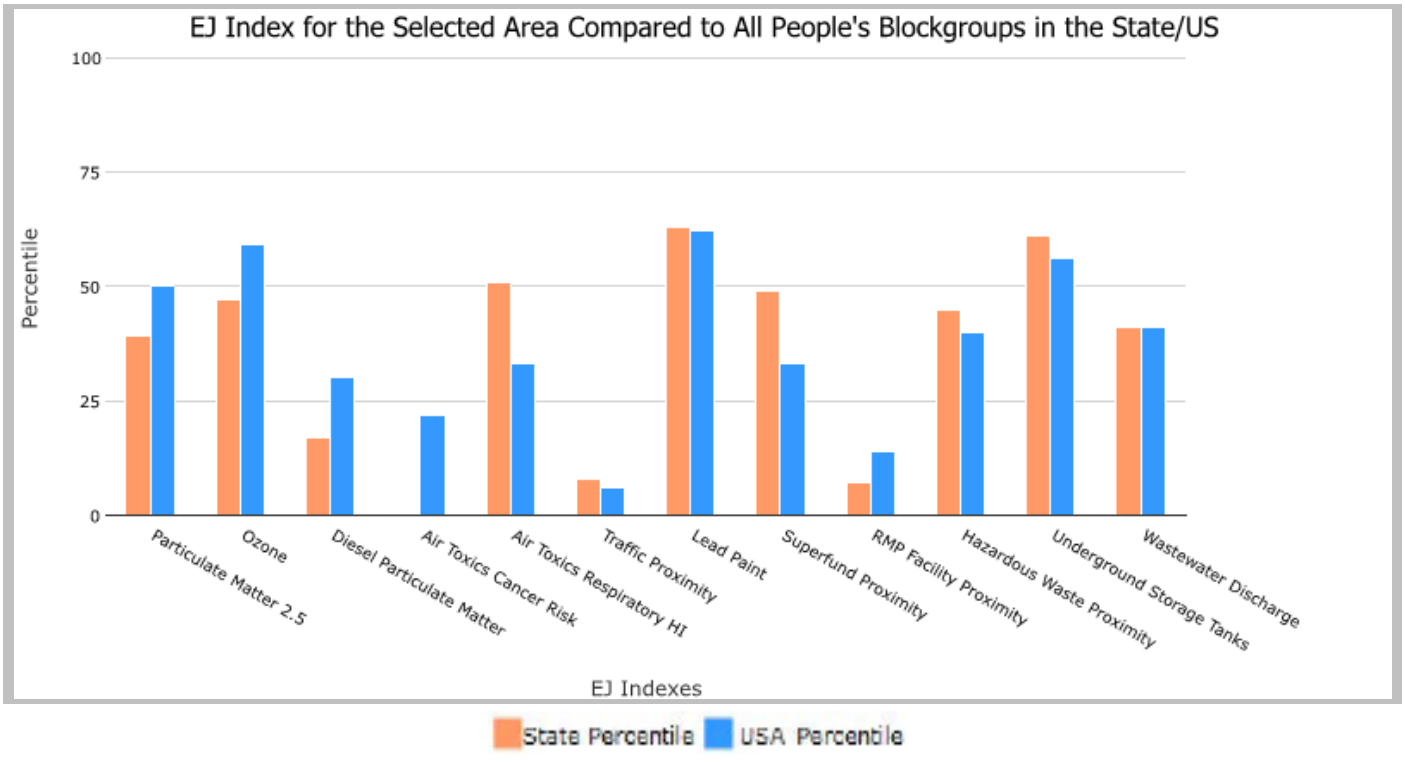
1 mile Ring Centered at 40.834593,-80.526953, OHIO, EPA Region 5

