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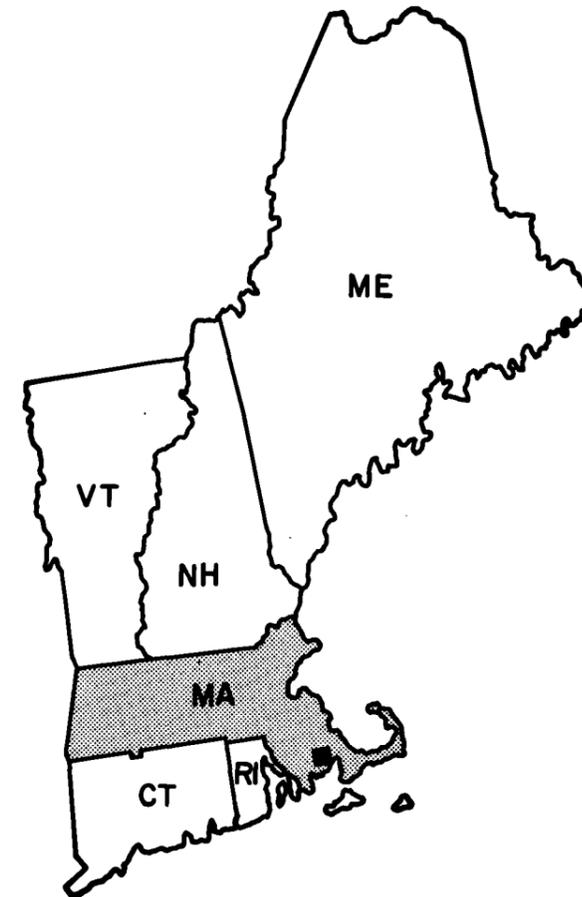
# Site Analysis Conrail Railyard New Bedford, Massachusetts

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Site Analysis  
Conrail Railyard  
New Bedford, Massachusetts

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## ABSTRACT

Historical aerial photography of the Conrail Railyard in New Bedford, Massachusetts, spanning the period from 1938 to 1985, was analyzed to document evidence of alleged PCB spills and illegal filling activities into the Acushnet River.

Findings at the Conrail Railyard included numerous ground stains, consistent patterns of ground discoloration, and a possible instance of the transferring of material from a railroad tank car to a tank truck or vice versa. Filling activity into the Acushnet River was first seen on 1967 imagery and still appeared ongoing on 1985 imagery.

The Environmental Protection Agency's (EPA) Environmental Photographic Interpretation Center in Warrenton, Virginia, a field station of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this study at the request of EPA Region 1. This analysis was completed in December 1986.

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## INTRODUCTION

This report presents an analysis of historical aerial photography of the Conrail Railyard in New Bedford, Massachusetts. It is intended to support an investigation of the pollution problem, particularly by polychlorinated biphenyls (PCBs), of the New Bedford Harbor; the Conrail Railyard is located along the western shore of the Acushnet River, just north of the harbor. Former employees of companies who received shipments of PCBs at the railyard have alleged that multiple spillages occurred during transfer of the PCBs from railroad tank cars to 55-gallon drums and tank trucks. Shipments of PCBs were received at the railyard from 1941 to 1977.<sup>1</sup>

In addition to evidence of the alleged PCB contamination, the Environmental Protection Agency (EPA) Region 1 also requested documentation of illegal dumping into the Acushnet River just east of the Conrail Railyard. The dumping activities have produced several fill areas of significant size.

Also at EPA Region 1's request, all imagery was analyzed for evidence of flooding. None was observed.

Aerial photography of the Conrail Railyard was obtained to represent the period from 1938 to 1985.<sup>2</sup> Historical black and white photography for the years 1938, 1951, 1956, 1961, 1967 and 1980, and color photography for 1962, 1971 and 1974 were used for this analysis. A current color mission was flown for EPA on December 19, 1985. Photographs for the years 1938, 1956, 1961, 1967, and 1974 were analyzed but not reproduced for this report due to the lack of significant changes or features.

The location of the Conrail Railyard is shown on Figure 1, a U.S. Geological Survey (USGS) 1:25,000 scale topographic map. Site boundaries or areas used in the analysis were determined from collateral information provided by EPA Region 1 and observations made from the aerial photography and do not denote legal property lines or ownership.

The EPA's Environmental Photographic Interpretation Center in Warrenton, Virginia, a field station of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this study at the request of EPA Region 1. This analysis was completed in December 1986.

<sup>1</sup>Collateral information supplied by EPA Region 1.

<sup>2</sup>For a complete listing of maps and photography used in this report, see the References section.



