CT Statewide Trout Fish Distribution

Bureau of Natural Resources

Lean Project December 8th – 12th, 2009

State of Connecticut
Department of Environmental Protection
Gina McCarthy, Commissioner

The CT DEP Fish Distribution Team

"no fish shall die before it is caught"

Team Sponsor: Rick Jacobson
Team Champion: MaryAnn Nusom Haverstock "Our Volunteer"
Team Leaders: Dave Sumner and Tim Barry
Team Members: Neal Hagstrom, Chris McDowell, Art Klein, Joe Ravita, Jamie Hays

Team Vision

Utilize the lean process to gain improvements in the distribution process of Trout stocking, while providing the same service and experience to the public while meeting the DEP budgetary constraints.

Project Team Charter

<u>Opportunities for Improvements:</u>
Increasing fish distribution efficiency will allow for improved fishing opportunity and improved facility maintenance

<u>Project Scope</u>:
Statewide fish distribution: (1) decrease fish transportation time (2) expand distribution of fish in high demand/quality areas

<u>Goals (Metrics)</u>:
1- Increase staff efficiency by 10%
2- Expand number of available fish for High Demand Stocking
3- Reduced fuel consumption by 25%
4- Decrease average run time by 15%

Current State – Fish Numbers

- 750,000 / Year
- 600,000 at Quinebaug Hatchery
- 150,000 at Burlington

Transfers Process

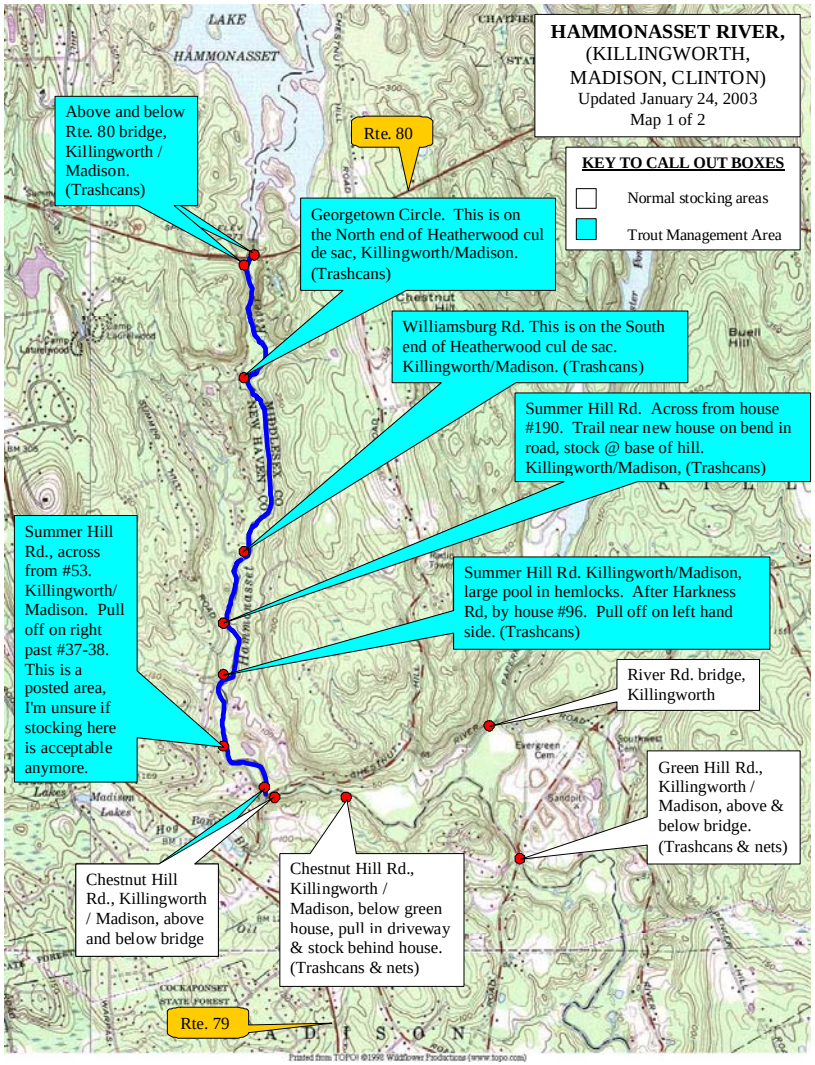
Quinebaug to Burlington

- 220,000 Transfer for Distribution (100 Truck runs)
- 250,000 Hatchery Restock Transfer (mostly in June – 50 Truck Runs)
- Predator loss is 40% on average at Burlington

Current State – Stocked Sites

- 340 Total Stocked Sites
- 19% or 65 Specialty Management Areas
- 81% or 275 are “Put & Take” (88 lakes & 184 rivers and streams)
- 233 Trucks Runs from the East with 194 meeting points (83%), 90 scheduled with volunteer opportunities
- 193 Truck runs from the West, with 54 meeting points (28%), with no scheduled volunteer opportunities
- Total number of Stops 2,113 State wide

Current State – Average Time Per Stop



- Approximately 15 minutes per stop (.25 Hours/Stop)
- Average of 3 People per stop to support drops
- So each stop takes approximately .75 Man hours per stop
- Average Stops per Run is 15
- Therefore average time to perform stops on a run 3.75 Hours (15 stops x .25 Hours)
- Goal is to reduce stops by 15% or 317 stops

Current State – Average Fish/Drop

- 750,000 Fish Distributed/Year
- 340 Stocked Sites
