Commodity Flow Study

Berkeley County Local Emergency Planning Committee

2024

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BERKELEY COUNTY
COMMODITY FLOW STUDY

RELEASED 2025

BERKELEY COUNTY COMMODITY FLOW STUDY

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NARRATIVE

1.0 INTRODUCTION

1.1 Purpose of Study

Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendment and Reauthorization Act (SARA), in 1986, which provides for the collection and availability of information regarding the use, storage, production, and release of hazardous chemicals to the public and emergency responders in local communities. Community right-to-know provisions provide education, information, and public access regarding chemical uses and releases into the environment respective to individual facilities. By doing so, states and communities, working with facilities, can improve chemical safety and protect public health and the environment.

In 1993, the West Virginia Legislature passed House Bill 2382 to implement the EPCRA in West Virginia. The State Emergency Response Commission (SERC) serves as the administrative body for the implementation of House Bill 2382 at the state level; the SERC works cooperatively with the local emergency planning committees (LEPCs) serving the counties of West Virginia. The EPCRA is indicative of the fact that Congress realizes the risk to communities posed by the use, storage, and transportation of hazardous materials. West Virginia's implementation of the EPCRA indicates the state's realization of this risk as well.

As part of the implementation of the EPCRA, LEPCs should develop and implement comprehensive emergency response plans. Those LEPCs conduct various hazard analyses and risk assessments in support of the plans, of which this commodity flow study is an example. Utilizing local funding, the Berkeley County LEPC coordinated the completion of this flow study. The LEPC hired a contractor, JH Consulting, LLC (JHC) of Buckhannon, West Virginia to facilitate data collection and analysis. Data collection was initiated by JHC and Berkeley County Office of Emergency Management (BCOEM) in the summer of 2024. Following the collection of data, JHC completed the final analysis and assimilated the results into a report. (NOTE: The sections below provide detailed methodologies by analysis.)

This study intends to provide emergency managers and responders in Berkeley County with information to more fully advise efforts to mitigate, prepare for, respond to, and recover from hazardous material incidents. These efforts may significantly minimize damage or harm to equipment, facilities, personnel, and to the community at large.

1.2 Study Area

Berkeley County is located in the eastern panhandle of West Virginia and dates back to 1772. The county is included in the Hagerstown-Martinsburg, MDWV metropolitan statistical area. Berkeley County has a population of 122,076 as of the 2020 Census, making it the second most populous county in West Virginia, behind Kanawha County. The county consists of 322 square miles, of which 321 square miles is land and 0.4 square miles is water. The population density is 379 people per square mile.

Berkeley County lies in a transition between two climate zones, the humid subtropical zone and the humid continental zone. The county experiences four distinct seasons, with cool to cold temperatures in the winter, and hot and humid summers. Martinsburg, the county seat, sees an average of 26.6 inches of snowfall a year, with a daily mean temperature of 30.9F in January. In July, the daily mean temperature is 74.7F. The period of May through July is the wettest time of the year, averaging over 3.5 inches of precipitation a month.

There are two municipalities located in Berkeley County: The City of Martinsburg, which is the county seat, and the town of Hedgesville. Additionally, there are two Census-designated places in the county: Falling Waters, and Inwood. Berkeley County is bordered by Jefferson County to the east and Morgan County to the West. The county is bordered to the south by Frederick County, Virginia and to the north by Washington County, Maryland.

The major highway transportation routes in Berkeley County consists of an interstate, a U.S. highway and three state highways. Interstate 81 (I-81) runs on a north-south course through the eastern portion of the county. U.S. Highway 11 (U.S. 11) runs more or less parallel to the I-81 corridor.

The eastern portion of State Route 9 (WV-9) runs from its junction with U.S. 11 in Martinsburg east into Jefferson County. The western portion of this route runs from its junction with U.S. 11 north of Martinsburg northwest to Hedgesville and then west into Morgan County. State Route 45 (WV-45) runs between U.S. 11 just north of Martinsburg and Shepherdstown, in northern Jefferson County. WV-45 runs concurrently with U.S. 11 through Martinsburg and then runs southwest into Virginia. State Route 51 (WV-51) runs generally east-west in the southeastern corner of the county, though Inwood and into Jefferson County. A map of the highway network is seen below.

CSX operates their main rail line through Berkeley County. The B&O line runs in a northwesterly/southeasterly direction through the northern half of the county. There is a short spur lines that reaches into Martinsburg from the train station past WV-9, rejoining a spur partner south of Martinsburg. Two more spur lines split from the main rail line north of I-81.

Interstate 81 is a major route that runs the length of the east coast of the United States. A Virginia DOT traffic study in Frederick County found that over 20% of the traffic on I-81 through the county were tractor-trailers.

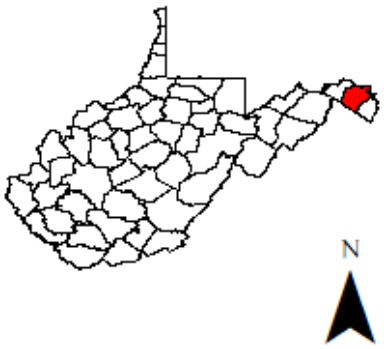
The Appalachian Mountain Range runs through Berkeley County from north to south, nearly dividing the county into eastern and western halves. The majority of the developed areas are located on the east side of this mountain range, in the Shenandoah Valley. The valley is also where both Interstate 81 and U.S. Highway 11 run. The Potomac River makes up the entirety of the county's northern border, separating Berkeley County from Washington County, Maryland.

It is expected that the majority of hazardous materials transported into and through Berkeley County will do so along the I-81 and U.S. 11 corridor. Because the majority of developed areas are also located in this corridor, a hazardous materials incident located anywhere along these highways could cause numerous communities to be isolated from the rest of the county. Of particular concern is an incident on State Route 9, which is the main east-west route through the county. Figure 1.2.a below shows the study area.

Hedgesville

Martinsburg

Berkeley County



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Study Area

Data Source(s):
WVGISTC

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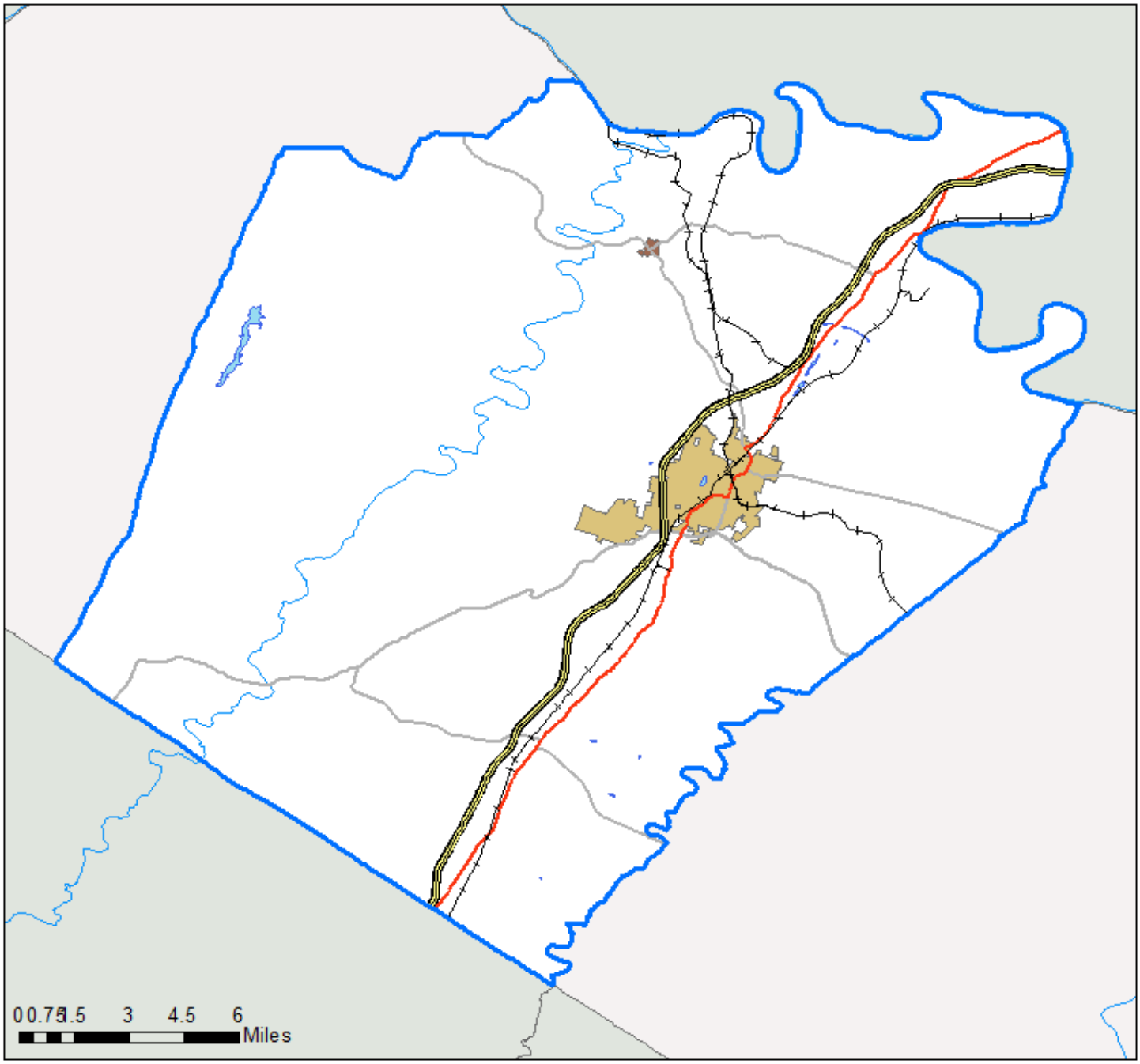
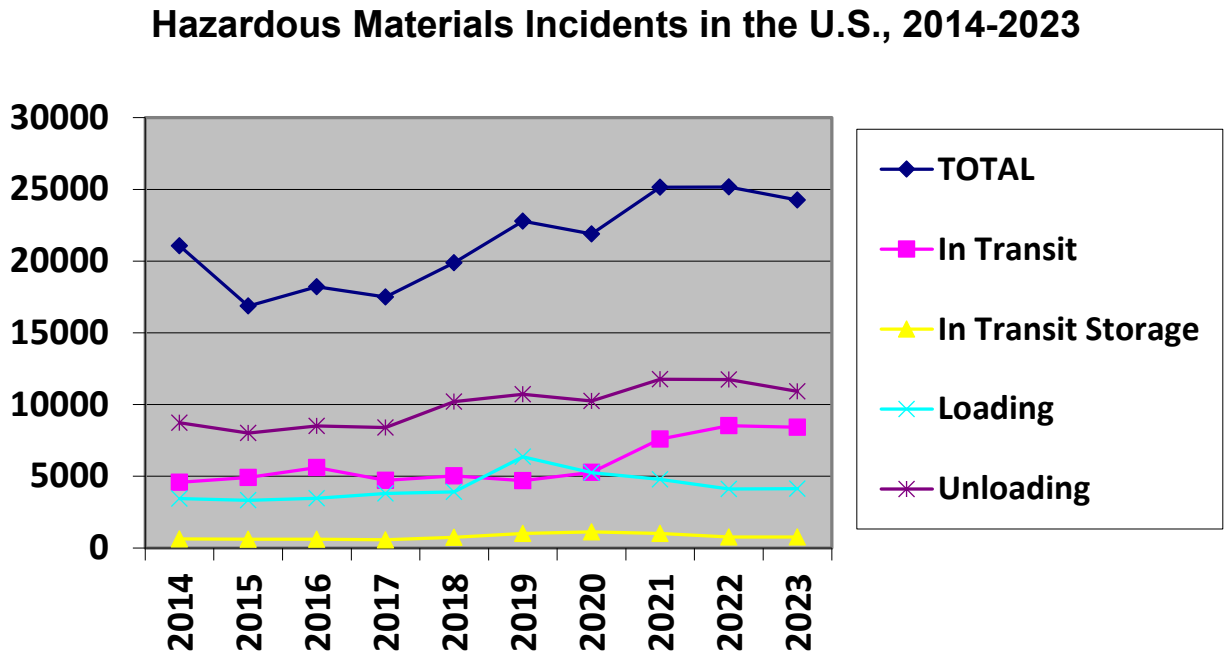


2.0 HIGHWAY ANALYSIS

2.1 Statistics

The annual number of hazardous material incidents during transport in the United States has increased since 2014, though since 2014 the number has oscillated. Figure 2.1.a shows the total hazardous material incidents in the U.S. for the period 2014-2022. The blue line with the diamond year indicators represents the total number of incidents. The sub-lines are all parts of that total, and they indicate the transport phase in which the incident occurred.

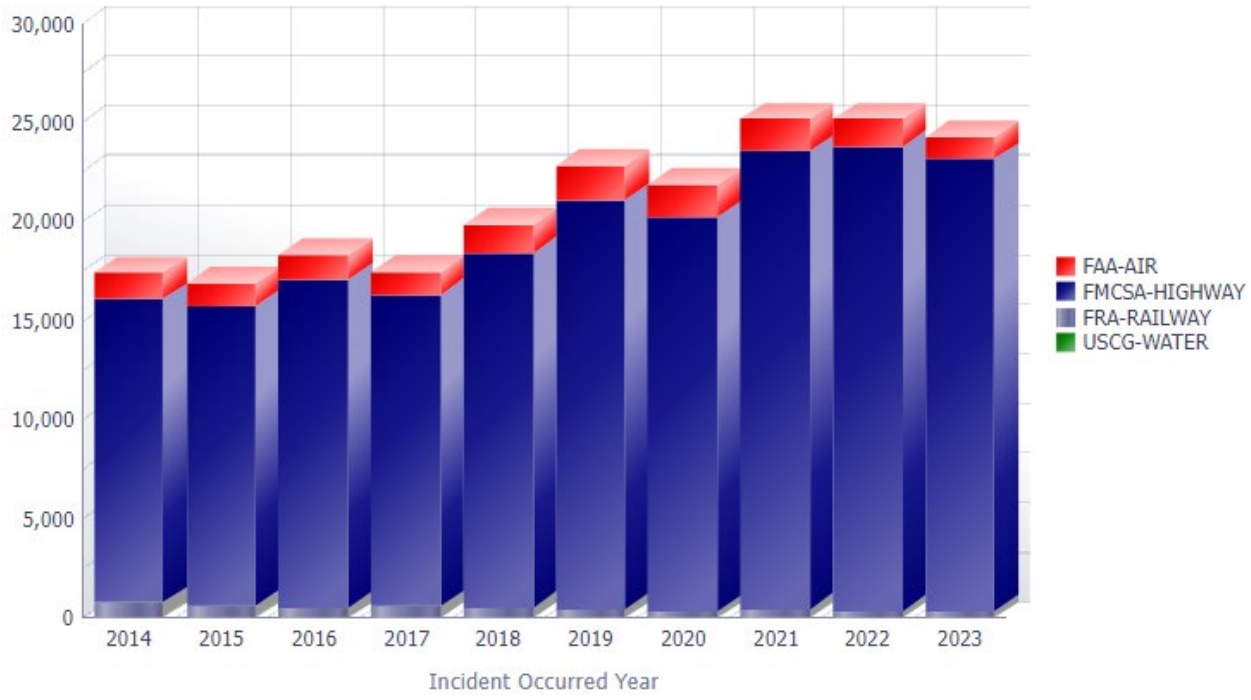
Figure 2.1.a



Per Figure 2.1.b, the U.S. Department of Transportation (DOT) has posited that a majority of hazardous material incidents in the United States occur on highways (http://www.phmsa.dot.gov/hazmat/library/data-stats/incidents).

Figure 2.1.b

Hazardous Material Incidents by Mode



The DOT also maintains data on the causes of hazardous material incidents. According to the DOT, the causes of the highway incidents have been as follows (http://www.phmsa.dot.gov/hazmat/library/data-stats/incidents).

Table 2.1.1

Cause of Hazardous Materials Incidents 2021-2023

Cause	2021	2022	2023	Total
Abrasion	126	187	260	573
Broken Component or Device	195	270	396	861
Cause Not reported	5,998	3,907	4,166	14,071
Commodity Polymerization	1	--	3	4
Commodity Self-Ignition	3	3	1	7
Conveyer or Material Handling Equipment Mishap	252	254	334	840
Corrosion – Exterior	21	31	35	87
Corrosion – Interior	47	87	71	205
Defective Component or Device	953	885	881	2,719
Deterioration or Aging	64	57	53	174
Dropped	2,101	2,437	2,285	6,823
Fire, Temperature, or Heat	6	10	15	31

Cause	2021	2022	2023	Total
Forklift Accident	1,480	1,781	1,194	4,455
Freezing	17	33	15	65
Human Error	2,838	2,577	2,180	7,595
Impact with Sharp or Protruding Object (e.g., Nails)	631	992	1,055	2,678
Improper Preparation for Transportation	3,205	3,786	2,912	9,903
Inadequate Accident Damage Protection	1	4	2	7
Inadequate Blocking and Bracing	242	258	325	825
Inadequate Maintenance	2	6	8	16
Inadequate Preparation for Transportation	1,288	965	1,108	3,361
Inadequate Procedures	85	79	58	222
Inadequate Training	31	20	13	64
Incompatible Product	1	--	--	1
Incorrectly Sized Component or Device	--	--	3	3
Loose Closure, Component, or Device	2,846	3,978	4,635	11,459
Misaligned Material, Component, or Device	18	47	42	107
Missing Component or Device	13	12	17	42
Over-Pressurized	29	40	51	120
Overfilled	31	37	48	116
Rollover Accident	28	21	31	80
Threads Worn or Cross Threaded	17	23	16	56
Too Much Weigh on Package	238	313	318	869
Valve Open	272	286	238	796
Vandalism	1	1	1	3
Vehicular Crash or Accident Damage	52	45	58	155
Water Damage	11	14	14	39

There are many types of hazardous materials transported via highways, each divided into "classes" denoted on the placards labeling shipments. Table 2.1.2 lists the hazardous material classes involved in 2019, 2020, and 2021 incidents (http://www.phmsa.dot.gov/hazmat/library/data-stats/incidents).

Table 2.1.2

Hazmat Incidents by Class 2021-2023

Hazard Class	2021	2022	2023
1: Explosives	78	88	76
2: Flammable, Non-Flammable, & Poisonous Gases	485	550	737
3: Flammable Liquids	11,442	10,695	9,592
4: Other Ignitable Hazards	94	88	99
5: Oxidizers	1,999	1,422	1,700
6: Poisonous & Infectious Materials	363	245	225

Hazard Class	2021	2022	2023
7: Radioactive Materials	1	1	3
8: Corrosive	8,099	9,813	9,825
9: Other Miscellaneous Hazardous	547	504	585

The DOT also maintains the results of the hazardous material incidents discussed above. Table 2.1.3 presents those results (http://www.phmsa.dot.gov/hazmat/library/data-stats/incidents).

Table 2.1.3

Hazmat Incidents Results 2021-2023

Result	2021	2022	2023
Environmental Damage	26	18	15
Explosion	4	6	9
Fire	25	21	39
Material Entered Waterway/Sewer	24	12	25
None	399	389	759
Spillage	22,671	22,973	21,984
Vapor (Gas) Dispersion	100	33	59

2.2 Methodology

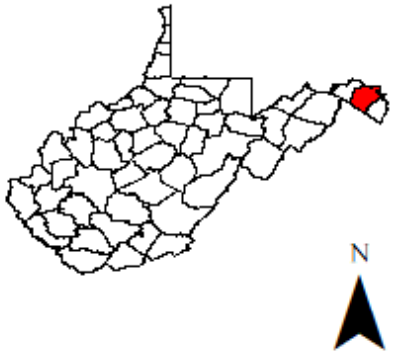
Berkeley County is the only county in West Virginia that Interstate 81 travels through. I-81 crosses Berkeley County from Maryland in the north to Virginia in the south. I-81 provides access to the Eastern WV Regional Airport and travels under CSXT's rail line north of Martinsburg. West Virginia Route 9 is a major east-west highway. West Virginia 9 runs from Morgan County to Jefferson County. Other major highways include U.S. 11, WV-45 and WV-51.

