Pequest Wildlife Management Area / Kenco Acquisition

Presented by:

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North Jersey Resource Conservation and Development

Kenco Wetland Restoration Project

Overview

- 90+ Acre Property, Modified Agricultural Wetlands
- Drained in the 1950s for agriculture production
- Over 1-Mile of Shoreline on the Pequest River
- Over 3 miles of agricultural ditch systems
- 21 acres of mature forest
- Dominant vegetation included sod (grass species), invasive species (autumn olive, multiflora rose)

Site: before

Ditch draining the site

Site: before

Ditch draining the site (central portion): pre-grading
Note cattails, trash, and Autumn Olive

Preconstruction Conditions- View North

Pequest Riparian Shelf: before

Access road, taken during wetland delineation, pre-grading

Site: Pre-construction

Looking south along the piques, note access road in the riparian zone, Autumn Olive in the passive forest, ditching in the wetland

View of Agricultural Drainage and Roadways

Kenco Project Timeline

- NJ Wetland Mitigation Council Resolution and Funding- *August 2014*
- Design and NJDEP Permitting- *2014-2017*
- Start of Construction- *July 2017*
- Start of Planting- *November 2017*
- Completion of Planting- *March 2018*
- Start of Maintenance and Monitoring- *April 2018*
- Anticipated Project Closeout – *December 2022*

Pre-restoration Fish Sampling

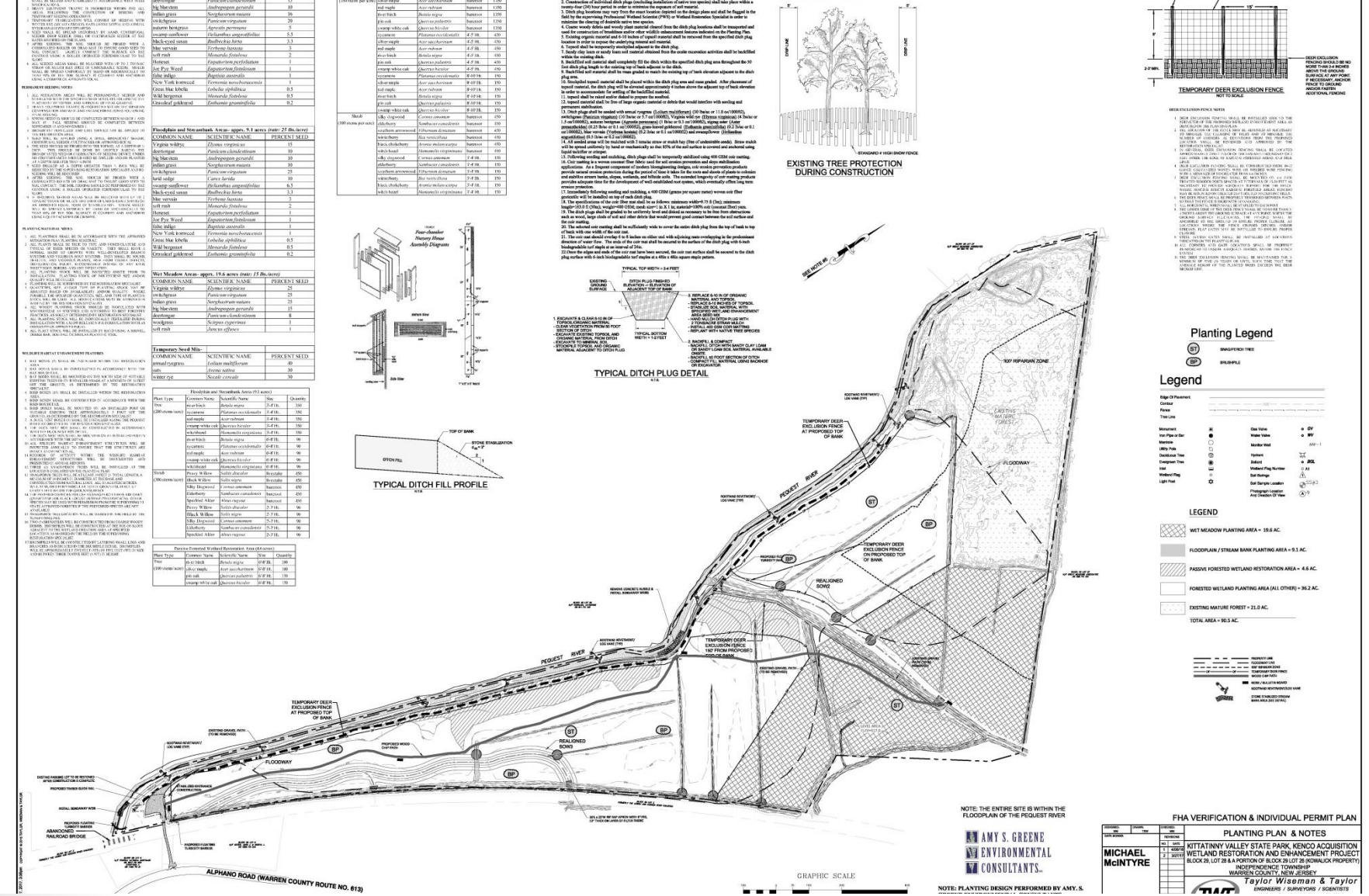
NJDFW Freshwater Fisheries- Baseline Inventory