- 2,200 Average Fish/Site
- 15 Average Stops per Site Total Stocked Sites (high is 40)
- 146 Fish dropped per stop
- 1 Net = 50 fish therefore each stop averages 3 Nets/Stop

Evaluation Process: Value Stream Mapping (VSM)

- We can effect small changes without large capital expenditures
- Many opportunities for field changes versus management changes
- VSM helps visualize the entire process

Fisheries VSM - Scheduling

Rick V – hatchery coordination

Wait for delivery

Bob O. distributes fish #s to district for schedule creation

Wait for # delivery

Create schedule for distribution & coordinate dates & runs with fish management staff, COs & volunteers

Wait on schedule completion and feed back

Opportunity: Rick V produces stocking schedule.

Opportunity: Bob O. creates district schedules.

Opportunity: Utilize other Divisions(water management) to properly train volunteers and the commitment and coordination requirements. Master Wildlife Model.

Fisheries VSM – Truck Prep

Driver gets in truck after pre trip inspection & drives to water fill station

Put water in truck (open lids, center under spigot, pull fill valve)

Wait for truck to fill

Fisheries VSM – Start Loading

Give hatchery drivers maps & #s slips for their runs 30 minutes

Drive water filled truck to first pond to pick up fish 3 minutes

Put one person in fish pond with seine and crowd fish for fish dip netting 3 ponds

Wait for fish to be seined

Wait for nets to come to counter, then netters wait for counters to count each net

Fisheries VSM - Loading

Load fish on truck using seasonal staff by dip netting fish out of pond and handing net to 1 of 3 permanent maintainers on truck to count fish into the individual tank compartments.

Driver drives to other ponds and performs seining & counting process for other species & sizes

Driver drives to third pond – counting and load Pond 3

Wait for time to leave to make meeting time - Location dependent

Wait for netter or counter

Opportunity: Fish pumps.
Opportunity: Counting System

Fisheries VSM – Pre-run Meetings

Driver drives hatchery with trout to meeting location 45 minutes (Total miles=51083. 5354 gallons total)

Driver and run leader meet at meeting location and either wait for volunteers then proceed to first location or simply proceed to first stocking location 5-10 minutes

TRANSFER FISH TO BURLINGTON **

Hatchery driver and/or run leader wait for each other at meeting location 15-20 minutes.