Interstates

US Routes

State Routes

Miscellaneous Roads



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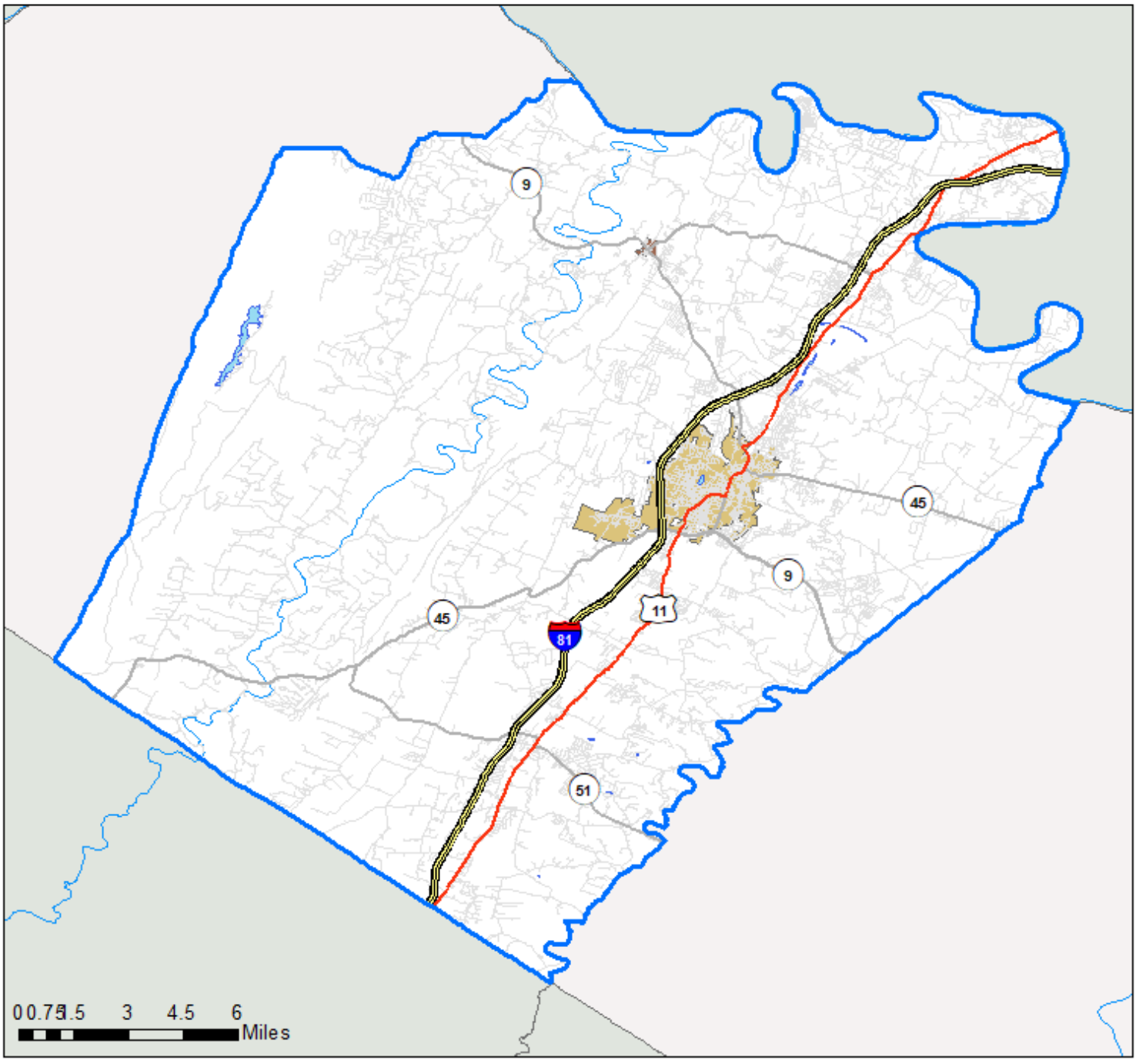
Roadway Network

Data Source(s):
US Census (Tiger Data)

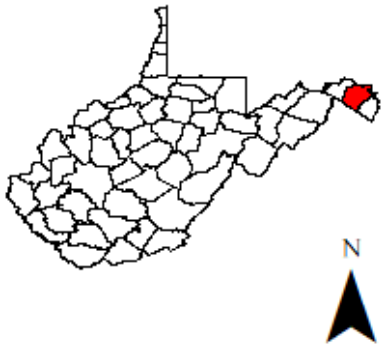
DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



To complete the highway analysis, monitors established sites along the primary transportation routes and at key intersections throughout the study area. For Berkeley County, monitors selected the following sites, all of which were monitored at two different time intervals on different days. Detailed data sheets for each of these sites are in Appendix 3. Figure 2.2.b illustrates the locations of these sites.

- I-81 at VA state line
- I-81 near Exit 8
- SR 9 at Short Rd.
- I-81N at Exit 23
- I-81S at WV Welcome Center

Monitoring Sites



N

BERKELEY COUNTY COMMODITY FLOW STUDY

Monitoring Sites

Data Source(s):
Field Reconnaissance

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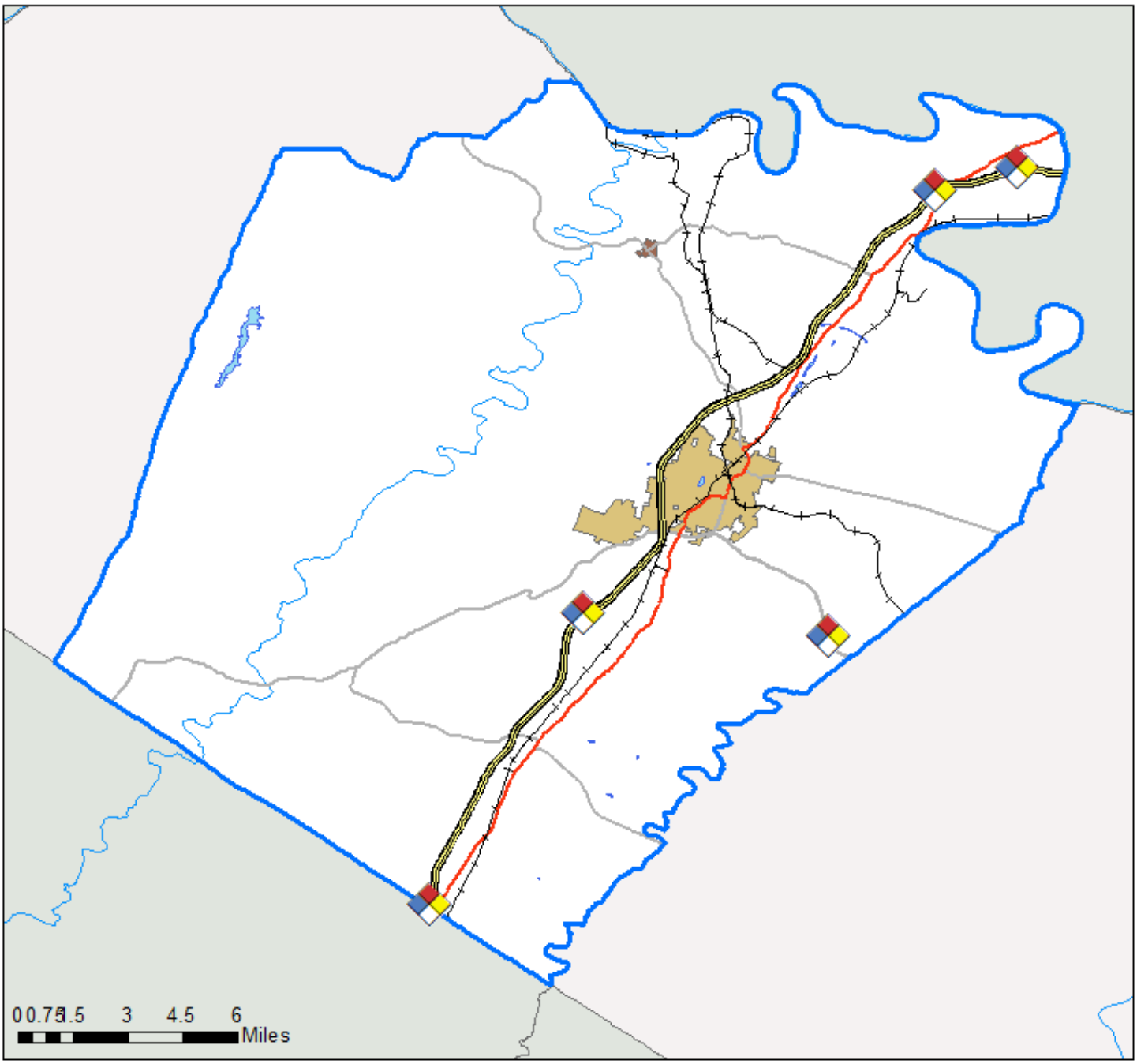


A one-person crew staffed each observation point. This individual noted the UN numbers and the hazard classes of the placards passing through the site. The monitor manually counted the total truck traffic through the site to allow for real-time comparisons between hazmat-carrying and non-hazmat-carrying truck traffic. Planners also researched total traffic volume data (maintained by the West Virginia Department of Transportation [WVDOT] for the planning area (WVDOT, 2023). This data allows the planning committee to compare total traffic versus total hazmat traffic.

2.3 Field Data

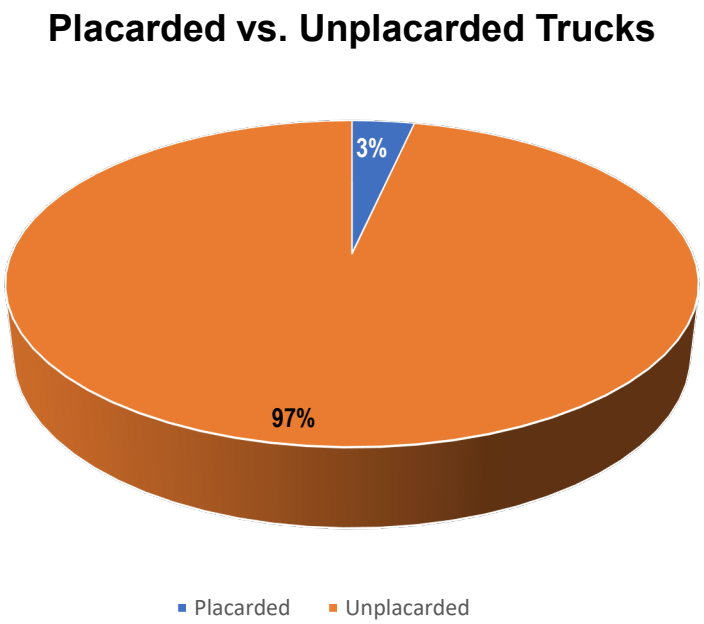
Monitors counted a total of 15,002 trucks during the observation periods. Of the total trucks, 521 (3.5%) bore placards and were thus carrying hazardous materials. This total represents an increase from the study area's previous commodity flow study, during which 1.18% of observed trucks carried placards. Monitors recorded a total of 253 trucks labeled with UN numbers bearing a total of 139 unique UNs. Monitors also observed 268 additional placards, labeled generally with the name of a DOT hazard class. General placards included the following.

- Explosives
- Flammable gas
- Non-flammable gas
- Flammable liquid
- Flammable solid
- Dangerous when wet
- Oxidizer
- Toxic
- Poison
- Radioactive
- Corrosive
- Miscellaneous
- Dangerous

Below, planners considered trucks bearing general placards with the hazard class of the placard; thus, total figures per hazard class from this point include specifically identified UN numbers and the general placards.

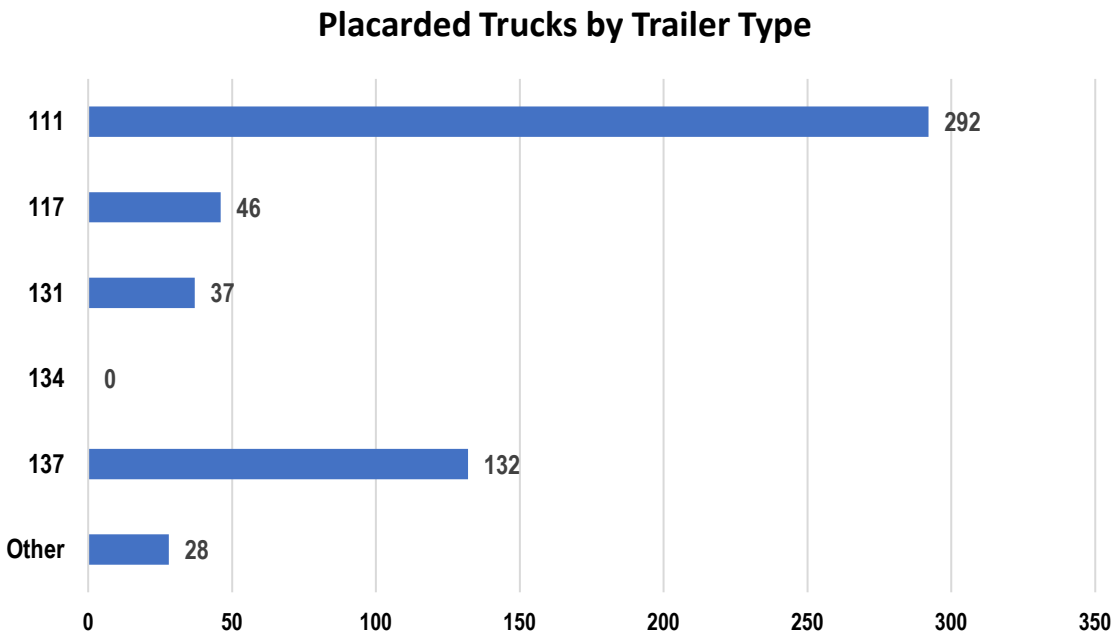
Figure 2.3.a depicts the placarded and un-placarded truck traffic observed at monitoring points.

Figure 2.3.a



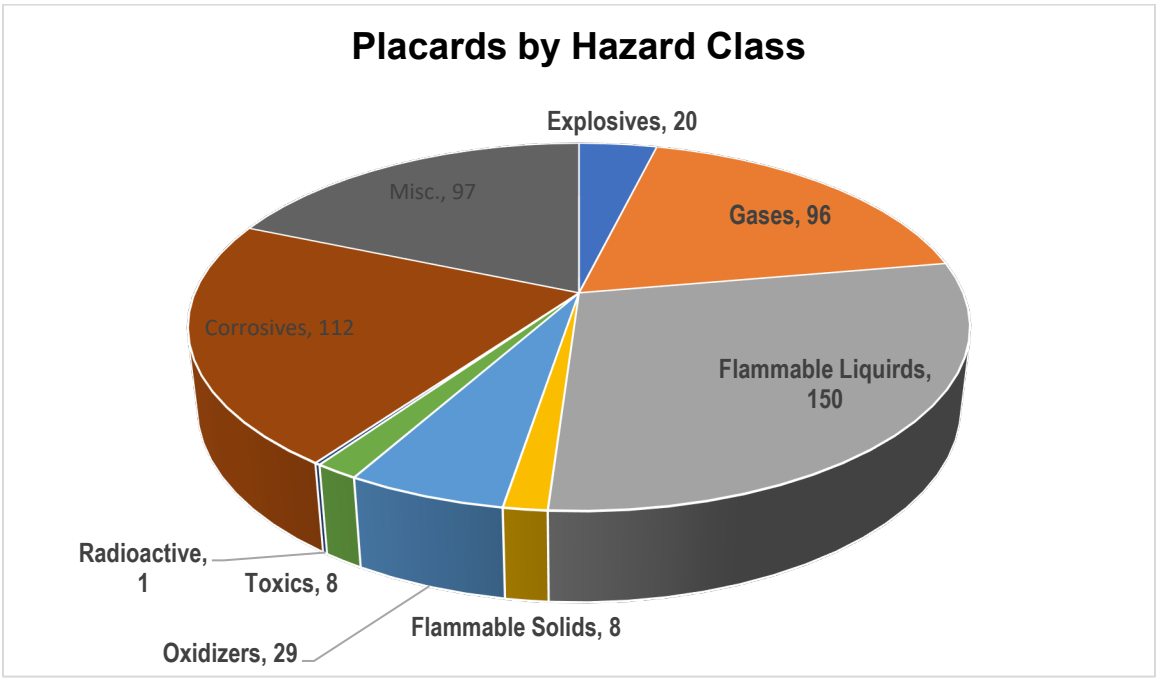
Monitors recorded placarded trucks by trailer type (e.g., mixed cargo, compressed liquefied gases, flammable liquids, etc.), per the latest edition of the U.S. DOT's *Emergency Response Guidebook* (2016, pp. 12-13). Monitors listed placarded trucks that did not fall into any of the trailer type categories (e.g., flatbed trucks) as "Other." The three most frequently observed trailer types observed in this study were: 111, mixed cargo (n=292), 137, corrosive liquid tank (n=132), and 117, cryogenic liquid tank (n=46). See Appendix 3 for a graphic representation of each trailer type. Figure 2.3.b depicts the total placarded truck traffic counted by trailer type.

Figure 2.3.b



Approximately 3% of the 15,002 total trucks observed carried hazardous materials.

Figure 2.3.c



Approximately 28.8% of the total placarded vehicles recorded were carrying Class 3 (Flammable Liquids). Class 8 (Corrosive) were the second-most frequently carried materials (21.5 %), followed by Class 2 (Gases, 18.4 %). Within Class 3, Gasoline (UN 1203) was the most frequent material, contributing 76.8% of all Class 3 placards sighted. Combustible Liquids (UN 1993) was the second-most cited material (comprising 8.9% of the Class 3 placards). Petroleum (UN 1268) along with Alcohols (UN 1987) tied for third, each contributing 3.6%,

The following map (Figure 2.3.d) depicts the hazardous materials observed in this study, organized by monitoring site. Figure 2.3.e again depicts the monitoring sites; however, this graphic identifies the two most frequently recorded hazard class observed at the sites.