Mussel Survey

Permit requirement- baseline inventory

Design Highlights

- 34.2 acres of Forested Wetland Restoration
- 19.6 acres of Wet Meadow Restoration
- 9.1 acres of Stream Corridor Restoration (nearly 2 miles)
- 21 acres of enhanced Forested Wetlands
- 4.6 acres of Passive Forested Wetland Restoration
- Apprx. 1-mile of Floodplain Bench along the Pequest River
- Apprx. 1-mile of stream realignment
- Ditch plugging
- Instream structures and bank stabilization (log/rock vanes, revetment)
- Wildlife Habitat features (snags, brushpiles, turtle nesting mounds)



Approved Site Plan

Construction Highlights

- Sediment and Erosion Control /BMP's
- Over 40,000 CY of Earth Movement
- Topsoil Stripping and Reuse
- Removal of Debris (irrigation, pipes, drainage)
- Stream Diversion
- Decompaction and Microtopography
- Plant Salvage

Excavation of Streams

UNT Realignment- In Progress

Stream Restoration Construction

Stabilized Stream Realignment with Plant Salvage

Debris Removal

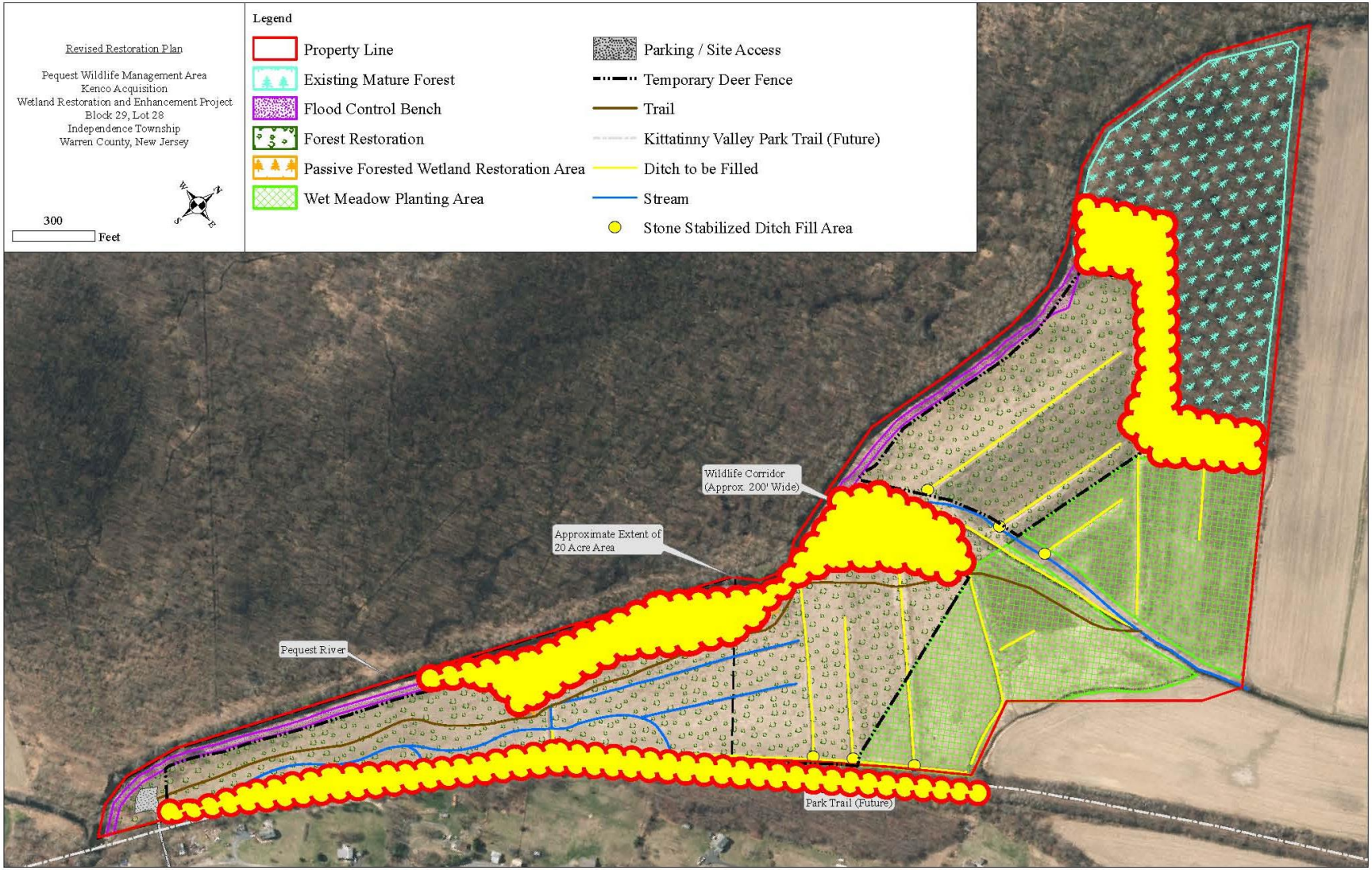
Bank Stabilization- Rock Vanes

Log Vanes Installed within the Pequest River

Decompaction prior to seeding.

INVASIVE SPECIES MANAGEMENT ON RESTORATION SITES

- Excavation and new soil - Eliminates plant, seed source , seed bank ($$$)
- Mowing
- Change in Hydrology- alterations of habitat
- Herbicide Application- selective/non-selective
- Shading and Outcompeting with desirables



