LACBWR Decommissioning Update and LTP Overview

NRC Public Meeting
September 20, 2016

LACROSSE SOLUTIONS

LACBWR Key Facts

LaCrosse Solutions

- BWR (50MWe)
- AEC demonstration reactor
- Owned by Dairyland Power Cooperative (DPC)
- Operated from 1967 to 1987
- Licensed site shared with operational fossil plant

LACBWR Site

LaCrosse Solutions

LACBWR Site

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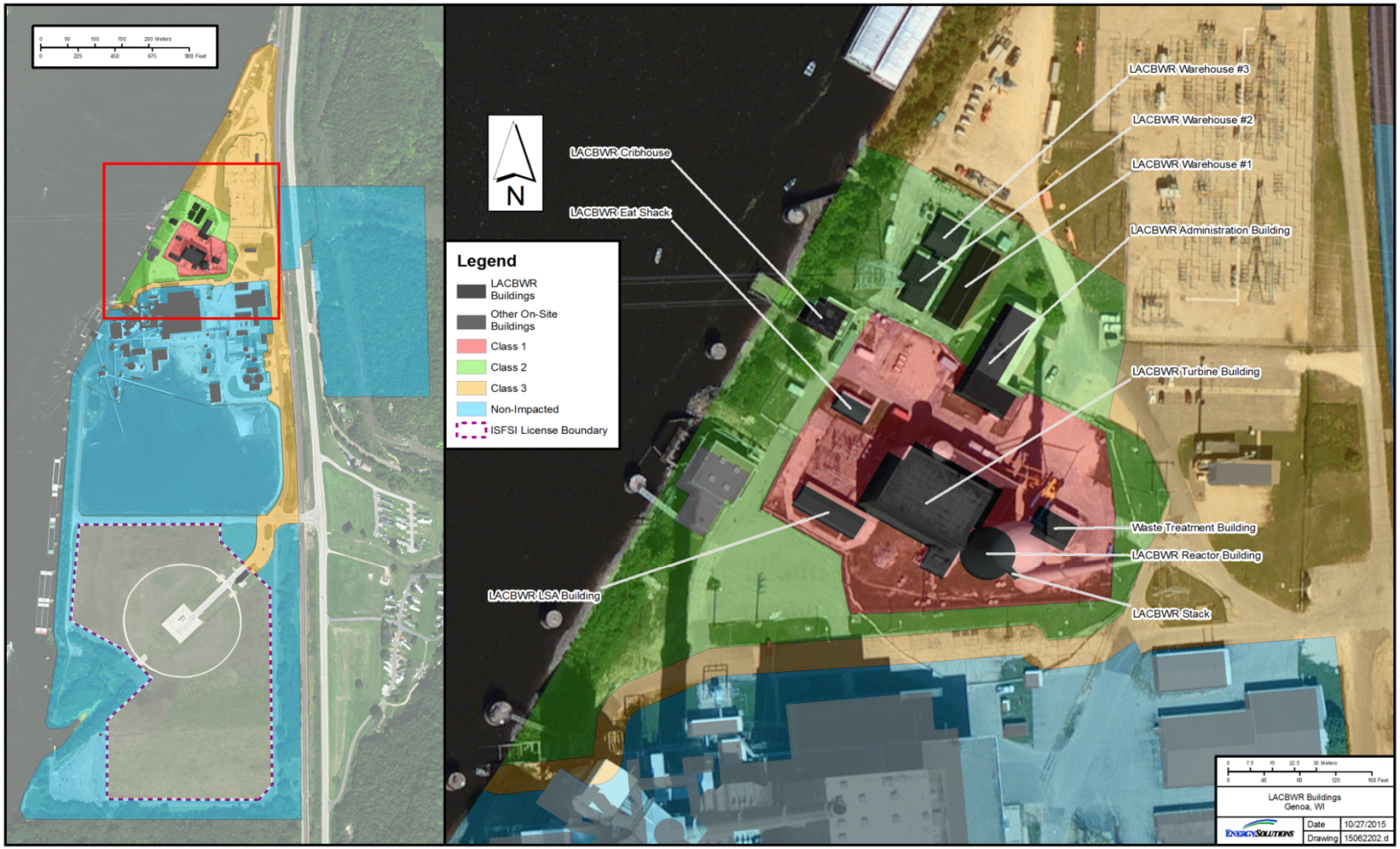

Decommissioning to Date

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- LACBWR staff performed limited dismantlement work between 1996 and 2004
- In 2005, efforts shifted to RPV and Class B/C waste removal that was successfully completed in 2007
  - Energy*Solutions* (ES) performed the removal and disposal of the RPV and B/C waste at the Barnwell disposal facility
- Fuel transfer to dry storage commenced in 2008 and was completed September 19, 2012
- Additional dismantlement work completed in 2012 – 2014 including removal of fuel racks and completion of main turbine generator component removal

Decommissioning to Date

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- All spent fuel is in dry storage at the Independent Spent Fuel Storage Facility (ISFSI)
- Metal removal project performed from 2012 to 2014
- Plant buildings still standing
- LACBWR placed in Passive SAFSTOR in 2014
- Initial Site Characterization completed by ES
- License Transferred on June 1, 2016

Overview of the Agreements

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- ES created a special purpose subsidiary, LaCrosse*Solutions*, to be licensee for LACBWR
- LaCrosse*Solutions*
  - Became the lead licensee for LACBWR decommissioning operations
  - Took possession of the used nuclear fuel (but not ownership)
  - Assumed full responsibility for licensed activities
  - Assumed all liabilities and obligations for radiological decommissioning and site restoration directly related to LACBWR decommissioning
- Dairyland remains the licensed owner and retains title to
  - Used nuclear fuel
  - The Nuclear Decommissioning Trust
  - Real estate and site improvements
- Dairyland operates and maintains the ISFSI

LACBWR Current Status

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- License Termination Plan submitted June 27, 2016
- Partial Site Release Request submitted June 27, 2016
- Decommissioning transitioned from SAFSTOR to DECON in August 2016.
- Active decommissioning in progress
- Stack will be the first structure to be removed this Fall.