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Total Hazmat by Site

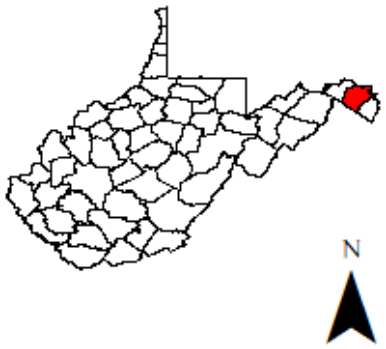
Data Source(s):
Field Reconnaissance

0-40 placards observed

41-70 placards observed

71-77 placards observed

98-195 placards observed



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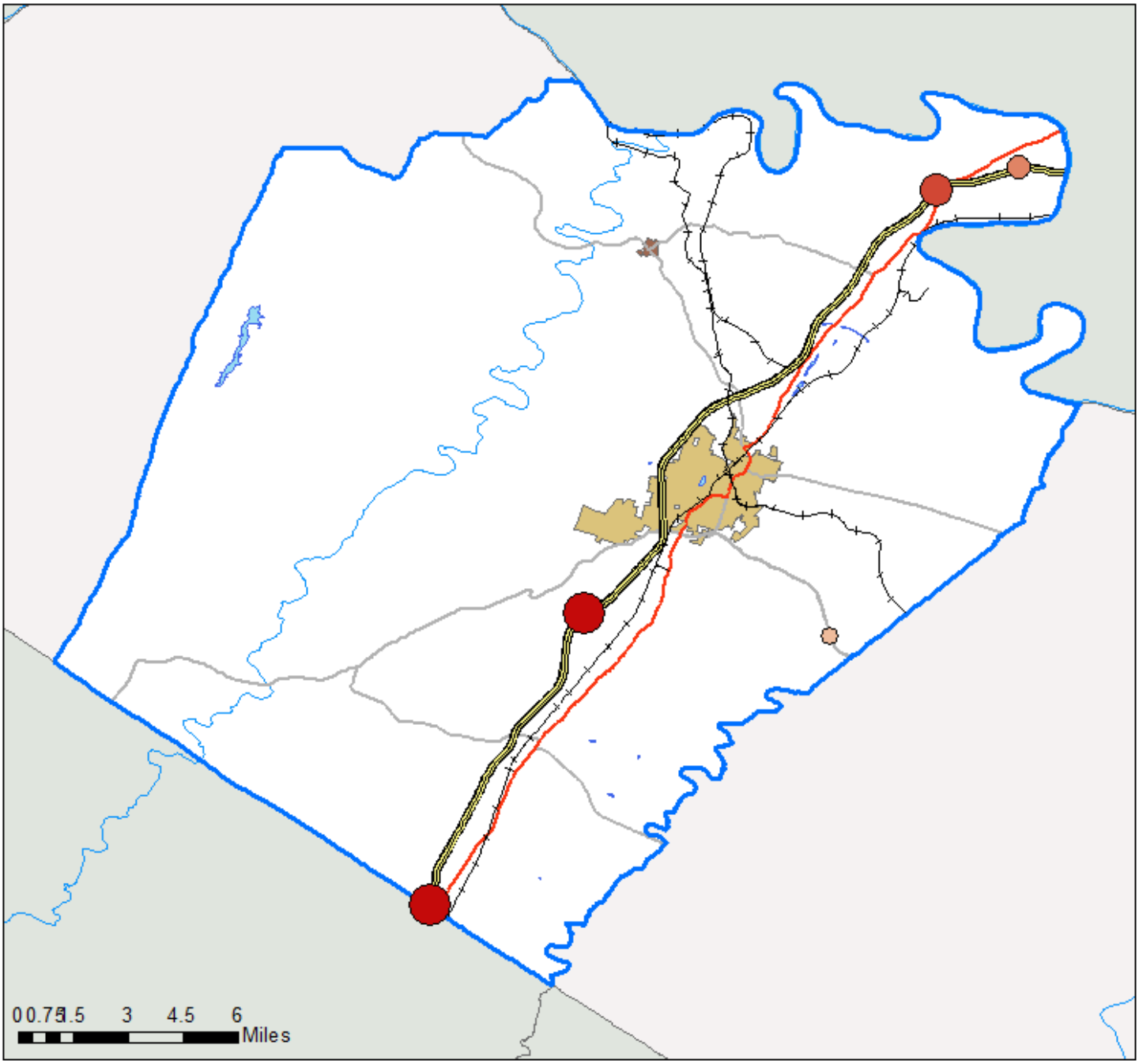


Most Observed

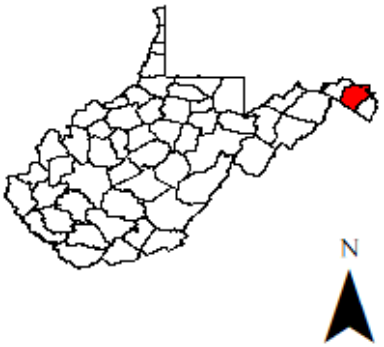
Cl. 2: Gases

Cl. 3: Flammable Liquids

Second-Most Observed

Cl. 8: Corrosives

Cl. 9: Miscellaneous



BERKELEY COUNTY COMMODITY FLOW STUDY

Hazard Classes by Site

Data Source(s):
Field Reconnaissance

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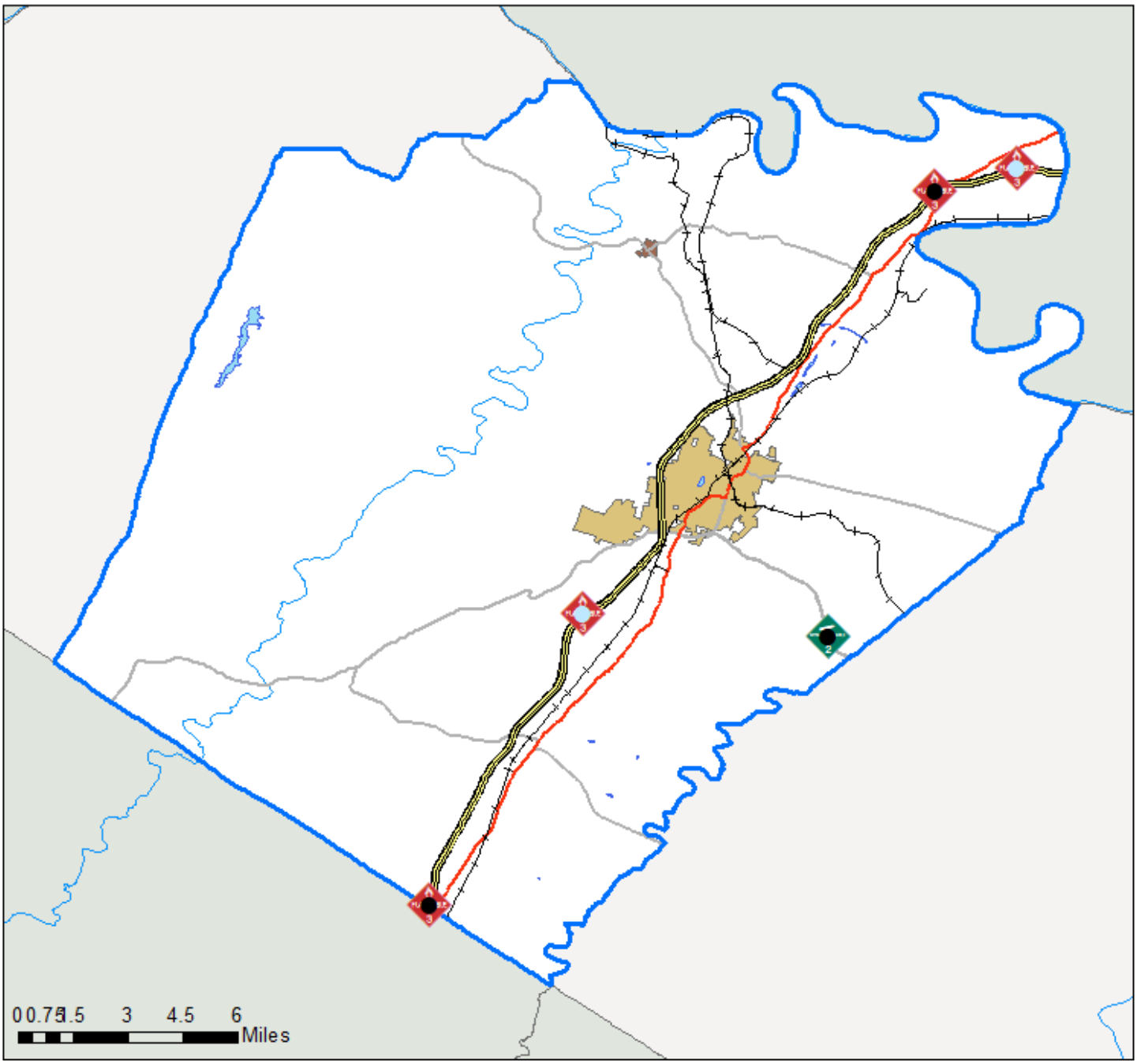


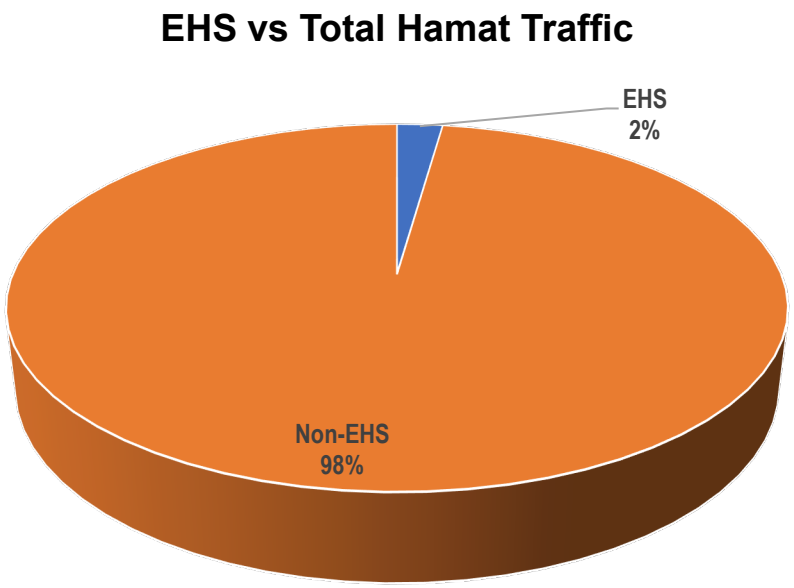
Monitors recorded six materials at the observation points that appear on the U.S. Environmental Protection Agency's (EPA) list of "extremely hazardous substances" (EHS). Table 2.3.1 and Figure 2.3.f describe these materials and their relationship to the other hazards materials recorded in this study. Figure 2.3.g shows the segments of the study area to see the greatest number of EHS traffic.

Table 2.3.1

Trucks Carrying EHS

Extremely Hazardous Substances (EHS)	Total Trucks
Hydrogen peroxide	3
Nitric Acid	3
Ammonia, solution	3
Sulfuric acid	1
Toluene diisocyanate	1
Formaldehyde, solution (corrosive)	1
TOTALS	**12**

Figure 2.3.f

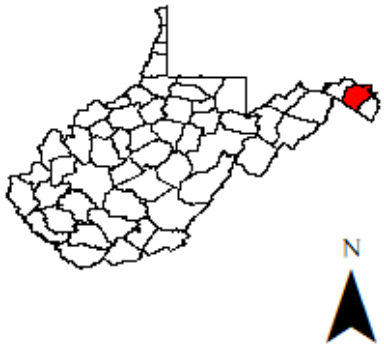


No EHS observed

1 EHS placard observed

2 EHS placards observed

2+ EHS placards observed



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Total EHS by Site

Data Source(s):
Field Reconnaissance

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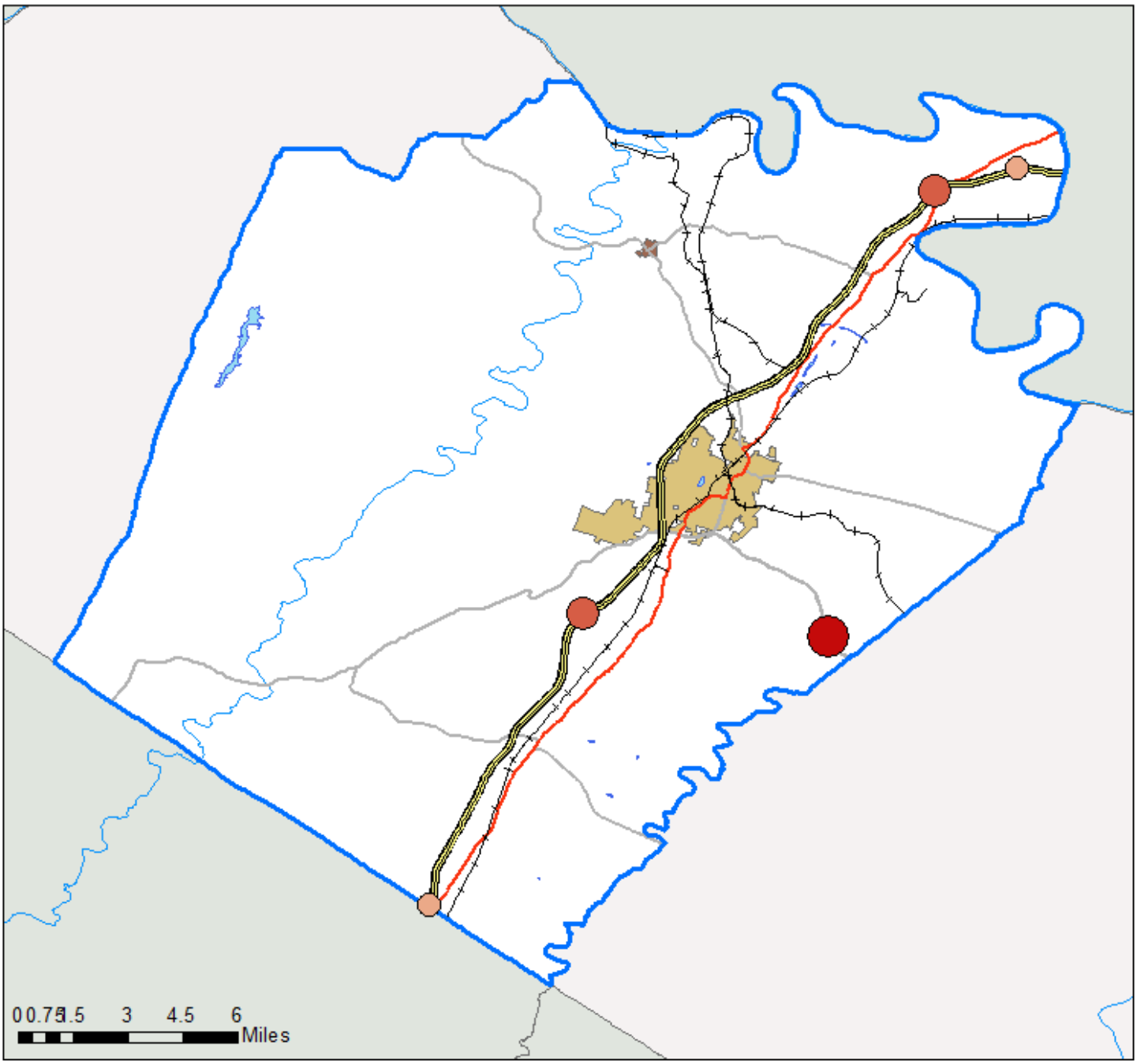


2.4 Route-by-Route Analysis

This section presents data for the two different routes included in the study. It identifies:

- the breakdown of hazard classes,
- the top materials transported (with volume), and
- the extremely hazardous substances observed along each route.

This section also includes a calculation of potential accidents with placarded loads based on route-specific data per a methodology from Transcaer[1]. Transcaer based its formula on several criteria, including:

- the number of placarded vehicles observed in the study area,
- the highway road miles within the study area, and
- the national hazardous material accident frequency rate.

The Transcaer formula estimates the probable number of accidents involving "placarded loads" on the highways in the study. Figures less than one would indicate the likely instance of years passing without accidents involving placarded loads. Further, an accident involving a placarded load may not involve a hazardous material release. Officials at the local level may consider mitigation measures for highways with higher estimated accidents, or they may seek to train response agencies with those routes in their first-due areas more fully on transportation-based hazardous materials emergencies.

2.4.1 I-81

Monitoring Location with Latitude/Longitude:

- I-81 at VA state line (39.295985, -78.081029)
- I-81 near Exit 8 (39.41575, -78.01101)
- I-81N at Exit 23 (39.577284, -77.881079)

[1] The Transcaer formula is:

$$((((\alpha * \beta) / 1{,}000{,}000) * 0.608)/(\gamma/ 24 \text{ hrs. per Day})) * 365 \text{ Days per Year}$$

α: Route Miles in Study Area (i.e., Berkeley County)
β: Placarded Vehicles
γ: Survey Time on Route

- I-81S at WV Welcome Center (39.585949, -77.848896)

Monitors observed a total of 14,458 trucks, 480 (3.3%) of which bore placards, along I-81. The monitoring of I-81 occurred over six four-hour periods, for a total of 24 hours of monitoring.

Table 2.4.1.1

Observed Hazard Classes, I-81

1	2	3	4	5	6	7	8	9
20 *4.2%*	79 *16.5%*	144 *30.0%*	8 *1.7%*	26 *5.4%*	7 *1.5%*	1 *0.2%*	100 *20.8%*	95 *19.8%*

Table 2.4.1.2

Top 10 Materials Observed, I-81

Material	UN Number	Total
Elevated temperature liquid	3257	37
Gasoline	1203	22
Liquified petroleum gas	1075	13
Combustible liquids	1993	12
Environmentally hazardous substance, liquid, n.o.s.	3082	11
Corrosive liquid, acidic, organic, n.o.s.	3265	9
Ammonium nitrate emulsion	3375	8
Sodium hydroxide solution	1824	7
Liquid hydrogen	1966	7
Nitrogen, refrigerated liquid	1977	7

Table 2.4.1.3

EHS Materials Observed, I-81

Material	UN Number	Total
Sulfuric acid	1830	1
Hydrogen peroxide	2014	2
Nitric Acid	2031	1
Toluene diisocyanate	2078	1
Formaldehyde, solution (corrosive)	2209	1

Table 2.4.1.4

Estimated Annual Accidents Involving Placarded Loads, I-81

Route	Approx. Miles in Berkeley County	Accidents with Placarded Loads per Year
I-81	51.76	5.51

2.4.2 SR 9

Monitoring Location with Latitude/Longitude:

- SR 9 at Short Rd. (39.40135, -77.92274)

Monitors observed a total of 544 trucks, 39 (7.2%) of which bore placards, along SR 9. The monitoring of SR 9 occurred over two four-hour periods, for a total of eight hours of monitoring.

Table 2.4.2.1

Observed Hazard Classes, SR 9

1	2	3	4	5	6	7	8	9
0 *0.0%*	17 *43.6%*	6 *15.4%*	0 *0.0%*	3 *7.7%*	1 *2.6%*	0 *0.0%*	12 *30.8%*	0 *0.0%*

Table 2.4.2.2

Top 10 Materials Observed, SR 9

Material	UN Number	Total
Liquified petroleum gas	1075	11
Gasoline	1203	3
Combustible liquids	1993	3
Ammonia, solution	2672	3
Oxygen, refrigerated liquid	1073	2
Nitric Acid	2031	2
Sulfuryl chloride	1834	1
Hydrogen peroxide	2014	1
[1]Tetralin hydroperoxide	2136	1
Organic peroxide type D, solid	3106	1

Table 2.4.2.3

EHS Materials Observed, SR 9

Material	UN Number	Total
Hydrogen peroxide	2014	1
Nitric Acid	2031	2
Ammonia, solution	2672	3

Table 2.4.2.4

Estimated Annual Accidents Involving Placarded Loads, SR 9

Route	Approx. Miles in Berkeley County	Accidents with Placarded Loads per Year
SR 9	18.62	0.48

2.5 Conclusions

Table 2.5.1 presents the top 10 materials identified by the highway analysis.

Table 2.5.1

Top 10 Materials – Highway Analysis

Material Name (and)	UN Number	Total Observations
Elevated temperature liquid	3257	37
Gasoline	1203	22
Liquified petroleum gas	1075	13
Combustible liquids	1993	12
Environmentally hazardous substance, liquid, n.o.s.	3082	11
Corrosive liquid, acidic, organic, n.o.s.	3265	9
Ammonium nitrate emulsion	3375	8
Sodium hydroxide solution	1824	7
Liquid hydrogen	1966	7
Nitrogen, refrigerated liquid	1977	7

Though conclusions based on one of many analyses can be misleading, for planning purposes, highway data suggested the following.

- National hazardous material incident trends *generally* predicted the hazardous materials seen locally.
    - Confirmations
        - Class 2, which includes non-flammable gases, ranked third nationally in incidents and were the most frequently recorded materials in Berkeley County.
        - Class 3 Flammables are involved in the most incidents nationally and frequently appeared in Berkeley County.
        - Class 8 Corrosives were involved in the second most incidents nationally as well as locally.

    - **Deviation:** Class 2 and Class 8 were opposite in frequency locally than national statistics would predict.