**FIGURE I** LOCATION MAP  
**CONRAIL RAILYARD** NEW BEDFORD NORTH, MASS. QUAD SCALE 1:25,000

## METHODOLOGY

A search of government and commercial aerial photographic sources was undertaken to obtain the best quality photography available of the site spanning the desired time frame. A listing of all maps and photography used for this report can be found in the References section.

The analysis was performed by stereoscopically viewing pairs of transparencies, backlit on a light table. By observing the site three-dimensionally, and at various magnifications, the analyst could search for objects, features, or "signatures" associated with different environmental conditions. The term "signature" refers to a combination of characteristics (such as color, tone, shadow, texture and size) which indicate a specific object or condition, even though the object itself is not identifiable from the photography.

Prints were made from coverages which reveal significant changes in the study area. Findings are annotated on overlays to these prints, or to maps of the study area, and full descriptions are provided in the accompanying text. The resolution quality of the original, transparent photography used by the analyst is degraded on the prints due to factors inherent in the printing process. Therefore, some objects or features identified from the original film and described in the text may not be clearly discernible, or even visible, on the photographic prints presented in this report.

It should be noted that site boundaries or areas used in this analysis were determined from collateral data provided by EPA Region 1 and observations made from the aerial photography and do not denote legal property lines or ownership.

In this report, a distinction is made between probable and possible identifications. Probable is used when a limited number of discernible signatures allows the analyst to be reasonably sure of a particular identification. Possible is used when few signatures are discernible, and the analyst can only infer an identification.

In addition, "ground discoloration" is used to describe a general darkening of the ground which appears to be the result of normal (although not implying harmless) railyard operations. "Ground stain" is used to identify small, isolated, dark areas whose signatures suggest a possible spill or liquid release.

## AERIAL PHOTO SITE ANALYSIS

SEPTEMBER 28, 1951 (FIGURE 2)

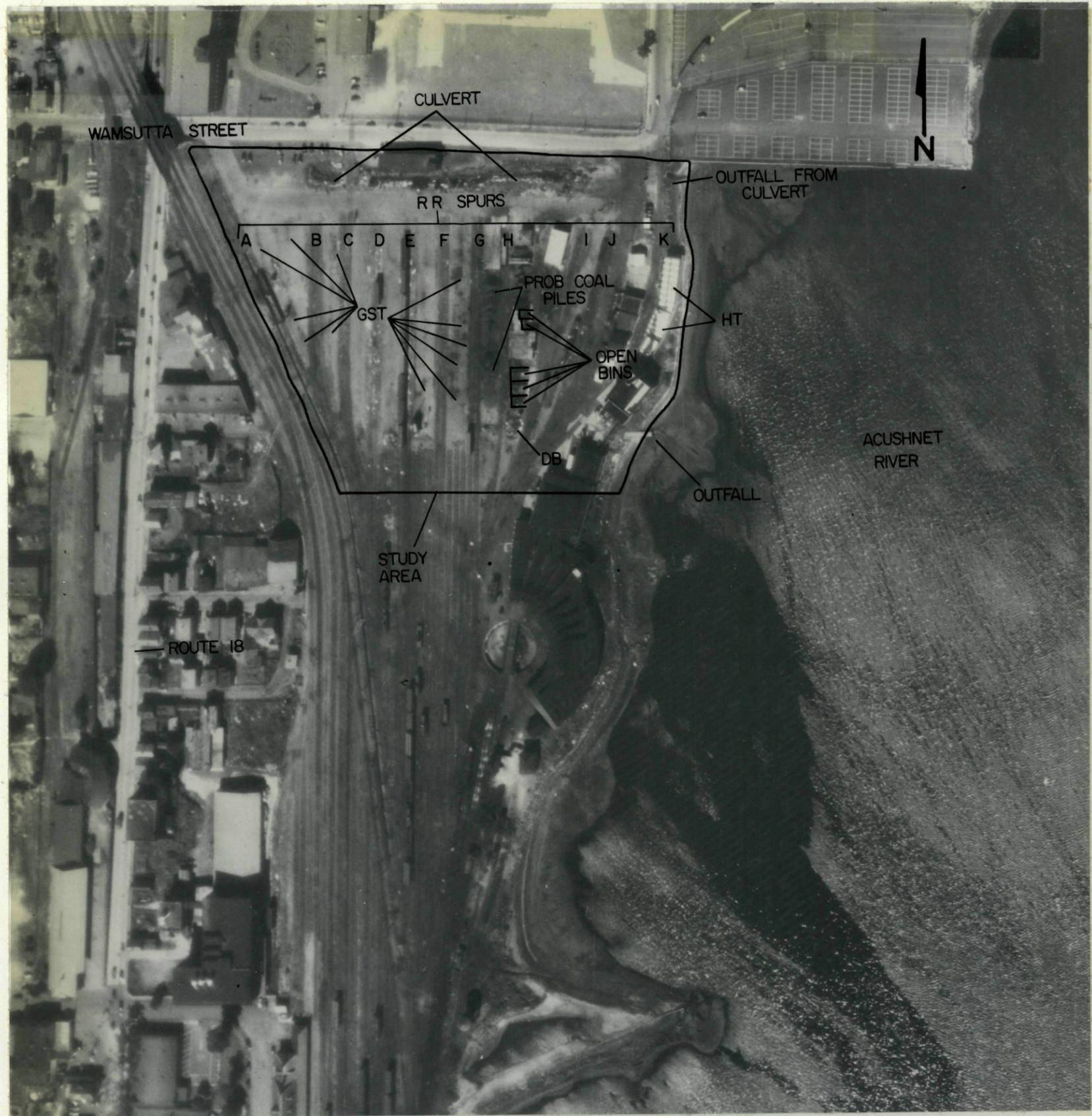
As requested by EPA Region 1, only the northern portion of the railyard, as outlined on Figure 2, was analyzed. The railroad spurs in the study area are lettered A-K (from west to east) for identification/location purposes.