Decommissioning Approach & Schedule

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- Source term removal within radiologically controlled areas
  - Minimize survey and surgical removal
  - Utilize large capacity intermodals and rail cars to move LLW to Clive
  - Remove structures to a minimum of 3 feet below grade
  - Affected systems/buildings – ship to Clive
- Non-rad materials and areas
  - Remove hazardous materials such as asbestos, light ballasts, PCBs, Hg switches and oil before removal of components or demolition as necessary
- Clean components with scrap value will be evaluated for salvage

Decommissioning Approach & Schedule

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- Demolish buildings
  - Radioactive building debris sent to Clive
  - Final Status Survey per MARSSIM Program
  - NRC/ORISE Confirmatory Surveys
  - Backfill

Decommissioning Approach & Schedule

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- Completion of Major Structure Demolition
  - Stack — February 23, 2017
  - Waste Treatment Building — May 15, 2017
  - Turbine Building — November 30, 2017
  - Misc. (Storage, Offices) — December 20, 2017
  - Reactor Building — January 2, 2018
- Site Restoration — January 2, 2018
- Submit Final Survey Report — July 1, 2018
- Project Completion — April 2, 2019
- Transfer NRC License — April 2, 2019

State of Wisconsin

LaCrosse Solutions

- Maintain radiological effluent monitors
- Inspectors have open site access
- Radiation Protection Section invited to all NRC LTP meetings and inspections
- Copied on all submittals to the NRC

LTP Overview

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- Chapter 1: General Information
- Chapter 2: Site Characterization
- Chapter 3: Remaining Site Dismantlement Activities
- Chapter 4: Remediation Plan
- Chapter 5: Final Radiation Survey Plan
- Chapter 6: Compliance With the Radiological Criteria for License Termination
- Chapter 7: Update of the Site-Specific Decommissioning Costs
- Chapter 8: Supplement to the Environmental Report

Chapter 2: Site Characterization

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- Extent and distribution of residual radioactivity at Site well known
- LTP provides results of extensive characterization:
  - Soil samples
  - Surface and subsurface land area measurements
  - Structure measurements including concrete core samples

Essentially no soil contamination identified

No groundwater contamination identified

Chapter 3: Remaining Site Dismantlement Activities

LACROSSE SOLUTIONS

- Completion of Major Structure Demolition
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Chapter 4: Remediation Plan

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- Methods that may be used to remediate contaminated systems, components and structures:
  - Scabbling and Shaving
  - Needle Guns
  - Chipping
  - Sponge and Abrasive Blasting
  - Pressure Washing
  - High-Pressure Water Blasting
  - Grit Blasting
  - Removal of Activated/Contaminated Concrete
- Planned remediation meets NRC "As Low As Reasonably Achievable" (ALARA) criterion

Chapter 5: Final Radiation Survey Plan

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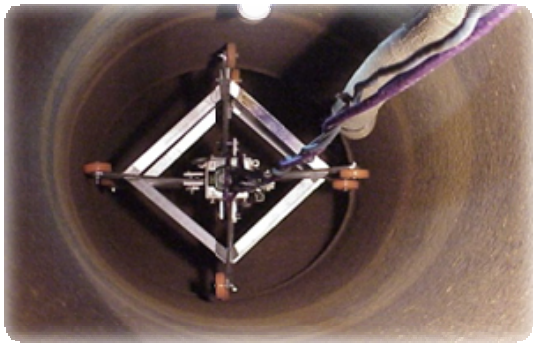
- Comprehensive Sampling and Measurements will be performed to demonstrate that Site meets NRC unrestricted release criteria
- Soil: Scan/static measurements, volumetric sampling
- Concrete: Insitu Gamma Spectroscopy
- Buried Pipe and Penetrations: pipe crawlers, sediment sampling and/or other methods



Chapter 6: Compliance With the Radiological Criteria for License Termination

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- Radiological criteria for unrestricted release specified in NRC Regulations
  - Dose Criterion: The residual radioactivity that is above natural background levels results in dose to a member of the critical group that does not exceed 25 mrem/year*, and
  - ALARA Criterion: The residual radioactivity has been reduced to levels that are ALARA.
- To determine compliance with 25 mrem/year criterion, the critical group is conservatively assumed to be an Industrial Worker

* Avg. natural background radiation in the US is 310 mrem/year

Chapter 7: Update of the Site-Specific Decommissioning Costs

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- Provides an estimate of remaining decommissioning costs at the time of LTP submittal and compares the estimated costs with the present funds set aside
- The DCE includes an evaluation of the following elements:
  - Cost assumptions used, including contingency factor
  - Major decommissioning activities and tasks
  - Unit cost factors
  - Costs of decontamination and removal of equipment/structures
  - Final Radiation Survey costs
  - Estimated total costs

Current trust fund provides sufficient funding and financial assurance for completion of LACBWR Decommissioning

Chapter 8: Supplement to the Environmental Report

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- Describes any new information or significant environmental change associated with the site-specific decommissioning and site closure activities
- Conclusion:
  - Potential environmental impacts associated with decommissioning will be bounded by the previously issued environmental impacts statements (Post Shutdown Activities report, NUREG-0586, and LACBWR Environmental Statement).
  - There are no new or significant environmental changes associated with decommissioning