Hatchery driver and/or run leader wait for volunteers to arrive OR Volunteers wait for DEP

Volunteers get out of their vehicles and meet run leader by hatchery truck 15 minutes

Opportunity: Remove volunteers (Alternative responsibilities for volunteers)
Opportunity: Skip Bio/CO – go straight to 1st step.
Opportunity: Utilize insurance truck. Extended cab truck. Better designed tank – more efficient.

Fisheries VSM (Transfer fish from Burlington – cont.)

Schedule Tim – 3 days (21 hours) & Bob – 1 day (7 hours) Coordination fish hatchery management

Opportunity: Standardized stocking plan spreadsheet %

Loading – CDL inspection 5 minutes/truck – only 1 Burlington truck – possible transportation

Loading – fill trucks with water – 30 minutes/truck, 3 trucks in Burlington

Loading water – 2 trucks waiting

Fisheries VSM (Transfer fish from Burlington – cont.)

Prepare stocking maps and load sheets for trucks – 1 hour/manager

Loading – daily load sheets, Driver maps with stocking location – 1 minute/truck, 3 trucks in Burlington

Loading – move to ponds (minimum 3 ponds)

Move to ponds – 1-5 minutes /truck

Opportunity: Process assessment/change.

Fisheries VSM (Transfer fish from Burlington – cont.)

Pond 1	Pond 2	Pond 3
Transport	Transport	Transport
Loading, Netting, Waiting Counting fish	Loading, Netting, Waiting Counting fish	Loading, Netting, Waiting Counting fish

Opportunity: Investigate Counting Fish process.

Fisheries VSM - Coordination

Trucks loaded with fish – quick stop at Hatch house for final coordination

Driver and Loaded truck travel to meeting location 45 minutes (Miles – 17961, Fuel 1658g)

Bio/CO prep for stock maps

BIO/ CO travel to 1st stop

Fisheries VSM – Coordination

Drive to meeting location

Conference (5-10 minutes)

Drive to meeting location & meet with volunteers

Process volunteers (10-15 minutes)

Opportunity: Train or eliminate volunteers

Fisheries VSM – Starting Run

Fish delivered from truck to stocking location

Step 1 at location. Driver leaves cab access tanks. Run leader determines number for location

Wait for hatchery driver to net fish. Hand down to stockers. Hatchery driver waits for net to return to truck.

BIO – Gets boat, Preps truck

BIO – Travel to lake

Fisheries VSM - Stocking

Stream Stocking – Average = 15 stops

Transportation to 15 stops

Lake/Pond Stocking =1-3 stops

Waiting between Lake/pond stocking stops (20 minutes)

Opportunity: Eliminate / reduce boat stocking
Opportunity: Reduce stops without reducing fishing quality experience.

Fisheries VSM – More Stocking

Fish are run to streamside by seasonal staff and released into water

Stop 1 – At each stock location driver stops truck gets out and accesses tanks. Run leader determines # of fish to go out at location and hands net with fish down to seasonal (or volunteer) 5 minutes/site

Wait for fishery driver to net fish out of tank

Hatchery driver waits for nets to return to truck

Fish are run to stream side by volunteers and releases at streamside

Opportunity: Remove run leader.

Fisheries VSM – Finish Stocking

Driver, seasonal and run leader get back in vehicles and proceed to next locations. Volunteers get back into vehicles (max of 3 vehicles if possible) and follow hatchery truck to next locations

