

June 1996

# SUPERFUND

## Barriers to Brownfield Redevelopment





**Resources, Community, and  
Economic Development Division**

B-271652

June 17, 1996

The Honorable John Chafee  
Chairman, Committee on Environment  
and Public Works  
United States Senate

The Honorable Robert Smith  
Chairman, Subcommittee on Superfund,  
Waste Control and Risk Assessment  
Committee on Environment  
and Public Works  
United States Senate

Over the past several decades, manufacturing has been declining in many of the nation's cities. When the businesses closed, they left abandoned and idled properties commonly known as "brownfields," which are sometimes contaminated with chemical wastes from the manufacturing processes. Because, in part, of the high cost of assessing the sites to determine the nature and extent of contamination and to clean them up in accordance with federal and state environmental laws, some new businesses have chosen to locate on uncontaminated sites outside of urban areas, known as "greenfields." These decisions lead to the loss of tax revenue and employment in central city neighborhoods. Lenders and developers are wary of investing in such contaminated property because, under the environmental laws, they could be held liable for cleaning up the contamination. They have often cited the liability provisions in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, as one of the major disincentives to redeveloping brownfields. In June 1995, we reported on the barriers, including liability under CERCLA, to redeveloping urban industrial property.<sup>1</sup>

The Senate's proposed legislation to reauthorize Superfund, S. 1285, seeks to encourage local governments to redevelop brownfields by addressing two of the barriers to redevelopment: liability under the Superfund legislation and the costs of assessing the sites. The bill would protect lenders and property purchasers from Superfund liability under certain circumstances. It also proposes to assist with the costs of assessing the sites by providing interest-free loans of \$100,000 per year, up to a total of \$200,000 per site, which local governments could use to cover these costs.

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<sup>1</sup>Community Development: Reuse of Urban Industrial Sites (GAO/RCED-95-172, June 30, 1995).

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To help you evaluate whether these provisions in S. 1285 would encourage redeveloping the brownfields in the nation's cities, you asked us to provide information on (1) what the universe of potential brownfield sites nationwide is, (2) what legal barriers Superfund presents for redeveloping brownfields, and (3) whether the proposed loans to local governments are likely to be sufficient for conducting site assessments.

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## Results in Brief

Abandoned or idled industrial sites that could be classified as brownfields probably total hundreds of thousands of acres, but no official nationwide count exists. The researchers at the Urban Land Institute, a nonprofit research organization involved in urban issues, estimate that about 150,000 acres of abandoned industrial land exist in the nation's major cities. This number represents the lower end of the potential estimates because it excludes some types of commercial properties, such as ones with underground storage tanks and former dry cleaners, that could be classified as brownfields. Some municipalities also made their own estimates of brownfield acreage within their borders; these estimates range from hundreds to thousands of acres. Because the cities attempting to develop brownfield inventories used different definitions of brownfields and because many cities have not completed an inventory yet, precise nationwide estimates are difficult to make.

Superfund's liability provisions make brownfields more difficult to redevelop, in part, because of the unwillingness of lenders, developers, and property owners to invest in a redevelopment project that could leave them liable for cleanup costs. While brownfields usually are not contaminated seriously enough to become Superfund sites, these parties still fear that they could be sued for cleanup costs if they become involved with a contaminated site. For example, as a result of the liability problem and the general riskiness of investing in redeveloping brownfields, banks sometimes refuse to lend funds for this purpose. S. 1285 seeks to lower these barriers by exempting from liability both lenders and property purchasers under certain conditions and by supporting the state programs that provide protection from the states' liability laws to the parties that perform voluntary cleanups.

Officials who have overseen brownfield redevelopment projects told us that the proposed interest-free loans of \$100,000 per year, up to a total of \$200,000, would be sufficient to cover the average costs of assessing the contamination at a single site and preparing a formal site cleanup plan.

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However, the assessment costs for very large properties or those with complex contamination might exceed either the annual or total loan limit.

