

CONNECTICUT DEP USES LEAN GETS IMPRESSIVE RESULTS

Kim Hudak

Assistant Director
Water Permitting & Enforcement Division

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LEAN Approaches to Help State Environmental Agencies Improve Operations
February 24, 2011



Connecticut Department of Environmental Protection
www.ct.gov/dep

LEAN I - EVALUATION OF WPED'S ENFORCEMENT PROGRAMS

JUNE 9-12, 2008



Team Members: Melissa Blais, Anne Dana, Tess Gutowski, Sarah Ely, Rick Jacobson,
Nicole Lugli, Will Oros, Colette Ready, Donna Seresin, Sue Zampaglione,
Sensei: Fred Shamburg, Leanovations LLC

Team Charter

- Eliminate Wastes and/or non-value added steps found in WPED's administrative enforcement activities
- Identify ways to improve WPED's administrative enforcement processes
- Charter Goals
 - Reduce NOV closure time by 30%
 - Reduce enforcement elevation decision time by 30%
 - Reduce the time for drafting formal enforcement document by 30%

Where We Were: Current State, June 2008

- Division has 3 enforcement groups, each with a unique way of doing business
- Enforcement Response Policy (ERP) goal of 180 days to send draft consent orders is not being met.
- Notice of Violation (NOV)
 - Issued in 2007 – 170. Of these, 62 not closed.
 - Total Backlog (last 5 years) = 583
- Consent Orders (CO)
 - Completed in 2006 = 2
 - Completed in 2007 = 14
 - Total Backlog of draft COs = 30
 - Last 5 years = 24
 - Greater than 5 years = 6

June 2008 Current State of the Process



- Processes-106
- Green (Value added)-6
- Orange Non-Value Added but Necessary)-30
- Blue (Waiting)-25
- Pink (Not Nec.)-14
- Purple (Transport)-31

June 2008 Current State per VSM



- 80% of NOV's move directly to Closure

- 168 Days for Direct Closure

- 99% was waiting and rework

Clearly many OPPORTUNITIES!!

June 2008 Current State per VSM



- 20% of NOVs move to Formal Enforcement
- 25% go through the process 1x
 - 95% was waiting and rework time
- 75% go through the process >2x
 - 92% was waiting and rework time and additional discovered violations

397 days to go through process 1 time.
820 days to go through process more than one time.

Clearly many OPPORTUNITIES!!

7

Future State, as seen, June 2008

- Standardize Work/Workflow
- Use of Visuals for File Management and Workflow Management
- New Approach to NOVs and COs



Type	New	Old
Value added	5	6
Non-Value Added	13	30
Waiting	6	25
Not Necessary	0	14
Transport	10	31
Total	34	106

8

2- Month Goals

- ✓ Standard Operating Procedures
- ✓ Buckslips
- ✓ Status Boards
- ✓ Visual File Management
- ✓ Training (Access & Excel)
- ✓ Change NOV review process
- ✓ Weekly Status Meetings
- ✓ Enforcement Decision Process
- ✓ Assigned Field Staff to Office to reduce backlog
- ✓ E-drafts

✓ means 2 month goals met

6 Month Goals

- ✓ Standardize NOV, CO lan_u_a_e and penalty calculations for General Permits
- ✓ Project Management Training
- ✓ Define Manager's expectations of enforcement actions

