

Natural Resource Management Plan Update

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Environmental Protection Division

Community Advisory Committee Meeting

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BROOKHAVEN
NATIONAL LABORATORY

a passion for discovery



Agenda

- Quick history of natural resource management on BNL site 1800s-1990s
- Establishment of Upton Reserve
- 2003 NRMP – Accomplishments
- 2011 NRMP – where we're going

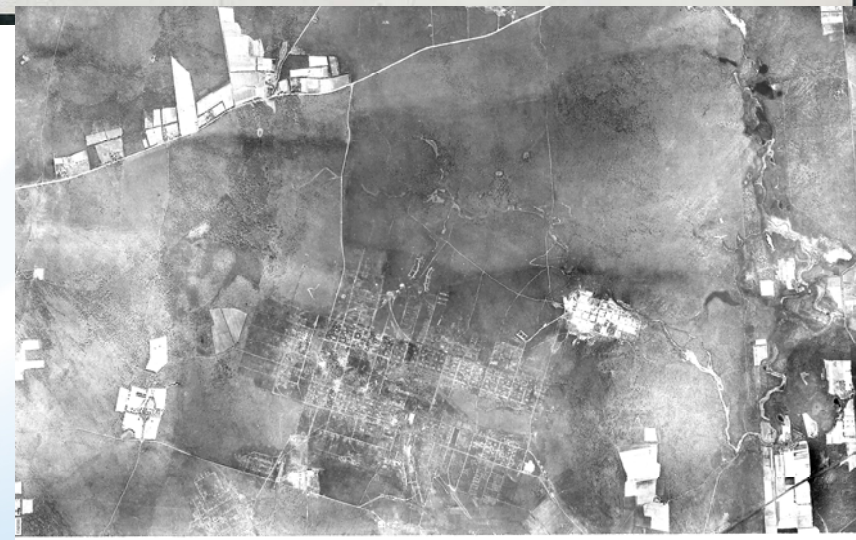
History of Natural Resource Management

- Formal & Informal Management
 - 1850s – 1900s - Cord wood industry, some farming in area of Solar Farm



History of Natural Resource Management

- Formal & Informal Management
 - 1917 - Clearing of area to establish Camp Upton in WW I
 - 1921 – Camp Upton auctioned off



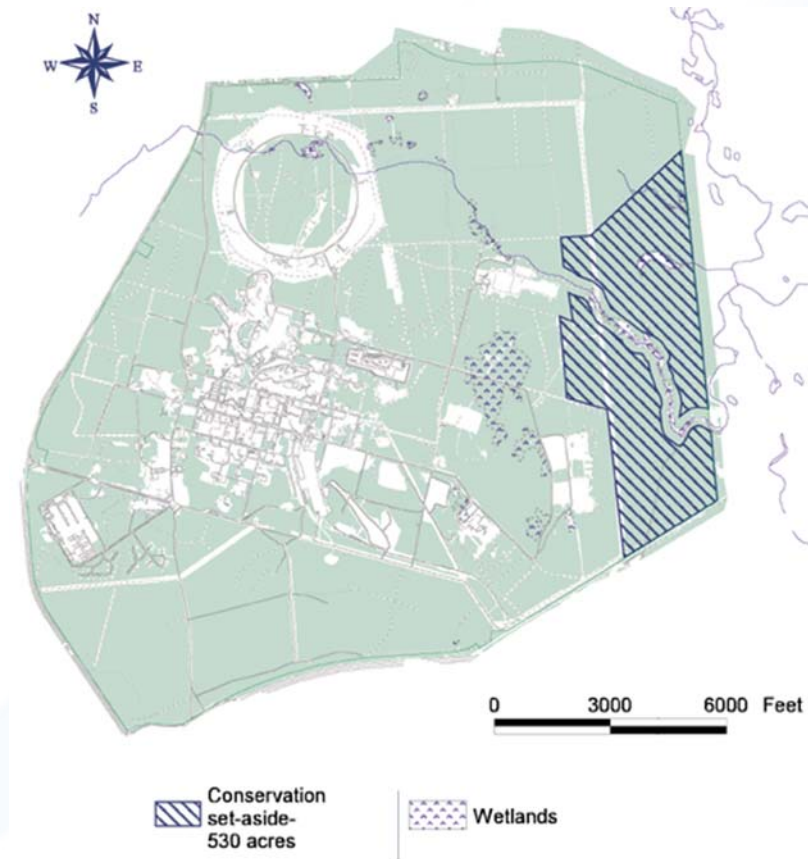
History of Natural Resource Management

- Formal & Informal Management
 - 1934 – 1940 - CCC reforests Upton National Forest
 - Firebreaks
 - 1940 – Clearing for Camp Upton in WW II



