OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

AUDIT REPORT

DOE-OIG-21-13 February 2021

THE DEPARTMENT OF ENERGY'S WILDLAND FIRE PREVENTION EFFORTS AT THE LOS ALAMOS NATIONAL LABORATORY

Department of Energy
Washington, DC 20585

February 1, 2021

MEMORANDUM FOR THE ACTING ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION
MANAGER, LOS ALAMOS FIELD OFFICE

FROM:

John E. McCoy II
Deputy Assistant Inspector General
for Audits
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "The Department of Energy's Wildland Fire Prevention Efforts at the Los Alamos National Laboratory"

RESULTS IN BRIEF

Our review found that activities designed to reduce the impact from wildland fire had not been fully implemented at the Los Alamos National Laboratory (LANL) in accordance with site plans.[1] Specifically, mitigation measures such as tree thinning identified in the 2014 LANL Forest Management Plan (Forest Plan) and 2016 LANL Five-Year Wildland Fire Management Plan (Wildland Fire Plan), which are necessary to reduce the risk of crown fires, were not always performed, increasing the potential for a devastating wildland fire to spread. In addition, not all fire roads were maintained in a state to ensure safe passage for firefighters and equipment responding to wildland fires in undeveloped areas of LANL, which could create dangerous conditions for emergency responders and delay response times. Further, we could not obtain evidence demonstrating that annual planning and preparedness activities were completed as required. Without documenting planning and preparedness activities, there was no assurance that all prevention and mitigation options were considered and that the site was fully prepared for wildland fire events. These issues occurred, in part, because a comprehensive, risk-based approach to wildland fire management had not been developed at LANL in accordance with the *Federal Wildland Fire Management Policy* (Federal Policy). In addition, the issues we identified also occurred due to a lack of formality in the implementation of the Wildland Fire Plan. Further, a lack of Federal oversight of wildland fire management activities contributed to the issues we identified. While the threat of wildland fire cannot be completely eliminated,

[1] The focus of our review was on actions taken under site plans in effect prior to May 2019 when the plans were revised. Actions to implement the revised plans were underway at the time of our fieldwork; however, not all actions had been completed.

certain enhancements to LANL's wildland fire protection strategies could provide increased protection for the Department's assets, as well as the health and safety of its workers and the public.

BACKGROUND

The National Nuclear Security Administration's LANL is a multipurpose research institution with a primary mission of promoting and protecting national security through the design, qualification, certification, and assessment of nuclear weapons. The LANL, as one of the largest science and technology institutes in the world, conducts multidisciplinary research in fields such as space exploration, renewable energy, medicine, nanotechnology, and supercomputing. Managed and operated by Triad National Security, LLC[2] (contractor), LANL employs about 12,000 people and contains approximately 2,000 structures, including 13 nuclear facilities, totaling about 8 million square feet with an estimated replacement value of $14.2 billion. The majority of LANL's 36 square mile property consists of undeveloped land, which provides security and safety buffer zones for the types of research and testing performed.

Under the management and operating contract, the contractor is to comply with Department of Energy Order 420.1C, *Facility Safety*, which requires the contractor to establish a comprehensive fire protection program that includes an integrated site-wide wildland fire management plan. This plan is to be consistent with Federal Policy and meet relevant portions of the requirements of National Fire Protection Association 1143, *Standard for Wildland Fire Management*. In accordance with the requirement, the contractor prepared its Wildland Fire Plan, which identified wildland fire risks and strategies for mitigating those risks. The Wildland Fire Plan complemented the contractor's Forest Plan by outlining risks related to forest health conditions and the contractor's long-term approach to address them. In May 2019, the contractor combined these plans into one document, the LANL Wildland Fire Mitigation and Forest Health Plan (Wildland Fire and Forest Health Plan), which outlines new strategies for wildland fire and forest management. The contractor designed actions to implement its new strategies and initiated activities in July 2019. Since actions to implement the new wildland fire management strategies were in their initial stages at the time of our review, the focus of this report is on actions taken under the Wildland Fire and Forest Plans.

In the last two decades, there have been two historically large wildland fires in the vicinity of LANL: the Cerro Grande Fire in 2000; and the Las Conchas Fire in 2011 that threatened Department assets and impacted operations. The Cerro Grande Fire was a devastating crown fire that spread onto LANL property and through densely forested canyons, burning over 7,500 acres of Department land and shutting down operations for 15 days. This fire damaged or destroyed over 100 structures and ruined a wide variety of LANL projects and scientific records, resulting in damages to LANL totaling $331 million, not including lost productivity costs estimated at $15 million per week[3] during the shutdown and recovery efforts. The Las Conchas Fire only burned

[2] Triad National Security, LLC became the management and operating contractor on November 1, 2018. Los Alamos National Security, LLC served as the management and operating contractor from June 1, 2006, through October 31, 2018.

[3] Lost productivity estimated costs obtained from LA-UR-14-27161, *Climate Change and the Los Alamos National Laboratory: The Adaptation Challenge* (February 2015). The estimated costs were not audited as part of our review.