- The overwhelming majority of highway hazardous material incidents occur during the unloading phase.
- The three leading causes of highway hazardous materials incidents include loose closures, components, or devices; improper preparation for transport; and human error.
- Approximately 97% of highway hazardous material incidents occurring across the nation

(between 2021 and 2023) resulted in spillage of the material.

- Of the 15,002 trucks in this study, 521 (3.5%) bore a placard.
- Monitors observed six extremely hazardous substances with only two, hydrogen peroxide and nitric acid, appearing on both routes.

3.0 RAILWAY ANALYSIS

3.1 Statistics

Since the middle of the 19th century, railroads have been active players in the transport of large quantities of commodities because of their low cost and relative speed. As the transport of hazardous materials has increased on roadways, so too have railways seen an increase in their transport.

The Federal Railroad Administration (FRA) compiles statistics on the causes of train accidents. Table 3.1.1 illustrates the cause of train accidents from 2014 to 2023 (https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/inccaus.aspx).

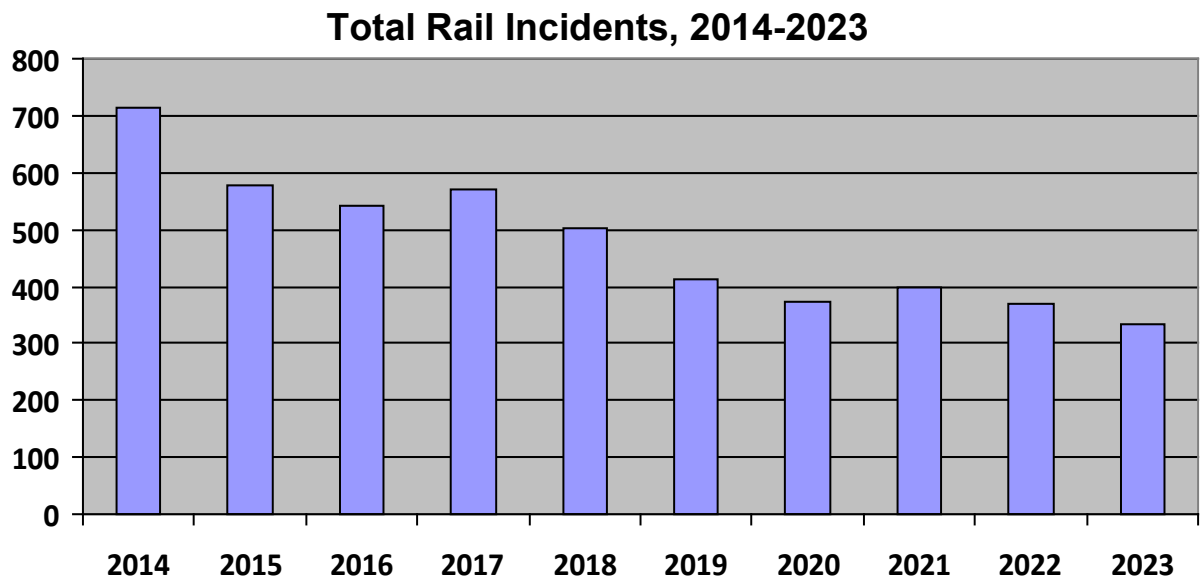
Table 3.1.1

Cause of Train Accidents 2014-2023

Cause	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Track, Roadbed, Structures	546	532	516	480	559	537	410	430	397	451
Signal & Communications	47	54	42	48	55	45	41	26	28	34
Mechanical or Electrical Failure	240	263	253	259	289	275	235	204	246	224
Human Factor	742	762	657	678	744	819	710	695	870	824
Miscellaneous Causes	311	319	255	324	350	318	280	323	350	361
TOTALS	**1,886**	**1,761**	**1,723**	**1,789**	**1,997**	**1,994**	**1,676**	**1,678**	**1,891**	**1,894**

The U.S. Department of Transportation (DOT) reports that the number of railroad accidents involving hazardous materials has steadily decreased. Figure 3.2.a depicts railway accident trends for the previous ten years. (http://www.phmsa.dot.gov/hazmat/library/data-stats/incidents).

Figure 3.1.a



The number of rail accidents, as can be seen, is low. 99.99% of rail shipments involving hazardous materials reach their destination without incident (AAR, 2023). The Association of American Railroads reports that train accidents have lowered 33% between 2000 and 2021, and rail hazmat accident rates have decreased 60% since 2000 (AAR, 2024).

There are many hazardous materials transported via railway, each divided into "classes" denoted on the placards labeling shipments. Table 3.1.2 lists the hazardous material classes involved in 2021, 2022, and 2023 railway incidents (http://www.portal.phmsa.dot.gov/analytics/saw.dll?PortalPages)

Table 3.1.2

Railway Hazmat Incidents by Class, 2021-2023

Hazard Class	2021	2022	2023
1: Explosives	0	0	0
2: Flammable, Non-Flammable, & Poisonous Gases	65	55	48
3: Flammable Liquids	180	146	133
4: Other Ignitable Hazards	5	2	2
5: Oxidizers	6	13	10
6: Poisonous & Infectious Materials	3	4	6
7: Radioactive Materials	0	0	0
8: Corrosive	102	90	80
9: Other Miscellaneous Hazardous	18	39	27

As can be seen, Class 3 Flammable Liquids and Class 8 Corrosives were the hazard classes invovled in the majority of railway incidents. The USDOT also maintains the results of these incidents. Table 3.1.3 presents the results (http://www.phmsa.dot.gove/hazmat/library/data-stats/incidents). The majority of railway hazmat incidents resulted in spillage of the material.

Table 3.1.3

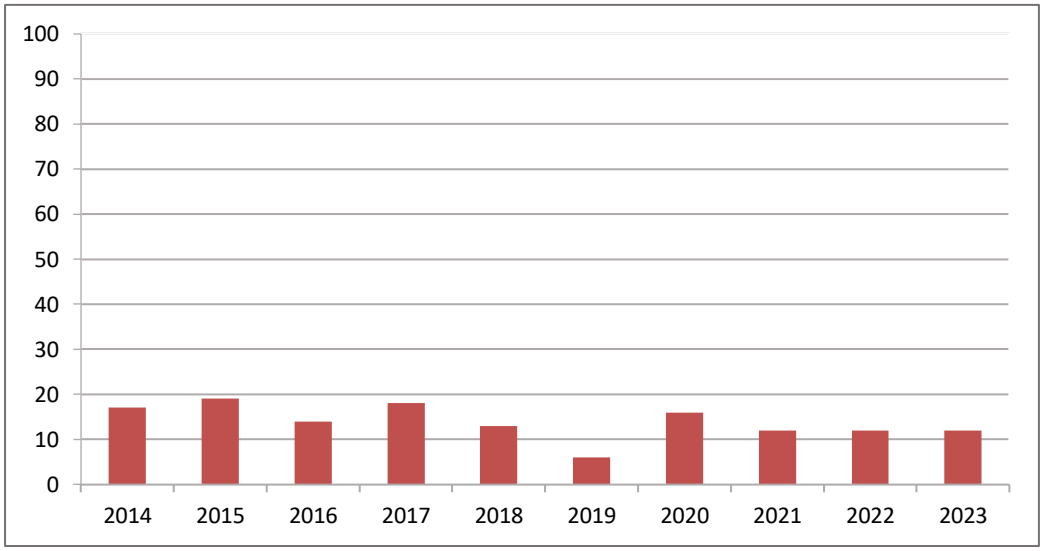
Railway Hazmat Incidents Results, 2021-2023

Result	2021	2022	2023
Environmental Damage	2	3	8
Fire	3	2	7
Material Entered Waterway/Sewer	2	2	1
None	4	3	4
Spillage	295	286	255
Vapor (Gas) Dispersion	123	90	80

Figure 3.1.b depicts the total number of train accidents not at grade crossings in STATE during the period 2014 to 2023 (FRA, https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/query/TenYearAccidentIncidentOverview.aspx)

Figure 3.1.b

Train Accidents, West Virginia



Further, according to the FRA, there have been a total of 26 railroad accidents/incidents in Berkeley County since 2014 (http://safetydata.fra.dot.gov/officeofsafety/publicsite/Query/tenyr2a.aspx).
The most accidents occurred in 2019 with six. One death occurred within the 10-year study in 2017.

3.2 Methodology

Planners collected rail data primarily through coordination with the prominent rail companies operating in Berkeley County. The Berkeley County Local Emergency Planning Committee (LEPC) submitted a standard *Request for Hazardous Materials Density Study* to CSX Transportation to request commodity flow information for Berkeley County. The consultant spoke with a representative from the Winchester and Western Railroad Company who reported they do not transport hazardous materials.

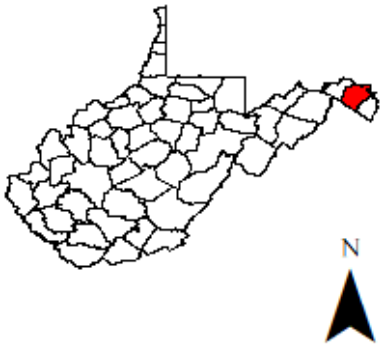
3.3 Field Data

As noted, two companies conduct commodity shipping by rail in Berkeley County: CSXT and the Winchester and Western Railroad Company. Figure 3.3.a depicts rail lines in Berkeley County.

Amtrak

CSXT Transportation

Winchester Western RR



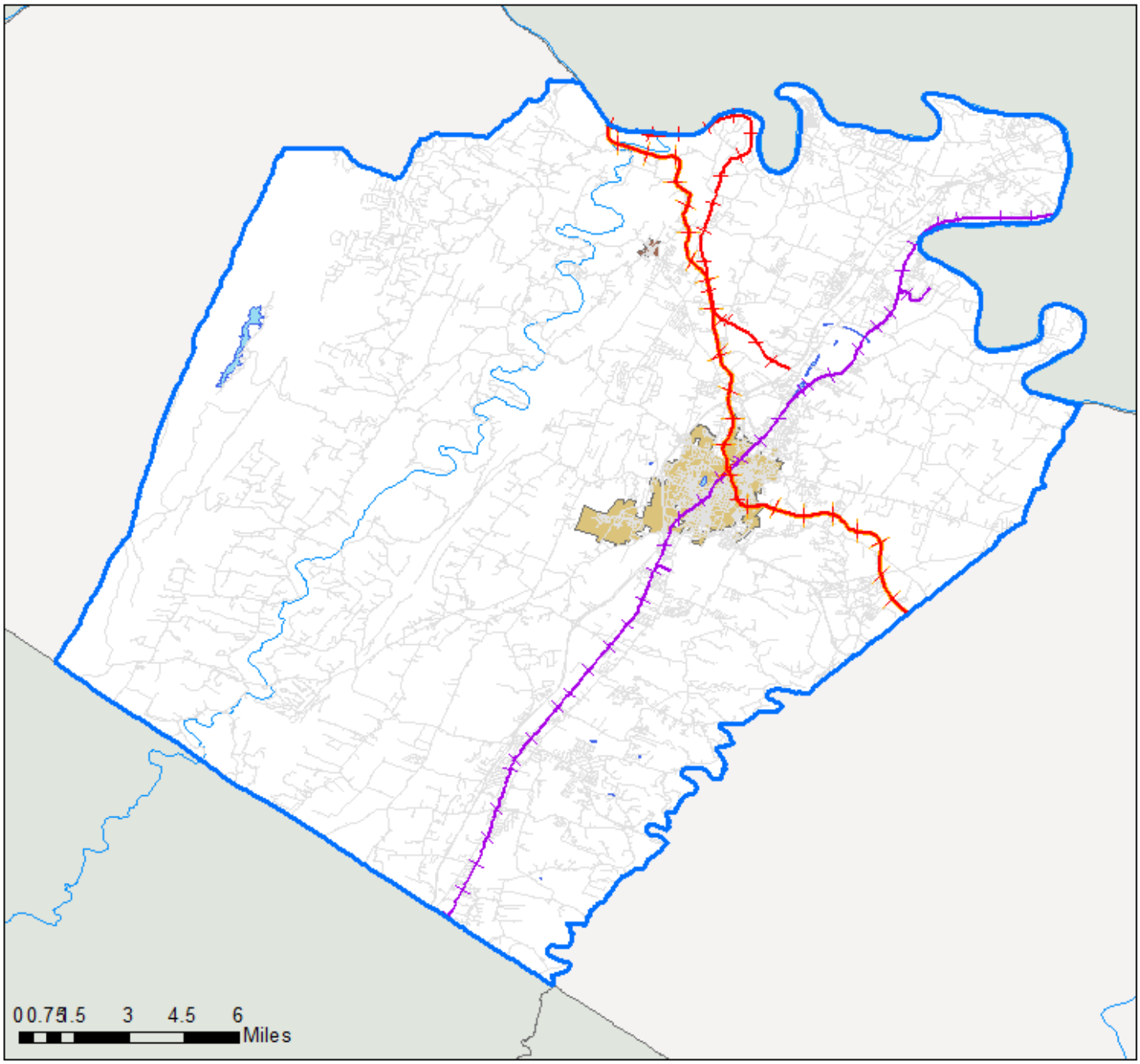
N

BERKELEY COUNTY COMMODITY FLOW STUDY

Railway Network

Data Source(s):
US Census (Tiger Data)

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



CSX Transportation (CSXT) provided quantitative freight data (i.e., specific materials, hazard classes, and carload totals). The data provided by CSXT were significant; thus, this section summarizes and presents the major findings. CSXT's data covers the "last full year" for which the company had data available (i.e., portion 2023 and portion of 2024). CSXT handled 49,161 loaded hazardous materials shipments, which included intermodal shipments (trailers or containers on flatcars). Intermodal hazardous materials shipments are non-bulk and less than 55-gallon package formats.

Table 3.3.1

Hazardous Materials Transported via Rail in Berkeley County

CSX Transportation Hazardous Materials			
Proper Shipping Name	*Class*	*UN/NA*	*Total Loads*
Alcohols, N.O.S.	3	1987	8,420
Sulfur, Molten	9	2448	4,803
Hydrocarbons, Liquid, N.O.S.	3	3295	4,770
Liquified Petroleum Gases	2.1	1972	3,960
FAK-Hazardous Materials	0		2,828
Elevated Temperature Liquid, N.O.S.	9	3258	2,747
Butane	2.1	1011	2,719
Propane	2.1	1978	2,517
Petroleum Distillates, N.O.S.	3	1993	2,186
Phosphoric Acid Liquid	8	1805	1,576
Sodium Hydroxide Solution	8	1824	1,330
Isobutane	2.1	1969	1,143
Environmentally Hazardous substances, Liquid, N.O.S.	9	3082	813
Alcoholic Beverages	3	3065	746
Environmentally Hazardous Substances, Solid, N.O.S.	9	3077	694

The top materials in the 2023 calendar year portion of the CSXT *Hazardous Materials Density Study* accounted for 8,404 loads (86.73% of CSXT's 2023 reported data). Thus, the remaining 142 materials accounted for 1,286 loads. It is difficult to determine, with precision, the actual number of loads of these additional 142 materials. Less than 1% of the total hazardous materials reported that each of them would comprise no more than 12 carloads. Averaging 1,286 loads across the remaining 189 materials yields an average of 6.80 loads of each.

The top materials in the 2024 portion of the CSXT data accounted for 33,171 loads (84.04% of CSXT's 2024 reported data). Thus, the remaining 221 materials accounted for 6,300 loads. Again, it is difficult to determine the actual number of loads of these additional 221 materials. Less than 1% of the total hazardous materials reported

that each of them would comprise less than 63 loads. Averaging 6,300 loads across the remaining 221 materials yields an average of 28.51 loads of each.

CSXT's data provided the hazard classes for each material, including those whose totals accounted for less than 1% of the shipments. Table 3.3.2 presents the remaining materials by hazard class.

Table 3.3.2

Remaining CSX Reported Commodities by Hazard Class

Class 1: Explosives	
1.4S	Cartridges for Weapons
1.4S	Cases of Cartridges, empty with primer
Class 2: Gases	
2.1	Five unique materials
2.2	14 unique materials
2.3	Two unique materials
Class 3: Flammable Liquids	
3	68 unique materials
Class 4: Flammable Solids	
4.1	11 unique materials
4.2	Five unique materials
4.3	Calcium
Class 5: Oxidizers	
5.1	17 unique materials
5.2	Three unique materials
Class 6: Toxics	
6.1	21 unique materials
Class 7: Radioactive	
7	Radioactive material low specific activity
Class 8: Corrosives	
8	57 unique materials
Class 9: Miscellaneous	
9	16 unique materials

The complete CSXT data included 10 materials that appear on the U.S. Environmental Protection Agency's (USEPA) list of Extremely Hazardous Substances (EHS). The materials are as follows (with UN numbers).

Table 3.3.3

CSX Reported Extremely Hazardous Substances

Name	UN	Name	UN
Benzyl chloride	1738	Hydrogen peroxide	2014
Chlorine	1017	Nitric acid	2031
Chloroacetic acid	1750	Potassium cyanide	1680
Cyclohexylamine	2357	Sodium cyanide	1689
Ethylene oxide	1040	Sulfuric acid	1830

3.4 Conclusions

Table 3.4.1 presents the top 10 materials identified by the railway analysis.

Table 3.4.1

Top 10 Materials – Railway Analysis			
Proper Shipping Name	*UN/NA*	*Total Loads*	*Shippers Reporting Material*
Alcohols, N.O.S.	1987	8,420	CSXT
Sulfur, Molten	2448	4,803	CSXT
Hydrocarbons, Liquid, N.O.S.	3295	4,770	CSXT
Liquified Petroleum Gases	1972	3,960	CSXT
FAK-Hazardous Materials		2,828	CSXT
Elevated Temperature Liquid, N.O.S.	3258	2,747	CSXT
Butane	1011	2,719	CSXT
Propane	1978	2,517	CSXT
Petroleum Distillates, N.O.S.	1993	2,186	CSXT
Phosphoric Acid Liquid	1805	1,576	CSXT

Railway analysis data suggests the following conclusions.

- The railway analysis yielded 10 USEPA-designated Extremely Hazardous Substances (EHSs).
- The most reported cause of railway accidents (nationally) is human error. The least reported cause involves signals and communications.
- According to USDOT data, the number of railroad accidents involving hazardous materials across the nation has steadily decreased over the past 10 years.
- Nationwide data suggest Class 3 Flammable Liquids and Class 8 Corrosives are involved in the majority of railway incidents. The overwhelming majority of railway incidents result in the spillage of material.

- According to the Federal Railroad Administration (FRA), Berkeley County has experienced twenty-six railway incidents since 2015. One, occurring in 2017, included a fatality.
- There was one radioactive material transported by rail through Berkeley County, Low Specific Activity (LSA-1).

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusions

The following conclusions summarize the transport, use, and storage of hazardous materials in Berkeley County.

- This commodity flow study reflects a total of 282 different specifically named materials.
  - Thirty-three materials (11.70%) appeared only in the highway analysis.
  - Two-hundred thirteen materials (75.53 %) appeared only in the railway analysis.

- This study identified 13 “extremely hazardous substances” (EHS) that require extraordinary planning and response considerations.
- In addition to those 282 materials above, the study included a total of 12 other placards during the highway analysis that did not have a UN number.
  - Corrosive
  - Dangerous When Wet
  - Dangerous
  - Explosives
  - Flammable Gas
  - Flammable Liquid
  - Miscellaneous
  - Non-Flammable Gas
  - Oxidizer
  - Poison
  - Radioactive
  - Toxic

4.2 Recommendations

4.2.1 Continue to update this flow study on a regular basis.

Berkeley County, being located along the Interstate 81 corridor, and is the second most populous county in West Virginia (as of the 2020 Census), has been fortunate enough to see a steady economic growth during recent years with reported family median incomes growing by $22,000 between the 2010 and 2020 censuses. As such, the nature of the county’s industry is likely to change as are the amounts and types of hazardous

materials being utilized and stored. For this document to remain an accurate, viable basis for hazardous material planning and training efforts, it should reflect these continual changes. The document should be updated every three to five years.