Approximate Population: 3,449

Input Area (sq. miles): 3.14

East Palestine Train Derailment

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
EJ Index for Particulate Matter 2.5	39	50
EJ Index for Ozone	47	59
EJ Index for Diesel Particulate Matter*	17	30
EJ Index for Air Toxics Cancer Risk*	0	22
EJ Index for Air Toxics Respiratory HI*	51	33
EJ Index for Traffic Proximity	8	6
EJ Index for Lead Paint	63	62
EJ Index for Superfund Proximity	49	33
EJ Index for RMP Facility Proximity	7	14
EJ Index for Hazardous Waste Proximity	45	40
EJ Index for Underground Storage Tanks	61	56
EJ Index for Wastewater Discharge	41	41



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

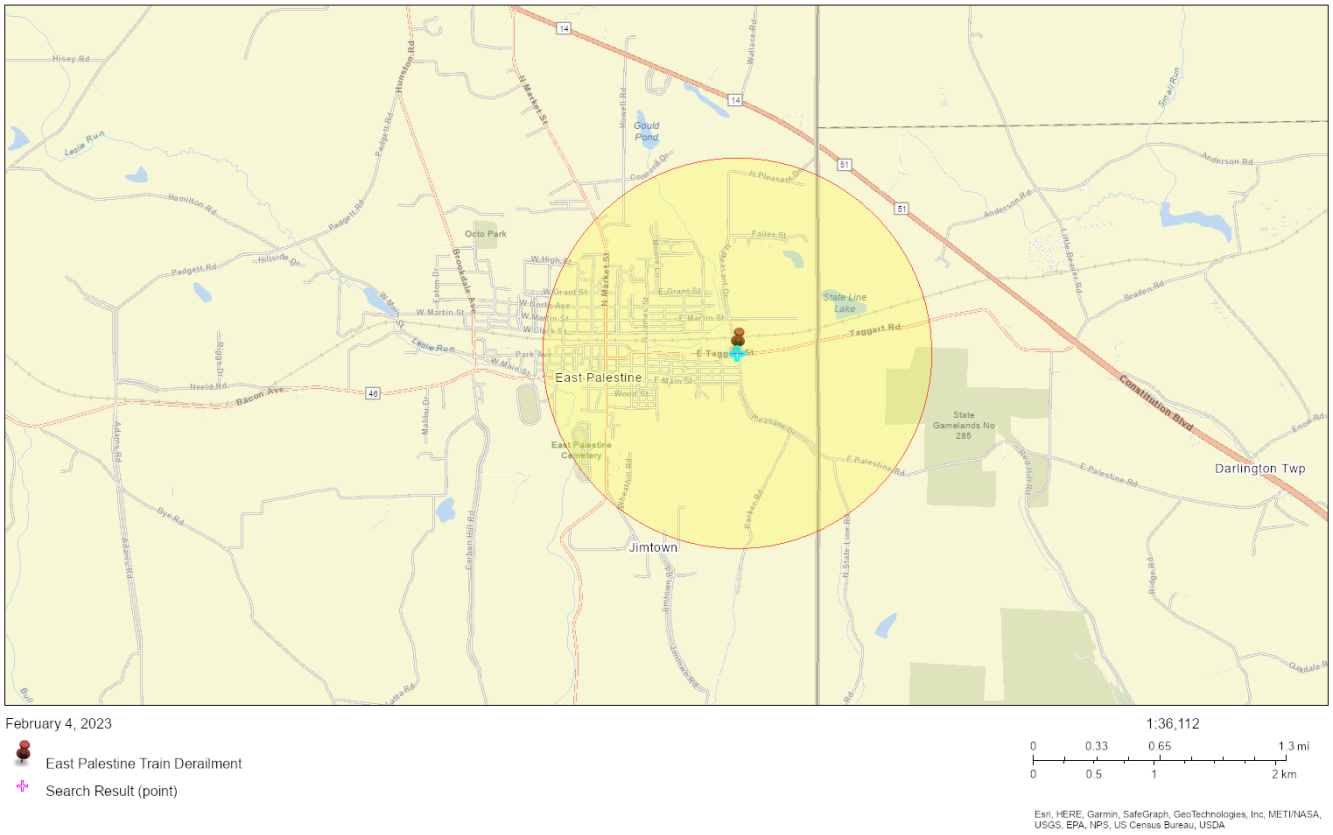
EJScreen Report (Version 2.1)