History of Natural Resource Management

- Formal & Informal Management
 - 1947 - BNL established – maintenance of fire breaks, use of natural areas for experimentation through late 1970s.
 - RCRA Inspection and Consent Order 1993
 - Site wide Biological Surveys 1994 & 1995
 - Wildlife Management Plan (WMP) 1999 – focus on Tiger Salamanders
 - 2000 - Upton Ecological and Research Reserve (Upton Reserve) and Technical Advisory Group (TAG)



WMP/NRMP – 2000 to 2004

- Upton Reserve
 - Set aside 530 acres for research purposes
 - Technical Advisory Group – worked to recommend research and review NRMP.
 - NYSDEC, TNC, SC Parks, USFWS, USNPS, CPB Commission, DOE, BSA, CAC, PEP, BER
 - Two U.S. Fish & Wildlife Employees
 - Forest Management
 - Fire Management
 - Evaluation of Deer Population
 - Establish monitoring programs
 - Provide for adaptive management
 - \$200K/year for management and research – 5 years
 - Funded for 4 years
- Foundation for Ecological Research in the Northeast (FERN) established to carry on research

NRMP - 2003




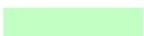







- NRMP Finalized December 2003
 - Built upon WMP – maintained strong focus on tiger salamanders but expanded to virtually all natural resources
 - Established an “Adaptive Management” approach
 - Integrated other management needs (ex. Cultural Resources)
 - Focus on gaining better understanding of site resources
 - Began or continued managing what we could (salamanders, fish, invasive plants, etc.)