4.2.2 Vary data collection times throughout a calendar year.

Interstate 81 is a major transportation route through western Virginia, Maryland, and central Pennsylvania. Some substances observed during this study may be shipped year round, however manufacturing and agriculture may require different substances to be shipped only at certain times throughout the year.

4.2.3 Conduct an in-depth hazardous material vulnerability assessment based on covered facilities and the areas surrounding them.

A detailed vulnerability assessment would characterize not only the material presence but also material quantities, at-risk populations, potential protective measures, etc. A detailed vulnerability assessment would be a companion to this document.

4.2.4 Ensure that responders receive training in response to incidents involving gases, flammable liquids, and corrosive substances.

In general, flammable and non-flammable gases, flammable liquids, and corrosive materials are the frequently transported products in Berkeley County (as part of Class 2, Class 3, and Class 8). As such, they are the hazardous materials most likely to be involved in an incident. Responders should seek training to prepare themselves for such an incident properly.

4.2.5 Ensure that responders receive training in the response involving ammonia nitric acid, and sulfuric acid.

While there are several other types of EHS transported through the Berkeley County, these three materials were the most frequently reported EHSs in the study. Consequently, they are the EHS materials most likely to be involved in an incident and responders should thus properly prepare for their release.

4.2.6 Design emergency exercises that include the materials recorded in this study.

Earlier recommendations in this report call for the need to properly train local responders. A significant aspect of this preparedness is designing realistic exercises

involving the materials they are likely to encounter. Training efforts are misspent if involving materials that responders are highly unlikely to see in a local incident.

4.2.7 Encourage CSXT representatives to participate in emergency exercises.

Due to the presence of rail transport in Berkeley County, CSXT could be a critical component of a hazardous material response. As such, CSXT participation in exercises would greatly benefit the coordination that would need to occur between them and local responders during an actual incident.

4.2.8 Develop and maintain a database of covered facilities throughout Berkeley County.

Developing and maintaining a database will allow emergency managers to maintain communications with a consistent group of covered facilities (i.e., the information can simply be updated rather than re-collected on an annual basis). Entering known covered facilities into a database also frees emergency managers to coordinate with potential or new facilities to ensure as many facilities as possible comply with SARA Title III.

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APPENDIX 1

HAZARDOUS MATERIALS IN BERKELEY COUNTY

This appendix contains a complete list of all of the hazardous materials identified in Berkeley County, regardless of phase.

Table A1.1

Materials List (w/ Known Corresponding UN Number)

* EHS Materials

Hazardous materials	UN Number	Mode	
		Highway	Railway
1,1,1,2-tetrafluoroethane ethane	3159		X
1,2-dichloroethylene	1150	X	
1-hexene	2370		X
1-methoxy-2-propanol	3092		X
2-(2-aminoethoxy) ethanol	3055		X
2-chloropropane	2356		X
4-methylmorpholine	2535		X
Acetic acid solution	2790		X
Acetic acid, glacial	2789		X
Acetone	1090		X
Acetonitrile	1648	X	
Acetylene	1001	X	
Acetylene, dissolved	1001		X
Acrylic acid, stabilized	2218		X
Adhesives	1133		X
Aerosols	1950		X
Aerosols, flammable,n.o.s.	1950		X
Air bag modules	3268		X
Alcoholic beverages	3065		X
Alcohols, n.o.s.	1987		X
Alkyl sulfonic acids, liquid	2584		X
Alkyl sulfonic acids, solid	2583		X
Alkylphenols, liquid, n.o.s.	3145		X
Aluminum chloride, solution	2581		X
Amines, liquid, corrosive, n.o.s.	3145	X	

Hazardous materials	UN Number	Mode	
		Highway	Railway
Amines, solid, corrosive, n.o.s.	2430		X
Ammonia, solution	2073	X	
Ammonium hydrogendifluoride, solid	1727		X
Ammonium nitrate emulsion	3375	X	
Ammonium sulfide, solution	2683	X	
Amyl acetates	1104		X
Anisole	2222		X
Argon	1951	X	
Argon, refrigerated liquid	1951		X
Articles containing misce	3548		X
Articles, pressurized pneumatic	3164		X
Azodicarbonamide	3242		X
Batteries, nickel-metal hydride	3496		X
Batteries, wet, filled with acid	2794		X
Batteries, wet, non-spillable	2800		X
Battery fluid, acid	2796		X
Battery-powered vehicle	3171		X
Benzyl chloride	1738		X
Bisulfites, aqueous solution, n.o.s.	2693	X	X
Blasting agent, insensitive	332	X	
Butane	1075		X
Butanols	1120	X	
Butyl acetates	1123		X
Butyl acrylates, stabilized	2348		X
Calcium	1401		X
Carbon	1362		X
Carbon dioxide	1013		X
Carbon dioxide, refrigerated liquid	2187		X
Cartridges for weapons, inert projectile	39		X
Cases, cartridge, empty with primer	55		X
Caustic alkali liquids, n.o.s.	1719		X
Chemicals under pressure, corrosive, n.o.s.	N/A		X
Chemicals under pressure, n.o.s.	N/A		X
Chlorine	1017		X
Chloroacetic acid, solution	2564		X
Chlorobenzotrifluorides	2234		X

Hazardous materials	UN Number	Mode	
		Highway	Railway
Chlorobutanes	1127		X
Chlorosilanes, flammable, corrosive, n.o.s.	3362		X
Chromium trioxide, anhydrous	1463		X
Coating solution	1139		X
Combustible liquid, n.o.s.	1993	X	X
Compound, vulcanizing, liquid	1133	X	
Compounds, cleaning liquid	1993		X
Compressed gas, n.o.s.	1953		X
Corrosive liquid, acidic, inorganic, n.o.s.	3264		X
Corrosive liquid, acidic, organic, n.o.s.	3265	X	X
Corrosive liquid, basic, inorganic, n.o.s.	3266	X	X
Corrosive liquid, basic, organic, n.o.s.	3267		X
Corrosive liquid, inorganic	3264	X	
Corrosive liquid, toxic, n.o.s.	2922		X
Corrosive liquids, flammable, n.o.s.	2920		X
Corrosive liquids, n.o.s.	1760	X	X
Corrosive liquids, oxidizing, n.o.s.	3093		X
Corrosive solid, acidic, inorganic, n.o.s.	3260		X
Corrosive solid, acidic, organic, n.o.s.	3261		X
Corrosive solid, basic, inorganic, n.o.s.	3262		X
Corrosive solids, n.o.s.	1759		X
Corrosive solids, toxic, n.o.s.	2923		X
Cyclohexanone	1145		X
Cyclohexylamine	2357		X
Dangerous goods in machinery	3363		X
Dichloroacetyl chloride	1765		X
Dichloromethane	1593		X
Dicyclohexylamine	2565		X
Dicyclopentadiene	2048		X
Dimethyl carbonate	1161		X
Di-n-butylamine	2248	X	
Disinfectants, liquid, corrosive, n.o.s.	1903		X
Disinfectants, liquid, toxic, n.o.s.	3142		X
Disodium trioxosilicate	3253		X
Elevated temperature liquid, flammable, n.o.s.	3256		X
Elevated temperature liquid, n.o.s.	3257	X	X

Hazardous materials	UN Number	Mode	
		Highway	Railway
Engine starting fluid	1950		X
Engine, internal combusti	3530		X
Environmentally hazardous substance, liquid, n.o.s.	3082	X	X
Environmentally hazardous substance, solid, n.o.s.	3077	X	X
Esters, n.o.s.	3272	X	X
Ethanol	1170	X	X
Ethanol and gasoline mixture	3475		X
Ethanolamine	2491		X
Ethers, n.o.s.	3271		X
Ethyl acetate	1173		X
Ethyl acrylate, stabilized	1917	X	X
Ethyl chloroacetate	1181		X
Ethyl lactate	1192		X
Ethylene oxide	1040		X
Extract, flavoring,liquid	1197		X
Fak-hazardous materials	N/A		X
Ferric chloride, anhydrous	1773		X
Ferric chloride, solution	2582	X	X
Ferrous chloride,solution	1760		X
Firelighters, solid	2623		X
Flammable liquid, corrosive, n.o.s.	2924	X	X
Flammable liquids, n.o.s.	1993		X
Flammable liquids, toxic, corrosive, n.o.s.	3286		X
Flammable liquids, toxic, n.o.s.	1992		X
Flammable solids, organic, n.o.s.	1325		X
Fluorosilicic acid	1778		X
Formaldehyde solutions, flammable	1198		X
Formaldehyde, solution (corrosive)	2209	X	
Formic acid	1779	X	X
Fuel oil	1993		X
Fuel, aviation, turbine engine	1863	X	X
Gas oil	1202		X
Gasoline	1203	X	X
Hazardous waste, solid, n.o.s.	3077		X
Heptanes	1206		X
Hexanes	1208		X

Hazardous materials	UN Number	Mode	
		Highway	Railway
Hydrocarbons, liquid, n.o.s.	3295		X
Hydrochloric acid	1789		X
Hydrofluoric acid	1790		X
Hydrogen peroxide and peroxyacetic acid mixture, stabilized	2015		X
Hydrogen peroxide, aqueous solutions	2014	X	X
Hydrogen peroxide, stabilized	2015		X
Hydroxylamine sulfate	2865		X
Hypochlorite solution	1791	X	X
Isobutane	1969		X
Isobutyl acetate	1213		X
Isoprene, stabilized	1218	X	X
Isopropanol	1219	X	X
Isopropenylbenzene	2303		X
Isopropylbenzene	1918		X
Lead compounds, soluble, n.o.s.	2291		X
Life-saving appliances, not self inflating	3072		X
Life-saving appliances, self inflating	2990		X
Lighters	1075		X
Lighters, non-pressurized, containing flammable liquid	1057	X	
Liquefied gas, n.o.s	3163	X	X
Liquefied petroleum gas	1075	X	X
Liquid hydrogen	1966	X	
Lithium batteries, contained in equipment	3481		X
Lithium battery	3481		X
Lithium ion batteries	3481	X	X
Lithium ion batteries contained in equip	3481		X
Lithium metal batteries contained in equ	3091		X
Magnesium	1869		X
Maleic anhydride	2215		X
Matches,safety	1944		X
Metal catalyst, dry	2881		X
Metal catalyst, wetted	1378		X
Metal powders, flammable, n.o.s.	3089		X
Methanol	1230		X
Methanol solutions	1230		X

Hazardous materials	UN Number	Mode	
		Highway	Railway
Methyl cyclohexane	2296		X
Methyl formate	1243		X
Methyl isobutyl carbinol	2053	X	
Methyl methacrylate monomer, stabilized	1247	X	X
Methyl tert butyl ether	2393		X
Military impedimenta and mixed hazardous materials	N/A		X
Molten sulfur	2448	X	
Morpholine	2054		X
N-amyl methyl ketone	1110	X	
Natural gas, compressed	1971	X	
N-butyl methacrylate, stabilized	2227		X
Nitrates, inorganic, n.o.s.	3218		X
Nitric acid	2031	X	X
Nitrites, inorganic, n.o.s.	2627		X
Nitrocellulose plasticizer	2557		X
Nitrocellulose with alcohol	2556		X
Nitrogen, compressed	1066		X
Nitrogen, refrigerated liquid	1977	X	
Nitrous oxide	2201	X	X
N-propanol	1274		X
Octyl aldehydes	1191		X
O-dichlorobenzene	1591		X
Organic peroxide type c, liquid	3103		X
Organic peroxide type d, solid	3106	X	
Organic peroxide type e, solid	3108		X
Organic peroxide type f, liquid	3109	X	X
Organic peroxide type f, liquid temp controlled	3109	X	
Other regulated substance	3077		X
Other regulated substances, liquid, n.o.s.	3082		X
Oxidizing liquid, corrosive, n.o.s.	3098	X	
Oxidizing solid, corrosive, n.o.s.	3085		X
Oxidizing solid, n.o.s.	1479		X
Oxygen, refrigerated liquid	1072	X	
Paint	1263	X	X
Paint related material	1263		X
Pentafluoroethane	3220		X

Hazardous materials	UN Number	Mode	
		Highway	Railway
Pentamethylheptane	2286		X
Perchloric acid	1873		X
Perfumery products	1266		X
Permanganates, inorganic, aqueous solution, n.o.s.	3214		X
Pesticides, liquid, toxic, n.o.s.	2902		X
Petroleum distillates, n.o.s.	1268		X
Petroleum gases, liquefied	1011		X
Phenol, molten	2312		X
Phenyltrichlorosilane	1804		X
Phosphoric acid, liquid	1805		X
Phosphoric acid, solution	1805	X	
Picolines	2313		X
Piperazine	2579		X
Polyamines, liquid, corrosive, n.o.s.	2735		X
Polychlorinated biphenyls, liquid	2315	X	
Polychlorinated biphenyls, solid	3432		X
Polyester resin kits	N/A		X
Polymeric beads, expandable	2211		X
Potassium cyanide	1680		X
Potassium hydroxide, solution	1814	X	X
Potassium nitrate	1486		X
Potassium permanganate	1490		X
Printing ink	1210		X
Propane	1075		X
Propylene	1077	X	X
Propyltrichlorosilane	1816		X
Radioactive material, low specific activity (lsa-i)	2909		X
Refrigerant gas r-502	1973	X	
Refrigerant gas, n.o.s.	1078	X	
Refrigerating machines	2857		X
Resin solution	1866		X
Resin solution, flammable	1866	X	
Safety devices, electrically initiated	3268	X	
Self-heating solid, inorganic, n.o.s.	3190		X
Self-heating solid, organic, n.o.s.	3088		X
Self-reactive solid type c	3224		X

Hazardous materials	UN Number	Mode	
		Highway	Railway
Self-reactive solid type d	3226		X
Sodium chlorate	1495		X
Sodium chlorite	1496		X
Sodium cyanide	1689		X
Sodium dithionite	1384	X	
Sodium fluoride	1690		X
Sodium hydrogendifluoride	2439		X
Sodium hydroxide solution	1824	X	X
Sodium hydroxide, solid	1823		X
Sodium ion batteries contained in equipment	3552	X	
Sodium methylate solutions	1289		X
Sodium nitrate	1498		X
Sodium nitrite	1500	X	X
Solids containing flammable liquid, n.o.s.	3175		X
Strontium nitrate	1507		X
Styrene monomer, stabilized	2055	X	X
Sulfur, molten	2448		X
Sulfuric acid	1830	X	X
Sulfuric acid, spent	1832		X
Sulfuryl chloride	1834	X	
Tars, liquid	1999		X
Tear gas substances, solid, n.o.s.	3448		X
Tetrachloroethylene	1897		X
Tetraethyl silicate	1292		X
Tetraethylenepentamine	2320		X
Tetrahydrofuran	2056		X
Tetralin hydroperoxide[1,2]	2136	X	
Thallium compounds, n.o.s.	1707		X
Toluene	1294		X
Toluene diisocyanate	2078	X	X
Toxic liquid, inorganic, n.o.s.	3287		X
Toxic liquids, corrosive, organic, n.o.s.	2927		X
Toxic solid, inorganic, n.o.s.	3288		X
Toxic solids, organic, n.o.s.	2811		X
Triethylamine	1296		X

Hazardous materials	UN Number	Mode	
		Highway	Railway
Turpentine	1299		X
Vehicle, flammable liquid powered	3166		X
Waste environmentally hazardous substances, liquid, n.o.s.	N/A		X
Waste flammable liquids, n.o.s.	N/A		X
Xylenes	1307		X
Xylidines, liquid	1711		X

Table A1.2

General Placards Observed

Placard	Definition	Mode	
		Highway	Rail
Corrosive	Toxic; inhalation, ingestion, or skin contact may cause severe injury or death.	X	
Dangerous	Produce flammable and toxic gases upon contact with water OR may explode from heat, shock, friction, or contamination.	X	
Dangerous When Wet	Produce flammable and toxic gases upon contact with water.	X	
Explosives	Explosives without a significant blast hazard.	X	
Flammable Gas	Highly flammable; easily ignited by heat, sparks, or flame; may form explosive mixtures with air.	X	
Flammable Liquid	Highly flammable; easily ignited by sparks or flame.	X	
Flammable Solid	Highly flammable; easily ignited by sparks or flame.	X	
Miscellaneous	Generic placard representing Hazard Class 9.	X	
Non-Flammable Gas	Vapors may cause dizziness or asphyxiation without warning; vapors are heavier than air and likely to spread along the ground.	X	
Oxidizer	May explode from friction, heat, or irritation; will accelerate burning when involved in a fire.	X	
Oxygen	Substance does not burn but will support combustion; some may react explosively with fuels.		
Poison	Toxic; inhalation, ingestion, or skin contact may cause severe injury or death.	X	
Radioactive		X	
Toxic	inhalation, ingestion, or skin contact may cause severe injury or death.	X	

APPENDIX 2

Highway Monitoring Site Data

This appendix contains detailed information regarding the monitoring sites observed as part of this project.

BERKELEY COUNTY
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EMERGENCY MANAGEMENT

APPENDIX 2
HIGHWAY MONITORING SITE DATA

This appendix contains detailed information regarding the monitoring sites observed as part of this project.

- I-81 at VA state line
- I-81 near Exit 8
- SR 9 at Short Rd.
- I-81N at Exit 23
- I-81S at WV Welcome Center

Where applicable, the site profiles below contain the most recent West Virginia Department of Transportation (WVDOT) traffic count information (2023) for that highway. The figure presented represents the total traffic through that site in an average 24-hour period. For comparison, planners mathematically estimated the hazardous material figures for each site for 24-hour intervals and then presented an estimated percentage of traffic carrying hazardous materials through a site in an average 24-hour period.

Date: 21 Aug 2024

Time: 0900 -1300 **Interval:** 4 hrs.

I-81N @ Exit 23

Monitor: I-81 northbound

Weather: Sunny; Temp: 61°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	Totals	% of Total
111	40	1.8%
117	6	0.3%
131	7	0.3%
134	0	0.0%
137	27	1.2%
Other	2	0.1%

Site Summary Data

Total Haz-Mat:	77
Unique Placards (#):	30
Total Truck Traffic:	2171
% w/ Placard:	3.5%
WVDOT Count:	63828
24 hr-Trucks Calc:	13026
24-hr Haz Calc:	462
Est Haz per hr:	19
% Haz per 24-hr:	0.7%

Hazard Classes

1-Explosives:	4	5.2%
2-Gases:	10	13.0%
3-Flamm. Liquids:	25	32.5%
4-Flamm. Solids:	0	0.0%
5-Oxidizers:	5	6.5%
6-Toxics:	0	0.0%
7-Radioactives:	0	0.0%
8-Corrosives:	24	31.2%
9-Miscellaneous:	9	11.7%

UN No.	Class	Name	Total	% of All Placards
332	1	Blasting agent, insensitive	1	1.3%
1001	2	Acetylene	1	1.3%
1075	2	Liquefied petroleum gas	2	2.6%
1077	2	Propylene	1	1.3%
1150	3	1,2-Dichloroethylene	1	1.3%
1203	3	Gasoline	4	5.2%
1219	3	Isopropanol	1	1.3%
1263	3	Paint	1	1.3%
1805	8	Phosphoric acid, solution	1	1.3%
1824	8	Sodium hydroxide solution	3	3.9%
1830	8	Sulfuric acid	1	1.3%
1866	3	Resin solution, flammable	3	3.9%
1951	2	Argon	1	1.3%
1966	2	Liquid hydrogen	1	1.3%
1971	2	Natural gas, compressed	2	2.6%
1993	3	Combustible liquids	5	6.5%
2031	8	Nitric acid	1	1.3%
2248	8	Di-n-butylamine	1	1.3%
2491	8	Ethanolamine	1	1.3%
3082	9	Environmentally hazardous substance, liquid, n.o.s.	1	1.3%
3109	5	Organic peroxide type F, liquid	1	1.3%
3163	2	Liquefied gas, n.o.s	1	1.3%
3257	9	Elevated temperature liquid, n.o.s.	6	7.8%
3264	8	Corrosive liquid, inorganic	1	1.3%
3375	5	Ammonium nitrate emulsion	4	5.2%

Red denotes USEPA Section 302 "Extremely Hazardous Substances"

General Placards	Total	% of All Placards
Explosives	3	3.9%
Non-Flamm Gas	1	1.3%
Flamm Liquid	10	13.0%
Corrosive	15	19.5%
Dangerous	2	2.6%

Date: 21 Aug 2024

Time: 1400 -1800 **Interval:** 4 hrs.