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## Background

Under CERCLA, the Environmental Protection Agency (EPA) can compel the parties responsible for hazardous waste contamination to pay to clean up sites. The cleanup costs can be considerable. EPA estimates that the average cost to clean up a site on the National Priorities List (NPL), its list of highly contaminated sites, is \$26 million. Although most brownfields are not highly contaminated, cities, lenders, and developers cite the possibility that the liability provisions in CERCLA could be applied to these properties as a major barrier to redeveloping them. Under CERCLA, the responsible parties are strictly liable for cleanup costs—they can be compelled to perform cleanups—and can be subject to “joint and several” liability. Under strict liability, a responsible party is liable regardless of whether the party is at fault. Under joint and several liability, each party can be held responsible for the entire cost of the cleanup. Most states have similar liability laws and develop their own lists of the sites needing cleaning up.

EPA defines brownfields as “abandoned, idled or underused industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.” When industries choose to avoid such potential problems by locating on uncontaminated sites rather than on brownfields, they may seek suburban “greenfields.” Although these sites may require building additional infrastructure, such as access roads and sewer systems, that brownfield sites would not, the developers may still view greenfields as more cost-effective than the sites requiring a cleanup. When the developers choose greenfields over brownfields, city residents lose employment opportunities, city governments lose tax revenue, and the new development contributes to urban sprawl.

Several legislative proposals that would address brownfield issues, including S. 1285, have been introduced. Also, the President recently proposed tax incentives for those who voluntarily clean up brownfield properties. Besides these proposals, other executive agencies have provided funds for brownfield redevelopment.<sup>2</sup> EPA issued a “brownfields action agenda” in 1995, which, among other things, provides 50 grants to local governments to fund a wide variety of 2-year demonstration projects that address brownfield problems. It has also removed nearly 28,000 sites

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<sup>2</sup>The Department of Housing and Urban Development and the Department of Commerce also sponsor research and provide technical assistance on redeveloping industrial sites.

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from its list of potential NPL sites, thereby potentially stimulating redevelopment at these sites by reducing the possibility of Superfund liability. Additionally, EPA clarified its enforcement policies toward lenders, property purchasers, and certain property owners to alleviate their concerns and facilitate their involvement in the cleanup and redevelopment of brownfields.

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## Hundreds of Thousands of Brownfield Acres May Exist in U.S. Municipalities

The abandoned or idled industrial sites that could be classified as brownfields probably number in the tens of thousands, totaling hundreds of thousands of acres, but no official nationwide count exists. Some of the research and advocacy organizations involved in urban issues have developed estimates, and municipalities have also estimated the potential number of brownfield sites, or acreage, within their borders. However, any estimate of the number of brownfields is likely to be imprecise because the cities and others measuring the number of brownfields often use different techniques and definitions.

The researchers at the Urban Land Institute estimated that about 150,000 acres of abandoned or underused industrial land exist in major U.S. cities.<sup>3</sup> This estimate excludes some commercial properties that could also be classified as brownfields; those excluded are sites with underground storage tanks, such as former gas stations, or dry cleaners. Therefore, this estimate represents the lower end of the range of estimates. While the federal government and the states have not identified and listed brownfield properties, several local governments that received grants under EPA's brownfields pilot program have also developed estimates of brownfield acreage within their borders. (See table 1).

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<sup>3</sup>The researchers at the Urban Land Institute reached this estimate by identifying the acreage devoted to industrial use in 10 major cities in the 1950s and 1960s. It then compared this acreage with current estimates of vacant land in these cities and projected the results to other cities where the population exceeded 25,000 in 1970.