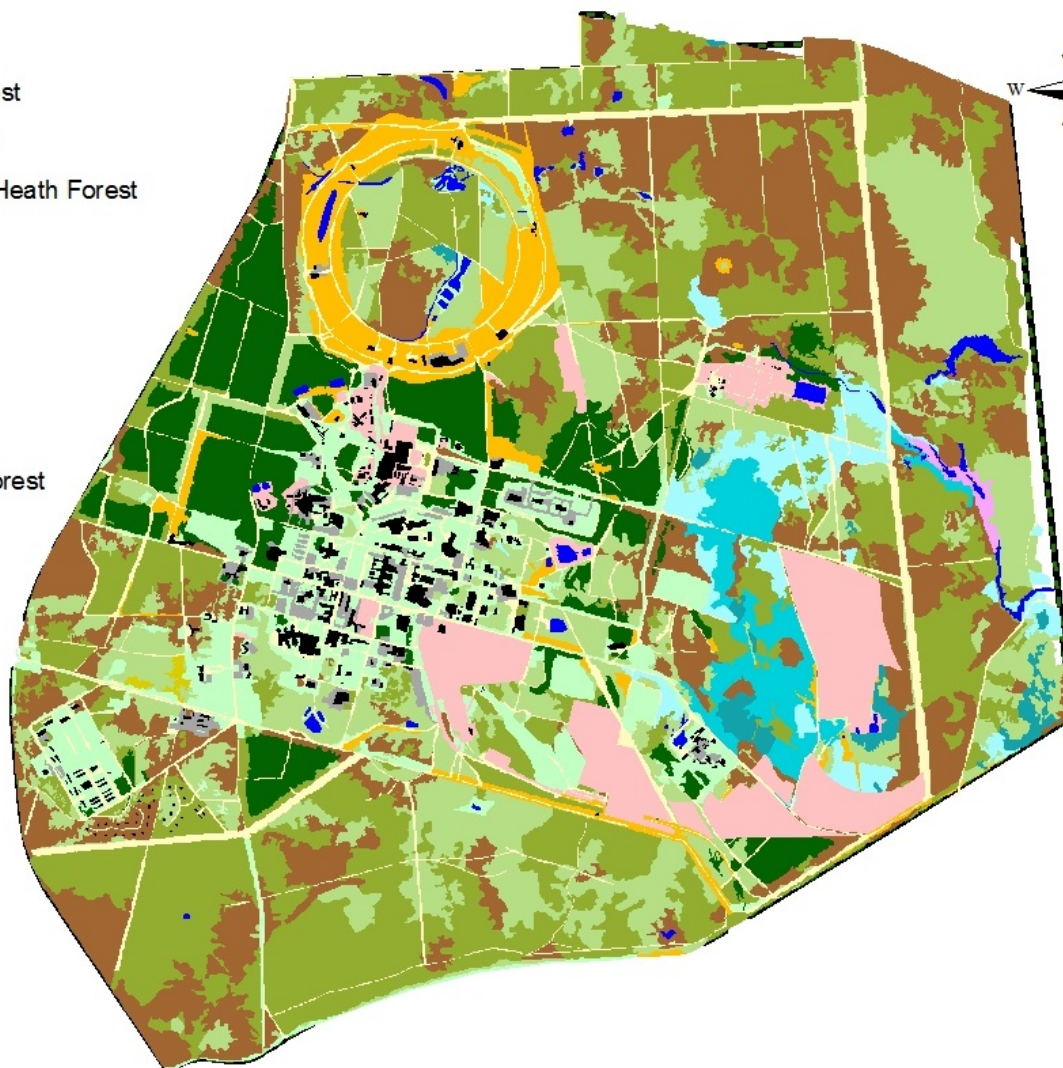


Accomplishments 2003-2011

- Geographic Information System – multiple layers
 - Aerial photos
 - Soils
 - Vegetation
 - Wetlands
 - Protected species
 - Monitoring layers
 - Cultural Resources – WW I, WW II, CCC
- GIS used for planning – NSLS II, LISF, Permits, etc.

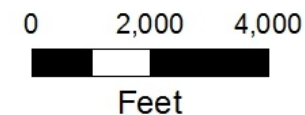
Legend

	Red Maple-Blackgum Wet Forest
	Red Maple-Mesic Heath Forest
	Red Maple/Scarlet Oak-Mesic Heath Forest
	Building
	Disturbed
	Grass
	Parking Lot
	Pitch Pine/White Oak Forest
	Pitch Pine/Mixed Oak-Heath Forest
	Planted White Pine Forest
	Black Cherry Forest
	Scarlet Oak-Heath Forest
	Road
	Successional
	Cattail Marsh
	Water



Environmental Protection Division

Vegetation Map of Brookhaven National Laboratory

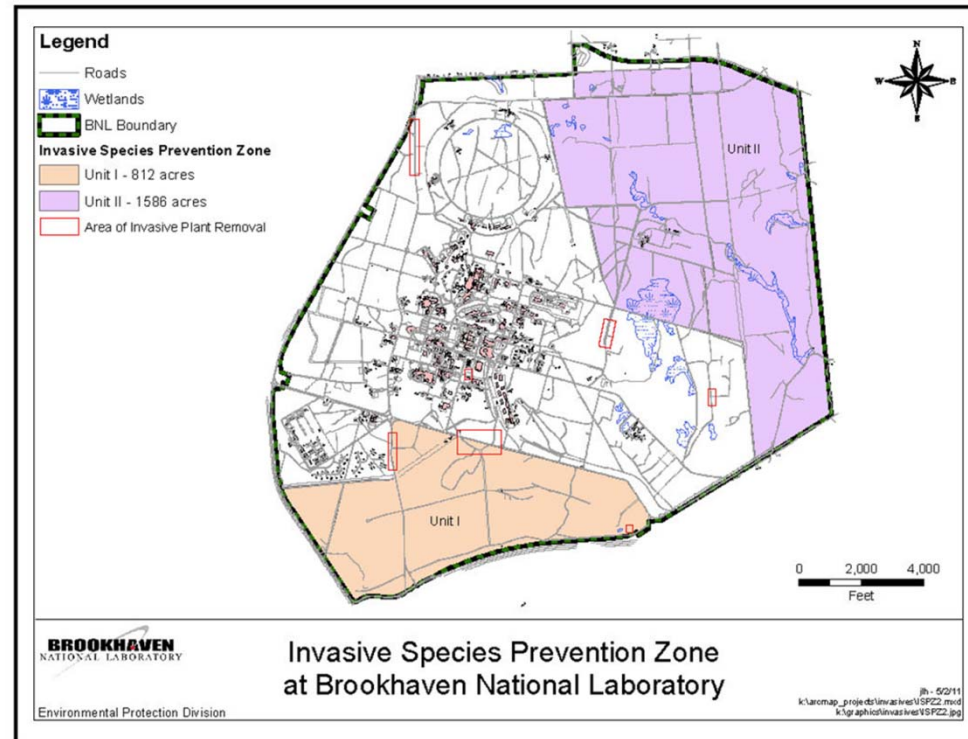
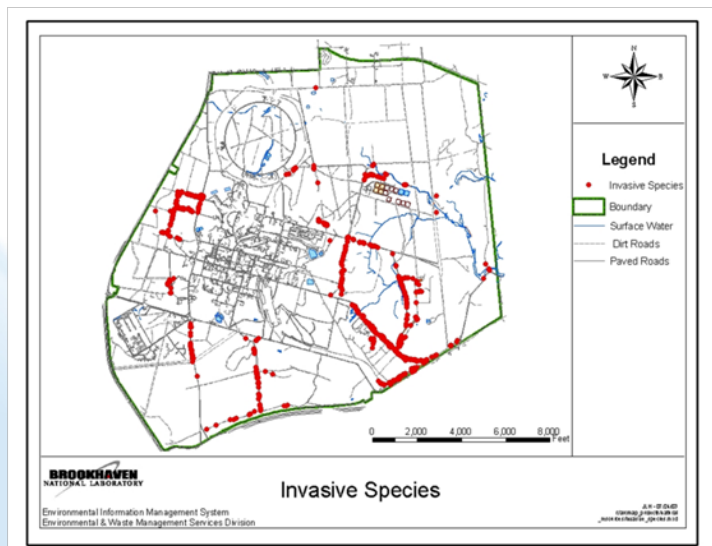