1 acre of Department land; however, the fire's intensity and proximity to LANL resulted in the closure of the site for 9 days with approximately $15.7 million in costs associated with cleaning up damaged property and resuming safe operations, not including an estimated $15 million in lost productivity costs per week. Given the risk posed by wildland fire to LANL's facilities and workforce, we initiated this audit to determine whether the Los Alamos Field Office and the contractor were taking necessary actions to identify possible hazards associated with and mitigate the impacts of wildland fire.

RESULTS OF AUDIT

Our review found that while the contractor had identified risks associated with wildland fire in its Wildland Fire and Forest Plans, the contractor had not fully implemented activities designed to reduce the impact from wildland fire. Specifically, we found that mitigation measures such as tree thinning, which are necessary to reducing the risk of crown fires, were not always performed, and therefore increased the potential for another devastating fire like the Cerro Grande Fire. In addition, not all fire roads were maintained in a state to ensure safe passage for firefighters and equipment responding to wildland fires in undeveloped areas of LANL, which could create dangerous conditions for emergency responders and delay response times. Further, contractor officials could not demonstrate that annual planning and preparedness activities were completed as prescribed in the Wildland Fire Plan. Without documenting planning and preparedness activities, there was no assurance that all prevention and mitigation options were considered and that the site was fully prepared for wildland fire events.

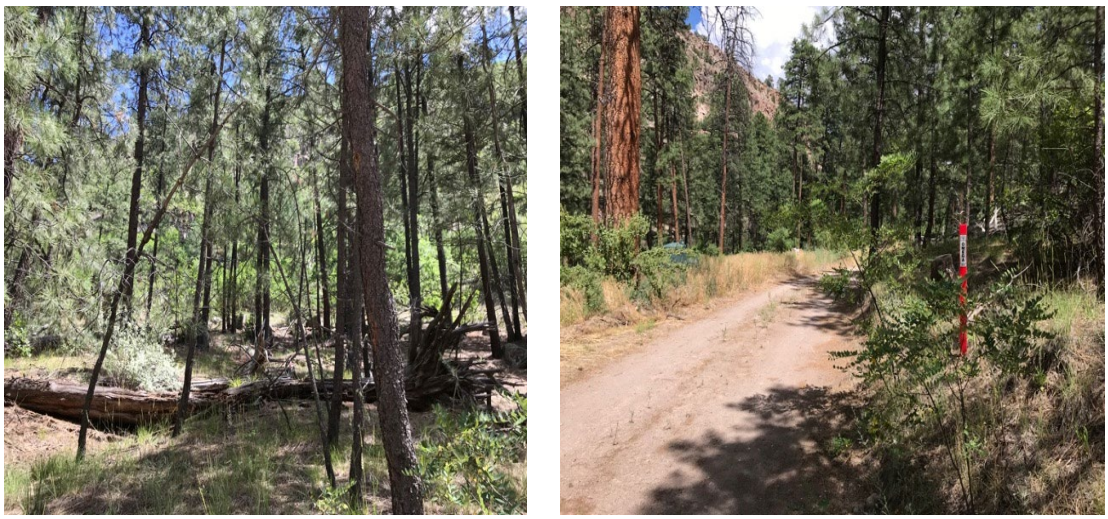
These issues occurred, in part, because the contractor had not developed a comprehensive, risk-based approach to wildland fire management at LANL in accordance with Federal Policy. In addition, the issues we identified also occurred due to a lack of formality in the implementation of the Wildland Fire Plan. Further, a lack of Federal oversight of the contractor's wildland fire management activities contributed to the issues we identified. Although the Los Alamos Field Office was responsible for overseeing contractor performance, it had not reviewed and approved the contractor's Wildland Fire Plan or conducted assessments of wildland fire management activities.

Mitigation of Crown Fires

We found that necessary mitigation measures to reduce the risk of crown fires, such as tree thinning, were not always performed, and therefore increased the potential for another devastating fire like the Cerro Grande Fire. Crown fires are catastrophic fires that spread quickly through the crowns of trees in dense forests. These fires are very hot, burn deeply into the soil, and are incredibly dangerous and expensive to suppress. According to the Forest Plan, management of forest health conditions was fundamental to reducing the risk of crown fires at LANL. Based on the risk assessment conducted by wildland fire experts as part of the Wildland Fire Plan, contractor officials determined that fuel levels in deep canyons, which were most prone to active crown fires, were high, and that mitigation was needed in these areas since fire suppression was difficult, and hazard potential extreme. Lowering high fuel loads in forests would substantially reduce the potential for future large, high-intensity wildfires that could threaten to seriously interrupt mission work, as was the case during the Cerro Grande Fire.

Despite recognition of the risk, mitigation measures identified in the Wildland Fire and Forest Plans had not been performed to reduce the risk of crown fires. According to contractor's Emergency Preparedness Group Leader and Wildland Fire Technical Specialists, LANL forests were unhealthy and unnatural, and, like the rest of the United States,[4] they were well behind the curve on mitigating the hazards of wildland fires. At the time of our fieldwork, there was no completed mitigation plan in place to address the risk in these areas. The contractor's Emergency Preparedness Group Leader indicated that as part of the implementation actions under its new Wildland Fire and Forest Health Plan, a Wildland Fire Hazard Analysis was underway, and based on the results of the assessment, a path forward for future mitigation projects would be developed. While this is a positive measure, the assessment was not expected to be completed until the end of calendar year 2020, and there is no assurance as to if or when this risk will be addressed.