**Table 1: Estimates of Brownfield Acreage in Selected Municipalities That Received Grants Under EPA's Brownfields Program**

Location	Population (1992) <sup>a</sup>	Number of brownfield acres <sup>b</sup>
Birmingham, AL	265,000	500 to 1,000 <sup>c</sup>
Bridgeport, CT	137,000	500
Indianapolis, IN	747,000	1,000
Baltimore, MD	726,000	450
Cuyahoga County, OH	1,411,000	40,000

<sup>a</sup>Source: County and City Data Book, Bureau of the Census, 1994.

<sup>b</sup>Source: Discussions with municipal officials in these cities.

<sup>c</sup>Note that these estimates are not strictly comparable because local governments did not always use the same definition of a brownfield site. For example, officials in Bridgeport, Connecticut, and Baltimore, Maryland, identified properties in limited areas of these cities, focusing on the properties believed to be contaminated, while Cuyahoga County officials included all abandoned industrial and commercial properties throughout the entire county.

In addition, the U.S. Conference of Mayors, an organization for local government issues, recently surveyed its member cities about the amount of brownfield acreage in their cities. (See app. I for a summary of the survey results for cities with populations over 100,000.) As with the cities participating in EPA's brownfields program, these estimates varied considerably, from a low of 39 acres in Houston (the estimate was limited to a 20-square-mile area of the city targeted for redevelopment) to a high of 14,000 acres in Cleveland, depending, in part, on how the cities defined and counted their brownfields.

The researchers and the cities have used different techniques and definitions in measuring the number of brownfields. For example, the Urban Land Institute's estimate used a relatively narrow definition of a brownfield site because it focused primarily on the industrial corridors in larger cities. The number of brownfield acres could actually be greater than that estimate if it were based on the broader definitions that some local governments used in preparing their own estimates. Table 2 outlines the ways in which brownfield definitions vary.

**Table 2: Various Definitions of Brownfield Properties**

<b>Factors defining a site as a brownfield</b>	<b>Broad definition includes</b>	<b>Narrow definition includes</b>
Size of site	Small properties such as gas stations and large multiple-acre sites	Only properties large enough to support significant redevelopment
Location	Industrial properties in any location, including small towns and rural areas <sup>a</sup>	Industrial properties in large central cities
Level of contamination	All abandoned industrial property regardless of whether contamination is known to be present <sup>b</sup>	Property where contamination is perceived or identified
Current status of site	All abandoned property and property not available for redevelopment because the owner has decided not to sell <sup>c</sup>	Abandoned industrial property only

<sup>a</sup>EPA's grant program uses this inclusive definition. In addition to its grants to large cities, EPA recently awarded grants to several small Oregon towns to redevelop abandoned lumber mills and to a coalition of Chicago suburbs.

<sup>b</sup>It is difficult to determine in advance whether suspected brownfields are, in fact, contaminated. For example, the city of Chicago is comparing currently vacant properties with old fire department maps of the city to identify those properties likely to be contaminated. These maps detail the former industrial or commercial activity at these sites and, therefore, the potential for contamination.

<sup>c</sup>Owners may avoid selling contaminated properties because they fear drawing attention to the contamination and thus incurring cleanup costs.

Source: Discussions with municipal officials involved in brownfield inventories and brownfield researchers.

## CERCLA's Liability Provisions Raise a Legal Barrier to Redeveloping Brownfields

The potential of being held liable under CERCLA for the contamination on brownfield properties is a significant barrier to redevelopment, according to lenders, property purchasers such as developers, and property owners. Most brownfields are not likely to be added to the list of potential NPL sites because they are not severely contaminated. However, these investors still are wary of the cleanup liability provisions of both federal and state legislation because these can apply even at non-NPL sites. As a result, lenders and developers may avoid investing in potentially contaminated properties, and current owners may avoid selling them. To lower the barriers to brownfield redevelopment, S. 1285 would limit the liability of lenders and such property purchasers as developers under certain conditions and also would provide assistance for the state programs that encourage the voluntary cleanup of hazardous waste sites. However, these



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initiatives will not remove all barriers to brownfield redevelopment, such as the initial cleanup costs or high urban property taxes, that may still make them unattractive to business in comparison with suburban greenfields.