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Accomplishments 2003-2011

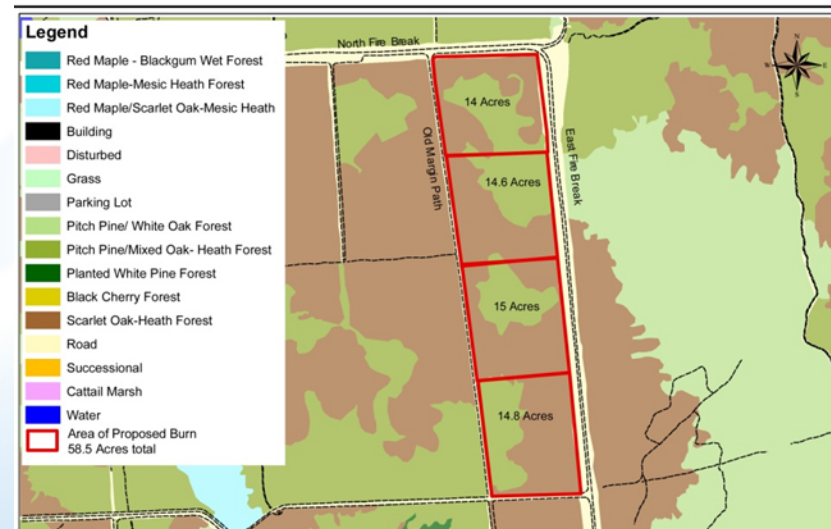
■ Plants

- Vegetation Map for BNL
- Invasive species mapped (volunteers and interns) – 2003-2005
- Invasive Species Prevention Zones (ISPZ) established
- Invasive plant management – 2009 - 2011