✓ Means 6 month goals met

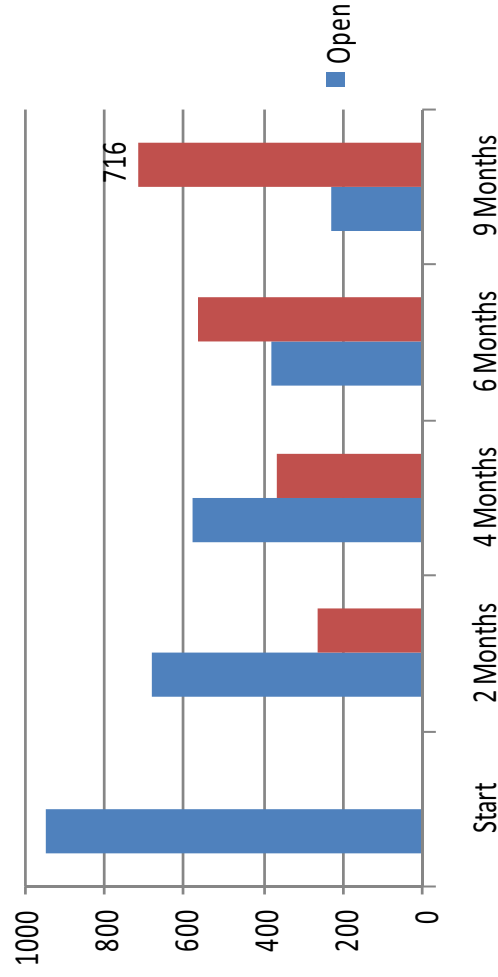
1 Year Goals



- ✓ Ticket/CO – Benchmark against Traffic Enforcement
- ✓ Rearrange layout
- ✓ Redistributing duties for SMRs/Aquatic Toxicity
- ✓ Redefine Agenda meeting (negotiations commission)
- ✓ Streamline databases
- ✓ Standardize penalty for more categories
- ✓ Standardize language for CO per individual permits and general permits
- ✓ Move towards “FIFO” – (NB: there are exceptions)
- ✓ Means 1 year goal met

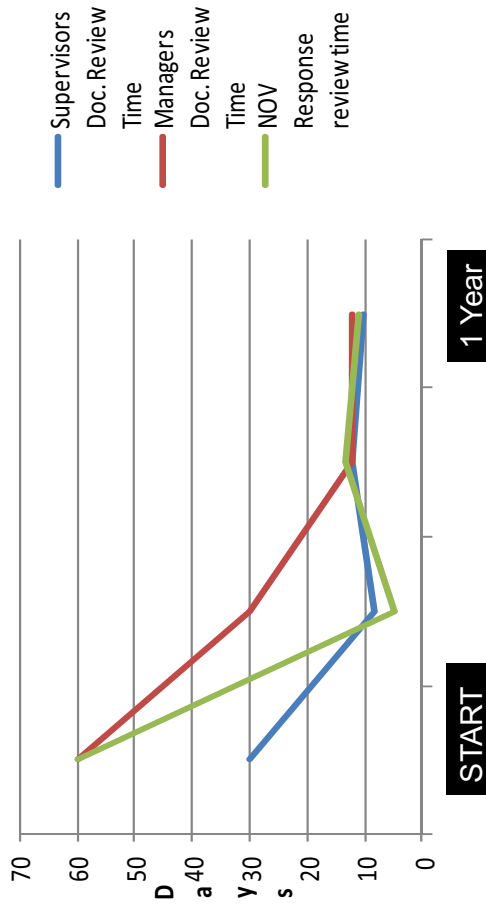
Successes

WPED Open/Closed Backlog NOV's



Successes

WPED Review & Decision Times



One Year – Success!

Ticket/CO – Benchmark against Traffic Enforcement	<u>Status:</u>	Draft CO for SW Construction that can be issued in the field.
Rearrange layout	<u>Status:</u>	Determined to be not feasible
Redistributing duties for SMRs/Aquatic Toxicity	<u>Status:</u>	Have interns/seasonal employees to perform data entry functions.
Redefine Agenda meeting (negotiations commission)	<u>Status:</u>	Not quite ready for negotiations commission BUT have modified Agenda meetings
Streamline databases	<u>Status:</u>	Have streamlined databases, BUT not where we want to be – yet
Standardize penalty for more categories	<u>Status:</u>	Standardize penalty for more categories
Standardize language for CO per individual permits and general permits	<u>Status:</u>	Standardize language for CO for several general permits
Move towards “FIFO” – (NB: there are exceptions)	<u>Status:</u>	“FIFO” – res, there are exceptions

The Post-Kaizen program improvements:

- ☀ The time to draft a final Consent Order averages 180 days. The Agency's Enforcement Response Policy sets a deadline of 180 days.
- ☀ An important value added step new to the process is the bifurcation of management lead decision making on enforcement cases.
- ☀ Established Weekly Status Meetings that have facilitated information sharing, discussion/debate and decision-making on cases resulting in timely resolution of cases as well as consistency among the three enforcement program administrative approaches.