The liability for the costly cleanup of environmental contamination is a barrier to brownfield redevelopment because it discourages lenders, developers, and property owners from participating in these projects. Under CERCLA, the owners of property containing hazardous substances are among those who can be held liable for the cleanup costs incurred by EPA, the states, and other responsible parties, regardless of whether the property is currently listed on the NPL.<sup>4</sup> The lenders who hold a security interest in contaminated property may be considered property owners under CERCLA if they participate in the management of the property. The developers who purchase property may also become liable for any contamination later found at the site. Former property owners may also be liable for the cleanup costs if the contamination occurred during their ownership of the property. Thus, even the suspicion of current or prior contamination may make lenders less willing to provide funds, developers less willing to purchase property, and owners less willing to place their property on the real estate market.

The Congress and EPA have already taken some steps to limit lenders' liability. Under CERCLA, a party (such as a bank) that holds the evidence of ownership (such as a mortgage) in the property to protect its interest, and does not participate in the management of the property, is not considered a property owner. However, the statute does not define what actions constitute "participation in the management of the contaminated property," and the courts have given varying meaning to this phrase. As a result, many lenders are reluctant to finance the purchase of property they suspect is contaminated,<sup>5</sup> or to foreclose on such property in order to avoid the potential liability for cleanup. In an attempt to clarify these matters, EPA issued a rule in 1992 that outlined the actions a lender could

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<sup>4</sup>However, as mentioned earlier, most urban industrial properties would not be contaminated enough to meet EPA's criteria for adding sites to the NPL. In addition, EPA has slowed the rate of the NPL's annual growth. It plans to add fewer than 50 sites per year, far fewer than the number of brownfield properties.

<sup>5</sup>For example, a survey by the Independent Bankers Association of America showed that one in five community banks reported a mortgage default because of environmental contamination, and three out of four of the banks said that they will not lend funds when they identify environmental contamination.

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take without becoming subject to liability.<sup>6</sup> However, in 1994 a federal appeals court held that EPA was not authorized to issue the rule. After the rule was invalidated, EPA and the Department of Justice issued a policy stating that they intend to apply the provisions of the rule when deciding whether to take enforcement action against lenders. However, the lenders can still be sued by third parties seeking contributions for the cost of the cleanup.

The Senate bill proposes two actions specifically designed to lower CERCLA's liability barriers to redeveloping brownfields.<sup>7</sup> First, the bill would define in detail the circumstances under which a lender who holds a security interest could act to protect that interest without becoming liable for cleanup costs. It also places a cap on the total amount that lenders would have to pay in the event they are liable. Second, the bill would limit the liability of certain purchasers of property, such as developers, if they assess a site for contamination before buying it and find none. Because the Senate bill does not exempt property owners from liability, these owners may continue to avoid selling contaminated properties because they fear drawing attention to the contamination and thus incurring cleanup costs. However, the bill authorizes funds from the Superfund trust fund to be used to help the states develop their voluntary cleanup programs. These programs often provide liability relief from the states' hazardous waste laws to developers or property owners that volunteer to clean up contaminated sites.

Resolving CERCLA's liability concerns may not address all of the barriers to redeveloping brownfields. According to representatives of several large banks, the contamination at brownfields still generally makes them risky investments. Because of the potential contamination, developers have difficulty in predicting what the cost to clean up a site will be and when it will be ready for redevelopment; as a consequence, a return on the investment is uncertain in comparison with the potential return on a project on a greenfield site. Lenders, developers, and property owners could also be liable under other federal laws, such as the Resource

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<sup>6</sup>EPA has also issued other guidance documents to encourage brownfield redevelopment. These include guidance for prospective purchasers that allows the agency to enter into agreements with prospective property purchasers not to sue them for contamination existing at the time of the purchase. EPA has also stated that it will not take action against the owners of property located over groundwater contaminated by sources outside of the property.