Accomplishments 2003-2011

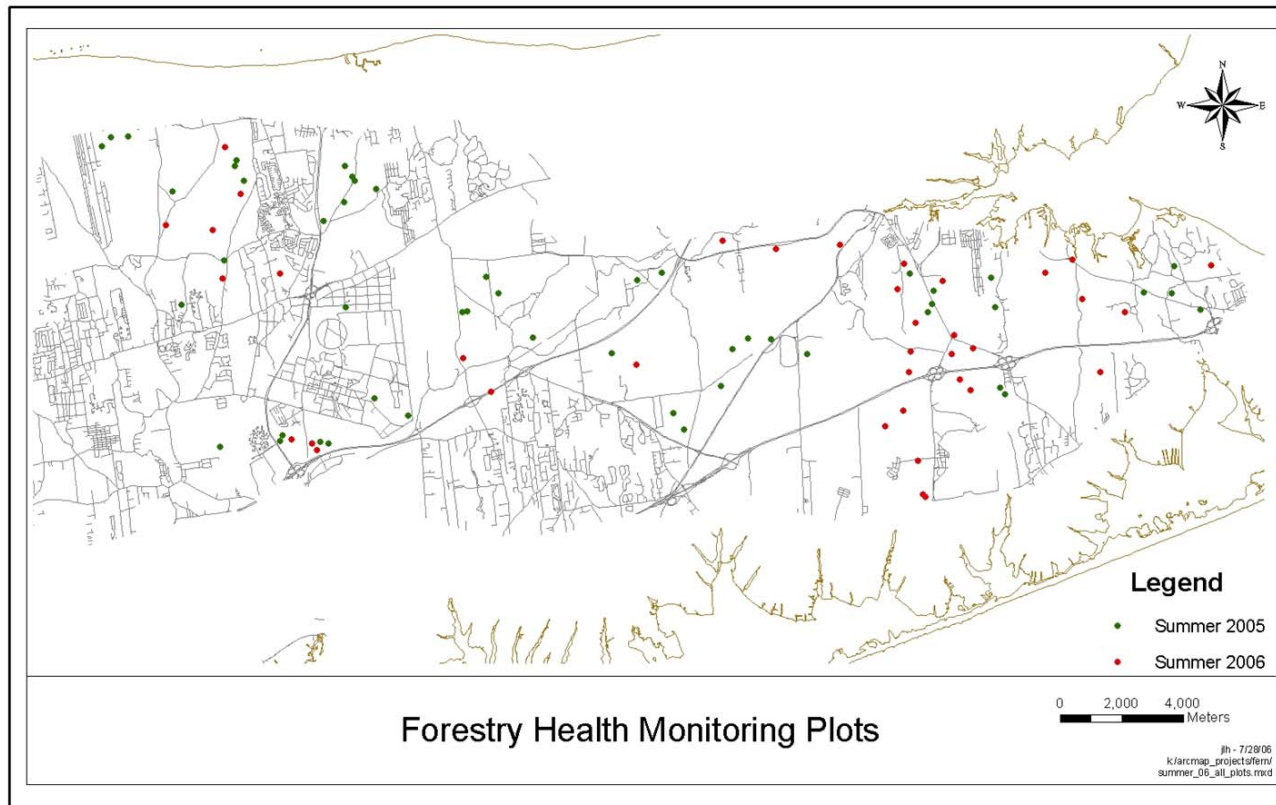
- Plants
 - Native Grass Initiative started – now LINPI – producing native plants for restoration work
 - Wildland Fire Management Plan – first prescribed fires on site – 2004, 2007, 2011



Accomplishments 2003-2011

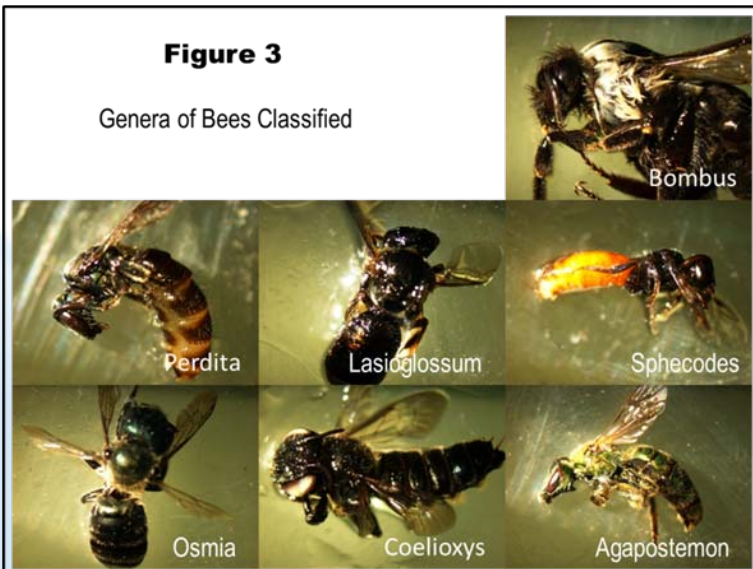
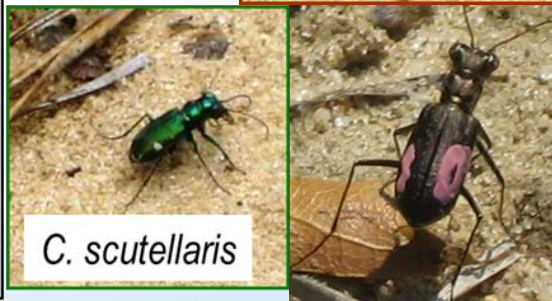
- Plants