The pictures below illustrate forest conditions we observed in one canyon, Los Alamos Canyon, during our fieldwork. The contractor's Emergency Preparedness Group Leader and Wildland Fire Technical Specialist indicated that there were approximately 400–500 trees per acre in this canyon; however, the ideal number should be 40–50 trees per acre. This was concerning since these contractor officials also informed us that a potential release site[5] exists at the bottom of this canyon, which could produce a health risk to the environment and to human health during a fire.

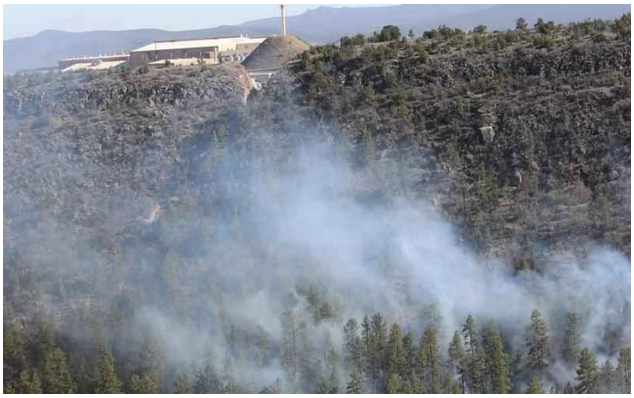


Examples of high fuel levels in Los Alamos Canyon that increase the risk of a devastating crown fire, which could damage or destroy LANL property, shutdown operations, and create health risks to the public and environment
(Pictures taken and provided by contractor officials)

Additionally, the risk of crown fires in canyons was concerning because several mission-critical facilities are located on mesas at the tops of the canyons, which could be impacted by a fire.

[4] This statement was not audited. Fuel mitigation conditions for the United States as a whole were not included in the scope of our review.
[5] A potential release site is an area where hazardous chemical and/or radioactive wastes are present as a result of past operations. These sites are found on mesa tops, in material disposal areas, and in canyons at LANL.

While contractor officials indicated that facilities on mesas are to have defensible space[6] around the perimeter to protect them from fires, in spite of these mitigation efforts, crown fires can jump man-made areas created to stop the spread of fires, as well as natural barriers, such as canyons and rivers. This was the case during the Cerro Grande Fire; due to the intensity of the crown fire from overgrown forests, the fire jumped the Los Alamos Canyon, and spot fires jumped almost a mile within LANL boundaries. The picture below illustrates the close proximity of a mission-critical facility, the Los Alamos Neutron Science Center, which was evacuated in March 2019 due to a wildland fire in the densely forested canyon.



Los Alamos Neutron Science Center, a mission-critical facility, located at the top of the Los Alamos Canyon, which could be damaged or destroyed in the event of a high-intensity wildland fire in the densely forested canyon
(Picture taken by Los Alamos Monitor included in a LANL After Action Report)

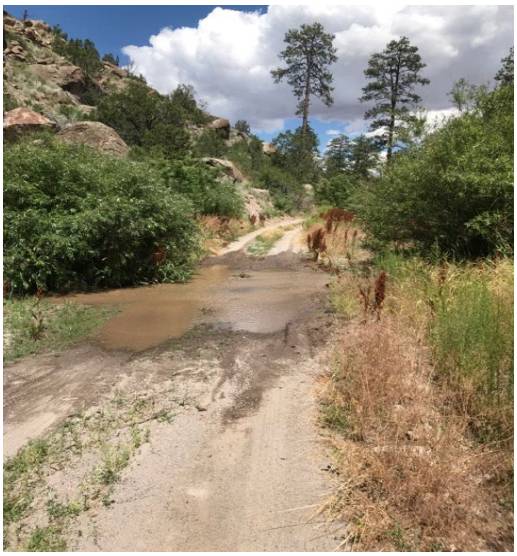
Compounding the issue, the Wildland Fire Plan identified the need to manage sections of power lines that cut through forested areas due to increased risk; however, vegetation maintenance in buffer zones below overhead power lines was not always completed. This was evident based on two recent wildland fires that occurred in Los Alamos Canyon in April 2018 and in March 2019, which were caused by malfunctioning and damaged power lines, respectfully. For instance, the After Action Report for the 2019 wildland fire noted that the fire was initiated by an overhead power line which had a break in it, causing the line to fall into the easement area where it made contact with receptive fuels. This was concerning because according to the Wildland Fire Plan, management of vegetation in buffer zones below power lines is critical to maintaining and preserving operations; however, these instances showed that fuel mitigation below overhead power lines still needed to be addressed. While maintenance standards for overhead power lines are to be developed under the new Wildland Fire and Forest Health Plan, a path forward for mitigation projects had not been completely developed at the time of our review.