I-81 near Exit 8

Monitor: I-81 N/S

Weather: Sunny; Temp: 81°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	Totals	% of Total
111	59	1.8%
117	4	0.1%
131	6	0.2%
134	0	0.0%
137	24	0.7%
Other	5	0.1%

Site Summary Data

Total Haz-Mat:	80
Unique Placards (#):	31
Total Truck Traffic:	3343
% w/ Placard:	2.4%
WVDOT Count:	44100
24 hr-Trucks Calc:	20058
24-hr Haz Calc:	480
Est Haz per hr:	20
% Haz per 24-hr:	1.1%

Hazard Classes

1-Explosives:	5	6.3%
2-Gases:	11	13.8%
3-Flamm. Liquids:	24	30.0%
4-Flamm. Solids:	0	0.0%
5-Oxidizers:	4	5.0%
6-Toxics:	3	3.8%
7-Radioactives:	1	1.3%
8-Corrosives:	10	12.5%
9-Miscellaneous:	22	27.5%

UN No.	Class	Name	Total	% of All Placards
1075	2	Liquefied petroleum gas	1	1.3%
1203	3	Gasoline	4	5.0%
1218	3	Isoprene, stabilized	1	1.3%
1254	8	N/A[1]	1	1.3%
1500	5	Sodium nitrite	1	1.3%
1760	8	Corrosive liquids, n.o.s.	1	1.3%
1779	8	Formic acid	1	1.3%
1866	3	Resin solution, flammable	2	2.5%
1917	3	Ethyl acrylate, stabilized	1	1.3%
1973	3	Refrigerant gas R-502	1	1.3%
1977	2	Nitrogen, refrigerated liquid	3	3.8%
1993	3	Combustible liquids	3	3.8%
2055	3	Styrene monomer, stabilized	1	1.3%
2209	8	Formaldehyde, solution (corrosive)	1	1.3%
2582	8	Ferric chloride, solution	1	1.3%
3077	9	Environmentally hazardous substance, solid, n.o.s.	2	2.5%
3082	9	Environmentally hazardous substance, liquid, n.o.s.	3	3.8%
3098	5	Oxidizing liquid, corrosive, n.o.s.	1	1.3%
3257	9	Elevated temperature liquid, n.o.s.	9	11.3%
3265	8	Corrosive liquid, acidic, organic, n.o.s.	1	1.3%
3266	8	Corrosive liquid, basic, inorganic, n.o.s.	1	1.3%

General Placards	Total	% of All Placards
Explosives	5	6.3%
Flamm Gas	2	2.5%
Non-Flamm Gas	5	6.3%
Flamm Liquid	11	13.8%
Oxidizer	2	2.5%
Poison	3	3.8%
Radioactive	1	1.3%
Corrosive	3	3.8%
Miscellaneous	2	2.5%
Dangerous	6	7.5%

Red denotes USEPA Section 302 "Extremely Hazardous Substances"

[1] - This UN Number is no longer in use.

Date: 22 Aug 2024

Time: 0600 -1000 **Interval:** 4 hrs.

I-81 South @ Welcome Center

Monitor: I-81 southbound

Weather: Clear; Temp: 46°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	Totals	% of Total
111	36	2.4%
117	4	0.3%
131	7	0.5%
134	0	0.0%
137	18	1.2%
Other	6	0.4%

Site Summary Data

Total Haz-Mat:	71
Unique Placards (#):	22
Total Truck Traffic:	1523
% w/ Placard:	4.7%
WVDOT Count:	50500
24 hr-Trucks Calc:	9138
24-hr Haz Calc:	426
Est Haz per hr:	18
% Haz per 24-hr:	0.8%

Hazard Classes

1-Explosives:	0	0.0%
2-Gases:	15	21.1%
3-Flamm. Liquids:	21	29.6%
4-Flamm. Solids:	3	4.2%
5-Oxidizers:	3	4.2%
6-Toxics:	1	1.4%
7-Radioactives:	0	0.0%
8-Corrosives:	12	16.9%
9-Miscellaneous:	16	22.5%

UN No.	Class	Name	Total	% of All Placards
1001	2	Acetylene	1	1.4%
1075	2	Liquefied petroleum gas	4	5.6%
1078	2	Refrigerant gas, n.o.s.	1	1.4%
1203	3	Gasoline	5	7.0%
1283	3	N/A[1]	1	1.4%
1824	8	Sodium hydroxide solution	2	2.8%
1977	2	Nitrogen, refrigerated liquid	1	1.4%
1993	3	Combustible liquids	2	2.8%
2014	5	Hydrogen peroxide	1	1.4%
2448	4	Molten sulfur	2	2.8%
2735	8	Amines, liquid, corrosive, n.o.s.	1	1.4%
3119	5	Organic peroxide type F, liquid, temp. controlled	1	1.4%
3257	9	Elevated temperature liquid, n.o.s.	10	14.1%
3266	8	Corrosive liquid, basic, inorganic, n.o.s.	1	1.4%
3375	5	Ammonium nitrate emulsion	1	1.4%

General Placards	Total	% of All Placards
Flamm Gas	3	4.2%
Non-Flamm Gas	5	7.0%
Flamm Liquid	13	18.3%
Dang When Wet	1	1.4%
Poison	1	1.4%
Corrosive	8	11.3%
Dangerous	6	8.5%

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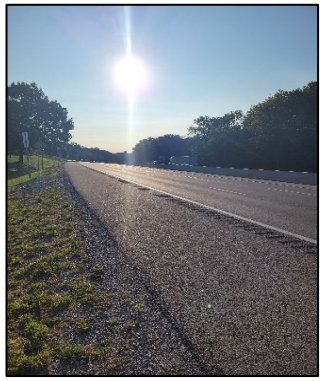
[1] - This UN Number is no longer in use.



Date: 22 Aug 2024

Time: 1030 - 1430 **Interval:** 4 hrs.

Rt. 9 @ Short Rd.

Monitor: Rt. 9 E/W

Weather: Sunny; Temp: 67°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	Totals	% of Total	UN No.	Class	Name	Total	% of All Placards	General Placards	Total	% of All Placards
111	5	1.8%	1075	2	Liquefied petroleum gas	7	41.2%	Flamm Gas	1	5.9%
117	7	2.6%	1203	3	Gasoline	3	17.6%	Non-Flamm Gas	1	5.9%
131	3	1.1%	2672	8	Ammonia, solution	2	11.8%	Corrosive	2	11.8%
134	0	0.0%	3109	5	Organic peroxide type F, liquid temp controlled	1	5.9%			
137	2	0.7%								
Other	0	0.0%								

Red denotes USEPA Section 302 "Extremely Hazardous Substances"

Site Summary Data

Total Haz-Mat:	17
Unique Placards (#):	7
Total Truck Traffic:	274
% w/ Placard:	6.2%
WVDOT Count:	24800
24 hr-Trucks Calc:	1644
24-hr Haz Calc:	102
Est Haz per hr:	4
% Haz per 24-hr:	0.4%

Hazard Classes

1-Explosives:	0	0.0%
2-Gases:	9	52.9%
3-Flamm. Liquids:	3	17.6%
4-Flamm. Solids:	0	0.0%
5-Oxidizers:	1	5.9%
6-Toxics:	0	0.0%
7-Radioactives:	0	0.0%
8-Corrosives:	4	23.5%
9-Miscellaneous:	0	0.0%

Date: 22 Aug 2024

Time: 1600 - 2000 **Interval:** 4 hrs.

I-81 @ VA Line

Monitor: I-81 N/S

Weather: Sunny; Temp: 75°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	Totals	% of Total
111	61	2.4%
117	7	0.3%
131	4	0.2%
134	0	0.0%
137	14	0.5%
Other	3	0.1%

Site Summary Data

Total Haz-Mat:	89
Unique Placards (#):	31
Total Truck Traffic:	2551
% w/ Placard:	3.5%
WVDOT Count:	42100
24 hr-Trucks Calc:	15306
24-hr Haz Calc:	534
Est Haz per hr:	22
% Haz per 24-hr:	1.3%

Hazard Classes

1-Explosives:	2	2.2%
2-Gases:	17	19.1%
3-Flamm. Liquids:	34	38.2%
4-Flamm. Solids:	0	0.0%
5-Oxidizers:	4	4.5%
6-Toxics:	2	2.2%
7-Radioactives:	0	0.0%
8-Corrosives:	18	20.2%
9-Miscellaneous:	12	13.5%

UN No.	Class	Name	Total	% of All Placards
1057	3	Lighters, non-pressurized, containing flammable liquid	1	1.1%
1075	2	Liquefied petroleum gas	3	3.4%
1110	3	n-Amyl methyl ketone	1	1.1%
1133	3	Compound, vulcanizing, liquid	2	2.2%
1203	3	Gasoline	4	4.5%
1263	2	Paint	2	2.2%
1648	3	Acetonitrile	1	1.1%
1814	8	Potassium hydroxide, solution	1	1.1%
1966	2	Liquid hydrogen	1	1.1%
1977	2	Nitrogen, refrigerated liquid	2	2.2%
1993	3	Combustible liquids	2	2.2%
2053	3	Methyl isobutyl carbinol	1	1.1%
2078	6	Toluene diisocyanate	1	1.1%
2201	2	Nitrous oxide, refrigerated liquid	1	1.1%
3077	9	Environmentally hazardous substance, solid, n.o.s.	1	1.1%
3082	9	Environmentally hazardous substance, liquid, n.o.s.	2	2.2%
3109	5	Organic peroxide type F, liquid temp controlled	1	1.1%
3257	9	Elevated temperature liquid, n.o.s.	2	2.2%
3265	8	Corrosive liquid, acidic, organic, n.o.s.	1	1.1%
3266	8	Corrosive liquid, basic, inorganic, n.o.s.	2	2.2%
3375	5	Ammonium nitrate emulsion	1	1.1%
3480	9	Lithium ion batteries	1	1.1%

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General Placards	Total	% of All Placards
Explosives	2	2.2%
Flamm Gas	2	2.2%
Non-Flamm Gas	6	6.7%
Flamm Liquid	22	24.7%
Oxidizer	2	2.2%
Toxic	1	1.1%
Corrosive	14	15.7%
Miscellaneous	2	2.2%
Dangerous	4	0.2%

Date: 23 Aug 2024

Time: 0600 - 1000 **Interval:** 4 hrs.

Rt. 9 @ Short Rd.

Monitor: Rt. 9 E/W

Weather: Sunny; Temp: 52°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	*Totals*	*% of Total*
111	2	0.7%
117	6	2.2%
131	3	1.1%
134	0	0.0%
137	10	3.7%
Other	2	0.7%

UN No.	*Class*	*Name*	*Total*	*% of All Placards*
1073	2	Oxygen, refrigerated liquid	2	8.7%
1075	2	Liquefied petroleum gas	4	17.4%
1834	6	Sulfuryl chloride	1	4.3%
1993	3	Combustible liquids	3	13.0%
2014	5	Hydrogen peroxide	1	4.3%
2031	8	Nitric acid	2	8.7%
2136	9	Tetralin hydroperoxide[1,2]	1	4.3%
2672	8	Ammonia, solution	1	4.3%
3106	5	Organic peroxide type D, solid	1	4.3%

General Placards	*Total*	*% of All Placards*
Flamm Gas	1	4.3%
Non-Flamm Gas	1	4.3%
Corrosive	5	21.7%

Site Summary Data

Total Haz-Mat:	23
Unique Placards (#):	12
Total Truck Traffic:	270
% w/ Placard:	8.5%
WVDOT Count:	24800
24 hr-Trucks Calc:	1620
24-hr Haz Calc:	138
Est Haz per hr:	6
% Haz per 24-hr:	0.6%

Red denotes USEPA Section 302 "Extremely Hazardous Substances"

[1] - This UN Number is no longer in use.

[2] - Actual class unavailable; planners assigned "miscellaneous".

Hazard Classes

1-Explosives:	0	0.0%
2-Gases:	8	34.8%
3-Flamm. Liquids:	3	13.0%
4-Flamm. Solids:	0	0.0%
5-Oxidizers:	2	8.7%
6-Toxics:	1	4.3%
7-Radioactives:	0	0.0%
8-Corrosives:	8	34.8%
9-Miscellaneous:	1	4.3%

Date: 23 Aug 2024

Time: 1030 - 1430 **Interval:** 4 hrs.

I-81 @ VA Line

Monitor: I-81 N/S

Weather: Sunny; Temp: 68°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	*Totals*	*% of Total*
111	45	1.6%
117	7	0.2%
131	5	0.2%
134	0	0.0%
137	31	1.1%
Other	9	0.3%

Site Summary Data	
Total Haz-Mat:	106
Unique Placards (#):	34
Total Truck Traffic:	2898
% w/ Placard:	3.7%
WVDOT Count:	42100
24 hr-Trucks Calc:	17388
24-hr Haz Calc:	636
Est Haz per hr:	27
% Haz per 24-hr:	1.5%

Hazard Classes		
1-Explosives:	6	5.7%
2-Gases:	16	15.1%
3-Flamm. Liquids:	24	22.6%
4-Flamm. Solids:	2	1.9%
5-Oxidizers:	6	5.7%
6-Toxics:	1	0.9%
7-Radioactives:	0	0.0%
8-Corrosives:	24	22.6%
9-Miscellaneous:	27	25.5%

UN No.	*Class*	*Name*	*Total*	*% of All Placards*
1073	2	Oxygen, refrigerated liquid	1	0.9%
1075	2	Liquefied petroleum gas	3	2.8%
1170	3	Ethanol	1	0.9%
1203	3	Gasoline	3	2.8%
1247	3	Methyl methacrylate monomer, stabilized	1	0.9%
1263	2	Paint	1	0.9%
1384	4	Sodium dithionite	1	0.9%
1760	8	Corrosive liquids, n.o.s.	1	0.9%
1791	8	Hypochlorite solution	1	0.9%
1824	8	Sodium hydroxide solution	1	0.9%
1863	3	Fuel, aviation, turbine engine	2	1.9%
1917	3	Ethyl acrylate, stabilized	1	0.9%
1966	2	Liquid hydrogen	3	2.8%
2158	3	N/A[1]	1	0.9%
2315	9	Polychlorinated biphenyls, liquid	2	1.9%
2693	8	Bisulfites, aqueous solution, n.o.s.	2	1.9%
2924	3	Flammable liquid, corrosive, n.o.s.	1	0.9%
3077	9	Environmentally hazardous substance, solid, n.o.s.	3	2.8%
3082	9	Environmentally hazardous substance, liquid, n.o.s.	3	2.8%
3257	9	Elevated temperature liquid, n.o.s.	9	8.5%
3265	8	Corrosive liquid, acidic, organic, n.o.s.	3	2.8%
3268	9	Safety devices, electrically initiated	1	0.9%
3272	3	Esters, n.o.s.	1	0.9%
3375	5	Ammonium nitrate emulsion	2	1.9%
3552	9	Sodium ion batteries contained in equipment[2]	1	0.9%

General Placards	*Total*	*% of All Placards*
Explosives	6	5.7%
Flamm Gas	3	2.8%
Non-Flamm Gas	5	4.7%
Flamm Liquid	13	12.3%
Flamm Solid	1	0.9%
Oxidizer	4	3.8%
Toxic	1	0.9%
Corrosive	16	15.1%
Dangerous	8	0.3%

[1] - This UN Number is no longer in use.

[2] - Actual class unavailable; planners assigned "miscellaneous".

Date: 23 Aug 2024

Time: 1500 -1900 **Interval:** 4 hrs.

I-81 near Exit 8

Monitor: I-81 N/S

Weather: Sunny; Temp: 80°

Special Considerations: N/A

Trucks Carrying Haz-Mat

Trucks may have multiple placards

Trailer Type	Totals	% of Total
111	44	2.2%
117	5	0.3%
131	2	0.1%
134	0	0.0%
137	6	0.3%
Other	1	0.1%

Site Summary Data

Total Haz-Mat:	58
Unique Placards (#):	25
Total Truck Traffic:	1972
% w/ Placard:	2.9%
WVDOT Count:	44100
24 hr-Trucks Calc:	11832
24-hr Haz Calc:	348
Est Haz per hr:	15
% Haz per 24-hr:	0.8%

UN No.	Class	Name	Total	% of All Placards
1057	3	Lighters, non-pressurized, containing flammable liquid	1	1.7%
1073	2	Oxygen, refridgerated liquid	1	1.7%
1120	3	Butanols	1	1.7%
1133	3	Compound, vulcanizing, liquid	1	1.7%
1203	3	Gasoline	2	3.4%
1500	5	Sodium nitrite	1	1.7%
1824	8	Sodium hydroxide solution	1	1.7%
1951	2	Argon	1	1.7%
1966	2	Liquid hydrogen	2	3.4%
1971	2	Natural gas, compressed	1	1.7%
1977	2	Nitrogen, refrigerated liquid	1	1.7%
2014	5	Hydrogen peroxide	1	1.7%
2055	3	Styrene monomer, stabilized	1	1.7%
2683	8	Ammonium sulfide, solution	1	1.7%
3077	9	Environmentally hazardous substance, solid, n.o.s.	1	1.7%
3082	9	Environmentally hazardous substance, liquid, n.o.s.	2	3.4%
3109	5	Organic peroxide type F, liquid temp controlled	1	1.7%
3257	9	Elevated temperature liquid, n.o.s.	1	1.7%

General Placards	Total	% of All Placards
Explosives	3	5.2%
Non-Flamm Gas	4	6.9%
Flamm Liquid	10	17.2%
Flamm Solid	3	5.2%
Oxidizer	1	1.7%
Corrosive	10	17.2%
Dangerous	6	10.3%

Hazard Classes

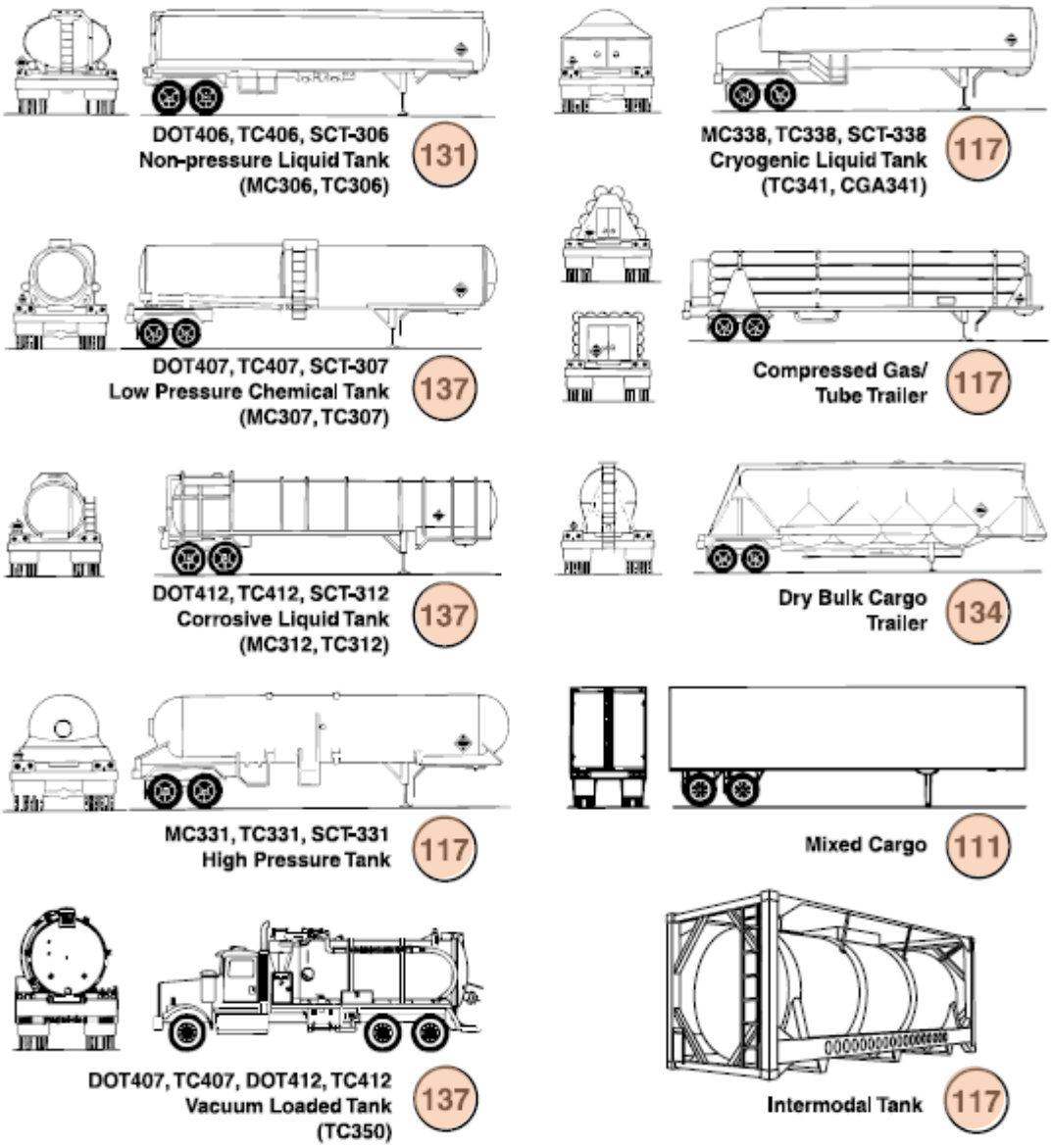
1-Explosives:	3	5.2%
2-Gases:	10	17.2%
3-Flamm. Liquids:	16	27.6%
4-Flamm. Solids:	3	5.2%
5-Oxidizers:	4	6.9%
6-Toxics:	0	0.0%
7-Radioactives:	0	0.0%
8-Corrosives:	12	20.7%
9-Miscellaneous:	10	17.2%

Red denotes USEPA Section 302 "Extremely Hazardous Substances"

APPENDIX 3

TRAILER TYPE REFERENCE SHEET

This appendix contains the reference sheet used for determining trailer types during highway field reconnaissance.