- Forest health monitoring – 2005 - 2006
- Baseline vegetation surveys ahead of LISF construction



Accomplishments 2003-2011

- Invertebrates – Building our understanding
 - Damselfly & dragonfly surveys – supportive of NY State damselfly & dragonfly atlas
 - Tiger beetle surveys – BNL and Pine Barrens
 - Burying beetle surveys
 - Pollinator surveys – ahead of LISF construction



Accomplishments 2003-2011



- Reptiles and Amphibians
 - 28 of ~32 species on Long Island documented on BNL
- Eastern tiger salamander
 - Increased number of known habitats from 15 – 26
 - Increased the size of upland habitat required 850 ft. to 1000 ft. – potentially larger
 - Significant research aiding writing of NYS recovery plan
 - Protections built into construction projects
- Eastern Hognose Snake
 - Better understanding of habitat needs
- Box Turtles
 - Home range and intraspecific interactions
- Spotted Turtles
 - Population restoration



Accomplishments 2003-2011

■ Fish

- Banded Sunfish –
 - Rescue ahead of Peconic River Cleanup
 - Multiple population assessments
 - Initial re-introduction to Peconic River after clean-up, additional reintroductions as better cover develops
 - Working with NYSDEC on genetics and distribution on Long Island
- Swamp Darter
 - Likely gone from BNL due to draught conditions in 2005 (re-introduce?)
- Recovery Plans (both fish) – still needed



Accomplishments 2003-2011

■ Mammals

- Small mammal surveys –
 - general understanding
 - Baseline prior to LISF construction
- Flying squirrels –initial surveys
- Bats
 - 1st documentation of White-nose Syndrome on Island
 - 1st acoustical surveys for Long Island



Accomplishments 2003-2011

■ Mammals

- White-tailed Deer
 - Gradual progress toward management
 - Significant employee involvement
 - Environmental Assessment Delayed due to Higher Priorities
 - EA to begin Dec. 2011
- Feral Animals & Nuisance Wildlife
 - Long-term management appears to be effective for feral animals
 - Continual issues with nuisance wildlife



Accomplishments 2003-2011

■ Birds

- 12 years bird survey data – 116 species documented on 7 permanent transects
- Data useful for understanding trends, NEPA reviews, changes in habitat
- Turkeys – Population stable – routinely used by NYSDEC
 - Source for trap and transfer
 - Tagging
- Geese – population management – mixed success
 - 2008-2010 reduction in population
 - 2011 population increase



Accomplishments 2003-2011

- Research & Interns
 - Work with Office of Education Programs
- 100 + Interns, Teachers, Professors, etc. since 2000
- 100+ projects see <http://www.bnl.gov/esd/wildlife/research.asp>



Accomplishments 2003-2011

- Interns go on for advance degrees in wildlife, immunology, medicine, veterinary science, environmental science, chemistry, become teachers, etc. (~24 w/advanced degrees)
- Professors build relationship with BNL for use of facilities (NSLS Increase Program)
- Teachers utilize experience in class rooms (aquatic science, soils, insects, genetics) touching thousands of students

Accomplishments 2003-2011

- Natural Resource Management Program foundation of Green Institute - Open Space Stewardship Program (35 schools, 3,000 students involved)
 - Started after 2 Teachers worked within the Natural Resource Program in 2004
 - Established summer workshop
 - Continue to worked with other teachers



NRMP 2011 Update



- Build on previous success
- Learn from past experience
- Key Focus areas
 - Protection of threatened and endangered species and their habitat
 - Tiger salamanders, frosted elfin, banded sunfish, swamp darter, others
 - Management of Invasive Species
 - Continue to reduce distribution of invasive plants, protect ISPZ
 - Deer management
 - Complete EA, implement management strategies
 - Establish deer exclosures

NRMP 2011 Update

■ Focus Areas Continued

- Fire Management
 - Increase use of prescribed fire
- Feral & Nuisance Animal Management
 - Better policy for handling nuisance animals
- Wetland and River Management
 - Monitor changes in Peconic River due to removal of discharges
 - Improved habitat for banded sunfish?
 - Improved wetland habitat?
 - Are our predictions accurate?