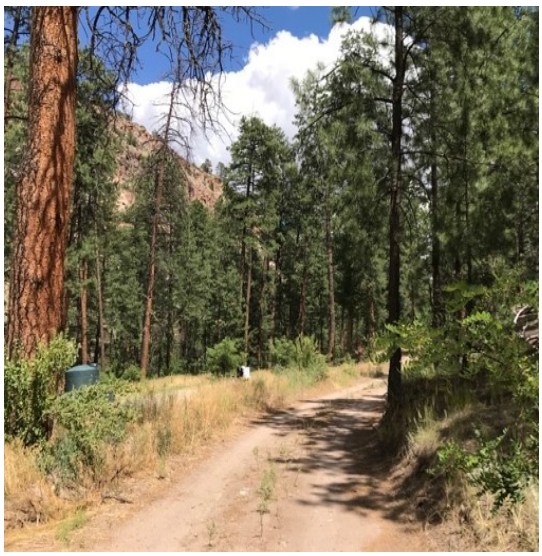
Maintenance of Fire Roads

We found that not all fire roads were maintained in a state to ensure safe passage for firefighters and equipment responding to wildland fires in undeveloped areas of LANL. The purpose of the

[6] Defensible space is an area either natural or man-made where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss to life, property, or resources.

fire road network is to alleviate dangerous conditions by providing clear and safe access for emergency responders and reducing response times to undeveloped areas of LANL. According to contractor officials, fire roads were maintained to primitive standards, passable by four-wheel drive vehicles, with only one way in and out and no turnaround areas. Although a formal standard for road maintenance had not been defined for LANL, the contractor's Emergency Preparedness Group Leader and Fire Management Officer indicated that fire roads in undeveloped areas at LANL were maintained to the same standards as the U.S. Department of Agriculture's Forest Service. While this level of maintenance may be sufficient for that agency, we noted that the U.S. Department of Agriculture's Forest Service was primarily responsible for protecting acres of undeveloped land. In contrast, the undeveloped land at LANL is interspersed with over 2,000 structures, including 13 nuclear facilities that need to be protected. During our fieldwork, we observed road conditions that could impede emergency responders and jeopardize their safety during a wildland fire event. Specifically, contractor officials provided a tour of the Omega Fire Road in Los Alamos Canyon to illustrate typical fire road conditions at LANL. On the tour of this road, we noted that the fire road was not wide enough for emergency vehicles to pass or turn around when responding to fires. In addition, we observed excess vegetation along the sides of the road, which also limited the ability for vehicles to pass or pull over. In our opinion, the lack of turnaround and pullover areas may cause a bottleneck of responding vehicles and personnel, creating entrapment and hindering response times. Additionally, the limited turning radius could restrict the types of vehicles that could respond. The pictures below illustrate fire road conditions observed during our site tour.





Examples of road conditions on the Omega Fire Road in Los Alamos Canyon that could impede emergency responders and jeopardize their safety during a wildland fire event in the canyon
(Pictures taken and provided by contractor officials)

Issues related to fire road standards were also identified in the After Action Report for the March 2019 wildland fire in Los Alamos Canyon. In particular, the After Action Report identified the primitive road standards and lack of turnaround areas as a deficiency. The report also identified the fact that the Omega Fire Road used to access the fire was connected by 3 steel bridges posted

with weight limits of 20 tons, which were exceeded by a fire apparatus of 30 plus tons as a deficiency. According to the contractor's Fire Management Officer, the excess weight could have caused the bridges to collapse, damaging the fire apparatus and potentially injuring emergency responders. The contractor's Fire Management Officer also informed us that the fire apparatus dispatched to this fire was not a wildland fire engine and should not have been used for a fire in this area. When we asked the contractor's Emergency Preparedness Group Leader and Fire Management Officer if there was a procedure defining the types of fire apparatus that can respond to certain areas of LANL, the officials indicated that they were unaware of any such procedure and noted that the dispatch of the fire apparatus was the responsibility of the fire department, not the contractor. While dispatch is a fire department function, the contractor is responsible for implementing wildland fire management at LANL, which includes maintaining a fire road system to allow safe and quick access to undeveloped areas for emergency responders. Without a fire road system capable of supporting its intended use, or a procedure defining the types of apparatus that can respond to certain areas of LANL, there is no assurance that a similar situation will not occur in the future.

Furthermore, a contractor official informed us that some fire roads had smaller, unmarked dirt roads that branched off, which may appear to be fire roads and create unsafe conditions during a wildland fire. According to a contractor Wildland Fire Technical Specialist, formerly the LANL Wildland Fire Program Manager with almost 20 years of fire management experience at the site, smoke caused by wildland fires may create instances of confusion for emergency responders since it may impede their vision, leading them onto the smaller roads that were not intended for a fire apparatus. This official also indicated that some of these roads were dead ends, and due to terrain and/or densely forested areas, the fire apparatus may not be able to turn around, potentially trapping emergency responders in the path of the fire. This was concerning because the contractor official stated that the potential exists for emergency responders and their vehicles to "go over a cliff since some roads are on mesas at the top of canyons." According to the Fire Department's Fire Chief, contractor officials used to provide fire road tours to the fire department each year so fire fighters would be familiar with roads; however, these tours have not been offered for several years. While contractor officials indicated that they were not required to provide the tours, Department Order 151.1D, *Comprehensive Emergency Management System*, requires the contractor to provide orientation to emergency responders on an annual basis, including familiarization with onsite specific conditions and hazards.

