Purpose of the Annual Site Environmental Report

- Required by DOE and prepared in accordance with DOE Order 231.1B, Environment, Safety and Health Reporting. Documents compliance with:
  - DOE Order 436.1, Departmental Sustainability
    - Requires DOE sites to maintain an Environmental Management System (EMS). An EMS specifies requirements for conducting general surveillance monitoring to evaluate the effects, if any, of site operations.
  - DOE Order 458.1, Radiation Protection of the Public and Environment
    - Requires DOE site to maintain surveillance monitoring for determining radiological impacts to the public and environment.

- Official record of BNL’s environmental impact for calendar year 2014
  - Serves as an historical record; BNL has been preparing SERs since 1971
  - Used to respond to Freedom of Information Act (FOIA) requests

- Serves as the principal environmental communications vehicle
  - Distribution includes DOE, DOE Laboratories, regulators, local libraries, and interested stakeholders

- Available as a downloadable file on the BNL web page, in hardcopy, and as a summary booklet that includes a CD version of the full report, including SER Volume II, Groundwater Status Report
Keeping you informed…

- We frequently bring topics of interest to the CAC’s attention well before the SER is published

- **SER Topics covered at CAC meetings in 2014 include:**
  - SPDES Permit Modification/STP Upgrades Updates
  - Natural Resource Management Update
  - Environmental Cleanup Program Progress
  - Former Reactor Facilities & Groundwater Cleanup Updates
  - History of the BNL Site
  - Peconic River Monitoring Updates
  - Groundwater Treatment System Modifications
2014 SER
Table of Contents/Chapter Authors

- **SER Volume I**
  - Executive Summary: Karen Ratel
  - Chapter 1 – Introduction: Karen Ratel
  - Chapter 2 – Environmental Management System: Peter Pohlot / Karen Ratel
  - Chapter 3 – Compliance Status: Jason Remien
  - Chapter 4 – Air Quality: Jeff Williams
  - Chapter 5 – Water Quality: Jason Remien
  - Chapter 6 – Natural and Cultural Resources: Tim Green
  - Chapter 7 – Groundwater Protection: Bill Dorsch / Douglas Paquette
  - Chapter 8 – Radiological Dose Assessment: Tim Welty
  - Chapter 9 – Quality Assurance: John Burke

- **SER Volume II**
  - Groundwater Status Report – Groundwater Protection Group (approved by DOE and regulators in August 2015)
Chapter 2 - Environmental Management System (EMS) ISO 14001

- EMS Recommended for continued certification by NSF, June 2014
  - “The system is fully integrated and effective with one minor nonconformity and many system strengths.”
  - 1 Minor Nonconformance: BNL’s Cultural Resource program involving tagging of artifacts that are part of the Historical Identification Tag program.

- Pollution Prevention (P2) Program
  - Cost avoidance of over $4 million in 2014.
  - Reduced/recycled/reused 35.5 million lbs. of industrial, sanitary, hazardous, and rad waste.
Chapter 2 – Waste Generation

- As a result of research and cleanup activities, BNL generated regulated waste requiring careful handling and disposal.

- In 2014, BNL generated the following types and quantities of waste (trend noted):
  
  **Routine Operations**
  - Hazardous Waste: 4.3 tons - up
  - Mixed Waste: 96 ft³ - down
  - Radioactive Waste: 3,261 ft³ – up

  **Nonroutine Operations**
  - Hazardous Waste: 9.1 tons - down
  - Mixed Waste: 3 ft³ - down
  - Radioactive Waste: 5,877 ft³ - up
Chapter 2 – Energy Management & Conservation

- **2014 Statistics**
  - 291 million kilowatt hours of electricity
  - 102,000 gallons of fuel oil
  - 19,000 gallons of propane
  - 670 million ft³ feet of natural gas
  - Energy intensity for 2014 was 22.6% below the 2003 baseline