APPENDIX 4

Railway Data Requests & Comprehensive Rail Data

This appendix contains comprehensive rail data and copies of the information requests submitted to rail shippers.

BERKELEY COUNTY
EM
PUBLIC SAFETY. PUBLIC TRUST
EMERGENCY MANAGEMENT

BERKELEY COUNTY OFFICE OF EMERGENCY MANAGEMENT

September 5, 2024

CSXT
Attn: Director-Hazardous Material Systems
500 Water Street
J-275
Jacksonville, FL 32202

Re: Hazardous Materials Information Request
Berkeley County Commodity Flow Study

Dear Director:

Please accept this cover letter and the enclosed CSX Density Study Request form on behalf of the Berkeley County Office of Emergency Management. I have also included a brief description of our project as part of this letter.

Berkeley County OEM is conducting a commodity flow study to depict the hazardous materials that are passing through Berkeley County via roadways, railways, and facilities. We would appreciate any information you could provide regarding the commodities that are transported on your lines in Berkeley County.

This project is an important component of our on-going hazardous materials emergency planning. We will use the information presented by the report to refine hazmat response plans and guide the development of training programs and exercise scenarios (to ensure that our responders are prepared to face the types of materials that are present in our county).

The information provided by CSX will be used solely for emergency and contingency planning. Our consultant has agreed to information control processes to ensure that all information, including rail data, is kept confidential and secure. Upon the conclusion of the project, all files will be given to the Berkeley County OEM.

Again, thank you for your assistance in this matter. Should you have any questions or comments, feel free to contact myself at (304) 263-1345 or by email at rlilly@berkeleywv.org. You may also contact Mr. Jeffery Harvey, Owner of JH Consulting, at (304) 473-1009 or by email at jharvey@jhcpreparedness.com.

Respectfully submitted,

Randy Lilly

Randy Lilly
Director

802 Emmett Rousch Drive, Martinsburg, WV 25401
Phone: 304-263-1345 Fax: 304-264-4467

REQUEST FOR HAZARDOUS MATERIALS DENSITY STUDY

Organization Requesting Density Study: Berkeley County Office of Emergency Management

Contact Person: Randy Lilly, Director

Phone Number: 304-263-1345

Email Address: rlilly@berkeleywv.org

MailingAddress: 802 Emmett Rousch Drive, Suite B
(Street Address)

Martinsburg, WV 25401
(City, State, Zip)

Geographical Description of Area for study: Berkeley County WV

By signing below I acknowledge and agree to the terms set forth by CSX Transportation, Inc. for use and dissemination of the information contained within the CSXT Hazardous Materials Density Study. I affirm that the information provided by CSXT in this report will be used solely for and by bonafide emergency planning and response organizations for the expressed purpose of emergency and contingency planning. This information will not be distributed publicly in whole or in part without the expressed written permission of CSX Transportation, Inc.

Randy Lilly

(Signature of person requesting density study)

Return Completed Form to: CSXT, Director-Hazardous Material Systems
500 Water Street
J-275
Jacksonville, FL 32202 or **Fax 904-245-2867**

For CSXT Use Only

Director, Hazardous Material Systems Approval:___Yes___ NO Date:_____

Crisis Communication Manager:

Date Request Received: _____

Date Report Generated: _____

Date Report Sent:_____

Hazardous Material Density Study for Berkeley County, WV

November 08, 2024

Introduction

This document is the CSX Transportation Hazardous Materials Density Study for the CSXT track segment(s) in your jurisdiction. CSXT shares these kinds of studies with local communities to provide them with information about the types and amounts of hazardous materials transported in their communities. CSXT believes that this program is very useful for local emergency responders to develop effective and realistic emergency response plans. We share this with you as part of our commitment to enhance safety of the public, community first responders, and our employees. This document and the information it contains is proprietary to CSXT and remains the property of CSXT. It is provided solely for emergency planning purposes and may not be used for any other purpose.

The enclosed report covers the latest full year data we have available. This report lists each commodity by name, hazard class, and percentage of the carload total. A breakout of the most often transported products for your location and the total hazardous materials traffic handled.

Totals

Berkeley County, West Virginia, 2023

Total Hazardous Materials traffic handled was 9,690 loaded shipments. This number includes intermodal shipments (trailer or container on flat cars). Intermodal hazardous materials shipments are non-bulk and less than 55 gal/package formats.

Berkeley County, West Virginia, 2024

Total Hazardous Materials traffic handled was 39,471 loaded shipments. This number includes intermodal shipments (trailer or container on flat cars). Intermodal hazardous materials shipments are non-bulk and less than 55 gal/package formats.

Top products handled

Berkeley County, West Virginia, 2023

An analysis of the density report shows that 159 products accounted for 9,690 loaded carloads for the period. This represents 100% of the total hazardous materials carloads handled. These products include: (in descending order of carloads).

Berkeley County, West Virginia, 2024

An analysis of the density report shows that 236 products accounted for 39,471 loaded carloads for the period. This represents 100% of the total hazardous materials carloads handled. These

products include: (in descending order of carloads).

Carloads in Total

Berkeley County, West Virginia, 2023

Commodity	Hazard Class	Carload% of total Hazmat
ALCOHOLS, N.O.S.	3	19.89%
LIQUEFIED PETROLEUM GASES	2.1	10.76%
BUTANE	2.1	9.36%
PROPANE	2.1	8.38%
FAK-HAZARDOUS MATERIALS	0	6.21%
PETROLEUM DISTILLATES, N.O.S.	3	5.49%
HYDROCARBONS, LIQUID, N.O.S.	3	4.75%
ELEVATED TEMPERATURE LIQUID, N.O.S.	9	4.52%
PHOSPHORIC ACID, LIQUID	8	4.41%
SODIUM HYDROXIDE SOLUTION	8	2.81%
ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.	9	2.32%
SULFUR, MOLTEN	9	1.7%
ISOBUTANE	2.1	1.46%
ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.	9	1.34%
AMINES, LIQUID, CORROSIVE, N.O.S.	8	1.24%
FUEL OIL	CL	1.09%
ALCOHOLIC BEVERAGES	3	1%
HYDROCHLORIC ACID	8	<1%
BATTERIES, WET, FILLED WITH ACID	8	<1%
FLAMMABLE LIQUIDS, N.O.S.	3	<1%
PERFUMERY PRODUCTS	3	<1%
FUEL, AVIATION, TURBINE ENGINE	XXX	<1%
METHANOL	3	<1%
OTHER REGULATED SUBSTANCES, LIQUID, N.O.S.	9	<1%
CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	<1%
CYCLOHEXANONE	3	<1%
HAZARDOUS WASTE, SOLID, N.O.S.	9	<1%
LITHIUM ION BATTERIES	XXX	<1%
ARTICLES, PRESSURIZED PNEUMATIC	2.2	<1%
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9	<1%
ETHANOL	3	<1%
RESIN SOLUTION	3	<1%
PICOLINES	3	<1%
TETRAHYDROFURAN	3	<1%
WASTE FLAMMABLE LIQUIDS, N.O.S.	3	<1%
HEXANES	3	<1%
CHLORINE	2.3	<1%
PAINT	3	<1%
CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	<1%
POTASSIUM PERMANGANATE	5.1	<1%

Berkeley County, West Virginia, 2023

Commodity	Hazard Class	Carload% of total Hazmat
TOXIC LIQUID, INORGANIC, N.O.S.	6.1	<1%
ADHESIVES	3	<1%
SULFURIC ACID	8	<1%
ETHANOL AND GASOLINE MIXTURE	3	<1%
AIR BAG MODULES	9	<1%
COMBUSTIBLE LIQUID, N.O.S.	CL	<1%
LITHIUM ION BATTERIES	9	<1%
POLYMERIC BEADS, EXPANDABLE	9	<1%
AEROSOLS	2.2	<1%
ALKYL SULFONIC ACIDS, LIQUID	8	<1%
EXTRACT, FLAVORING,LIQUID	3	<1%
FERRIC CHLORIDE, SOLUTION	8	<1%
METHYL METHACRYLATE MONOMER, STABILIZED	3	<1%
CORROSIVE SOLID, BASIC, INORGANIC, N.O.S.	8	<1%
PETROLEUM DISTILLATES, N.	XXX	<1%
STYRENE MONOMER, STABILIZED	3	<1%
ACETIC ACID, GLACIAL	8	<1%
ISOPROPANOL	3	<1%
N-PROPANOL	3	<1%
PENTAFLUOROETHANE	2.2	<1%
SODIUM HYDROXIDE, SOLID	8	<1%
TOXIC SOLIDS, ORGANIC, N.O.S.	6.1	<1%
AEROSOLS	2.1	<1%
BATTERY-POWERED VEHICLE	9	<1%
ESTERS, N.O.S.	3	<1%
HEPTANES	3	<1%
MALEIC ANHYDRIDE	8	<1%
ACETONE	3	<1%
COMPRESSED GAS, N.O.S.	2.2	<1%
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	<1%
CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	<1%
CORROSIVE LIQUIDS, N.O.S.	8	<1%
DICHLOROACETYL CHLORIDE	8	<1%
DICHLOROMETHANE	6.1	<1%
DICYCLOHEXYLAMINE	8	<1%
FLAMMABLE LIQUIDS, CORROSIVE, N.O.S.	3	<1%
FLAMMABLE SOLIDS, ORGANIC, N.O.S.	4.1	<1%
HYDROFLUORIC ACID	8	<1%
LIGHTERS	2.1	<1%
LIQUEFIED GAS, N.O.S.	2.2	<1%
LITHIUM ION BATTERIES CONTAINED IN EQUIP	XXX	<1%
NITROGEN, COMPRESSED	2.2	<1%

Berkeley County, West Virginia, 2023

Commodity	Hazard Class	Carload% of total Hazmat
OXIDIZING SOLID, CORROSIVE, N.O.S.	5.1	<1%
1-METHOXY-2-PROPANOL	3	<1%
ALUMINUM CHLORIDE, SOLUTION	8	<1%
AMYL ACETATES	3	<1%
BENZYL CHLORIDE	6.1	<1%
BUTYL ACETATES	3	<1%
CALCIUM	4.3	<1%
CAUSTIC ALKALI LIQUIDS, N.O.S.	8	<1%
COATING SOLUTION	3	<1%
DISINFECTANTS, LIQUID, CORROSIVE, N.O.S.	8	<1%
FLAMMABLE LIQUIDS, TOXIC, N.O.S.	3	<1%
FORMIC ACID	8	<1%
N-BUTYL METHACRYLATE, STABILIZED	3	<1%
POTASSIUM HYDROXIDE, SOLUTION	8	<1%
SELF-HEATING SOLID, ORGANIC, N.O.S.	4.2	<1%
TETRAETHYL SILICATE	3	<1%
AEROSOLS, FLAMMABLE,N.O.S.	2.1	<1%
AMMONIUM HYDROGENDIFLUORIDE, SOLID	8	<1%
BATTERIES, NICKEL-METAL HYDRIDE	9	<1%
BATTERIES, WET, NON-SPILLABLE	8	<1%
BISULFITES, AQUEOUS SOLUTIONS, N.O.S.	8	<1%
CASES, CARTRIDGE, EMPTY WITH PRIMER	1.4S	<1%
CORROSIVE LIQUID, TOXIC, N.O.S.	8	<1%
DANGEROUS GOODS IN MACHIN	XXX	<1%
ENGINE, INTERNAL COMBUSTI	XXX	<1%
ETHYL LACTATE	3	<1%
HYDROGEN PEROXIDE, AQUEOUS SOLUTIONS	5.1	<1%
ISOBUTYL ACETATE	3	<1%
METAL CATALYST, DRY	4.2	<1%
METHYL FORMATE	3	<1%
NITROCELLULOSE WITH ALCOHOL	4.1	<1%
PETROLEUM GASES, LIQUEFIED	XXX	<1%
POTASSIUM NITRATE	5.1	<1%
PRINTING INK	3	<1%
VEHICLE, FLAMMABLE LIQUID POWERED	9	<1%
2-(2-AMINOETHOXY) ETHANOL	8	<1%
ANISOLE	3	<1%
AZODICARBONAMIDE	4.1	<1%
CARBON DIOXIDE	2.2	<1%
CHLOROBENZOTRIFLUORIDES	3	<1%
CHLOROBUTANES	3	<1%
CORROSIVE LIQUIDS, FLAMMABLE, N.O.S.	8	<1%

Berkeley County, West Virginia, 2023

Commodity	Hazard Class	Carload% of total Hazmat
CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.	8	<1%
CORROSIVE SOLIDS, N.O.S.	8	<1%
CORROSIVE SOLIDS, TOXIC, N.O.S.	8	<1%
CYCLOHEXYLAMINE	8	<1%
DANGEROUS GOODS IN MACHINERY	9	<1%
ETHYL ACETATE	3	<1%
ETHYL ACRYLATE, STABILIZED	3	<1%
FERROUS CHLORIDE,SOLUTION	8	<1%
FIRELIGHTERS, SOLID	4.1	<1%
FLAMMABLE LIQUIDS, TOXIC, CORROSIVE, N.O.S.	3	<1%
FLUOROSILICIC ACID	8	<1%
FUEL, AVIATION, TURBINE ENGINE	3	<1%
HYDROGEN PEROXIDE AND PEROXYACETIC ACID MIXTURE, STABILIZED	5.1	<1%
LIFE-SAVING APPLIANCES, NOT SELF INFLATING	9	<1%
LIFE-SAVING APPLIANCES, SELF INFLATING	9	<1%
METAL POWDERS, FLAMMABLE, N.O.S.	4.1	<1%
METHANOL SOLUTIONS	3	<1%
MORPHOLINE	8	<1%
NITROCELLULOSE PLASTICIZER	4.1	<1%
NITROUS OXIDE	2.2	<1%
OCTYL ALDEHYDES	3	<1%
PAINT RELATED MATERIAL	3	<1%
PERCHLORIC ACID	5.1	<1%
PHENYLTRICHLOROSILANE	8	<1%
PROPYLTRICHLOROSILANE	8	<1%
SELF-HEATING SOLID, INORGANIC, N.O.S.	4.2	<1%
SELF-REACTIVE SOLID TYPE C	4.1	<1%
SODIUM CHLORATE	5.1	<1%
SODIUM CHLORITE	5.1	<1%
SODIUM HYDROGENDIFLUORIDE	8	<1%
SODIUM NITRITE	5.1	<1%
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S.	4.1	<1%
TARS, LIQUID	3	<1%
TETRAETHYLENEPENTAMINE	8	<1%
XYLENES	3	<1%
	Total 159	**100%**

Berkeley County, West Virginia, 2024

Commodity	Hazard Class	Carload% of total Hazmat
ALCOHOLS, N.O.S.	3	16.45%
SULFUR, MOLTEN	9	11.75%
HYDROCARBONS, LIQUID, N.O.S.	3	10.92%
LIQUEFIED PETROLEUM GASES	2.1	7.39%
ELEVATED TEMPERATURE LIQUID, N.O.S.	9	5.85%
FAK-HAZARDOUS MATERIALS	0	5.64%
BUTANE	2.1	4.59%
PROPANE	2.1	4.32%
PETROLEUM DISTILLATES, N.O.S.	3	4.19%
PHOSPHORIC ACID, LIQUID	8	2.91%
SODIUM HYDROXIDE SOLUTION	8	2.68%
ISOBUTANE	2.1	2.54%
ALCOHOLIC BEVERAGES	3	1.89%
ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.	9	1.49%
ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.	9	1.43%
FERROUS CHLORIDE,SOLUTION	8	<1%
AMINES, LIQUID, CORROSIVE, N.O.S.	8	<1%
SULFURIC ACID	8	<1%
FUEL OIL	CL	<1%
HYDROCHLORIC ACID	8	<1%
PERFUMERY PRODUCTS	3	<1%
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9	<1%
CHLORINE	2.3	<1%
BATTERIES, WET, FILLED WITH ACID	8	<1%
CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	<1%
FLAMMABLE LIQUIDS, N.O.S.	3	<1%
CARBON DIOXIDE, REFRIGERATED LIQUID	2.2	<1%
ETHANOL	3	<1%
ARTICLES, PRESSURIZED PNEUMATIC	2.2	<1%
HYPOCHLORITE SOLUTIONS	8	<1%
HAZARDOUS WASTE, SOLID, N.O.S.	9	<1%
RESIN SOLUTION	3	<1%
OTHER REGULATED SUBSTANCES, LIQUID, N.O.S.	9	<1%
LITHIUM ION BATTERIES	XXX	<1%
WASTE FLAMMABLE LIQUIDS, N.O.S.	3	<1%
CHLOROACETIC ACID, SOLUTION	6.1	<1%
STYRENE MONOMER, STABILIZED	3	<1%
SODIUM METHYLATE SOLUTIONS	3	<1%
CYCLOHEXANONE	3	<1%
PROPYLENE	2.1	<1%
HEXANES	3	<1%
ADHESIVES	3	<1%

