

# Mitigating Wildfires: The Impact of Ground-Applied Phosphate Retardants in Strategic Areas

February 12, 2025

## Background

During its 2023 Regular Session, the Idaho Legislature appropriated \$750,000 to the Idaho Department of Lands (IDL) to fund a study of the use of phosphate-based, ground-applied, long-term retardants to prevent wildfire in critical and strategic areas. Provisions related to this appropriation were included in Senate Bill 1174 which was signed into law and became effective on March 28, 2023. The relevant sections of Senate Bill 1174 are included in Appendix 1.

The Legislature specified the funding must be used in accordance with the state's other fire hazard reduction programs enumerated under Chapter 4, Title 38, Idaho Code. It also instructed the department to select application areas based on "GIS data and other prevention efforts, including work done by other agencies, local governments, and timber protective associations."

Additionally, the legislation required the department to produce a report detailing the "utilization of phosphate-based, ground-applied, long-term retardants, an evaluation of its usefulness in preventing wildfires during the 2023 fire season, and its effectiveness as a tool to prevent the start and spread of wildfires."

The initial report was submitted for legislative consideration during the 2024 session. That report summarized the initial efforts of the Department of Lands in the application of the product in the Mountain Home project area. The report also cataloged that there was a residual of product that would be used at a later date.

This report will highlight the application of the remaining product and serve as the closeout of the initiative.

## Project Planning

The intent of the use for the residual product was to support either an emerging wildfire event or planned prescribed fire. The remainder of the 2023 fire season did not present an opportunity for the application on an emerging event, and the burn windows necessary for implementation of prescribed fire were generally too small or non-existent.

During the spring of 2024, Idaho State Forester Craig Foss once again assembled staff to determine the most appropriate utilization of the remaining product. This included the Forestry Assistance Bureau Chief Archie Gray and Wildfire Risk Mitigation Program Manager Tyre Holfeltz. It was determined during the planning session that due to predicted weather (significant spring rain) the application of product in support of a prescribed fire was unlikely to occur, and therefore the Department should look at application in support of preventative measures within the same project area as was previously used. Additionally, this decision was made in part to provide a comparative analysis to the previous application efforts.

Again, the task of implementing the project was assigned to Mr. Holfeltz.

## Site Selection

The application site during the 2024 fire season differed slightly from that of the 2023 application because there wasn't enough base material for application across the entire project area. The application site was 15 miles west of Mountain Home along I-84 in both directions of traffic on the outside right-of-way. Specifically, the project area spans from Mile Marker (MM) 95 to MM110.

A map of the application area is included in Appendix 2.

Dozens of wildfires have been ignited by humans, vehicles, and lightning along the project corridor for decades. Because of the site's high risk and quantifiable record for frequent human and natural caused fires, it was included in the Bureau of Land Management's Paradigm Project which sought to break the fire cycle in the area.

According to the Idaho Rangeland Resource Commission, roadsides in the vicinity of the study area are not just the worst hotspots in Idaho; in terms of fire frequency, they are the worst hotspots in the nation. BLM experts also say the deadly combination of vehicle ignitions, lightning strikes, and highly flammable cheatgrass fuels the fire cycle in the area.

The fact that no perennial water sources exist in the study area also was a continuing factor in the selection of the corridor, as did the need to protect significant values in and around the City of Mountain Home that are put at risk by wildfires sparked along the interstate.

## Project Implementation

Per the contract, the application had to occur prior to peak fire season in the study area, which meant application had to occur by mid to late August. Utilizing the same network of individuals from the previous application efforts, Mr. Holfeltz met with ITD representatives, BLM staff, and Perimeter Solutions by phone, email, and Teams to again review where the retardant would be mixed and then applied.

Perimeter Solutions provided all mixing and spray equipment, along with lined basins to prevent accidental spills during product preparation. ITD's facility at Exit 90 on Interstate 84 in Mountain Home served as the staging area.

The same Perimeter Solutions platform was used that was built out for the 2023 application: a T3 water tender with front and back mounted fan sprays, a top of tank monitor (for terrain variations), and a spray platform on the side of the truck. Perimeter Solutions fabricated the side platform which featured oscillating spray nozzles that angled precisely to ensure optimal coverage that met contract specifications. A photo of the modified water tender and side platform is included in Appendix 3.