Woody Invasive Management- Preconstruction

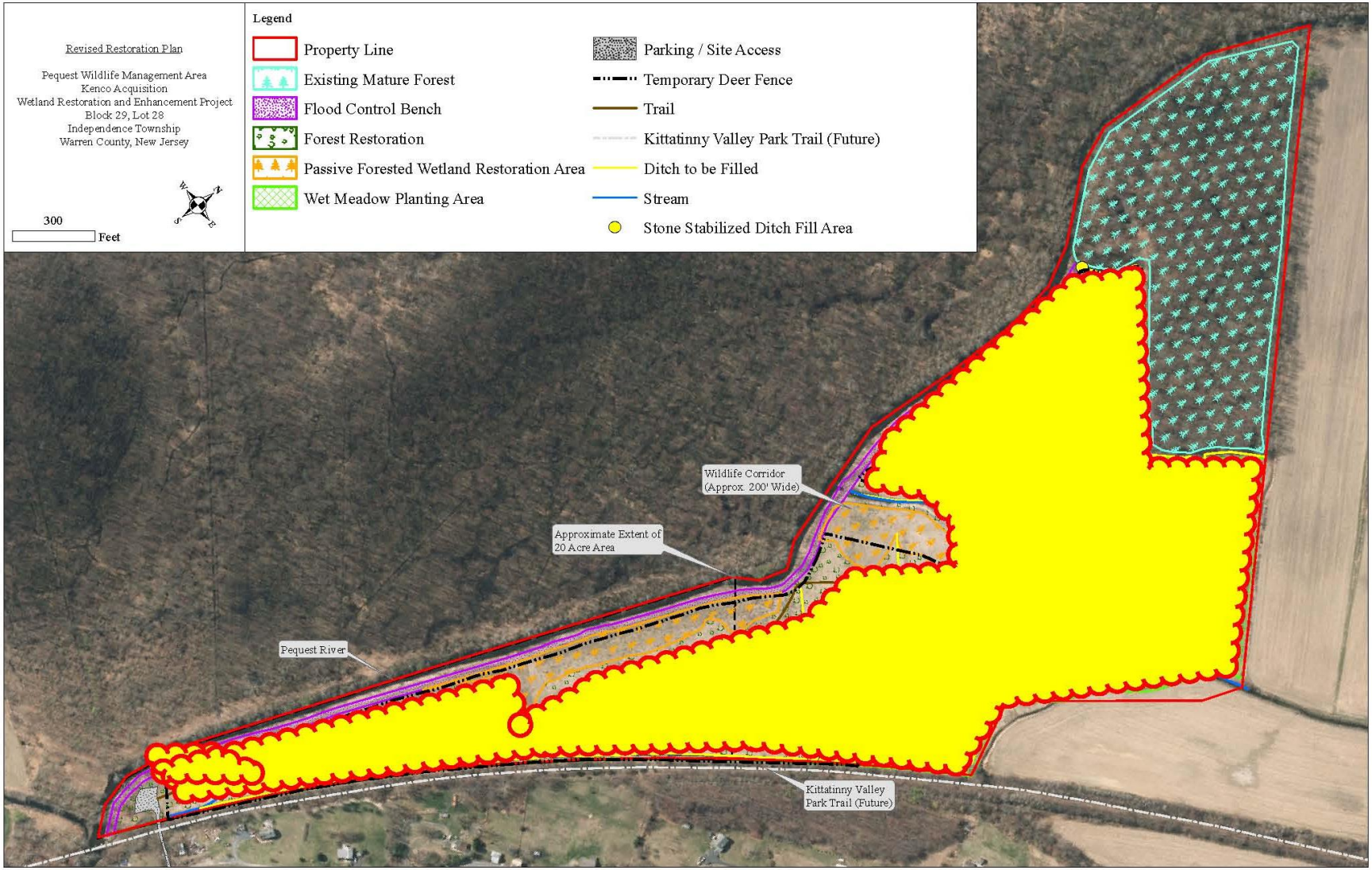
Autumn Olive, Multiflora Rose

Cut and Stump Spray Treatment within Passive Forest Restoration

Clearing, Grubbing, Excavation, and Burying of Invasives

New Topsoil, and Seeding with Invasives

Seeding and Stabilization with Native Species



Grassland Meadow Invasive Species

Turf, Autumn Olive, Mugwort, Canada Thistle, Green Foxtail

Site Wide Mow and Herbicide Application- Soil Sterilization

Original Treatment Fall 2015
Second Treatment Summer - 2017

2018- Nearly 100 % Coverage of Foxtail

Goal to have Warm Season Grasses outcompete Foxtail in future years.

Change in surface water aids in the control of invasive species!

Sometimes creates new problems (Common Reed or Reed Canarygrass)

Landscaping Highlights

- Plant Salvage
- Over 20,000 trees and shrubs installed
- 70 acres seeded and stabilized with native seed mixtures
- Habitat features (brush piles, perching snags, vernal habitat, basking logs, turtle nesting mounds)

Bareroot Seedlings- NJ State Nursery

Live Stakes- harvested onsite, locally

Containerized trees and shrubs- Pinelands Nursery, NJ

Habitat Features- Brushpiles

Wood Turtle Nesting Mounds

Realigned UNT of the Pequest River- plant salvage

Wet meadow- grassland bird habitat

Vernal Habitat- basking logs, snags

Pequest Riparian Shelf: before

Looking north, access road

Pequest Riparian Shelf: after

Pequest Riparian Shelf: after

Pequest River Bank: before

Pequest River Bank: before

Note heavy erosion

Pequest River Bank: after

Restored Stream: after

MIM's forest in the back

Realigned Stream-

September 2018

Tree establishment near vernal habitat

Maintenance and Monitoring

- Annual Monitoring (2018-2022)
- Invasive Species Control
- Wildlife documentation
- Replanting
- Herbivory Control (Deer, beaver, voles)
- Public Access
- Educational Signage and trail

Rare Plants and Wildlife

Juncus toreyii (NJ State Endangered)

Monarch Butterfly

On swamp milkweed

2018 Post-construction Fall Monitoring

2018 Post-construction Fall Monitoring

Parking Lot Completion

For fishing, hunting, and public access

2018 Construction Completion

Aerial View of Restoration Site Showing Forested Wetland, Wet Meadow, Riparian Zone, Restored Stream Channels and Floodplain Bench along Pequest River