Subsequent to our fieldwork, the contractor's Emergency Preparedness Group Leader and Fire Management Officer indicated that in their opinion the conditions described above did not represent safety issues. In our opinion, given the unpredictable behavior of wildland fires and the concerns expressed by the Fire Management Officer and former LANL Wildland Fire Program Manager, we believe that fire roads with only one way in and out, a lack of turnaround and pullover areas, and limited turning radii could cause a bottleneck of responding vehicles leading to entrapment during a wildland fire event. Additionally, as noted, the contractor's After Action Report for the March 2019 wildland fire cited the primitive road standards and lack of turnaround areas as a deficiency, which could impact emergency responder safety.

Planning and Preparedness Activities

We found that contractor officials could not demonstrate that annual planning and preparedness activities[7] were completed as prescribed in the Wildland Fire Plan. Despite the Wildland Fire Plan's requirement to prepare an updated wildfire risk assessment and prioritized project listing each year, contractor officials could not demonstrate that annual wildland fire risk updates fully evaluated changes in conditions and that fuel reduction projects were selected based on relative risk. When the contractor developed its Wildland Fire Plan in February 2016, it assessed wildland fire risks in accordance with National Fire Protection Association 1143, *Standard for Wildland Fire Management*. This assessment was to be updated annually in order to identify a list of potential fuel reduction projects. A prioritized list of fuel reduction projects, based on available budget and relative risk, was to be developed and included in Annual Operating Plans. While the contractor's Emergency Preparedness Group Leader and Wildland Fire Technical Specialists informed us that annual updates were completed, the only documentation provided for each year was a color-coded burn probability map of LANL and the surrounding area. These annual maps did not include a legend of what the colors represented, and the contractor was unable to explain what factors were considered in developing the maps. Additionally, contractor officials could not provide evidence demonstrating fuel reduction projects identified as needed for each year and how they were prioritized. Instead, we were informed by the contractor's Wildland Fire Technical Specialists that fuel reduction projects were selected and prioritized by "chasing the red" areas on the color-coded maps with no written justifications. These contractor officials also noted that projects were sometimes selected because they were less complex and did not require as many resources. Further, contractor officials could not provide documentation demonstrating that annual preparedness activities, such as verification of equipment readiness and inspection of fire roads, were completed as prescribed in the Wildland Fire Plan. Completing wildland fire preparedness activities in advance of wildland fire ignition is necessary to ensure safe, efficient, and effective suppression action. Without documenting planning and preparedness activities, there was no assurance that all prevention and mitigation options were considered and that the site was fully prepared for wildland fire events.

Lack of a Comprehensive, Risk-Based Approach

These issues occurred, in part, because the contractor had not developed a comprehensive, risk-based approach to wildland fire management at LANL. Under Federal Policy, risk management should be the foundation for all fire management activities, and risks must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing a particular activity. Even though the risk assessment conducted as part of the Wildland Fire Plan identified the need for fuel reduction in certain high-risk areas, mitigation activities were not completed for all areas identified, and there was no documentation to demonstrate that risks associated with not performing the activities had been fully analyzed in accordance with Federal Policy. Contractor officials told us that fuel reduction activities had not always been completed in high-risk areas, such as canyons, because of inadequate funding. However, if contractor officials had performed a comprehensive evaluation of wildland fire risk, including the potential

[7] According to the contractor's Wildland Fire Plan, wildland fire preparedness includes all fire management activities planned and accomplished in advance of wildland fire ignition to ensure safe, efficient, and effective suppression action.

consequences of not conducting needed mitigation measures, and developed a prioritized schedule of mitigation needs based on risk as required by National Fire Protection Association 1143, *Standard for Wildland Fire Management*, contractor management officials may have allocated additional funding for mitigation activities. By not ensuring fuel reduction activities were conducted in areas identified as high-risk, facilities and other structures may not be adequately protected from incidents of wildland fire.

Lack of Formality in Implementation

The issues identified also occurred due to a lack of formality in the implementation of the Wildland Fire Plan. Specifically, the contractor's Wildland Fire Plan lacked requirements for documenting wildland fire management activities and responsibilities for implementation were not well defined. For instance, contractor officials were to monitor fire road conditions in order to determine required maintenance; while the Wildland Fire Plan indicated that fire road specifications were developed following the Cerro Grande Fire, contractor officials could not provide a copy of the specifications, and contractor officials were unclear on who was responsible for establishing fire road standards. Additionally, the Wildland Fire Plan required the contractor to conduct seasonal readiness checks and other preparedness activities prior to the start of the wildland fire season; however, the contractor had not formalized a process to track progress or completion. Instead, this information was informally captured through institutional knowledge held by contractor officials. In addition, although the contractor began developing a wildland fire website in 2014 to capture data related to wildland fire management activities, it was not fully populated, and there was no set timeframe for full implementation. Further, the contractor had not required the subcontractor responsible for preparing annual wildland fire risk updates to provide a written product detailing the methodology used. Without such information, the contractor could not ensure that the updates provided a comprehensive analysis of wildland fire risk factors.

Lack of Federal Oversight

We also attributed the issues we identified to a lack of Federal oversight of the contractor's wildland fire management activities. Under the terms of the management and operating contract and its oversight procedures, the Los Alamos Field Office was responsible for overseeing the contractor's performance and ensuring compliance with the requirements of Department directives. Although the Los Alamos Field Office was responsible for overseeing contractor performance, it had not conducted formal assessments of the wildland fire management program or verified completion of mitigation efforts through operational awareness activities. In addition, contrary to its oversight procedure, Los Alamos Field Office officials had not reviewed and approved the contractor's Wildland Fire Plan. Similar issues were identified during previous Los Alamos Field Office self-assessments as well as an external review. Specifically, in its December 2016 Fire Protection Program Self-Assessment, the Los Alamos Field Office found that Federal officials had not reviewed and approved the contractor's Wildland Fire Plan in accordance with its oversight procedure since the approval of the fiscal year 2010 Annual Wildland Fire Operations Plan. The self-assessment also noted that the Los Alamos Field Office

had insufficient staffing to conduct effective oversight. The 2017 Chief of Defense Nuclear Safety review confirmed the self-assessment findings, noting that the Los Alamos Field Office had not updated its Fire Protection Program procedure since 2010.

In response to the Chief of Defense Nuclear Safety review and the December 2016 Fire Protection Program Self-Assessment, the Los Alamos Field Office revised its procedures related to oversight of fire protection and emergency management. Additionally, a Los Alamos Field Office official indicated that additional staff had been hired to conduct oversight activities. Since these actions had recently been completed at the time of our fieldwork, we were unable to verify the effectiveness of changes in Los Alamos Field Office oversight.

Enhancements to Wildland Fire Protection Strategies

To its credit, the contractor recognized that its Wildland Fire and Forest Plans were not being systematically implemented or integrated into LANL practices and initiated actions to rebuild its wildland fire management program. Specifically, the contractor established the Wildland Fire Mitigation Working Group in July 2018 to facilitate integration and coordination among internal and external organizations for wildland fire management and develop a cohesive strategy to reduce wildland fire risk at LANL. In May 2019, the contractor issued its new Wildland Fire and Forest Health Plan, which combined the Wildland Fire and Forest Plans into one document. This document established roles and responsibilities for wildland fire management activities and outlined mitigation treatment standards, responsible parties, and funding responsibilities. In addition, the contractor developed an Implementation Plan in July 2019, which identified key program milestones. Activities in the Implementation Plan included determining a methodology for wildland fire hazard analysis, and formalizing inspection and maintenance programs for fire roads, utility corridors, and defensible space treatments. While these are positive measures, completion of these activities is dependent on continued contractor and Los Alamos Field Office management support. Until actions are fully implemented, LANL is at a higher risk of wildland fire due to unhealthy forest conditions.

As demonstrated by past wildland fires, the potential for regional and local wildland fires poses a substantial risk to the operational capabilities that enable the Department to meet its assigned mission needs at LANL. As such, the contractor must be vigilant in implementing mitigation activities to minimize wildland fire risks. While the threat of wildland fire cannot be completely eliminated, certain enhancements to LANL's wildland fire protection strategies could provide increased protection for the Department's assets, as well as the health and safety of its workers and the public.

RECOMMENDATIONS

To address the issues highlighted above, we recommend that the Acting Administrator, National Nuclear Security Administration, in conjunction with the Manager, Los Alamos Field Office, work with the contractor to ensure the following actions are taken:

1. Conduct a site-wide wildland fire risk assessment to ensure that risks are fully understood and analyzed, and that consequences are considered in accordance with Federal Policy;

2. Develop a mitigation plan based on the risk assessment results and in accordance with National Fire Protection Association 1143, *Standard for Wildland Fire Management,* requirements;

3. Establish a formal process to capture and track data related to wildland fire activities to ensure completion of all preparedness activities and mitigation efforts; and

4. Ensure that actions outlined in the Wildland Fire and Forest Health Plan and its associated Implementation Plan are implemented to address wildland fire risks.

We also recommend that the Manager, Los Alamos Field Office, take the following action:

5. Ensure oversight activities related to wildland fire management, such as review and approval of the contractor's Wildland Fire and Forest Health Plan, performance of formal assessments, and verification of mitigation efforts through operational awareness activities are performed.

MANAGEMENT RESPONSE

Management concurred with the report's recommendations and identified corrective actions that were taken and planned to address the issues identified in the report. Specifically, management indicated that a LANL All-Hazards Emergency Plan and Wildland Fire Annex, including a requirement for a written Wildland Fire Hazards Analysis, will be issued. As noted in the report, an analysis was underway, and completion was expected by the end of calendar year 2020. In addition, management stated that, based on the results of wildland fire hazard and forest health analyses, an annual operating plan for mitigation treatments will be developed. Further, management indicated that actions outlined in the LANL Wildland Fire Mitigation and Forest Health Implementation Plan, such as developing procedures to inspect and document the status of wildland fire mitigation actives, will be developed and completion of mitigation activities will be monitored. Finally, management stated that the Los Alamos Field Office will review and approve the LANL All-Hazards Emergency Plan and Wildland Fire Annex and include Wildland Fire Program oversight activities, such as assessments and operational awareness activities, in the fiscal year 2021 oversight plans.

Management comments are included in Attachment 3. Additionally, management provided technical comments, which have been addressed in the body of the report, where appropriate.

AUDITOR COMMENTS

Management concurred with the report recommendations and management's proposed corrective actions were generally responsive to our recommendations.

Attachments
cc: Chief of Staff

OBJECTIVE, SCOPE, AND METHODOLOGY

OBJECTIVE

We conducted this audit to determine whether the Los Alamos Field Office and Triad National Security, LLC (contractor) were taking necessary actions to identify possible hazards associated with and mitigate the impacts of wildland fire.

SCOPE

This audit was conducted from July 2019 through July 2020 at Los Alamos National Laboratory (LANL) in Los Alamos, New Mexico. This audit was conducted under Office of Inspector General project number A18PT039. This report is one in a series of reports that will be issued as part of the audit effort.

METHODOLOGY

To accomplish our audit objective, we:

- Reviewed applicable Federal and Department of Energy regulations as well as National Fire Protection Association standards pertaining to wildland fire management.
- Reviewed relevant reports issued by the Office of Inspector General, Government Accountability Office, and Office of Enterprise Assessments.
- Interviewed Federal and contractor officials responsible for wildland fire management at LANL.
- Reviewed the LANL Five-Year Wildland Fire Management Plan for 2016–2020, the 2014 LANL Forest Management Plan, the LANL Wildland Fire Mitigation and Forest Health Plan, and its associated Implementation Plan effective in 2019.
- Reviewed environmental assessments related to wildland fire management activities at LANL conducted in calendar years 2000 and 2019.
- Reviewed the LANL Baseline Needs Assessment for Fire Protection and Emergency Response conducted in 2018.
- Reviewed internal and external assessments of Los Alamos Field Office oversight.
- Reviewed management and operating contract clauses related to fire protection and compliance with Department regulations.
- Reviewed documentation describing wildland fires that occurred at LANL in calendar years 2018 and 2019.

- Performed physical observations of wildland fire mitigation efforts at LANL. While conducting physical observations, pictures were taken by contractor officials on our behalf. The pictures were reviewed by the contractor and determined to be unclassified and released to the Office of Inspector General.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, we assessed significant internal controls and compliance with laws and regulations necessary to satisfy the audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of this audit. We did not rely on computer-processed data to satisfy our audit objective, and therefore, did not conduct a reliability assessment of computer-processed data.

Management held/waived the exit conference on January 14, 2021.

PRIOR REPORT

Audit Report on *The Department's Wildland Fire Planning and Preparation Efforts* (DOE/IG-0760, March 2007). The review found that Department of Energy sites within known wildfire zones had failed to perform or were not completely successful performing essential wildland fire mitigation activities involving the assessment and removal of vegetation and the maintenance of roads. The report concluded that contractor officials had not always adhered to established wildland fire planning and mitigation guidance. In particular, contractors had not used risk-based principles to prioritize mitigation efforts and had either omitted or not adequately considered a number of other items specified in Federal policy, Departmental guidance, and the Initial Joint Review when developing fire protection plans. In addition, Federal officials had not always actively monitored contractor wildland fire protection programs, coordinated protective efforts, or validated the effectiveness of contractor fire mitigation activities.

MANAGEMENT COMMENTS

Department of Energy
Under Secretary for Nuclear Security
Administrator, National Nuclear Security Administration
Washington, DC 20585

January 8, 2021

MEMORANDUM FOR TERI L. DONALDSON
INSPECTOR GENERAL

FROM: WILLIAM A. BOOKLESS
ACTING UNDER SECRETARY FOR NUCLEAR SECURITY
AND ADMINISTRATOR, NNSA

SUBJECT: Response to the Office of Inspector General Draft Report *The Department of Energy's Wildland Fire Prevention Efforts at the Los Alamos National Laboratory* (A18PT039b)

Thank you for the opportunity to review and comment on the subject draft report. Wildland fire protection is an important component of the overall site protection strategy at the National Nuclear Security Administration's (NNSA) Los Alamos National Laboratory (LANL). As noted in the draft report, Los Alamos established a Wildland Fire Mitigation Working Group, and issued the LANL Wildland Fire Mitigation and Forest Health Plan in May 2019 to address self-identified concerns with wildland fire management. Because the audit focused on prior plans, most of the salient issues in the report had already been identified and captured in the new LANL plan in 2019, and the recommendations are consistent with the site's previously planned actions. The attached management decision summarizes the actions taken and planned for each recommendation.

While NNSA will continue to enhance the site's wildland fire protection strategies, including better documenting the risk assessment and planning process, we would like to clarify that we have prioritized and implemented actions to protect employees, the public, and the site's critical infrastructure from the risks of wildland fire. As noted in the audit report, the contractor developed a Wildland Fire Mitigation and Forest Health Implementation Plan in 2019 that included developing a prioritized list of projects based on hazard analysis results and treatment assessment findings. To date, many of the hazard analyses across the site have been conducted and a Wildland Fire and Forest Health project schedule has been completed.