An open, unlined culvert runs just south of and parallel to Wamsutta Street. This culvert is suspected of carrying PCB contamination from the railyard into the Acushnet River. No staining is evident within the culvert but light-toned material, probably debris (not annotated), appears along its entire length. The culvert's outfall to the Acushnet River is visible, as well as another outfall to the south. Light-toned material or debris (not annotated), similar to that seen in the culvert, is visible along spurs D and E.

Numerous very dark ground stains (GST) are visible between spurs F and G, with generally lighter stains between spurs E and F and spurs A and C. Uniform ground discoloration is seen along all spurs except A, D and E. The darkest discoloration is along spurs B, G and H. Two large, probable coal piles between spurs G and H probably contribute to the intensity of the discoloration along these two spurs.

Other potential sources of contamination within the study area include a series of horizontal tanks (HT), five open bins partially filled with dark-toned material (probably coal), and a pile of debris (DB).

No tank cars are present in the study area. Tank cars are visible in the railyard south of the study area, but none appear to be in the process of transferring their contents.



- LEGEND
- DB - Debris
  - FA - Fill Area
  - GST - Ground Stain
  - HT - Horizontal Tank
  - MM - Mounded Material
  - SL - Standing Liquid
  - V - Vehicles
  - Historical Boundary
  - Study Area Boundary

FIGURE 2  
CONRAIL RAILYARD

SEPTEMBER 28, 1951

APPROX SCALE 1:2,500

APRIL 10, 1962 (FIGURE 3)

Light-toned probable debris (not annotated) is still visible all along the culvert. A pile of similar material is seen between spurs D and E. A black liquid appears to be flowing into the culvert from a small pool at the end of spur F. Possible ground stains are evident within the culvert near the point where the black liquid is entering it. A similar black pool of standing liquid (SL) is seen on the eastern side of spur F near its terminus. A string of seven tank cars is visible farther south on spur F. (All other cars in the study area are boxcars.)

Numerous black ground stains with an oil-sheen appearance are seen between spurs J and K. Similar ground stains appear in the northwestern section of the railyard between spurs A and C, both of which extend to Wamsutta Street.

The general pattern of ground discoloration is the same as in 1951, except that spur E is now discolored, and discoloration is visible only along the west side of spur C. The number of open bins has increased (not all are individually annotated), and all appear to be at least partially filled with coal. A loading/unloading platform has been added alongside spur B and is uniformly black in color.

A shallow pit with probable standing liquid was seen between spurs D and E on 1961 imagery. The probable liquid appears very dark-toned and is surrounded by a very light-toned material that rings the pit.



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FIGURE 3  
CONRAIL RAILYARD

APRIL 10, 1962

APPROX SCALE 1:2,800

OCTOBER 8, 1971 (FIGURE 4)

In general, activity in the northern portion of the railyard appears to have decreased significantly since 1967 (in which the level of activity was similar to that of 1962). (Imagery for 1967 was analyzed but not reproduced for this report.) Most of the buildings and features in this area, including the horizontal tanks and open bins, have been removed. Several mounds of debris and a new building are seen between spurs G and J. Another new building is visible north of spur H. Spur I appears to have been removed. White material, refuse or debris is scattered throughout the railyard.

The open portion of the culvert is mostly covered by vegetation and shows no evidence of significant ground staining. However, several dark ground stains are seen on an access road running over the culvert, near its outfall to the Acushnet River.

Ground stains are visible throughout the railyard, most notably between spurs B and D and spurs E and G. Ground discoloration is seen along the length of spurs B, C, E and F. Widespread ground discoloration is visible between spurs G and K. The probable coal piles seen in 1951, 1962 and 1967 are no longer present, but the ground discoloration in this area appears very similar to that seen in 1962 and probably is attributable to coal.