Berkeley County, West Virginia, 2024

Commodity	Hazard Class	Carload% of total Hazmat
COMBUSTIBLE LIQUID, N.O.S.	CL	<1%
ACRYLIC ACID, STABILIZED	8	<1%
TOXIC LIQUID, INORGANIC, N.O.S.	6.1	<1%
HYDROGEN PEROXIDE, STABILIZED	5.1	<1%
METHANOL	3	<1%
FUEL, AVIATION, TURBINE ENGINE	3	<1%
TETRAHYDROFURAN	3	<1%
ACETONE	3	<1%
METHYL METHACRYLATE MONOMER, STABILIZED	3	<1%
ACETIC ACID, GLACIAL	8	<1%
HYDROFLUORIC ACID	8	<1%
CORROSIVE LIQUID, TOXIC, N.O.S.	8	<1%
ELEVATED TEMPERATURE LIQUID, N.O.S.	9	<1%
PAINT	3	<1%
ARGON, REFRIGERATED LIQUID	2.2	<1%
AIR BAG MODULES	9	<1%
ETHANOL AND GASOLINE MIXTURE	3	<1%
TOLUENE	3	<1%
CORROSIVE LIQUIDS, N.O.S.	8	<1%
SODIUM NITRATE	5.1	<1%
ISOPROPENYLBENZENE	3	<1%
TETRACHLOROETHYLENE	6.1	<1%
N-BUTYL METHACRYLATE, STABILIZED	3	<1%
PETROLEUM DISTILLATES, N.	XXX	<1%
SODIUM CHLORATE	5.1	<1%
HEPTANES	3	<1%
ISOPROPYLBENZENE	3	<1%
PHENOL, MOLTEN	6.1	<1%
AEROSOLS	2.2	<1%
CORROSIVE SOLID, BASIC, INORGANIC, N.O.S.	8	<1%
DICHLOROACETYL CHLORIDE	8	<1%
2-(2-AMINOETHOXY) ETHANOL	8	<1%
NITROCELLULOSE WITH ALCOHOL	4.1	<1%
BISULFITES, AQUEOUS SOLUTIONS, N.O.S.	8	<1%
LITHIUM ION BATTERIES CONTAINED IN EQUIP	XXX	<1%
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	<1%
BATTERY-POWERED VEHICLE	9	<1%
GASOLINE	3	<1%
HYDROGEN PEROXIDE, AQUEOUS SOLUTIONS	5.1	<1%
PENTAFLUOROETHANE	2.2	<1%
PENTAMETHYLHEPTANE	3	<1%
AEROSOLS	2.1	<1%

Berkeley County, West Virginia, 2024

Commodity	Hazard Class	Carload% of total Hazmat
FLUOROSILICIC ACID	8	<1%
VEHICLE, FLAMMABLE LIQUID POWERED	9	<1%
CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	<1%
POTASSIUM HYDROXIDE, SOLUTION	8	<1%
AMYL ACETATES	3	<1%
POLYMERIC BEADS, EXPANDABLE	9	<1%
TOLUENE DIISOCYANATE	6.1	<1%
ALKYL SULFONIC ACIDS, LIQUID	8	<1%
AZODICARBONAMIDE	4.1	<1%
EXTRACT, FLAVORING,LIQUID	3	<1%
LIQUEFIED GAS, N.O.S.	2.2	<1%
ALUMINUM CHLORIDE, SOLUTION	8	<1%
METAL CATALYST, DRY	4.2	<1%
NITROGEN, COMPRESSED	2.2	<1%
CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	<1%
DICYCLOPENTADIENE	3	<1%
ISOPROPANOL	3	<1%
FLAMMABLE LIQUIDS, TOXIC, N.O.S.	3	<1%
FLAMMABLE LIQUIDS, CORROSIVE, N.O.S.	3	<1%
PRINTING INK	3	<1%
PROPYLTRICHLOROSILANE	8	<1%
SELF-HEATING SOLID, ORGANIC, N.O.S.	4.2	<1%
1,1,1,2-TETRAFLUOROETHANE ETHANE	2.2	<1%
CARBON DIOXIDE	2.2	<1%
COMPRESSED GAS, N.O.S.	2.2	<1%
CORROSIVE LIQUIDS, FLAMMABLE, N.O.S.	8	<1%
DICYCLOHEXYLAMINE	8	<1%
FERRIC CHLORIDE, ANHYDROUS	8	<1%
LIGHTERS	2.1	<1%
SELF-REACTIVE SOLID TYPE D	4.1	<1%
SODIUM HYDROXIDE, SOLID	8	<1%
BATTERY FLUID, ACID	8	<1%
CAUSTIC ALKALI LIQUIDS, N.O.S.	8	<1%
DANGEROUS GOODS IN MACHIN	XXX	<1%
ETHYL ACETATE	3	<1%
ETHYL CHLOROACETATE	6.1	<1%
FERRIC CHLORIDE, SOLUTION	8	<1%
PETROLEUM GASES, LIQUEFIED	XXX	<1%
POTASSIUM PERMANGANATE	5.1	<1%
ENGINE, INTERNAL COMBUSTI	XXX	<1%
FLAMMABLE SOLIDS, ORGANIC, N.O.S.	4.1	<1%
ISOPRENE, STABILIZED	3	<1%

Berkeley County, West Virginia, 2024

Commodity	Hazard Class	Carload% of total Hazmat
POLYAMINES, LIQUID, CORROSIVE, N.O.S.	XXX	<1%
POTASSIUM NITRATE	5.1	<1%
AMMONIUM HYDROGENDIFLUORIDE, SOLID	8	<1%
ARTICLES CONTAINING MISCE	XXX	<1%
BENZYL CHLORIDE	6.1	<1%
CALCIUM	4.3	<1%
COATING SOLUTION	3	<1%
DICHLOROMETHANE	6.1	<1%
ETHANOLAMINE	8	<1%
METHYL TERT BUTYL ETHER	3	<1%
N-PROPANOL	3	<1%
OXIDIZING SOLID, N.O.S.	5.1	<1%
REFRIGERATING MACHINES	2.2	<1%
SODIUM HYDROGENDIFLUORIDE	8	<1%
TETRAETHYL SILICATE	3	<1%
TRIETHYLAMINE	3	<1%
XYLENES	3	<1%
1-HEXENE	3	<1%
ACETIC ACID SOLUTION	8	<1%
CASES, CARTRIDGE, EMPTY WITH PRIMER	1.4S	<1%
CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.	8	<1%
DANGEROUS GOODS IN MACHINERY	9	<1%
ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S.	3	<1%
ESTERS, N.O.S.	3	<1%
HYDROXYLAMINE SULFATE	8	<1%
LIFE-SAVING APPLIANCES, SELF INFLATING	9	<1%
MILITARY IMPEDIMENTA AND MIXED HAZARDOUS MATERIALS	XXX	<1%
SODIUM CHLORITE	5.1	<1%
SODIUM NITRITE	5.1	<1%
WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.	9	<1%
4-METHYLMORPHOLINE	3	<1%
AEROSOLS, FLAMMABLE,N.O.S.	2.1	<1%
AMINES, SOLID, CORROSIVE, N.O.S.	8	<1%
CARTRIDGES FOR WEAPONS, INERT PROJECTILE	1.4S	<1%
CHLOROBENZOTRIFLUORIDES	3	<1%
CHLOROSILANES, FLAMMABLE, CORROSIVE, N.O.S.	3	<1%
CYCLOHEXYLAMINE	8	<1%
FIRELIGHTERS, SOLID	4.1	<1%
FORMALDEHYDE SOLUTIONS, FLAMMABLE	3	<1%
LITHIUM BATTERIES, CONTAINED IN EQUIPMENT	9	<1%
LITHIUM BATTERY	9	<1%

Berkeley County, West Virginia, 2024

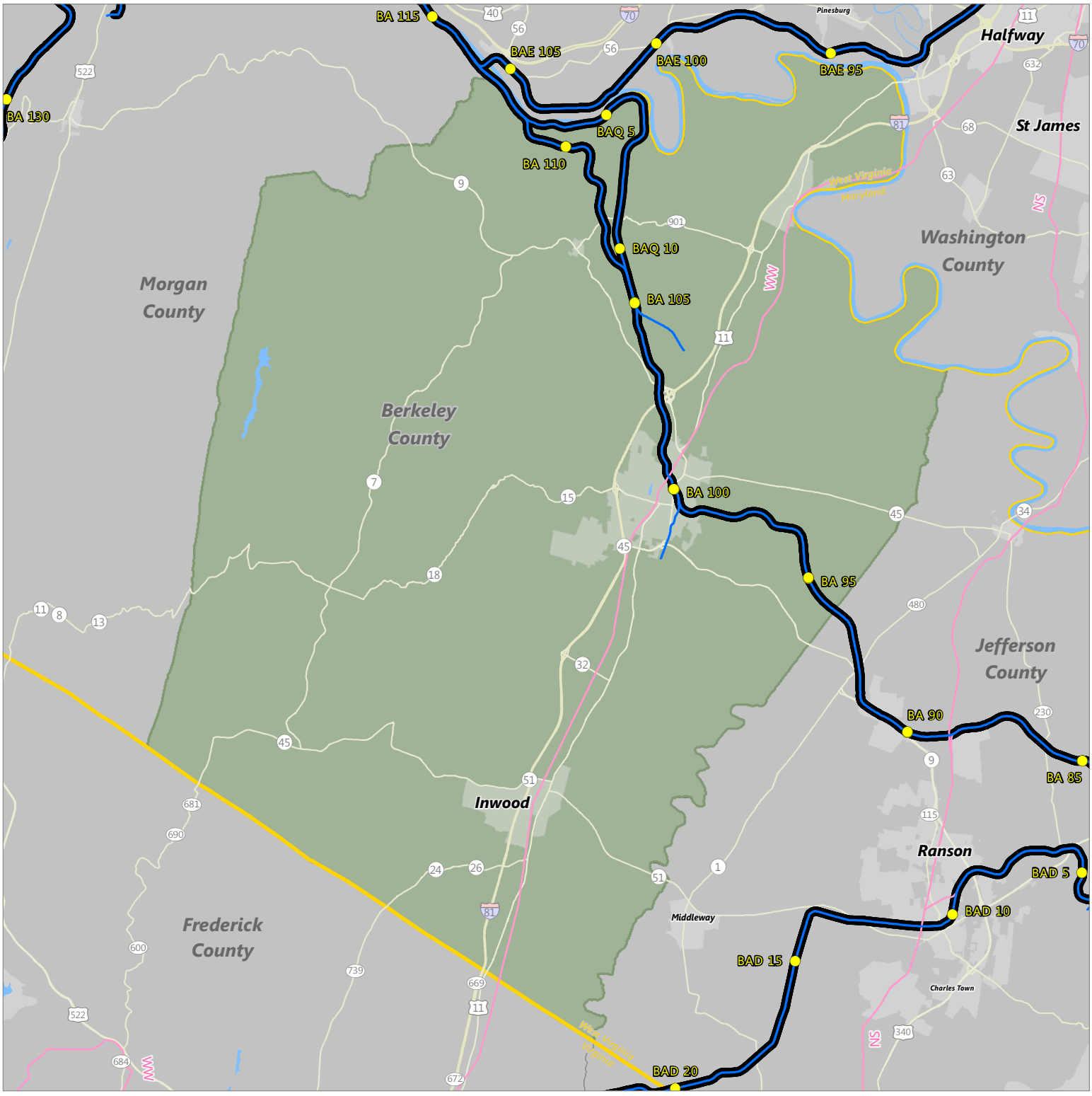
Commodity	Hazard Class	Carload% of total Hazmat
MAGNESIUM	4.1	<1%
MATCHES,SAFETY	4.1	<1%
METAL POWDERS, FLAMMABLE, N.O.S.	4.1	<1%
NITRIC ACID	8	<1%
NITRITES, INORGANIC, N.O.S.	5.1	<1%
NITROUS OXIDE	2.2	<1%
PAINT RELATED MATERIAL	3	<1%
PESTICIDES, LIQUID, TOXIC, N.O.S.	6.1	<1%
PHENYLTRICHLOROSILANE	8	<1%
PIPERAZINE	8	<1%
POLYESTER RESIN KITS	3	<1%
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I)	7	<1%
1-METHOXY-2-PROPANOL	3	<1%
2-CHLOROPROPANE	3	<1%
ACETYLENE, DISSOLVED	2.1	<1%
ALKYL SULFONIC ACIDS, SOLID	8	<1%
ALKYLPHENOLS, LIQUID, N.O.S.	8	<1%
BISULFITES, AQUEOUS SOLUTION, N.O.S.	8	<1%
BUTYL ACRYLATES, STABILIZED	3	<1%
CARBON	4.2	<1%
CHEMICALS UNDER PRESSURE, CORROSIVE, N.O.S.	2.2	<1%
CHEMICALS UNDER PRESSURE, N.O.S.	2.2	<1%
CHROMIUM TRIOXIDE, ANHYDROUS	5.1	<1%
COMPOUNDS, CLEANING LIQUID	3	<1%
CORROSIVE LIQUIDS, OXIDIZING, N.O.S.	8	<1%
CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.	8	<1%
CORROSIVE SOLIDS, TOXIC, N.O.S.	8	<1%
CORROSIVE SOLIDS, N.O.S.	8	<1%
DIMETHYL CARBONATE	3	<1%
DISINFECTANTS, LIQUID, TOXIC, N.O.S.	6.1	<1%
DISODIUM TRIOXOSILICATE	8	<1%
ENGINE STARTING FLUID	2.1	<1%
ETHERS, N.O.S.	3	<1%
ETHYLENE OXIDE	2.3	<1%
FLAMMABLE LIQUIDS, TOXIC, CORROSIVE, N.O.S.	3	<1%
GAS OIL	3	<1%
HYDROGEN PEROXIDE AND PEROXYACETIC ACID MIXTURE, STABILIZED	5.1	<1%
LEAD COMPOUNDS, SOLUBLE, N.O.S.	6.1	<1%
LIFE-SAVING APPLIANCES, NOT SELF INFLATING	9	<1%
LITHIUM METAL BATTERIES CONTAINED IN EQU	XXX	<1%
MALEIC ANHYDRIDE	8	<1%

Berkeley County, West Virginia, 2024

Commodity	Hazard Class	Carload% of total Hazmat
METAL CATALYST, WETTED	4.2	<1%
METHYL CYCLOHEXANE	3	<1%
METHYL FORMATE	3	<1%
NITRATES, INORGANIC, N.O.S.	5.1	<1%
NITROCELLULOSE PLASTICIZER	4.1	<1%
O-DICHLOROBENZENE	6.1	<1%
ORGANIC PEROXIDE TYPE C, LIQUID	5.2	<1%
ORGANIC PEROXIDE TYPE E, SOLID	5.2	<1%
ORGANIC PEROXIDE TYPE F, LIQUID	5.2	<1%
OTHER REGULATED SUBSTANCE	XXX	<1%
PAINT	8	<1%
PERCHLORIC ACID	5.1	<1%
PERMANGANATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.	5.1	<1%
PICOLINES	3	<1%
POLYCHLORINATED BIPHENYLS, SOLID	9	<1%
POTASSIUM CYANIDE	6.1	<1%
SODIUM CYANIDE	6.1	<1%
SODIUM FLUORIDE	6.1	<1%
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S.	4.1	<1%
STRONTIUM NITRATE	5.1	<1%
SULFURIC ACID, SPENT	8	<1%
TEAR GAS SUBSTANCES, SOLID, N.O.S.	6.1	<1%
THALLIUM COMPOUNDS, N.O.S.	6.1	<1%
TOXIC LIQUIDS, CORROSIVE, ORGANIC, N.O.S.	6.1	<1%
TOXIC SOLID, INORGANIC, N.O.S.	6.1	<1%
TOXIC SOLIDS, ORGANIC, N.O.S.	6.1	<1%
TURPENTINE	3	<1%
XYLIDINES, LIQUID	6.1	<1%
	Total 236	**100%**

Hazardous Material Routes

Berkeley County, West Virginia



Highlighted County
City
County
Hazmat Route
Street
CSX Rail Service
Foreign Rail
State Outline
Engineering Milepost

N
W E
S

Scale
1:219,666

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802 Emmett Rousch Drive
Suite B
Martinsburg, WV 25401

Dear Randy Lilly,

We welcome the opportunity at CSX Transportation to work with the communities where we operate, assisting in planning and training activities that will aid both our organizations should there be an incident.

The attached document and the information it contains is proprietary to CSXT and remains the property of CSXT. It is provided solely for the emergency planning purposes and may not be used for any other purpose.

In addition to the Hazardous Material Density Study, I encourage your community to work with the CSX Hazardous Materials Team in all of your planning efforts.

Also, in an effort to make training more available to more responders, we have developed a self-study training program for emergency responders, "Emergency Response to Railroad Incidents". This program covers basic issues such as responder safety, initial response procedures, locomotives and freight cars and paper work. It is designed for all levels of responders in fire, police, emergency management and emergency medical agencies. Personnel who complete this program and send completed quizzes back to us will receive certificates of completion. To receive a copy of this workbook, please logon to: http://www.nationsprint.com/clients/csx/ .To take the course online, please logon to: https://www.pathlms.com/transcaer/courses/26488

If I may be of further assistance please call me at (904) 366-5040 or email me at joe_taylor@csx.com

Sincerely,

Joseph Taylor

ENCLOSURE

APPENDIX 5
GLOSSARY

This appendix is a glossary of key terms and a list of acronyms used throughout the report. Definitions presented in this appendix may differ slightly from the common definitions of the terms; these definitions correspond to how the term is used (and its meaning) as part of the study.

LIST OF TERMS

Commodity Flow Study: A study to identify the types of hazardous materials transported on a variety of transportation systems (e.g., highway, railway, waterway, airway, pipeline, or at covered facilities).

Covered Facility: A facility that reports to a Local Emergency Planning Committee as part of Tier II reporting requirements under Title III of the Superfund Amendment and Reauthorization Act of 1986.

Covered Facility Analysis: An analysis of the hazardous materials used and stored by covered facilities. The analysis includes an identification of shipping routes, quantities shipped, and frequency of shipments.

Emergency: Any incident, whether natural or human-caused, that requires responsive action to protect life or property. Under the Robert T. Stafford Act, an "emergency" is an incident for which federal assistance is needed to supplement state and local efforts and capabilities to save lives and to protect property.

Extremely Hazardous Substance: A hazardous material recognized by the United States Environmental Protection Agency as having extremely toxic properties and thus necessitates additional safety measures during handling and transport.

Hazard Class: A system utilized by the United States Department of Transportation to classify the type of hazardous material in transport. There are nine (9) hazard classes: Explosives (Class 1), Gases (Class 2), Flammable Liquids (Class 3), Flammable Solids (Class 4), Oxidizers (Class 5), Toxics (Class 6), Radioactive (Class 7), Corrosives (Class 8), and Miscellaneous (Class 9).

Hazardous Material: A material that is (or can be) harmful to human health and the environment.

Highway Analysis: An analysis of hazardous materials transported along roadways in a

study area. The analysis is usually completed by visually monitoring select sites along the roadways and recording the hazardous materials that pass through the site. An analysis can also be conducted remotely through the use of waybills, shipping company reporting, etc.

Incident: An occurrence, natural or human-caused, that requires a response to protect life or property.

Placard: A sign or notice for display in a public place. For this document, the sign is the diamond or rectangular-shaped card attached to a truck and trailer labeling hazardous material shipments.

Threshold Planning Quantity: A quantity designated for each chemical on the list of extremely hazardous substances that triggers a notification by facilities to the State Emergency Response Commission that such facilities are subject to emergency planning requirements under SARA Title III.

LIST OF ACRONYMS

DOT	United States Department of Transportation
EHS	Extremely Hazardous Substance
EPCRA	Emergency Planning & Community Right-to-Know Act
FRA	Federal Railroad Administration
JHC	JH Consulting, LLC of West Virginia
LEPC	Local Emergency Planning Committee
SARA	Superfund Amendment and Reauthorization Act
SERC	State Emergency Response Commission
TPQ	Threshold Planning Quantity
USACE	United States Army Corps of Engineers
WV	West Virginia
WVDOT	West Virginia Department of Transportation
WWTP	Wastewater Treatment Plant