Stop 2

Transport

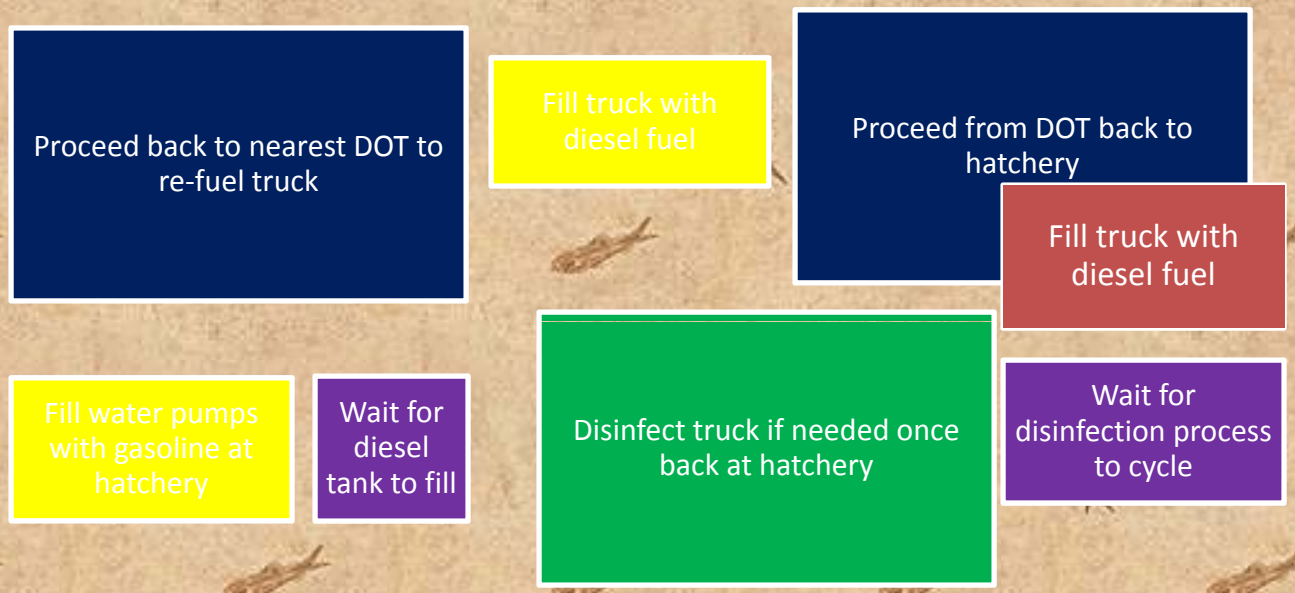
Waiting for boat stocking Lakes & Ponds

Empty truck of all water at last location, Wait for water to empty.

NOTE: Average of FIFTEEN stops up to FORTY stops.

Opportunity: Retrofit hatchery truck to fit three people.
Opportunity: Improve the volunteer experience for both the volunteer and DEP.
Opportunity: Eliminate or reduce boat stocking.
Opportunity: Reduce # of stocking locations.

Fisheries VSM – Return trip



Opportunity: Refuel all trucks – diesel & gas (for pumps) at one site – Quinebaug.
Opportunity: Bring field disinfection kit for nets to avoid having to disinfect entire truck at end of day.

Fisheries VSM – Truck Servicing

Wash exterior of truck down if needed

Check nets – fix if needed
Fill out pump log and vehicle service sheet. Make necessary repairs or notify appropriate person of major needed repairs.

Fill mileage sheet out at end of trip

Park truck in garage for night

If time is still available perform required hatchery duties before leaving for the day.

Fisheries VSM – End of Run

Meet location – Off load water

Meet location Drive back to hatchery

Wait for truck to empty

Travel back to hatchery from last stop – 1 hour

Opportunity: Expand capacity of Burlington Truck drains

Fisheries VSM – Truck Servicing

Trucks Clean

Opportunity: Assess need for better hose / cleaning system

Trucks Service – Mileage, Service sheet, Park for night

Park for night

If time allows, perform required hatchery duties for remainder of the day OR Hatchery personnel begin process again for second run

Lean Fundamentals

Developing Standardized Work

- **What is the ideal ordering of steps?**
- **What is done differently or not at all?**
- **Where should decisions be made?**
- **What knowledge and skills are truly required to perform the step(s)?**
- **Can the steps be simplified so that they are less dependent on knowledge and skills?**