Application of the product began September 4<sup>th</sup> and was completed September 7<sup>th</sup>. During application, public safety was a top priority given traffic on this busy section of interstate highway. The vendor provided chase vehicles to flank the slow-moving spray truck.

## Product Application and Coverage

Coverage of the product on the ground was determined by a formula provided by Perimeter Solutions and spot checking (cut sample burn tests) to determine the correct quantity was applied. Coverage over most of the area ranged from a light to moderate rate per the vendor formula. The side spray platform sprayed 160 gallons per minute (GPM) at 50 pounds per square inch (psi). The spray vehicle's speed ranged from 3 to 6 miles per hour to ensure proper coverage, and the top of tank mounted monitor was utilized to address rising or up slope terrain variability.

In total, approximately 72.5 acres were treated, and 22 totes (260 gallons each) of the product were used for application in the study area. Each tote cost \$11,900, translating to \$261,800 (22 totes X \$11,900 ea.) for the treatment of the project area or approximately \$3,611.03/acre or \$8,726.67/mile. There were no application costs as the vendor provided this service as part of the project completion deliverables per their bid.

## Findings

The project area did not have any cataloged fire occurrence within it, so to determine the efficacy of the application Mr. Holfeltz collected site samples on October 2, 2024, of standing and mowed material for the purpose of determining ignitability of material post application.

The collected material has not been burned due to limited windows of opportunity post collection; therefore, rates of consumption have not been determined for material collected from the application area.

What has been observed is that fire occurrence within the project area is below annual average. This observation is likely influenced by several factors but likely includes the application of the roadside product and timing of mowing completed by ITD.

## Next Steps

Since IDL can order the product through the interagency wildfire cache system for use during a wildfire incident and pay for it using suppression funds, the agency does not believe an additional general fund appropriation is warranted. IDL will share the findings of this project with its fire wardens and incident commanders who have discretion during wildfire incidents on the 9.6 million acres of state, private and federal land the agency protects to order the resources they need to suppress wildfires under their command.

When compared to mechanical mastication (mulching), mowing, and the other mitigation strategies IDL uses or supports, applying phosphate-based, ground-applied, long-term retardants to prevent wildfires is more expensive. For example, contracting for mowing in vegetative fuel types like those present in the study area typically costs IDL less than \$165 per acre. However, implementing a mitigation strategy using this type of product may be appropriate for helping prevent wildfires or reducing their intensity in high fire risk areas where high values are also present and mechanical fuels reduction may not be possible.

The department looks forward to working with the Legislature and other state agencies to discuss the lessons it has learned through this study and implementing collaborative wildfire mitigation strategies.

## Special Thanks

IDL is grateful that the Idaho Legislature funded this important research project and for their forward-thinking approach to wildfire mitigation. This project could not have been possible without the dedicated support of IDL staff, ITD Mountain Home staff, and the expertise and resources that Perimeter Solutions brought to the project.