1 mile Ring Centered at 40.834593,-80.526953, OHIO, EPA Region 5

Approximate Population: 3,449

Input Area (sq. miles): 3.14

East Palestine Train Derailment



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.1)

1 mile Ring Centered at 40.834593,-80.526953, OHIO, EPA Region 5

Approximate Population: 3,449

Input Area (sq. miles): 3.14

East Palestine Train Derailment

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	8.8	9.12	27	8.67	56
Ozone (ppb)	44.1	44.4	40	42.5	68
Diesel Particulate Matter* (µg/m^3)	0.14	0.279	9	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	20	24	0	28	<50th
Air Toxics Respiratory HI*	0.29	0.3	81	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	3	430	4	760	4
Lead Paint (% Pre-1960 Housing)	0.62	0.4	68	0.27	81
Superfund Proximity (site count/km distance)	0.032	0.093	42	0.13	30
RMP Facility Proximity (facility count/km distance)	0.071	0.81	3	0.77	10
Hazardous Waste Proximity (facility count/km distance)	0.35	1.7	36	2.2	40
Underground Storage Tanks (count/km^2)	3.4	2.9	70	3.9	69
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00063	0.37	37	12	45
Socioeconomic Indicators					
Demographic Index	21%	28%	49	35%	35
People of Color	5%	22%	29	40%	14
Low Income	37%	30%	62	30%	65
Unemployment Rate	6%	5%	66	5%	67
Limited English Speaking Households	0%	1%	0	5%	0
Less Than High School Education	13%	9%	71	12%	64
Under Age 5	9%	6%	78	6%	78
Over Age 64	17%	17%	55	16%	58

*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

For additional information, see: www.epa.gov/environmentaljustice

Attachment 5

Administrative Record Index

ATTACHMENT 5

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR THE
EAST PALESTINE TRAIN DERAILMENT
EAST PALESTINE, COLUMBIANA COUNTY, OHIO

ORIGINAL
FEBRUARY 2023
SEMS ID:

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1		January 1996	New Jersey DPSS	General Public	Ethyl Acrylate Hazardous Substance Fact Sheet	6
2		May 1999	New Jersey DPSS	General Public	Isobutylene Hazardous Substance Fact Sheet	6
3		April 2002	ATSDR	General Public	Hydrogen Chloride ToxFAQ	2
4		April 2002	ATSDR	General Public	Phosgene ToxFAQ	2
5		August 2007	ATSDR	General Public	Benzene ToxFAQ	2
6		November 2007	New Jersey DPSS	General Public	Butyl Acrylate Hazardous Substance Fact Sheet	6
7		August 2008	New Jersey DPSS	General Public	EGBE Hazardous Substance Fact Sheet	6

8		January 2023	ATSDR	General Public	Vinyl Chloride ToxFAQ	2
9		2/3/2023	National Response Center	File	NRC Report #1359227	3
10		2/3/2023	Norfolk Southern Railway Company	US EPA	Train Consist	35
11		2/3/2023	Norfolk Southern Railway Company	US EPA	Train Derail List	2
12		2/5/2023	Peters, J., US EPA	File	Pollution Report Package 1-10	34
13		2/10/2023	Kollar, K., Ohio EPA	Norfolk Southern Railway Co	Notice of Violation	2
14		2/10/2023	El-Zein, J., US EPA	Norfolk Southern Railway Co	General Notice of Potential Liability	5
15		2/16/2023	Ohio Emergency Management Agency	General Public	East Palestine Update 2/16/23	4
16		2/18/2023	Greater Cincinnati Water Works	Ohio River Valley Water Sanitation Commission	Sample Results from Ohio River	2
17	*****	*****	*****	*****	Action Memorandum – (Pending)	*****