NRMP 2011 Update

- Focus Areas Continued
 - Forest Health & Monitoring
 - 5 – 6 years in can we detect changes?
 - Active management of white pines approaching 80 yrs of age
 - Continue bird surveys
 - Re-establish bluebird boxes (Add 25 new boxes around LISF)
 - Climate change – begin focusing on long-term impacts of climate change on local ecosystem
 - Work with other agencies evaluating adaptation options
 - Department of Interior Landscape Level Conservation
 - Research – primary focus on LISF next 3-5 years

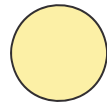
Long Island Solar Farm - LISF



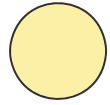
LISF

- Impacts of Utility Scale Solar Arrays
 - Wildlife impacts
 - Habitat – small mammals, birds, reptiles, amphibians
 - Use of Fence
 - Ecosystem impacts
 - Vegetation
 - Water budgets
 - Microclimate
 - Pollinators
 - Soils
 - Soil chemistry
 - Mercury deposition

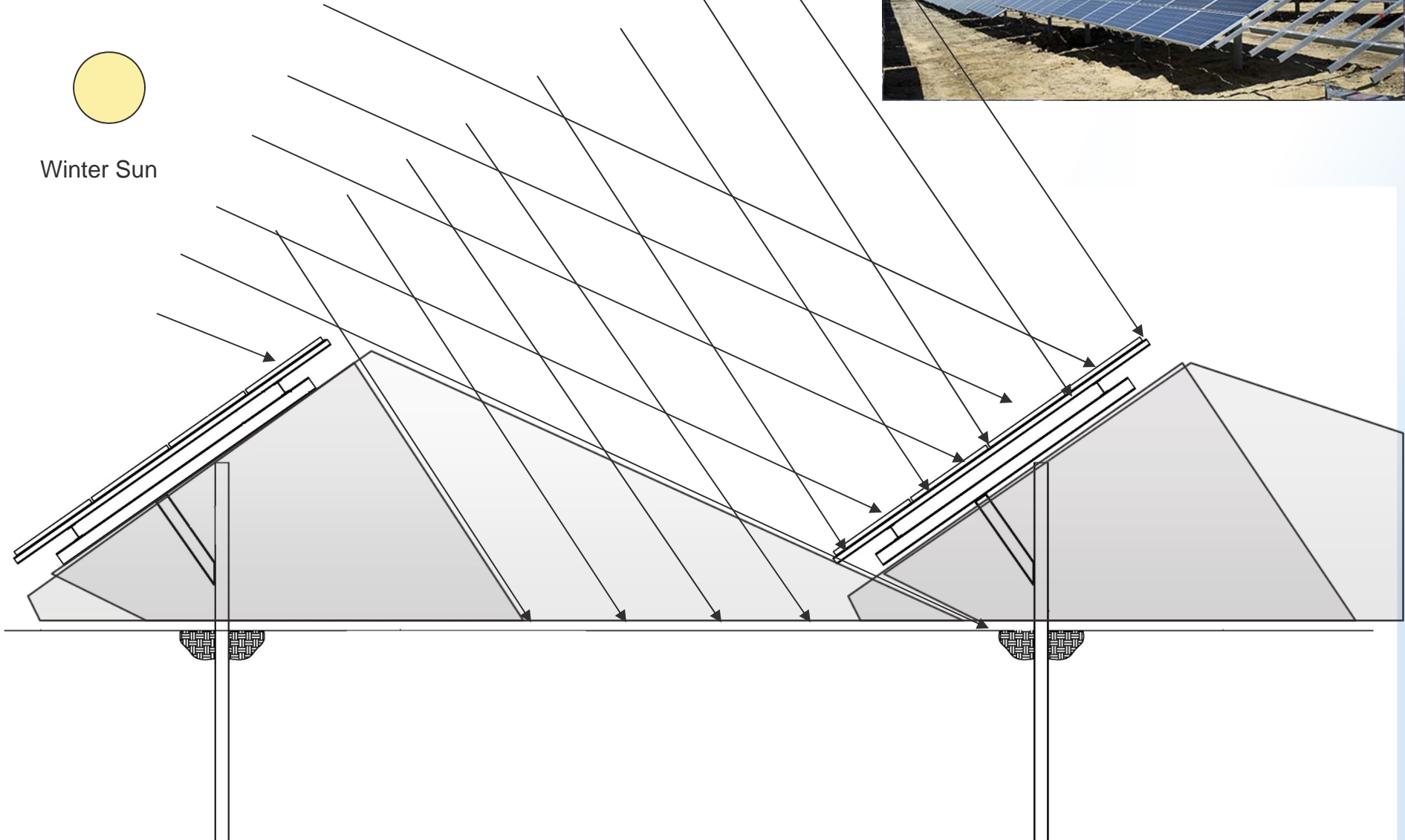
Solar Arrays



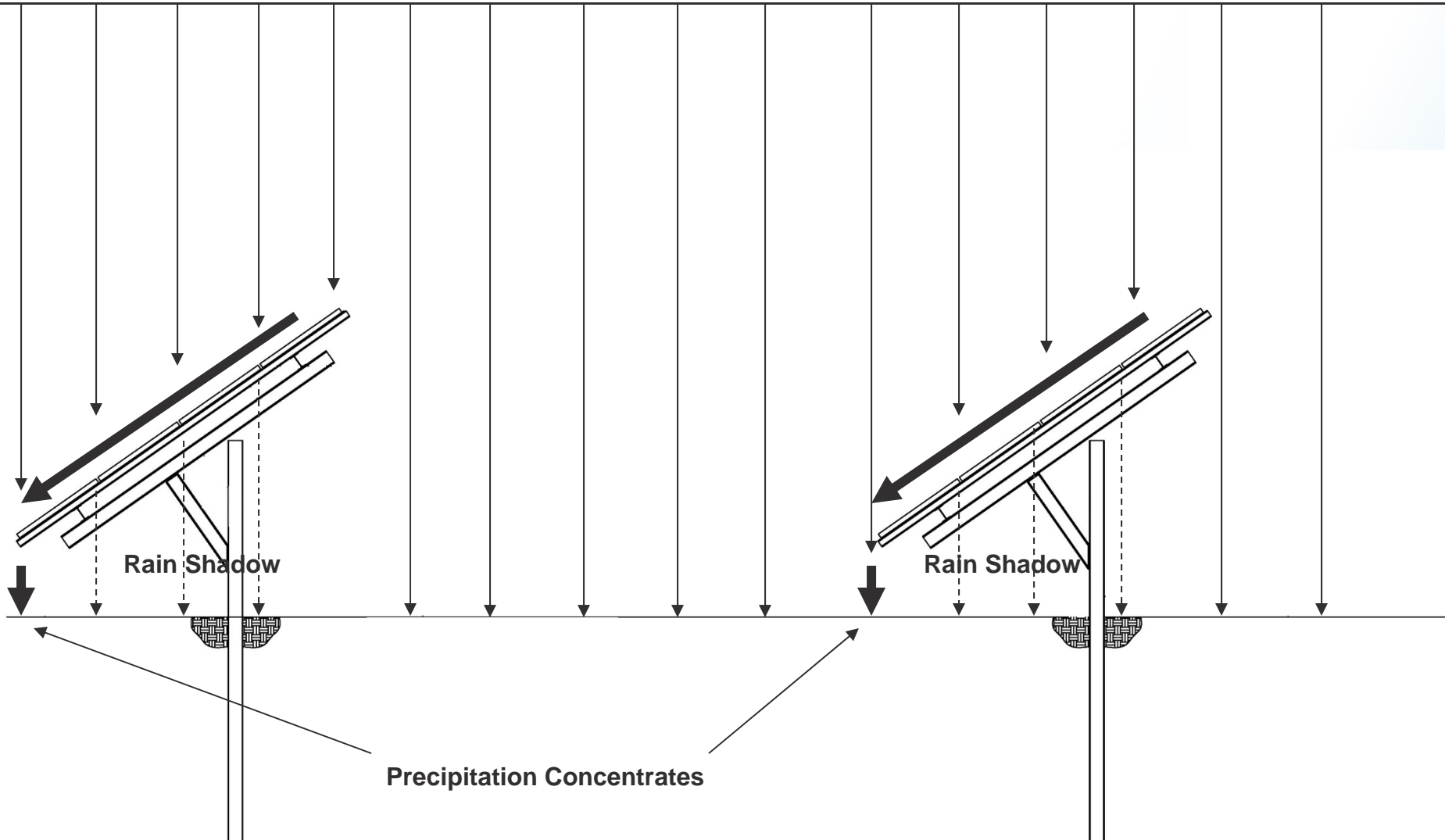
Summer Sun



Winter Sun



Precipitation



Questions?