<sup>7</sup>The Senate bill proposes other significant changes to CERCLA's liability provisions that are not directly related to brownfield redevelopment. For example, the bill would also establish a process for allocating the cleanup costs among responsible parties and require the Superfund trust fund to pay the costs allocated to insolvent parties, certain costs related to waste disposed of before 1981, and other costs. These changes could affect decisions at brownfield sites.

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Conservation and Recovery Act, or the states' hazardous waste laws, potentially increasing costs and slowing down the project.

Also, it may still be difficult for some of these urban industrial sites to compete with greenfields even if they are not contaminated. Although brownfield sites have some advantages for developers, such as having the necessary water, power, and road infrastructure in place to support a business, while greenfield sites may lack this infrastructure, some brownfield properties present other problems that can be associated with urban areas, such as higher property taxes caused by a decline in the tax base. These problems may be even more intractable barriers to redevelopment than Superfund.

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## Loan Provisions in S. 1285 Should Cover Most Costs of Site Assessments

The interest-free loans of \$100,000 to \$200,000 to municipalities proposed in S. 1285 to fund site assessment activities should be sufficient to cover the average cost at a brownfield site. Before brownfields can be redeveloped, it is necessary to perform a site assessment to determine the nature and extent of the contamination present. Because the site assessment requires research into a site's history and a technical analysis of the site's conditions, a substantial expenditure may be involved. For most brownfield sites, assessment costs could range from an average of \$60,000 to \$85,000 to more than \$200,000; thus, the loan amounts proposed in S. 1285 would cover the costs in most cases. However, the costs could be higher for very large sites or those with complex contamination.

Conducting a site assessment is the first step in deciding how to clean up and redevelop a site. The parties conducting these assessments generally use standard processes developed by the American Society for Testing and Materials (ASTM).<sup>8</sup> Under this system, the property owners, investors, or lenders hire a contractor to conduct a Phase I assessment. This phase involves identifying potential contamination by (1) reviewing the site's historical records, (2) interviewing those with knowledge of the former activities at the site, and (3) visually inspecting the site for physical evidence of hazardous waste. If the Phase I assessment turns up any evidence of environmental contamination, a Phase II assessment is necessary. In this phase, environmental professionals identify the nature and location of the contamination through sampling and analyzing materials from the site's structures and environmental media, such as soil and groundwater. As a final stage, the environmental professionals

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<sup>8</sup>ASTM is a nonprofit organization that writes standards and testing methods for various products and services, including environmental services.

prepare a plan for cleaning up the contamination identified in Phase II. These plans are often subject to review and approval by the local or state government.

We interviewed cleanup contractors and city officials that have overseen the assessment and redevelopment of brownfields to determine the costs of assessing a 10- to 20-acre site. These officials told us that developers are typically interested in properties ranging from 10 to 20 acres in size because these would support a substantial new business, such as a manufacturing facility or a business park. Some small commercial sites, such as former gas stations, are often consolidated into larger parcels to be economically viable for redevelopment. See table 3 for a summary of these officials' estimates.

**Table 3: Estimated Costs of Performing Site Assessments**

<b>Assessment activity</b>	<b>Average costs</b>	<b>High range of costs</b>
Phase I review	\$1,000 - \$5,000	\$10,000
Phase II review	\$50,000 - \$70,000	\$150,000
Cleanup plan	\$10,000	\$50,000
<b>Total</b>	<b>\$61,000 - \$85,000</b>	<b>\$210,000</b>

On the basis of their experience, these city officials and a contractor concluded that the proposed loan of \$100,000 per year would be sufficient to assess a site and prepare a cleanup plan for most sites. Costs in the high range could be encountered at larger properties or sites with complex contamination, such as those with extensive groundwater contamination, which is costly to assess. These sites could require more than the proposed \$100,000 per year and could also occasionally exceed the \$200,000 loan total. Local officials told us that some flexibility to exceed the \$100,000 per year limit and the \$200,000 total would be helpful for such sites.