Two tank cars are seen on spur C. Alongside the southern tank car is a yellow probable tank truck (with a white cab). A dark ground stain lies next to the tank truck, on its eastern side. Probable smoke or steam rising near the rear of the truck suggests that a transfer of contents may be in progress.

Filling activity into the Acushnet River was first seen in two areas (FA) on 1967 imagery; their extent in 1967 is annotated on Figure 4. Herman Melville Boulevard has been constructed since 1967 and is a rough approximation of the shoreline prior to 1967. All of the light-toned area east of Herman Melville Boulevard and south of the culvert outfall, excluding the outlined 1967 fill areas, has been filled since 1967. The fill material is fairly uniform in color and is medium-textured.



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FIGURE 4  
CONRAIL RAILYARD

OCTOBER 8, 1971

APPROX SCALE 1:2,800

SEPTEMBER 9, 1980 (FIGURE 5)

Very little evidence of activity is seen in the railyard. The culvert is obscured by vegetation.

Numerous ground stains are again seen between spurs E and G. A large, very dark stain is seen along spur A near several boxcars. All of the spurs show ground discoloration along their length; spur B is significantly darker than the rest, especially at its terminus (next to the platform). Most of the area between spurs G and K remains very darkly discolored.

Imagery for 1974 (not reproduced in this report) shows very little filling activity into the Acushnet River since 1971. From 1974 to 1980, however, significant filling activity has resulted in the formation of three fill area protrusions into the river. The two northernmost protrusions are covered with mottled, rough-textured material and do not appear currently active. The southernmost one has a more uniformly dark, finer-textured material and access roads that currently appear in use.

In the small fill area to the north, only a small amount of filling has occurred since 1971.



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FIGURE 5  
CONRAIL RAILYARD

SEPTEMBER 9, 1980

APPROX SCALE 1:4,100

DECEMBER 19, 1985 (FIGURE 6)

Again, very little evidence of activity is seen in the railyard. Patches of snow are scattered throughout the area. Spur J is not clearly visible and may have been removed. The culvert has been dug out and deepened, and is mostly obscured by shadow.

Significant ground staining is again visible between spurs E and G and near the terminus of spur B. The ground discoloration pattern along the spurs remains relatively unchanged from 1980.

The fill areas have not expanded any further into the Acushnet River since 1980; however, all show significant dumping and spreading of a dark grey, medium-textured material that completely covers their surfaces. Also visible on the fill areas are two new buildings, a trench, a probable open storage area, mounds of the grey material (MM), and numerous vehicles (V) including a crane, tractor trailers and earthmoving equipment. Two docks extend out from the fill areas. Eight boats are moored at the northern dock.



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  - - - Study Area Boundary

FIGURE 6  
CONRAIL RAILYARD

DECEMBER 19, 1985 13

APPROX SCALE 1:3,000

REFERENCES

AERIAL PHOTOGRAPHY

<u>Date</u>	<u>Agency</u>	<u>Mission Code</u>	<u>Frame #</u>	<u>Orig. Scale</u>	<u>EPIC Frame #</u>
December 13, 1938	USGS <sup>1</sup>	GSF	6:1,2	1:24,000	15026,15027
September 28, 1951	EPIC <sup>2</sup>	J	4632-4634	1:8,900	4262-4264
May 1, 1956	NOS <sup>3</sup>	56W-2	390-392	1:30,000	15624-15626
April 20, 1961	NOS	61-S	7144,7145	1:36,000	14812,14813
April 10, 1962	NOS	62S-1	5366-5368	1:15,000	14805-14807
June 1, 1967	NOS	67S-1	1971-1974	1:30,000	14808-14811
October 8, 1971	NOS	71L-1	100-701: 9706-9709	1:20,000	14802-14804, 15623
April 20, 1974	NOS	74E-5	100-84: 4846-4849	1:16,800	14798-14801
September 9, 1980	ASCS <sup>4</sup>	25005	480:83-85	1:40,000	15141-15143
September 28, 1980	ASCS	25005	780:8-10	1:40,000	15138-15140
December 19, 1985	EPIC	85/153	62,71	1:24,000	85/153:62,71

MAP

<u>Source</u>	<u>Name</u>	<u>Scale</u>	<u>Date</u>
USGS	New Bedford North, MA	1:25,000	1979

<sup>1</sup>U.S. Geological Survey, U.S. Department of the Interior

<sup>2</sup>Environmental Photographic Interpretation Center, U.S. Environmental Protection Agency

<sup>3</sup>National Ocean Survey, U.S. Department of Commerce

<sup>4</sup>Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture