Los Alamos Study Group

Nuclear Disarmament • Environmental Protection • Social Justice • Economic Sustainability

May 22, 2011

To: Interested parties

Re: The Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) at Los Alamos National Laboratory (LANL) should not be built.

Even if CMRR-NF were to be built eventually, it should be delayed now. Longer delay would bring greater net benefit – in dollars, program continuity, decreased management risk across the NNSA complex, and otherwise.

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A. Introduction: The CMRR-NF should not be built.

Reasons not to build CMRR-NF at all include the following.

- CMRR-NF is not needed for the long-term maintenance of a very large, powerful, diverse nuclear stockpile, the primary mission of the National Nuclear Security Administration (NNSA).[1]

[1] a. Primarily, CMRR-NF is not needed because large-scale pit production, its sole coherent justifying mission, is not needed. In fact, pit production *for the stockpile*, as opposed to maintenance of current pit production capability through the manufacture of test pits, is not needed at *any* scale. JASON, "Pit Lifetime," November 20, 2006, JSR-06-335, http://www.lasg.org/JASONs_report_pit_aging_ocr.pdf; JASON, "Lifetime Extension Program (LEP) Executive Summary," JSR-09-334E, September 9, 2009, http://www.lasg.org/JASON_LEP_9Sep2009.pdf; affidavit of Robert Peurifoy, November 1, 2010, http://www.lasg.org/CMRR/Litigation/Peurifoy_Bob_1Nov2010.pdf; affidavit of Frank von Hippel, January 6, 2011, http://www.lasg.org/CMRR/Litigation/von_Hippel_Frank_affidavit_6Jan2011.pdf; Greg Mello, "U.S. Plutonium 'Pit' Production: Additional Facilities, Production Restart are Unnecessary, Costly, and Provocative," March 2, 2010, http://www.lasg.org/CMRR/Mello_pit_recommendations_2Mar2010.pdf.

There is nothing in the public record since these JASON studies to suggest the advent of any problems with pits in deployed or reserve warheads that would necessitate their replacement, as opposed to their refurbishment and requalification, e.g. by removing external corrosion. Pit aging data has been accumulating since 2006. A senior congressional staff member briefed on this topic told me on February 23, 2011 that he was even "more reassured" by the new data of the past five years.

In 2007 NNSA established a requirement for a total of 18 war reserve W88 pits. There has been no request, and there is no authorization, to produce any certified stockpile pits of any kind after FY2011. NNSA has stated that the establishment of production *capability* was its goal, and "the exact number of pits to be manufactured was immaterial to the scope and purpose of the [pit production] project." The current requirement, apparently set in February 2008 by the Nuclear Weapons Council (NWC), is to establish a *capacity* to produce "50 to 80" pits per year, not to actually produce pits. Pit production capacity requirements fluctuated wildly prior to this. Government Accountability Office (GAO), "Nuclear Weapons: NNSA Needs to Establish a Cost and Schedule Baseline for Manufacturing a Critical Nuclear Weapon Component," GAO-08-593, May 2008, www.gao.gov/new.items/d08593.pdf, pp. 15, 28, 34. The policy assumptions underlying these fluctuating requirements – which appear arbitrary to say the least – are not specified and may not exist in any clear form.

b. Even if pit production were begun at modest levels, CMRR-NF would not be needed. In 2000 and 2001, a Hazard Category II Nuclear Facility was not considered necessary to fully replace the existing Chemistry and Metallurgy Research (CMR) facility for all then-foreseen LANL missions. A Hazard Category III "or less" facility (i.e. with material at risk [MAR] of less than or equal to 900 grams of Pu-239 equivalent) was considered sufficient. LANL, Comprehensive Site Plan 2000, p. 33, Tab 2 of references to Mello prepared testimony of April 27, 2011, http://www.lasg.org/CMRR/Litigation/Mello_refs_27Apr2011.pdf. Also, LAUR-02-1786, September 2001, LANL "Ten-Year Comprehensive Site Plan," Table II-2, p. 1, Study Group files. See also Bingaman statement announcing project,

- CMRR-NF is not needed for nuclear materials storage.[2] In 1994, LANL held 2.7 metric tons of plutonium,[3] presumably mostly at PF-4 where there is a 4,500 sq. ft. storage vault, about half the space formerly at the former Rocky Flats plant.[4] Vault space in PF-4 is poorly managed.[5]
- CMRR-NF is not needed for analytical chemistry (AC).[6]
- CMRR-NF is not needed for the metallurgical characterization (MC) services needed to support levels of modest pit production, or to surveill existing warheads.[7]
- CMRR-NF is not needed to prepare explosive experiments using plutonium in large tanks, a currently proposed mission for the facility, because these experiments have manifestly not been needed themselves, and are not needed in the future, to maintain the existing stockpile. It is not

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April 1999, at Tab 1, Mello testimony, op. cit. ("This would not be a Taj Majal but a scaled-down, streamlined facility that would meet the needs of the lab at a lower cost than they are met now.") Frank von Hippel, prepared testimony of April 27, 2011, finds the proposed plutonium storage capacity of CMRR-NF "absurd," citing the above GAO functional review of analytical chemistry requirements, and sees no need for the facility overall. http://www.lasg.org/CMRR/Litigation/vonHippel_27Apr2011.pdf. This absurdity is among indications that the proposed plutonium complex at LANL, with CMRR-NF, would be capable of capacity expansion, in effect providing a latent Modern Pit Facility (MPF) at LANL. NNSA expects LANL to achieve a pit production capacity of 40 pits/year in 2020, the year CMRR-NF was to be physically completed, and 60 pits/year in 2021, both prior to CMRR-NF operations. NNSA, "FY2011 Biennial Plan and Budget Assessment on the Modernization and Refurbishment of the Nuclear Weapons Complex," May 2010, http://www.lasg.org/budget/Sect1251_FY2011_BiennialPlan_BudgetAssmt_AnnexD_May2010.PDF, p. 6.

c. For reasonable alternatives to CMRR-NF capable of meeting this mission need see Mello affidavit of January 14, 2011, paragraphs 83-91, http://www.lasg.org/CMRR/Litigation/Mello_aff3_14Jan2011.pdf , and Mello, "The Proposed Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF): New Realities Call for New Thinking," http://www.lasg.org/CMRR/CMRR_alternatives.pdf. All reasonable alternatives center on usage of the pit production equipment in PF-4, with support functions conducted within PF-4 and at the CMRR Radiological, Utility, and Office Building (RLUOB), and *if desired* also elsewhere, either at LANL or at other sites. The entire "front end" of pit manufacturing, either up to metal production or including casting, could be done at another site, e.g. the planned Pit Disassembly and Conversion Facility (PDCF), as modified, at the Savannah River Site (SRS). Mark Hart, Warren Wood, and David Olivas, "Plutonium Pit Manufacturing Unit Process Separation Options for Rapid Reconstitution: A Joint Position Paper of Lawrence Livermore National Laboratory and Los Alamos National Laboratory," LLNL, LANL, September 6, 1996, cited in Mello affidavit of Jan. 14, 2011, op. cit, at p. 37. See also below at note 7.

e. The stockpile being maintained today is less than 50% of that maintained in 2000 when LANL proposed a Hazard Category III "or less" CMRR. DoD, "Increasing Transparency in the U.S. Nuclear Weapons Stockpile," http://www.defense.gov/npr/docs/10-05-03_fact_sheet_us_nuclear_transparency__final_w_date.pdf. For background see Hans Kristensen and Robert Norris, "US nuclear forces, 2011," http://bos.sagepub.com/content/67/2/66.full.

f. By the time CMRR-NF comes on line in 2023 or after, essentially all the U.S. nuclear stockpile will have been processed through Life Extension Projects (LEPs) that did not involve pit production. These warheads will have been maintained and upgraded for roughly an additional 30 years of service. Thus, as David Overskei, Phil Coyle, and others have argued, CMRR-NF may come "too late." (David Overskei, response to question from audience, "Nuclear Deterrence Summit," February 18, 2011, Study Group files; Phil Coyle, personal communication, July 2009). In the present political climate, new pit production missions for speculative future warheads in the post-2023 timeframe are being discussed as mission drivers for CMRR-NF, there being no justification for pit production for existing warheads. Mello conversations with senior congressional staff, February 22 and 24, 2011. The "need" for the CMRR-NF is political, not managerial.

[2] Adequate vault space of this type exists or could be relatively easily created at the Device Assembly Facility (DAF) at the Nevada National Security Site (NNSS) and at the K Area Complex of SRS, just to pick two of the most convenient examples. Re NNSS only: Conversation with Stephen Younger, President, National Security Technologies, February, 2011. Recent proposals to eliminate fire suppression in both the long-term vault and day vault of the CMRR-NF along with eliminating certain other engineered safety requirements only emphasize the redundancy of building more space for storing plutonium in robust sealed containers not counted as MAR, which is now apparently the proposed plan CMRR-NF. This is partially discussed in the letter from Peter Winokur, Chairman DNFSB, to Thomas D'Agostino, Administrator, NNSA, February 8, 2011, http://www.dnfsb.gov/pub_docs/correspondence/lanl/cor_20110208_la.pdf.

[3] DOE, "Plutonium: The First 50 Years," 1994, at Figure 4, http://www.fas.org/sgp/othergov/doe/pu50y.html#ZZ0.

clear that future untested warheads can be reliably certified using these or any combination of experiments and modeling.[8] These experiments also entail potentially severe diplomatic risks.

- CMRR-NF is very expensive. It is currently expected to cost between $3.7 and $5.8 billion (B), not including CMR demolition and disposal (D&D).[9] D&D costs have been estimated at roughly $400 million (M) in current dollars.[10] It has large opportunity costs within NNSA Weapons Activities program and NNSA overall, within Energy and Water accounts,[11] with respect to other important domestic and military programs, and in deficit reduction. Despite promises from the Obama Administration to seek unprecedented levels of funding for Weapons Activities, considerable funding uncertainty remains.[12] The CMRR-NF project has experienced approximately a 15-fold cost increase since the first published cost estimates in the 2001-2 timeframe (using the upper end of current estimates, as experience strongly suggests this will be more accurate), a 45-fold decrease in useful sq. ft. per dollar over that same period, and a 16-year delay in the estimated date of first operation.[13]
- CMRR-NF is managerial risky. It conflicts with existing programs at LANL and nationwide for money, management attention, nuclear engineers, and scarce nuclear-qualified vendors and

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[4] Government Accountability Office (GAO), "NNSA Needs to Establish a Cost and Schedule Baseline for Manufacturing a Critical Nuclear Weapon Component," May 2008, GAO-08-593, p. 21, www.gao.gov/new.items/d08593.pdf. The CMRR-NF vault floor area is listed by GAO as 13,000 sq. ft. (p. 31).

[5] References on this subject are voluminous, reaching back approximately two decades, and I have not had time to gather them (yet). PF-4 vault inefficiency is connected to wider questions about PF-4 program priorities and efficiency. See footnote 7.

[6] RLUOB contains as much or more AC space (19,500 sq. ft.) than is currently available in any two CMR wings (16,000 sq. ft.). LANL has other radiological laboratories.

[7] Rationalization of programs, floor space, vault space, and equipment within the existing plutonium facility (Building PF-4) will provide adequate MC capability if it does not already do so. Frank von Hippel prepared testimony of April 27, 2011, http://www.lasg.org/CMRR/Litigation/vonHippel_27Apr2011.pdf. Mello affidavit of January 14, 2011, op. cit., at paragraph 10, citing Tim George, LANL Nuclear Materials Technology Division Director, "Can Los Alamos Meet Its Future Nuclear Challenges? Balancing the Need to Expand Capabilities While Reducing Capacity," *Actinide Research Quarterly,* 1st Quarter 2001 at http://arq.lanl.gov/source/orgs/nmt/nmtdo/AQarchive/01spring/editorial.html, and citing Secretary of Energy Advisory Board (SEAB) Nuclear Weapons Complex Infrastructure Task Force, "Recommendations for the Nuclear Weapons Complex of the Future," July 13, 2005, p. H-6, at footnote 11 in http://www.lasg.org/CMRR/Litigation/Mello_aff3_ref/Mello_Aff3_All_References.pdf.

[8] Narrowly: JASON, "Reliable Replace Warhead Executive Summary," JSR-07-336E, September 7, 2007, http://www.fas.org/irp/agency/dod/jason/rrw.pdf. Broadly: LASG, "The Reliable Replacement Warhead (RRW) Program Can't Meet Congressional Objectives," April 16, 2007, http://www.lasg.org/RRW_talking_point_summary.pdf.

[9] White House, "November 2010 Update to the National Defense Authorization Act of FY2010, Section 1251 Report, New START Treaty Framework and Nuclear Force Structure Plans," http://www.lasg.org/CMRR/Sect1251_update_17Nov2010.pdf.

[10] NNSA, FY2012 Congressional Budget Request, p. 239.

[11] The House Energy and Water Development Appropriations Subcommittee will have only $30.6 B to disperse for FY2012, $5.9 B (16%) less than the Administration's budget request and $1.0 B less than FY2011. http://appropriations.house.gov/_files/51111FY2012SubcommitteeAllocations302bs.pdf. In addition to all the other priorities within NNSA, the agency expects large increases in pension fund liabilities, approaching $1 B per year, within 2 or 3 years. http://www.lasg.org/budget/DOE_FY2012_CBR_Vol_1.pdf (p. 16).

[12] Todd Jacobson, "House E&W Allocation Creates New Set of Funding Questions for NNSA," *Nuclear Weapons and Materials Monitor*, May13, 2011, (subscription).

[13] See table of changed value in Mello affidavit of January 14, 2011, op. cit., paragraph 86. Earlier cost and completion estimates ($375 M, FY2008) can be found in the "LANL Comprehensive Site Plan [CSP] 2001," LAUR-01-1838, July 2001, p. 110. http://www.complextransformationspeis.com/RM_141%20-%20LANL%202001b.pdf. For completion date slippages, see references at Mello paragraph 86, ibid.

workers.[14] At LANL, CMRR-NF strongly competes for physical space in TA-55 and in the Pajarito Corridor. See figures, attached. It may cause the closure of Pajarito Road for two years, which 4,400 LANL workers use to reach their workplaces.[15] Deep excavation (up to 130 feet) and related construction immediately adjacent to an operating plutonium facility, which itself requires a wide variety of structural and safety upgrades, may be tricky.[16] Especially given the extensive and intrusive additional upgrades to PF-4 which are now required, PF-4 operations could easily be halted for an extended period.[17] Between now and 2023, the national security impacts of CMRR-NF will be entirely negative, as they would be for any huge, decade-long, heavy construction project in that location. Just how negative, no one can predict.

- The CMRR-NF design concept may be changing[18] and its safety performance standards and future functionality could both be degraded.[19]

This list is not exhaustive.

Nevertheless the project continues. It lacks clarity regarding:

- purpose and need;
- specific functional requirements;
- design concept;
- capital cost and schedule (baseline) and operating (life cycle) costs;
- safety performance standards;
- impact on other programs and capital projects; and finally
- what entity should manage the project.[20]

All in all CMRR-NF is a major government fiasco and probably would already be viewed as such were poor project management not the long-standing norm at DOE. The project's present momentum is political and bureaucratic in nature, not the result of sound management.

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[14] The recent Strategic Forces subcommittee mark of the FY12 National Defense Authorization Bill (H.R. 1540) reflects some of these concerns at pp. 94-95 ("Report on project management for large-scale construction programs"). http://armedservices.house.gov/index.cfm/files/serve?File_id=2d22f281-e250-48ab-b141-93db2ffe7985.

> The committee is concerned that, given its history regarding management of large-scale construction projects, the National Nuclear Security Administration (NNSA) may encounter significant difficulty in managing and executing these programs to build two large, and wholly unique, nuclear facilities simultaneously [UPF and CMRR-NF]….The committee agrees with this decision to establish a mature design before full cost estimates are developed, and expects NNSA to avoid concurrent design and construction for these facilities.

[15] See Mello affidavit of October 21, 2010, paragraph 25. http://www.lasg.org/CMRR/Litigation/Mello_aff1_21Oct2010.pdf.

[16] The Bandelier Tuff is heavily jointed. Excavated pit walls have not always been stable at LANL.

[17] See further discussion of this problem in the text, below.

[18] NNSA, "Draft Supplemental Environmental Impact Statement [SEIS] for the Nuclear Facility Portion of the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico, Summary," http://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/Summary.pdf.

[19] Letter from Peter Winokur to Thomas D'Agostino, February 8, 2011, op. cit.

[20] Letter of Cliff Sterns, Chairman, Oversight and Investigations Subcommittee, House Commerce Committee, to DOE Secretary Steven Chu of April 27, 2011. http://www.lasg.org/CMRR/Stearns_Chu_ltr_27apr2011.pdf.

We advocate pausing the project to resolve some of these uncertainties. This would meet the legal requirements of the National Environmental Policy Act (NEPA) and its implementing regulations. We are litigating in the federal district court of New Mexico to enforce these requirements.[21]

Background information regarding CMRR-NF can be obtained from the web page we have created for this purpose.[22]

There are many additional reasons why CMRR-NF can and should be *delayed*, beyond the reasons. These reasons to delay are the second subject of this memorandum. They may be of interest even to those who want the project to go forward but have concerns about cost, timing, project management, and program conflicts.

Dr. Everett Beckner, former Assistant Administrator of the National Nuclear Security Administration (NNSA) for Defense Programs (DP) also advocates pausing the project for reconsideration.[23] We are aware of other experienced weapons managers and government project management experts who oppose this project as currently conceived who have not stepped forward publicly.

There is no national security reason *not* to delay CMRR-NF, since the structure is not needed to maintain all the nuclear weapons in the U.S. arsenal indefinitely. A requirement to build CMRR-NF, and to do so now, with its costs, risks, and impacts, is a *political* decision to seek new, large-scale, prompt stockpile options. These options must consist of large numbers of previously uncertified (i.e. novel) nuclear primaries, or else previously certified primaries for use in novel warheads. Certification of either is uncertain, as mentioned in footnotes above.

CMRR-NF is required for these novel stockpile options only if: a) the production rate sought is beyond what PF-4 could provide by 2023; b) the required promptness in starting production exceeds other options which might be implemented using the suite of other facilities expected to be available then; and c) there is a requirement to produce these pits without displacing other programs at PF-4, which is mostly devoted to non-pit purposes.[24]

B. CMRR-NF final design should be paused or slowed.[25]

1. DOE, an agency with one of the worst project management records in the U.S. government, is planning to construct several large, unique, complex nuclear facilities simultaneously.

DOE has multiple large nuclear facilities under construction or planned for construction in the present decade. The U.S. has done little large-scale nuclear construction in the past two decades and may not be able to successfully complete all these projects even under the most favorable assumptions – assumptions which would be far from realistic.

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[21] Los Alamos Study Group v. DOE, NNSA, Steven Chu, and Thomas Agostino. New Mexico Federal District Court 1:10-CV-0760-JH-ACT. The full docket is available at http://www.lasg.org/CMRR/Litigation/CMRR-NF_litigation.html.

[22] At http://www.lasg.org/CMRR/open_page.htm.

[23] Quoted in Todd Jacobson, "NNSA Not Pausing Design On Projects In Light Of Japanese Nuclear Crisis," *Nuclear Weapons and Materials Monitor*, 3/18/2011, http://www.lasg.org/ActionAlerts/Bulletin107.html, and in Roger Snodgrass, "Seismic concerns grow over plutonium plant," *Santa Fe New Mexican*, 3/19/2011, http://www.santafenewmexican.com/Seismic-concerns-grow-over-plutonium-plant. It is important to note that in the Snodgrass article Dr. Beckner states it is important to analyze hazards from a full-engaged fire in the proposed vault. NNSA is currently studying the possibility of considering none of the up to 6 metric tons of Pu to be stored there as MAR and eliminating fire suppression in the long-term and day vaults. Letter from Winokur to D'Agostino, February 8, 2011, op. cit.

[24] PF-4 space is divided between pit manufacturing and certification (35%), "readiness in technical base and facilities" (29%), "Other NNSA/DOE programs (28%) (Pu-238 heat source fabrication, ARIES/pit disassembly, MOX fuel polishing, and oxide fuels/ceramics R&D), and "Other NNSA weapons programs" (8%) (pit surveillance, Pu R&D, and special recovery line). GAO-08-593, op. cit., p. 22-23.

[25] *Pausing* and *slowing* are different strategies with different costs and benefits. Only the former meets the legal requirements of the National Environmental Policy Act (NEPA). Both are considered here.

These existing and planned projects include: the Hanford Tank Waste Treatment and Immobilization Plant (WTP); the Mixed Oxide Fuel Fabrication Facility (MFFF) at the Savannah River site (SRS); UPF at Y-12; the Pit Disassembly and Conversion Facility (PDCF) at SRS; and the Salt Waste Processing Facility (SWPF) at SRS. These projects generally compete for budget and other resources with each other, with other DOE programs, and with expected pension fund shortfalls. If any experience further cost overruns, or if any other large NNSA and DOE projects experience cost overruns as is common, this competition will be intensified.

This upsurge is nuclear facility construction is occurring against a background of profound national concern about budget deficits. Less broadly recognized so far is that by failing to honestly and constructively face our growing energy and climate crisis, and their effects such as increased flooding, Congress is profoundly endangering our national security.[26]

DOE and NNSA are constructing WTP, MFFF, and SWPF now. UPF and PDCF have yet to begin. While the CMRR project as a whole is under construction, the CMRR-NF subproject has not much begun.[27] Extensive CMRR-NF construction could begin later this year.

As was noted last year by the MFFF project manager, the U.S. lacks an adequate base of qualified nuclear suppliers to support multiple large nuclear projects.[28] Engineers and other technical specialties are in short supply.[29] Commercial nuclear reactor construction competes with NNSA and DOE capital construction, and both compete with hiring by federal agencies – DOE, NNSA, the Nuclear Regulatory Commission (NRC), and DNFSB. The competition is global.

Los Alamos is a relatively unattractive residential relocation destination; in one NNSA study it was the least attractive of eight possible residential locations.[30] CMRR project managers have expressed concern about how to house the potential influx of CMRR-NF workers.[31] These and other regional and institutional liabilities could disadvantage CMRR-NF and set the stage for project delays, cost increases, and under diminishing budgets, failure.

The PDCF project has been delayed and its completion date is uncertain. PDCF is the front end of two if not three plutonium disposition pathways (MOX, Pu vitrification, and Pu direct disposal), so any delays in PDCF risk corresponding delays in MOX fuel production and Pu vitrification. Should successful completion of PDCF be jeopardized by competition for funding, resources, or management attention – as may now be occurring – the MOX fuel production and Pu vitrification programs could be set up to for indefinite delay. While the MOX program has no merit, we believe, Pu vitrification and direct disposal do.

An operating PDCF facility could accomplish the "front end" of the pit production mission (metal production from recycled pits), which would also lighten the analytical workload at LANL. The K Area could provide the necessary plutonium storage. LANL's PF-4 has already installed the

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[26] For reasons far beyond the scope of this memorandum, such changed investments are an essential component of any successful program to revitalize the U.S economically.

[27] The first CMRR building, RLUOB, with its common support functions, has been built and is being outfitted. The CMRR parking lot has been built. Some 90,000 cubic yards of tuff was excavated from the CMRR-NF site in 2006.

[28] Mosi Dayani, MFFF Project Engineer, NNSA, "MOX Fuel Fabrication Facility: Leading the Nuclear Renaissance," 2010, slides 29, 30, 35. http://operatingexperience.doe-hss.wikispaces.net/file/view/Dayani+-+MOX+Fuel+Fabrication+Facility+-+Leading+the+Nuclear+Renaissance.ppt.

[29] DNFSB, personal communications. Qualified, certified craft workers could also be in short supply.

[30] SAIC/NNSA, "Relocation of Non-Nuclear Production to an Alternate Location Business Case, Rev. 2," October 18, 2007, p. 32. http://www.gsa.gov/graphics/pbs/Business_Case_Relocation_Non_Nuclear_Production.pdf.

[31] Ike Richardson, LANL Deputy Director, public statements of June 16, 2010. Quoted in Mello affidavit of October 21, 2010, paragraph 25, op. cit.

equipment necessary to make 80 pits/year given a source of purified metal.[32] I am not recommending this course of action, because there is no need for pit production at all.

Without PDCF, LANL's small ARIES project might be forced to expand to produce large quantities of PuO_2 for MOX on an open-ended schedule. This would raise very daunting safety challenges for safety, delay or prevent completion of planned physical upgrades, and harm competing programs at PF-4.

At present, the MOX mission is even more uncertain than it was prior to the Fukushima disaster. Were the MOX mission to disappear, or decrease in scale, opportunities to create contingent pit production space might appear at SRS, primarily for pit recycling and metal purification, and potentially also for casting. To repeat, none of this is actually needed or warranted.

2. If built, CMRR-NF should follow UPF, not lead or proceed simultaneously with it.

NNSA currently seeks to simultaneously build two large nuclear facilities for warhead component manufacturing. Of the two, UPF is more urgent than CMRR-NF.

During LEPs, secondaries are remanufactured.[33] If LEPs are to continue as planned without significant interruption, Building 9212 at Y-12 must disassemble and remanufacture secondaries until UPF fully replaces these functions. Process continuity in the aging and unsafe Building 9212 could be interrupted by many factors, despite current line item reinvestment. By contrast CMRR-NF is not needed to extend the life if any U.S. warhead. It is "needed" only to create the capacity for unapproved new stockpile options – options which national policy strongly stigmatizes.[34] Those options are stigmatized for technical as well as other causes.

The Strategic Forces Subcommittee of the House Armed Services Committee (HASC) has expressed serious concern about proceeding with concurrent design and construction of CMRR and UPF, *and expects NNSA not to do that*. Quoting at length:

> The committee believes that successful, efficient, and timely completion of the Chemistry and Metallurgy Research Building Replacement (CMRR) at the Los Alamos National Laboratory and the Uranium Processing Facility (UPF) at the Y-12 National Security Complex are critical to the long-term sustainability of the nuclear weapons stockpile. The committee is concerned that, given its history regarding management of large-scale construction projects, the National Nuclear Security Administration (NNSA) may encounter significant difficulty in managing and executing these programs to build two large, and wholly unique, nuclear facilities simultaneously.
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> The committee notes with concern the large cost growth and schedule delays of both of these programs as they have advanced in the design process. With the designs for UPF and the major nuclear component of CMRR only 45 percent complete, expected total project costs for constructing the facilities have increased several times over compared to original estimates. The original 2004 maximum cost estimate for CMRR was less than $1.0 billion; the current expected maximum cost for CMRR, based on the 45 percent complete design of the nuclear facility, has increased dramatically to over $6.0 billion. Similarly, the expected maximum cost for UPF has increased from $3.5 billion

[32] NNSA, Performance Evaluation Report (PR) for LANL, FY2008, in references to Mello testimony of April 27, 2011, pp. 112-113. http://www.lasg.org/CMRR/Litigation/Mello_refs_27Apr2011.pdf.

[33] Conversation with Madelyn Creedon, Senate Armed Services Committee, February 11, 2011.

[34] Department of Defense, "Nuclear Posture Review," p. xiv. "In any decision to proceed to engineering development for warhead LEPs, the United States will give strong preference to options for refurbishment or reuse. Replacement of nuclear components would be undertaken only if critical Stockpile Management Program goals could not otherwise be met, and if specifically authorized by the President and approved by Congress." http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf.

> in 2007 to $6.5 billion today. As discussed in documents accompanying the fiscal year 2012 budget request, NNSA will not determine full baseline costs for the these facilities until their designs are 90 percent complete. The committee agrees with this decision to establish a mature design before full cost estimates are developed, and expects NNSA to avoid concurrent design and construction for these facilities.
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> The committee recognizes the one-of-a-kind nature of these facilities and the difficulties in estimating their costs and schedules in conceptual phases. However, the dramatic increases in the expected costs of these facilities, coupled with their importance to sustaining the Nation's nuclear deterrent, demonstrate the need for strong oversight of the project management approach taken by NNSA for constructing these facilities.
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> Therefore, the committee directs the Under Secretary for Nuclear Security to submit a report to the congressional defense committees, by March 15, 2012, on NNSA's approach to construction project management for CMRR and UPF. The report should cover NNSA's general approach to managing both large-scale construction projects simultaneously; application of lessons learned by NNSA and the Department of Energy from previous large-scale construction projects; NNSA's approach to ensuring accurate cost and schedule estimates throughout the project design and construction cycle; how NNSA conducts oversight and ensures accountability from its design and construction contractors; alternatives considered for managing and scheduling the two projects; advice and guidance received from other Government organizations with experience managing large-scale construction projects; and any other matters the Administrator determines appropriate. The committee encourages NNSA to think creatively and explore all of its options for managing these projects, and to strive to complete them in an efficient and expeditious manner.[35] (emphasis added)

NNSA has stated that it wishes to stagger UPF a little after CMRR-NF, for a number of reasons.[36] The order should be reversed.

We believe NNSA chose to begin MFFF before PDCF in order to commit Congress to both facilities and to the MOX program (which has always been vulnerable to reversals since it has no public, and only private, benefit. We believe the same inverted prioritization is being pursued by NNSA in the case of UPF and CMRR-NF, and for the same reason. NNSA wants to start as many construction projects as possible in the present window of political opportunity, which many be short, and is privileging the project with the weaker justification.

Two years of schedule lag is however unlikely to be enough time to either learn the lessons of UPF design and construction, or transfer staff, vendor capacity, and management attention from one project to another. These can be grown, but not both quickly and with quality.

3. It is not known at this time whether it is possible to affordably meet CMRR-NF safety and functional design goals.

In January 2009 DNFSB reported that NNSA had said it might not be "economically feasible" to meet nuclear industry safety standards for active confinement ventilation at CMRR-NF. DNFSB insisted that NNSA meet those standards to win DNFSB's approval for the CMRR-NF design.

> The [NNSA's] CMRR Nuclear Safety Design Strategy…states that it may not be economically feasible to seismically design and qualify some components of the active confinement ventilation system or its support system to PC-3 seismic design

[35] Strategic Forces mark of the FY12 National Defense Authorization Bill (H.R. 1540) at pp. 94-95, op. cit.

[36] White House, "November 2010 Update to the National Defense Authorization Act of FY2010 Section 1251 Report: New START Treaty Framework and Nuclear Force Structure Plans," p. 6. http://www.lasg.org/CMRR/Sect1251_update_17Nov2010.pdf.

requirements…It is not acceptable to downgrade PC-3 seismic design requirements for the active confinement ventilation system.[37]

The economic feasibility of a safe, functional CMRR-NF is now clearly back on the table.

The latest increases in projected CMRR-NF cost are causing renewed interest in downgrading design basis safety criteria. On December 20, 2010, LANL wrote a letter to NNSA outlining eleven contemplated changes in the CMRR-NF design – in effect proposing to abandon the design that was previously certified over a multi-year peer review period. The DNFSB was not copied on that letter. These very significant possible changes were subsequently the subject of pointed inquiry by the DNFSB.[38]

The proposed changes were premised on a commitment to hold the MAR to half of what it had been before. Reportedly, no changes in mission requirements whatsoever underlay the drastic proposed change; the previous number was said to be simply a mistake. In the new plan, none of the material in the vault would be considered MAR, since no fire suppression would be provided.[39]

The draft Supplemental Environmental Impact Statement (SEIS) formally unveiled April 29, 2011 considers a new design alternative in which the bottom of the excavation would be raised some 70 feet and which omits replacement of the unconsolidated volcanic ash layer beneath the building. This would raise seismic accelerations of the building in the event of an earthquake. It would however be somewhat cheaper and easier to build.

The sweeping nature of the proposed safety design changes and their uncertain status today raise the same serious questions that NNSA raised in late 2008: can CMRR-NF be simultaneously *safe* and *economically feasible*?

An additional safety question is now looming which could affect both CMRR-NF safety design and PF-4 upgrades. Due to an inappropriate assumption regarding deposition velocity, the standard DOE plume model (MACCS2) greatly underestimates (by a factor of 3 to 5) the distance to which respirable plutonium particles in smoke travel under a given uniform meteorological condition. The changes would in general increase relevant target populations and in some cases the maximum dose received by any member of the public. How correcting this miscalculation will affect facility safety design is as yet unknown.[40] This change should not affect UPF design.

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[37] Letter and enclosure from Roy Kasdorf, DNFSB to Gerald Talbot, NNSA, Janaury 16, 2009. http://www.hss.energy.gov/deprep/2009/FB09J16A.PDF. See also George Lobsenz, "Safety Board Raises Seismic Issue on Alamos Project," *Energy Daily*, January 26, 2009. Mello affidavit of October 21, 2010, Exhibit 2, http://www.lasg.org/CMRR/Litigation/LASG_response_to_MTD_exhibits_21Oct2010.pdf.

[38] Letter from Peter Winokur to Thomas D'Agostino, February 8, 2011. http://www.dnfsb.gov/pub_docs/correspondence/lanl/cor_20110208_la.pdf. We have been unable to obtain the underlying LANL letter.

[39] Ibid. The MAR in the laboratory and processing portions of the facility is to just half what was previously estimated. Conversation with Madelyn Creedon, Senate Armed Services Committee, February 11, 2011.

[40] The DOE Chief of Nuclear Safety is reportedly preparing a memo on this subject. Background:

- November 5, 2010, DOE letter responding to DNFSB May 21, 2010 letter requesting an analysis for setting forth a technically defensible basis for (a) the final deposition velocity to be used in accident calculations for WTP and (b) complex-wide use of a default value (or values) to be specified in DOE's MACCS2. [PDF]
- September 17, 2010, DOE letter requesting a 45-day extension to respond to DNFSB's May 21, 2010, letter regarding the deposition velocity to be used for both WTP and complex wide. [PDF]
- August 26, 2010, DNFSB letter identifying an acceptable deposition velocity for use in the WTP Safety Strategy calculations. [PDF]

4. Delaying CMRR-NF will save money.

CMRR-NF would far cost much more to operate than the facilities it would replace. These are: all facilities currently used at CMR (other than those which CMRR-NF will not replace, like the Wing 9 hot cells.)[41]

> The CMRR maintenance budget is projected at approximately 2.5% of RPV [Replacement Plant Value] to sustain its condition. One of the challenges for the Laboratory and NNSA is to provide the funds necessary to meet this new maintenance funding demand.[42]

In FY07, total LANL maintenance spending was $88 M, of which $6 M was for the existing CMR building.[43] At $3.7 to 5.8 billion RPV, the CMRR-NF annual maintenance bill works out to be $93 to $145 million, more than a factor of ten larger. CMRR-NF operating costs, vs. CMR operating costs, are not quantified here but the difference will again be very large, on top of the increase in maintenance spending.[44]

A June 21, 2010 GAO report found that NNSA could not accurately quantify the costs of operating and maintaining its nuclear weapons facilities.[45] The Comptroller General subsequently wrote DOE, saying that as a result, "NNSA lacks the management information necessary to make cost-benefit decisions on infrastructure investment."[46]

CMRR-NF will thus increase LANL's operations and maintenance costs by at least $100 million per year and quite likely twice that.[47] Postponing these substantial increased annual costs, which should be far more carefully estimated, would save substantial sums in present value.[48]

The situation at UPF presents a complete contrast. There, the net decrease in operating cost and maintenance associated with construction of UPF and eventual decommissioning of Building 9212 at Y-12 is expected to save $200 million per year.[49] While the true savings are unlikely to be this great –

- May 21, 2010, DNFSB letter establishing a 120-day reporting requirement for a report on the deposition velocity to be used for both WTP and complex-wide. [PDF]

[41] Only CMR wings 5, 7, and 9 are in use today.

[42] LANL, "Ten-Year Site Plan, FY2008-FY20017," LA-CP-07-0039, January 9, 2007, pp. 114-115. Study Group files, Freedom of Information Act request.

[43] Ibid.

[44] Some of these operating costs will be added in a subsequent edition of this paper, to the extent NNSA has estimated them. For example, CMRR-NF will use so much electricity that the existing transmission lines to Los Alamos will need to be augmented with another line or else re-conductored to increase capacity. NNSA, Draft SEIS, op. cit.

[45] GAO, "Nuclear Weapons, Actions Needed to Identify Total Costs of Weapons Complex Infrastructure and Research and Production Capabilities, GAO-10-582, www.gao.gov/new.items/d10582.pdf.

[46] Letter from Gene Dodaro, Comptroller General, to Deputy DOE Secretary Dan Poneman, July 6, 2010. Study Group files.

[47] Comments to the contrary by retiring LANL Director Michael Anastasio notwithstanding. Quoted by Todd Jacobson, "NNSA, Lab Officials Detail Impacts of Potential Cuts To Weapons Program," *Nuclear Weapons & Materials Monitor, March 25, 2011. Paywall.*

[48] *Quantification of life-cycle costs is a requirement of DOE Order 430.1B, "Real Property and Asset Management." https://www.directives.doe.gov/directives/current-directives/430.1-BOrder-bc2/view.*

[49] Thomas D'Agostino:

> At Y12, we plan on going from 150 acres of high security space, ultimately to 15 acres of high security space. That shift—and this is where this uranium processing capability that we want to shift into—will allow us to move forward and save what we believe is a total of $200 million of operating expenses, both in security costs per year, as well as operating efficiencies, by getting the whole enterprise right-sized, if you will, leaving, kind of, the cold-war enterprise behind us, and shifting to a much smaller, more

they never are – the potential for major annual savings does appear real. However large they may be, this savings stream is not expected to begin until the late 2020s, however.[50] The longer UPF is delayed – for example by attempting to pursue two projects simultaneously – the greater the opportunity cost.

There will be costs associated with pausing (or slowing) any engineering project, including CMRR-NF. Some may say that if the present design teams are reconstituted to work on higher priority projects, they could never be reassembled, or if so only at great expense. If the project is that difficult and fragile, however, this only begs the question: isn't it a fiasco in the making? Lawmakers should be very suspicious of statements that only one particular contractor and configuration of employees, at one particular time – *right now* -- is capable of building this project. Cost effective execution is more likely after, not before, experience is gained from other projects.

5. The growing PF-4 Reinvestment Project is more important than CMRR-NF and should be prioritized; it is not clear that it can be pursued concurrent with CMRR-NF.

PF-4 is much larger in terms of usable space, and is far more important programmatically, than CMRR-NF. It is essential to fix up PF-4 from the safety perspective, and some programs must continue there while doing so.[51] These twin goals conflict managerially, fiscally, and programmatically with each other and with building CMRR-NF at the same time, in almost the same place.

In October of 2009, NNSA and DNFSB concluded that PF-4's mitigated offsite dose in the event of a major fire exceeded DOE's 25 rem guideline by more than two orders of magnitude.[52] On July 13 of the next year, NNSA provided an implementation plan in response to this recommendation[53] and on April 1, 2011, NNSA provided the "scope, cost, and schedule for upgrades necessary to achieve a seismically qualified safety class active ventilation subsystem."[54] The cost, in addition to the already-planned upgrades in the TRP project, was thought to be in the $40 to $80 million range. NNSA's recent letter mentioned some risks:

> The project has high visibility due to Recommendation 09-2 and may become very complex. It involves modification to a safety-class system and working in an operating, high-security plutonium facility in parallel with a high volume of other planned physical upgrades. Risks include: budget uncertainty; incompletely defined scope and requirements; incompletely documented as-built conditions; and assumptions on existing anchorage, use of the interim response spectra, and availability of sufficient number of qualified cleared workers.

Then, just two weeks later on April 15, LANL concluded that PF-4 is structurally inadequate with respect to seismic loads.[55] The structure on which ventilation upgrades would be built cannot be counted upon in the design basis earthquake.

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integrated future enterprise.

Transcript of SASC Strategic Force Subcommittee hearing, March 30, 2011,p. 24. http://armed-services.senate.gov/Transcripts/2011/03%20March/11-19%20-%203-30-11.pdf.

[50] Mello conversation with Madelyn Creedon, February 11, 2011.

[51] Program delays at PF-4 are already affecting all the sites, e.g. by causing backlogs in surveillance programs. Conversations with GAO staff, February 24, 2011.

[52] DNFSB, Recommendation 2009-2, "[LANL] Plutonium Facility Seismic Safety," http://www.dnfsb.gov/pub_docs/recommendations/lanl/rec_2009_02_la.pdf.

[53] Letter from Thomas D'Agostino, NNSA, to Peter Winokur, DNFSB of July 13, 2010. http://www.hss.energy.gov/deprep/2010/TB10L13A.PDF.

[54] Letter from James McConnell, NNSA, to Peter Winokur, DNFSB of April 1, 2011. http://www.hss.energy.gov/deprep/2011/TB11A01A.PDF.

For reference, the design basis 2,500-year recurrence interval earthquake is expected to generate seismic accelerations similar to those experienced at the Fukushima Daiichi nuclear power plant. The 10,000 year recurrence interval LANL earthquake would have accelerations twice as great.[56]

So in addition to, and concurrent with, the expensive, complex, and risky ventilation upgrade project described just two weeks prior, which was itself not previously scoped, structural upgrades are now also required. These will also no doubt be expensive, complex, and risky.

These revelations, of which only a sketch is provided here, raise new questions about the practicality of proceeding with everything at once at TA-55:

- existing and planned new programs in PF-4, including new pit production and industrial-scale production of plutonium dioxide for mixed-oxide (MOX) reactor fuel;
- the planned test production of additional kinds of plutonium pits; *and also*
- reconstructing the building in fundamental ways; *and also*
- undertaking a $6 billion construction project immediately adjacent to PF-4 involving a very deep excavation, multiple concrete batch plants, and up to 371,000 cubic yards of concrete; *and also*
- "smaller" projects (in the $50-$300 million range) as well as other more modest projects nearby *and also*
- highly-intrusive, large environmental remediation projects with court-ordered performance schedules, one of which is contiguous to TA-55.

What we are seeing in the history of both CMRR-NF and PF-4 is that the full implications of LANL's challenging geographic situation are only slowly being assimilated by the federal bureaucracy and contractor community. Both DOE and NNSA operate with an almost unbelievable "early optimism bias," as Deputy Administrator Donald Cook called the problem.[57] This leads to management failures again and again and has kept DOE and now NNSA on GAO's "Watch List" of agencies most susceptible to waste, fraud, and abuse each and every year for the last 20 years.

I believe NNSA is attempting too much, too fast in all this. The engineering base, the vendor base, the management, the nuclear-qualified workforce, do not exist. It would be prudent to delay CMRR-NF in order to focus on the more important problems at hand, to avoid what might easily become a fiscal and management train wreck in two or three years. What is most important is the safety of existing facilities. This is what needs the talent, money, and management attention.

6. Proceeding with CMRR-NF construction simultaneously with nine other Pajarito Corridor capital projects in a congested space will increase costs and risks across the board – and may not succeed.

The Pajarito Corridor is much too narrow and crowded to confidently absorb as many simultaneous construction projects as LANS optimistically envisions right now. There will be safety problems, excess project management costs, program costs, employee costs, and morale costs. Please see the

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[55] LANL, "Preliminary study assesses potential impact of seismic event at Los Alamos," April 15, 2011 press release. http://www.lanl.gov/news/releases/preliminary%20_study_assesses_potential_impact_of_seismic_event_at_los_alamos.html. Staff report, "LANL's earthquake study a 'big deal,' April 16, 2011, *Albuquerque Journal Santa Fe*. http://www.lasg.org/press/2011/LANL_earthquake_study_ABQ-JRNL_16Apr2011.html. See "Seismic Review Finds More Problems For Los Alamos National Laboratory," *Nuclear Weapons and Materials Monitor*, April 22, 2011. http://lasg.org/press/2011/NWMM_22Apr2011.html.

[56] Frank von Hippel prepared testimony, op. cit.

[57] Donald Cook, talk at the "Nuclear Deterrence Summit," sponsored by the *Nuclear Weapons and Materials Monitor*, February 16, 2011. Study Group notes and recording.

attached figures. These costs, risks, and impacts would be, first and foremost, *national security* costs, risks, and impacts. They will also waste money.

The nine projects are:

- Nuclear Materials Safety and Security Upgrades Project (NMSSUP), Phase II. This project is underway now.
- The TA-55 Reinvestment Project (TRP), Phases II and III. Some, possibly most, of this work is essential for safety.
- The Radioactive Liquid Waste Treatment Facility (RLWTF). At some scale, this project appears to be a basic necessity.
- The Transuranic Waste (TRU) facility and Consolidated Waste Complex (CWC). At some scale, the former is required.
- Closure of Material Disposal Area (MDA) C. MDA C is immediately adjacent to RLUOB, across an access road. Timing of this and MDA G closures are driven by a legally-mandated settlement agreement.[58]
- Closure of MDA G, by far the largest MDA at LANL.
- Disposition of TRU and other wastes currently stored at MDA G.
- Completion and occupancy of RLUOB.
- Relocation and possible short- or long-term (two years?) closure of Pajarito Road, which provides workplace access for 4,400 employees.[59]

Construction of these projects also entails a complex suite of ancillary permanent facilities, temporary and permanent traffic, utility, and other infrastructure changes, and various temporary facilities such as batch plants, laydown yards, and so on, not listed here.

The congestion from all this simultaneous construction, much of which is focused on the immediate TA-55 area, strongly threatens the continuity of LANL plutonium programs, if not their safety.

7. CMRR-NF operation requires the successful completion of a suite of ancillary facilities and projects, some of which are also necessary at some scale and configuration for other purposes; these should be prioritized over CMRR-NF.

These projects are NMSSUP, TRP, RLWTF, the TRU facility, and RLUOB, which appear necessary in concept (though not necessarily at the present or planned scale) to continue operations at LANL. There may also be other projects not yet fully revealed, such as the TA-52, -52, and -46 Consolidated Waste Complex, the TA-55 Cold Hardened Shop, the TA-48 CMRR Office Complex, and others. See attached figures.

8. Some buildings at LANL, in addition to PF-4 and CMR, are unsafe and if needed should be replaced sooner, rather than later.

There are serious seismic safety problems at LANL besides those at PF-4. These problem facilities include nuclear facilities, other high-hazard facilities, and ordinary occupied structures, many of which do not meet seismic and other safety standards, or ordinary building code standards.[60] It will take a

[58] Constructing CMRR-NF conflicts with more aggressive cleanup options for MDAs C and G. This conflict is an aspect of the current CMRR-NF litigation. One of the environmental impacts of CMRR-NF is to limit DOE's cleanup choices at MDAs C and G – illegally.

[59] John Bretzke, LANL, "Pajarito Construction Activities," June 16, 2010, presentation, slide 4. http://www.lasg.org/CMRR/John-Bretzke_Presentation_for_Community_Forum.pdf.

[60] I have been unable to obtain a complete list of the facilities which do not meet current seismic and other building codes.

great deal of money, time, and management attention to fix these problems, if they are ever fixed, and the ability to do so is harmed by attempting to build CMRR-NF at this time.

9. The scale and timing of the CMRR-NF construction project jeopardizes the scientific identity of LANL.

The attempt to manage and conduct numerous simultaneous construction projects at LANL risks (further) damage to the identity of LANL as a scientific laboratory, which the pit production mission itself, together with the choice of a fully privatized management and operating contractor led by an engineering and construction company (Bechtel) already places in jeopardy. The intensity, scale, and duration of construction at LANL risk the scientific quality and integrity of the stockpile stewardship mission.

10. Superblock at LLNL is available as a backup in the absence of CMRR-NF.

Superblock at LLNL (Building B332 and ancillary facilities) has a comparable amount of laboratory space (25,000 sq. ft. at Superblock vs. 22,500 sq. ft. at CMRR-NF). It exists now, it is operating, and it is paid for. While it has drawbacks, and it is not current policy to support it as a Hazard Category II nuclear facility, it is always available as backup in the absence of CMRR-NF.[61]

11. Missions at PF-4 may decrease, including both pit production and competing programs.

The future size of the stockpile is uncertain but is highly unlikely to be larger than today's, for sheer economic reasons if no others. The workload and functional requirements of the TA-55 complex related to the stockpile (e.g. surveillance, pit certification and production), which help determine the mission requirements of CMRR-NF, could decrease.

The Pu-238 mission at PF-4 has an uncertain future. LANL reportedly does not want it; SRS reportedly *does* want it. The nature and scale of this mission are classified; the mission may also be uncertain or unsupported by key past constituencies. If Pu-238 work was consolidated elsewhere or discontinued in whole or in part, considerable space could be liberated at PF-4, on the order of 20% of the total space. Pu-238 work is responsible for most of PF-4's overall hazard.

Justification for the scale of the proposed CMRR-NF vault – "the plutonium stores for the Nation" as NNSA Deputy Administrator for Defense Programs Donald Cook described it[62] – is particularly obscure.

12. LEP schedules are artificial, optimistic, and may not be met, allowing delay in any proposed pit production to match distant out-year, as yet unapproved, LEPs.

The proposed overall schedule for LEPs may be too optimistic, adding to financial and management pressures in the coming years and forcing (or allowing) postponement of any W78/88 or W80/W80-1 replacement warhead pit production (as if any were needed).

More broadly, NNSA faces an enormous financial and managerial bottleneck in the middle years of this decade. I believe it is virtually certain that NNSA will be unable to complete all its ambitious projects. LEPs will be prioritized. CMRR-NF competes with these and all other projects, from now until 2023 at the earliest.

13. The overly-ambitious CMRR-NF project continues to delay the implementation of alternatives which would remove the risks of continuing work in the CMR building.

CMR is unsafe. NNSA should promptly upgrade, or move out of, spaces in CMR.

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[61] I am unaware of any outstanding safety problems at this facility, but have not done enough homework on this topic.

[62] NNSA, Cook testimony to the Strategic Forces Subcommittee of the Senate Armed Services Committee, March 30, 2011, p. 11. http://armed-services.senate.gov/Transcripts/2011/03%20March/11-19%20-%203-30-11.pdf.

There are no plans to replace Wing 9. If it is to be retained, it should be made safer (seismically and otherwise) as soon as possible, which will require money and scarce attention. Otherwise, the programs it houses should either be brought to a speedy conclusion or moved to appropriate, safer locations, including PF-4.

The same philosophy should be adopted for CMR programs in other wings. Make them safer, move them out, or consider shutting them down. Structural upgrades to a portion of the southern CMR would be relatively inexpensive, and should be considered if necessary, but the preferred solution is to vet and consolidate all Hazard Category II and III plutonium missions at LANL into PF-4.

Figure 1: LANL Pajarito Corridor Project Planning 2010-2020

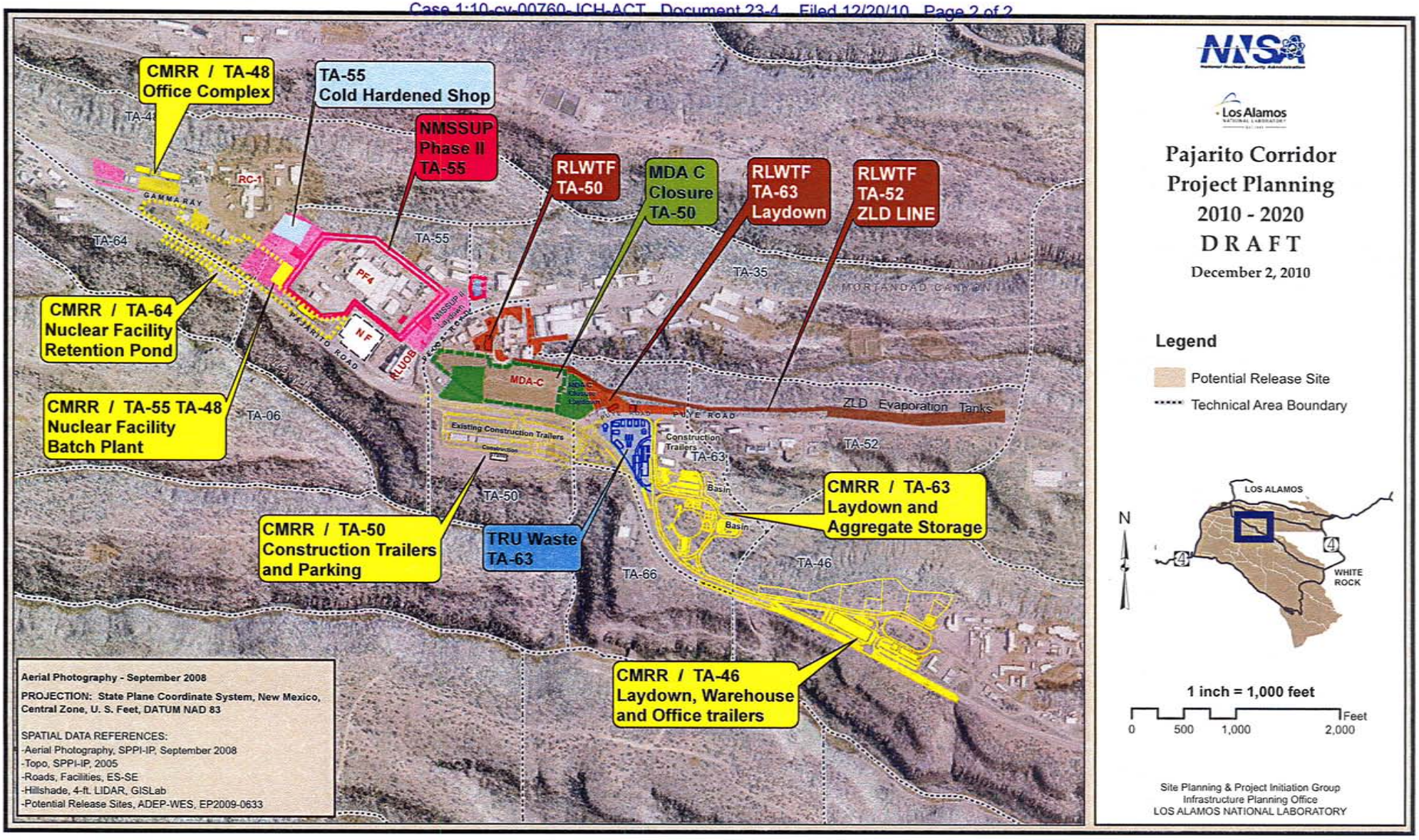
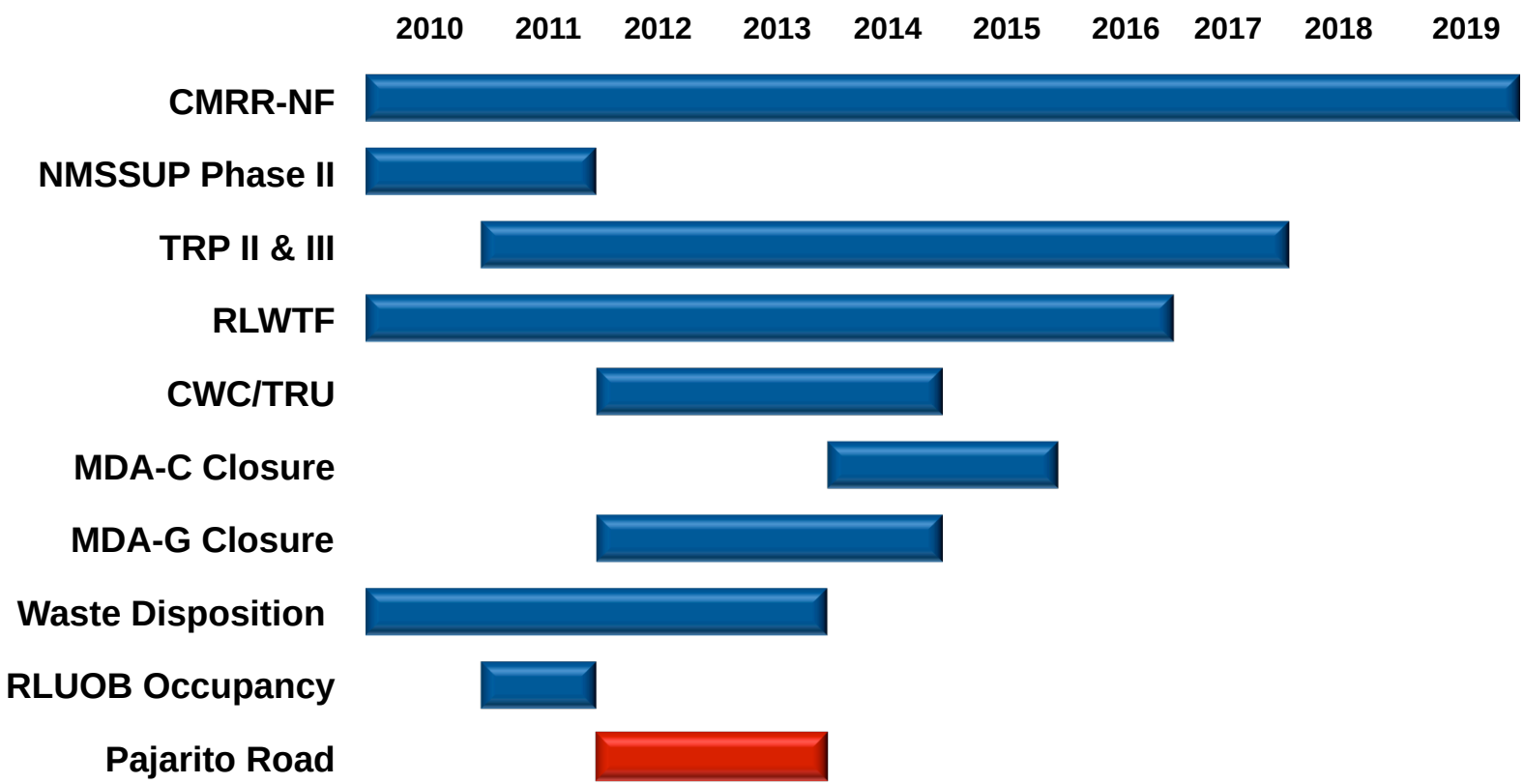


Figure 2: LANL, Bretzke presentation 2010

Major Projects Near Concurrent Activities



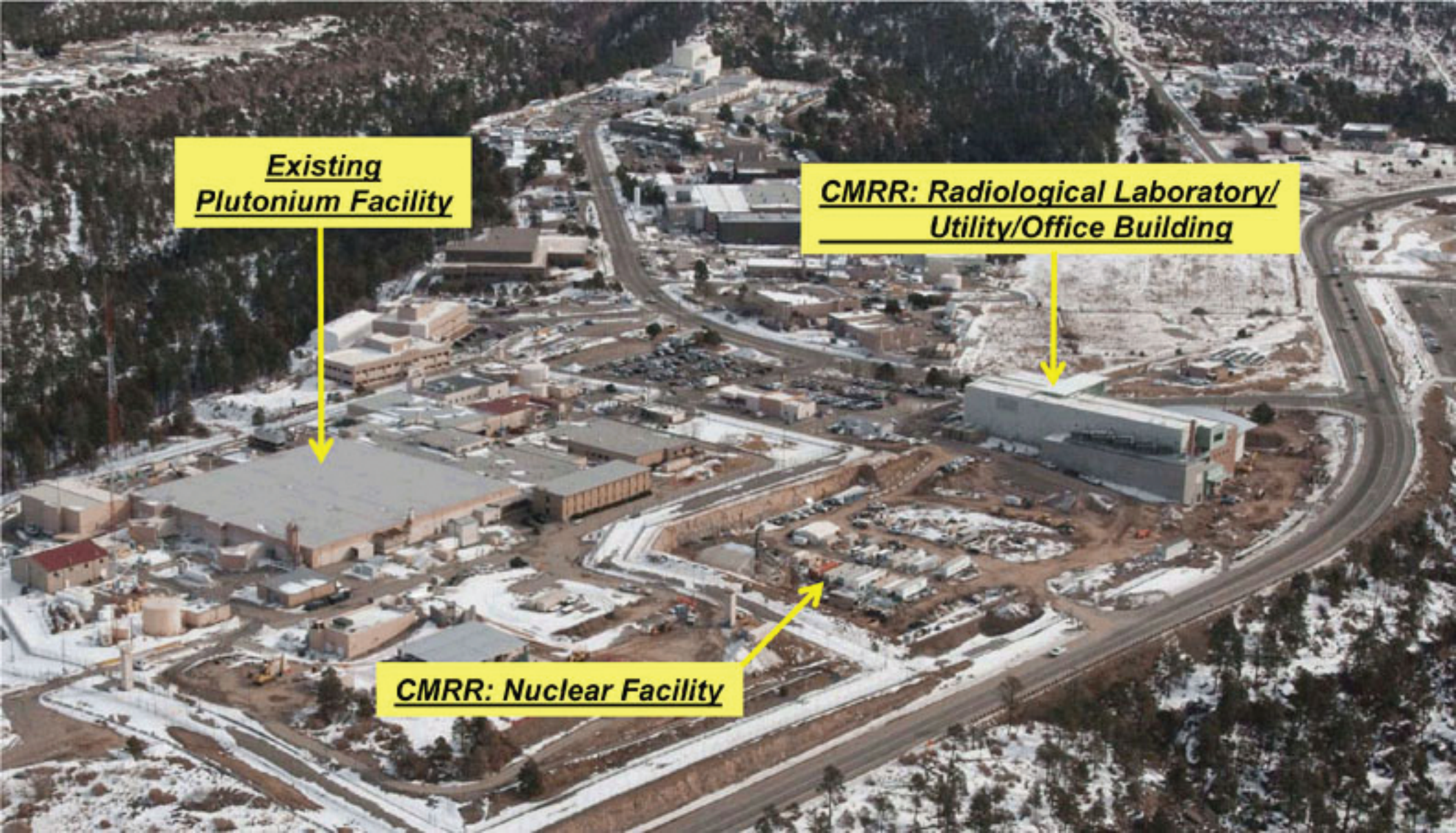
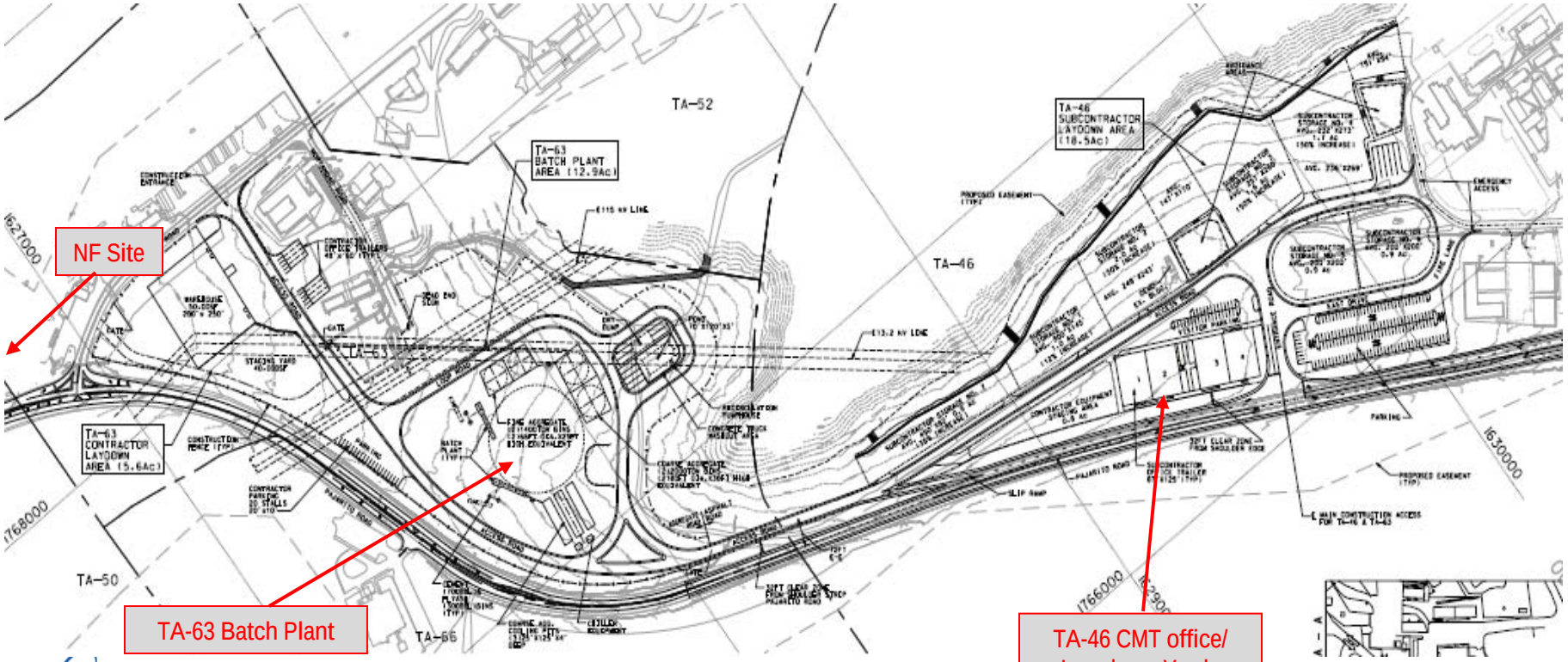

Existing
Plutonium Facility
CMRR: Radiological Laboratory/
Utility/Office Building
CMRR: Nuclear Facility

Figure 4: LANL, Bretzke, June 16, 2011

Construction Site Infrastructure

Lay-down/fabrication yards offices will be established approximately 1 mile from the NF construction site at TA-63 and TA-46 due to lack of available space at the NF construction site.



Los Alamos NATIONAL LABORATORY EST.1943 NNSA

CHEMISTRY & METALLURGY RESEARCH REPLACEMENT

Figure 5: NNSA Draft CMRR-NF SEIS, p. 2-20

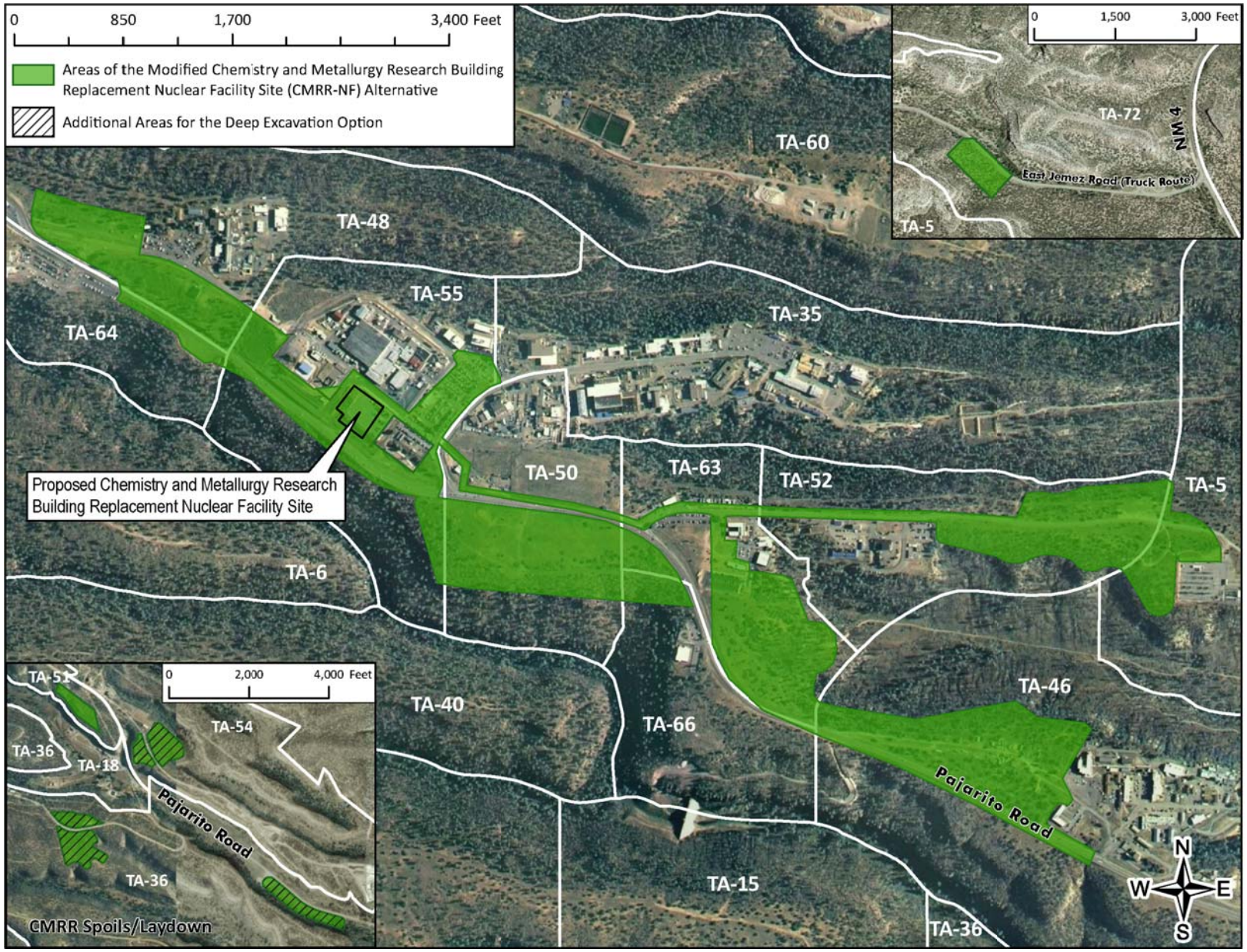


Figure 2–9 Potentially Affected Areas Under the Modified CMRR-NF Construction Plan

Figure 6: NNSA, "FY2011 Biennial Plan and Budget Assessment on the Modernization and Refurbishment of the Nuclear Weapons Complex," May 2010, http://www.lasg.org/budget/Sect1251_FY2011_BiennialPlan_BudgetAssmt_AnnexD_May2010.PDF, p. 28.