NNSA recognizes the unique challenges of wildfire prevention at the Los Alamos Site. We take our responsibilities to identify and mitigate risks from wildfires very seriously, and we stand ready to discuss and evaluate any issues supported by objective evidence that might warrant further enhancement to our current efforts. Our subject matter experts have provided extensive technical comments under separate cover for the auditors' consideration to address the issues noted above. If you have any questions regarding this response, please contact Mr. Dean Childs, Director, Audits and Internal Affairs, at (301) 903-1341.

Attachment

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NATIONAL NUCLEAR SECURITY ADMINISTRATION
Management Decision

The Department of Energy's Wildland Fire Prevention Efforts at the Los Alamos National Laboratory (A18PT039b)

The Office of Inspector General (OIG) recommended that the Administrator of the National Nuclear Security Administration (NNSA), in conjunction with the Manager, Los Alamos Field Office (NA-LA), work with the Los Alamos National Laboratory (LANL) to ensure the following actions are taken:

Recommendation 1: Conduct a site-wide wildland fire risk assessment to ensure that risks are fully understood and analyzed, and that consequences are considered in accordance with Federal Policy;

Management Response: Concur. The LANL Wildland Fire Program conducts site-wide wildland fire hazard analyses at least every five years or as new land cover data becomes available to provide information on where the greatest wildland fire risks are for life, safety, and property. The OIG recommendation is consistent with actions already in process to address Los Alamos' self-identified areas for improving documentation of their risk and hazards analyses and planning activities. Those actions include issuing a LANL All-Hazards Emergency Plan and Wildland Fire Annex, including a requirement for a written LANL Wildland Fire Hazards Analysis, also known as a site-wide risk assessment. The Wildland Fire Hazards Analysis will be completed at least every five years or as significant new land cover or other relevant data becomes available. The written analysis will include requirements found in National Fire Protection Association (NFPA) 1143, *Standard for Wildland Fire Management*, such as the evaluation of ignition risks, fire protection features, and wildland fire interface/intermix priorities. Much of the work on the analyses has been completed and the written product is expected by the end of the calendar year.

Estimated Completion Date: December 31, 2020

Recommendation 2: Based on the risk assessment results, develop a mitigation plan in accordance with NFPA 1143 requirements.

Management Response: Concur. The recommendation is consistent with actions already identified and planned. The LANL Wildland Fire Mitigation and Forest Health Plan outlines a strategy for mitigation planning that accounts for wildland fire mitigation and forest health variables. Wildland fire hazard analyses will consider several variables including: fuel types, fire behavior, fuel load, topography, weather conditions, and treatment history. LANL also has special considerations to account for in a wildland fire hazard analyses, including solid waste management units, threatened and endangered species habitat, and cultural resources. All of these considerations will be incorporated into mitigation project planning. The results and data from the wildland fire hazard analyses and forest health analyses will be used to develop an

annual operating plan for the mitigation treatments owned by the LANL Wildland Fire Program and LANL Environmental Stewardship Group.

Estimated Completion Date: September 30, 2021

Recommendation 3: Establish a formal process to capture and track data related to wildland fire activities to ensure completion of all preparedness activities and mitigation efforts.

Management Response: Concur. The recommendation is consistent with actions already identified and planned. Through the LANL Wildland Fire Mitigation and Forest Health Implementation Plan issued in July 2019, LANL will develop procedures to inspect and document the on-going status of various wildland fire mitigation activities. These procedures will include documentation and retention requirements as necessary.

Estimated Completion Date: September 30, 2021

Recommendation 4: Ensure that actions outlined in the Wildland Fire and Forest Health Plan and its associated Implementation Plan are implemented to address wildland fire risks.

Management Response: Concur. The recommendation is consistent with actions already identified and planned. The LANL Wildland Fire Mitigation and Forest Health Implementation Plan provides a framework and roadmap to meet the standards of good practice, and further defines program enhancements to ensure a consistent and comprehensive approach to Wildland Fire and Forest Health mitigation and emergency preparedness across the LANL site. For each task, the Implementation Plan identifies a responsible LANL organization, a strategy for implementation, and an implementation and assessment schedule. LANL will continue to monitor completion of wildland fire mitigation activities.

Estimated Completion Date: September 30, 2022

The OIG also recommended that the Manager, Los Alamos Field Office:

Recommendation 5: Ensure oversight activities related to wildland fire management such as review and approval of the contractor's Wildland Fire and Forest Health Plan, performance of formal assessments, and verification of mitigation efforts through operational awareness activities are performed.

Management Response: Concur. The recommendation is consistent with actions already identified and planned. NA-LA will review and approve the LANL All-Hazards Emergency Plan and Wildland Fire Annex. Additionally, NA-LA will include Wildland Fire Program oversight activities, such as assessments and operational awareness activities, in the Fiscal Year 2021 oversight plans. For example, an assessment will be scheduled to look at mitigation activities on a graded approach prior to the next fire season. Finally, NA-LA will conduct

Attachment

Wildland Fire Program oversight in accordance with the final, approved Fiscal Year 2021 oversight plans.

Estimated Completion Date: September 30, 2021

FEEDBACK

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Office of Inspector General (IG-12)
Department of Energy
Washington, DC 20585

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