Brainstorming Ideas

- Change District Lines
  - Quinebaug to deliver more direct to reduce transfers
  - Potential of 41 runs (will require 5th truck)
  - Will reduce overtime
- Reduce/eliminate Boat Stocking
  - 60 Boat stockings for East/4 Boat stockings for West
  - Saves 116 man hours/boat stocking
  - Saves on vehicle use
- To Reduce or Eliminate need for Coordinated Runs with Bios and C.O.s
  - Review job skills/write-up for Maintainers to see if this is a feasible option and what level of Maintainer could lead a run
  - Supply GPS units to facilitate hatchery led runs
  - The Hatchery will make call on which runs require BIOs
  - Eliminates 194 "Meet Up" Points
  - Reduces waiting time/run
  - Allows COs and BIOs to work on the business
- Reduce low priority by eliminating some stocking sites
  - 41 Potential if the cut-off was 300 fish or if the cut-off was 250 the site count would be 20
- Reduce number of stops per stocking sites
  - Approximately 7,500 stops/year for rivers & streams
  - Goal to reduce stops by 15% less Stops (1,125 stops)
  - This equates to a reduction of only 6 stops out of 40 per river/stream (considering each R&S gets restock 2.5 times)

Brainstorming Ideas

- Reduce number of Run frequencies
  - This is being reviewed
- Implement a "Mix Species" pond staging at Burlington for in season transfers
  - In season only due to Burlington needs to open up ponds
  - Burlington 12 Loads per 6 weeks = 72 loads X 4 man hours savings = 288 Man Hours
- Running the 5th Truck more often to assist in transfers during in season
  - Up to 41 potential straight stocking with in an 8 Hour Day direct from Quinebaug
  - This may reduce transfers by a certain percent (to be studied)
- Extend Stocking period into last week of February to gain capacity (weather permitting)
  - This may reallocate 25-30 loads creating flexibility to better serve pre-season stocking
- Eliminate the Public Fish Out Ponds
  - With creation of early season fishing opportunities these ponds are outdated and unnecessary
  - These ponds are being run at a loss
  - Free up a seasonal worker ($5,600)
  - Reduce cost by $4,300 to operate
  - Could be used to raise additional/surplus fish for stocking
- Review a the feasibility of a training program for Volunteers that better supports the distribution process
  - Coordinate and Utilize other Bureau Stake holders
- Grow more Rainbow
  - Change percent mix with more rainbow
  - easier to grow and less costly

Outside Feedback

- Bob and Bob reviewed the brainstorming session output and was comfortable with the direction the team was going/thinking

- Rick V. reviewed the direction the team was going and provided constructive feedback and additional opportunities

Visual Project Plan for Fish Event

Plan Do Check Act Project Plan **PDCA**

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LEAN TEAM PLAN (Draft Plan to be Presented to)

TASK/ACTIVITY	TASK OWNER(S)	PARTICIPANTS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	EXPECTED RESULTS
Eliminate Boat Stocking	Neil	Tim/Chris/Bob/Bob											Manpower and Fuel Savings (29 man days)
Reduce C.O. & B IO Coordinations	Chris	Bob/Bob/Paul/Bill											Manpower and Fuel Savings
Reduce stops where feasible	Neil/Tim	Chris/Bob/Bob											Manpower and Fuel Savings
Research and generate Requisition of GPS	Neil/Tim	Purchasing Dept											Allows Reducing Coordation Runs / Manpower and Fuel Savings
Direct Stocking in 2009 from Quninebaug	Dave/Jamie	Bill/Rick/Tim											Manpower and Fuel Savings / Product Quality (less stress)
Closing public fish-out ponds at Quinebaug	Dave	Bill/Rick											Manpower and Cost Savings / Potential for Production
Decontamination kit for each truck	Jamie	Rick											Manpower and Product Quality
Develop a "First Try" simple scheduling	Chris/Neil	Tim/Bob/Bob											Better Distrution Scheduling
Implement Mix Pond concept at Burlington	Jamie/Joe	Dave/Rick/Tim											Manpower and ease of loading and stocking
Research/draft aging vehicle program	Dave/Jamie	Rick/Rick											Fuel Savings and maintenance / (mission critical)
Research diesel fuel station at Quinebaug	Rick J.	Dave/Bill											Manpower and Fuel Savings
Changing the Mix percent of fish	Dave	Rick/Bill											Overall production cost savings and better quality fishing
Reassess potential Low priority stocking	Neil/Chris	Tim/Bob/Bob/Bill											Optimize return on product placement and cost/time
Develop a "feedback loop" system	Tim/Neil	Dave/Jamie											better quality fishing experience/ Check process
		Color Code Key	ON Target	Struggling	NO Action	Future	Dropped						