## Appendix 1: Sections 7 & 8 of Senate Bill 1174

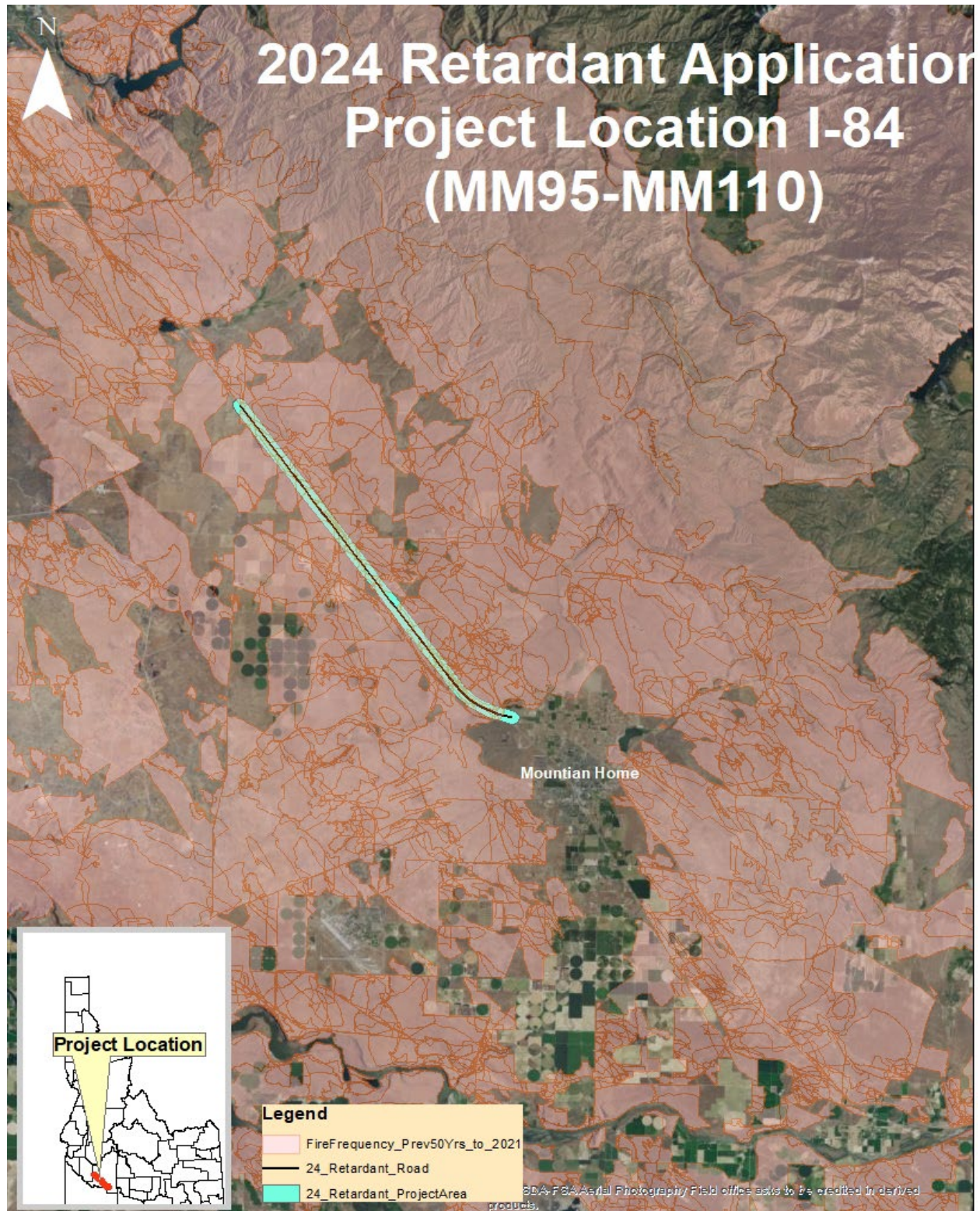
IN THE SENATE  
SENATE BILL NO. 1174  
BY FINANCE COMMITTEE

SECTION 7. In addition to the appropriation made in Section 1, Chapter 251, Laws of 2022, and any other appropriation provided by law, there is hereby appropriated to the Department of Lands for the Forest and Range Fire Protection Program \$750,000 from the General Fund to be expended for operating expenditures for the period July 1, 2022, through June 30, 2023, for equipment for statewide fire protection.

SECTION 8. PREVENTATIVE FIRE MEASURES. The moneys provided in Section 7 of this act for fire prevention measures shall be used for phosphate-based, ground-applied, long-term retardants to prevent wildfire in critical and strategic areas in accordance with Chapter 4, Title 38, Idaho Code. The Department of Lands shall select areas for application of such retardants in conjunction with GIS data and other prevention efforts, including work done by other agencies, local governments, and timber protective associations. At the close of the 2023 fire season, the Department shall evaluate the use of these products as an effective means in preventing and containing wildfires. The Department shall provide a report to the Joint Finance-Appropriations Committee, the Senate Resources and Environment Committee, and the House Resources and Conservation Committee, no later than January 8, 2024, on the utilization of phosphate-based, ground-applied, long-term retardants, an evaluation of its usefulness in preventing wildfires during the 2023 fire season, and its effectiveness as a tool to prevent the start and spread of wildfires.



## Appendix 2: Application Area Map





### Appendix 3: Modified Water Tender for Product Application