- **Utility Energy Service Contract (UESC)**
  - Environmental benefits include:
    - Electrical savings of 3,549,114 kWh/year
    - Fuel savings of 89,541 mmBtu/year
    - Greenhouse gas reduction of 7,022 MTCO2e
    - Building energy intensity reduction of 11%
Chapter 3 – Compliance Status Overview

- BNL must comply with 36 permits, including a Title V permit authorizing operation of 130 emission sources
  - SPDES Permit – Renewed in September 2014
  - Title V Permit – Renewed in February 2014

- National Environmental Policy Act (NEPA) – 134 projects reviewed
  - 127 considered minor actions
  - 7 Environmental Evaluation Notification Forms; all categorically excluded or fell within scope of existing EA

- Spills – 28 in 2014
  - 11 reportable to NYSDEC

- Potable Water
  - Usage similar to 2012 & 2013
  - Complied with all drinking water requirements
Chapter 3 and 5 – Water Quality Monitoring

- State Pollutant Discharge Elimination System (SPDES) – 8 permit excursions
  - (2) mercury, (2) total nitrogen at STP
  - (4) at recharge basins for pH (1), oil & grease (2), and HEDP (1)
- Metals detected in surface water samples consistent with SPDES limits
- No VOCs or Tritium detected above contract laboratory’s MDLs (All locations)
- No Cs-137, Sr-90, or other gamma-emitting nuclides attributable to Laboratory operations were detected

![SPDES Limit Violations Chart](chart.png)

Note: Some outfalls have multiple basins.
Chapter 3 – Inspections and Assessments

- **EPA (RCRA)**: No issues identified

- **NYSDEC**
  - Major Petroleum Facility/Chemical Bulk Storage: 8 findings; 7 closed out and final finding being addressed by F&O
  - Air: No issues identified during a December 2014 tour of permitted facilities
  - SPDES: No issues identified during annual surveillance inspection

- **SCDHS (STP, potable water)**: No issues identified at STP, potable water deficiencies identified are being addressed by F&O
Chapter 4 – Air Quality (Radiological)

- Radiological Emissions Monitoring
  - Three facilities monitored for radionuclide releases:
    - BLIP, Building 801 Target Processing Lab and HFBR
    - Total radionuclides released: 7,535 Ci (4,919 Ci in 2013)
    - BLIP emissions of short-lived radioactive gases O-15 and C-11 accounted for more than 99.99% of total
      - (Half life: O-15=122 seconds, C-11=20.4 min)

- Ambient Air Monitoring
  - Radiological air quality monitored at four on-site locations around the perimeter of the site.
    - Gross alpha and beta concentrations consistent with natural background.
    - Average tritium concentrations were less than typical MDLs.
Chapter 4 – Air Quality (Non-Radiological)

- Continuous Emissions Monitoring System (CEMS) required for Central Steam Facility Boilers 6 & 7
  - One Boiler 6 NO\textsubscript{x} limit exceedance 7/17 due to utility natural gas line service.
  - One 6-min period opacity exceedance Boiler 6.
  - Five 6-min opacity exceedances Boiler 7.
  - Fuel oil use (34,030 gals); 117,214 gals in 2013.
  - \text{SO}_2, \text{NO}_x, \text{TSP}, \text{and VOC} emissions well under respective permit limits of 445, 159, 113.3, and 39.7 tons.
Chapter 8 - Radiological Dose Assessment

- Ambient external dose (TLDs)
  - 69 mrem on site and 69 mrem off site (includes cosmic and terrestrial background)
  - no external dose contribution from BNL operations

- Total effective dose to the Maximally Exposed Off-site Individual (MEOSI) in 2014 from inhalation and ingestion pathways was 3.15 mrem

- Well Below Regulatory Limits
  - EPA: 10 mrem (air pathway)
  - NYSDOH: 10 mrem (ingestion pathway)
  - DOE: 100 mrem (from all pathways)

Average dose to individual is **620 mrem/year**

Future Presentations

- Chapter 6: Natural and Cultural Resources (January)
- Chapter 7: Groundwater Protection (November)

QUESTIONS?