Next 4 Slides are a further breakdown of other Opportunities "Black" is Distribution and "Red" is Production

Which may be a future Kaizen event

- **1-3 Months**
- **6-9 Months**
- **1 Year – 18 Months**
- **Beyond 18 Months**

1 to 3 Month Project Tasks

- Reduce the need for C.O.s and BIOs with 2009 Stocking Runs unless the Hatchery requests assistance
- Eliminate Boat Stocking in 2009
- Reduce stops where feasible and without impacting the fishing experience
- Purchase GPS devices with software for on road and off road
- Purchase road atlas for all trucks
- Research the potential for a Decontamination kit for each truck (such as Novasan and/or Roccal)
- Develop a "First Try" simple scheduling program with excel
- Implement Mix Pond concept at Burlington
- Begin Direct Stocking in 2009 from Quninebaug on select western district sites. Analyze and expand where feasible
- Begin utilize the 5th Truck when feasible with a knowledge that there is a risk.
- Purchase cell phones or compensate an employee for using a personal cell phone
- Assign one individual (on rotation basis) to sign up for list serve and network with other States for expanded learning
- Purchase and add 1-2 additional nets for trucks, especially when utilizing volunteers
- Pair up single volunteers with experienced groups
- Volunteers only when BIOs are available to teach and lead the group
- Propose closing public fish-out ponds at Quinebaug to realize immediate savings
- February stocking when weather permits (without calling)

6-9 Month Project Tasks

- **Research and draft an aging vehicle replacement program**
- **Expand the capacity of the Burlington truck drains**
- **Draft a proposal to utilize Fish-out Ponds at Quinebaug for production**
- **Develop an Identification/Recognition similar to UST Lean Team request**
- **Research and develop a draft proposal for more efficient netting system for Burlington**
- **Research better predator control at Burlington (currently losing 100,000/year or 40% of total)**
- **Research the cost and selling price to produce eyed eggs for private hatcheries**
- **Changing the Mix percent of fish, such as raising more rainbow (easier to grow and less costly)**
- **Researching and establishing a draft report for diesel fuel station at Quinebaug**
- **Reassess Volunteer duties**
- **Coordinate with other DEP Bureaus regarding volunteer duties**
- **Develop a "feedback loop" system for more efficient scheduling and site measurements/counts**
- **Reassess and select potential Low priority stocking program and be ready to communicate as necessary**

1Year – 18 Months Project Tasks

- New Trucks purchases should have:
  - extended cab to reduce need for additional trucking seasonal support to the site
  - an upgraded aerating systems
  - standardize tanks
  - drain quick release capabilities
  - Insulation capability
- Research displacement gage and/or "fish Pumps" for truck loading to eliminate the need to Fish counting while loading on trucks
- Install diesel fuel station at Quinebaug
- Research to benefits (ROI) for smaller vehicles for working around the hatchery
- Develop a comprehensive DEP Training program for Volunteers with other departments

Beyond 18 Months

- More efficient watering system at Burlington for truck filling
- More efficient parking facility for Burlington trucks
- Improve dirt ponds and lining in Burlington
- Adjust production to water supply at Quinebaug or invest in additional water supply system

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