## Agency Comments

We provided a draft of this report to EPA for its review and comment. We met with EPA officials that manage EPA's brownfield initiatives, including the Director of the Outreach and Special Projects Staff in the Office of Solid Waste and Emergency Response, and an attorney with the Office of Enforcement and Compliance Assurance. They generally agreed with the information in the report. However, they pointed out that the estimates of the number of brownfields in the United States vary widely and that the Urban Land Institute's estimate is likely to be conservative. We have provided more details on the sites potentially excluded from this estimate.

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The officials also explained that the loan program provided for in S. 1285 could be difficult and costly for EPA to administer and instead preferred the provision of grants to local governments. They also noted a number of policies that EPA has issued to help remove some of these liability barriers to brownfield redevelopment. We have recognized some of these policies, as appropriate, throughout the report.

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## Scope and Methodology

To estimate the inventory of brownfields in the United States, we contacted the research organizations attempting to inventory brownfields. We also contacted local officials in five cities that may have developed an inventory as part of their application for a grant under EPA's brownfields pilot program. To identify the difficulties in redeveloping brownfields, we interviewed federal officials involved in EPA's brownfields program, officials of five states' voluntary cleanup programs, local officials with experience in redeveloping brownfields, and representatives of lending institutions. To determine the potential cost of assessing brownfield sites, we contacted city officials in eight cities that have already redeveloped brownfield properties and environmental cleanup contractors with experience in working with brownfields. Because of time constraints, we could not independently survey cities to identify the number of brownfield properties within their boundaries and relied on the information that various cities had already compiled. We also reviewed the existing literature on identifying and redeveloping brownfields. We conducted our review from November 1995 through April 1996 in accordance with generally accepted government auditing standards.

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As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days after the date of this letter.

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Please call me at (202)512-6112 if you or your staff have any questions about this report. Major contributors to this report are listed in appendix II.

A handwritten signature in black ink, appearing to read "P. F. Guerrero". The signature is stylized with a large, looped initial "P" and a long, sweeping horizontal stroke at the end.

Peter F. Guerrero  
Director, Environmental  
Protection Issues

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# Results of Conference of Mayors' Survey of Brownfields

The U.S. Conference of Mayors, an organization for municipalities, completed a survey of its member cities in January 1996. The survey asked the cities to provide information on the brownfields within their borders. Table I.1 summarizes the survey results for cities with populations over 100,000, for those cities that provided estimates in acres.

**Table I.1: Results of U.S. Conference of Mayors' Survey of Brownfields**

Location	Population (1992) <sup>a</sup>	Number of brownfield acres <sup>b</sup>
San Francisco, CA	729,000	831
Denver, CO	484,000	8,400
Fort Wayne, IN	174,000	2,975
Gary, IN	117,000	1,281
Louisville, KY	271,000	5,500
Minneapolis, MN	363,000	2,000
St. Louis, MO	384,000	1,000
Lincoln, NE	197,000	50
Newark, NJ	268,000	203
Rochester, NY	234,000	293
Cleveland, OH	503,000	14,000
Dayton, OH	183,000	100
Tulsa, OK	375,000	100
Portland, OR	445,000	400
Erie, PA	109,000	125
Providence, RI	155,000	2,290
Knoxville, TN	167,000	250
Houston, TX	1,690,000	39
Salt Lake City, UT	166,000	250
Seattle, WA	520,000	2,070
Tacoma, WA	184,000	400

<sup>a</sup>Source: County and City Data Book, Bureau of the Census, 1994.

<sup>b</sup>Because the survey questionnaire did not contain a specific definition of brownfields, these cities used different criteria in estimating their brownfield acreage. For example, some cities, such as Houston, identified the brownfields located in particular enterprise or industrial redevelopment zones, while others tried to identify all of the brownfield properties within their borders.



# Major Contributors to This Report

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