Comments/Observations from the LEAN Team:

- *Critical in the process is having management support in accepting recommendations for change and being fully engaged in implementation.*
- *Important to keep all Division staff informed as to the project's goals and implementation activities. Buy-in from staff critical to make the process work.*
- *As the project implementation moves forward, need to be mindful of including others within the programs to integrate efforts moving forward.*
- *Acknowledge the work of the Team and Team Leader.*

- *There are competing demands on implementing lean and on-going work of the enforcement day to day program demands.*
- *Need to balance early on the KPIs and the goals set during the Pre-Kaizen planning phase.*
- *During the Kaizen event it is important to include IT expertise to identify opportunities for program efficiencies using the various databases and computer capabilities.*
- *Always use Plan-Do-Check-Act (P-D-C-A) as project plan is being implemented.*
- *Critical to the successful implementation of the project plan is the administrative support.*
- *Work done by this team has been shared with other Agency enforcement programs.*

Charter Goals revisited

- Reduce NOV response review time by 50% - (modified from reduce closure time)
 - Pre-Lean NOV review time – 60 days average
 - Goal – 30 days
 - Actual review time – 11days
 - 82% reduction → WOW!!!!**
- Reduce enforcement elevation decision time by 30%
 - Pre -Lean decision time - 60 days
 - Goal -42 days
 - Actual decision time – 7 days
 - 88% reduction → WOW!!!!**
- Reduce the time for drafting formal
 - Pre-lean actual draft time – 387 days
 - Draft time goal – 120 days
 - Actual Reduction- 74% → WOW!!!!**

End of Project Transition Plans

- Celebrate Success
- Keep moving forward – tracking KPIs
- Deal with Supervisor's retirement
- Keep Team Leader or appoint another
- Assess role of the Lean Team
- Assess Lean Team membership
- P-D-C-A

LEAN IV - NPDES PERMITTING PROCESS IMPROVEMENTS

May 11 - May 15, 2009



Team Members – Enna Herrera, Ewa Sukcik, Ken Major, Steve Edwards, Rose Gatter-Evarts, Chris Sullivan, Traci Iott, Fred Riese, David McKeegan Team Champion – Tess Gutowski Team Leader – Charles Neziannya

Project Team Charter

Opportunities for Improvement:

- Improve timeliness of issuing NPDES permits
- Create better defined roles & duties of the WPED & WPLR staff
- Improve the processing of NPDES permit applications & coordination needed with WPLR

Project Scope:

- Refine DEP's NPDES permit application review process
- Includes coordination with BMMCA (WPED), BWPLR (P&S; Remediation), BNR (Fisheries; Wildlife) and EPA

Goals (Metrics):

- Reduce time for Technical Review of individual NPDES permit applications by 50%
- Reduce WPLR's draft permit review time by 50%
- Reduce backlog of NPDES permit applications to <10% for Majors and <30% for Minors

Value Stream Mapping (VSM)

Table VSM. The activities and steps, both valued and non-valued added, in the current process.

Type of Process	Current # of Processes
Value added = Green	10
No Value Added = Pink	23
No Value Added but Necessary = Yellow	36
Waiting = Purple	18
Transport = Blue	27



Analysis of the Current Steps Using VSM

Opportunities:

- Reduce # steps by eliminating “do loops”
- Assign permit application review to Engineer at least 310 days prior to permit expiration and determine Significant Non-Compliance (SNC) status
- Meet with the Applicant at least 300 days prior to permit expiration to discuss permit application submittal that will address compliance, fisheries and P&S issues
- Delegate signature authority from Assistant Director to Supervisor on Notice of Sufficiency or Insufficiency
- Delegate signature authority from the Director to Assistant Director on Notices of Tentative Determination for NPDES Minor Permits

Comparison of Current and Future State

Table VSM. The activities and steps, both valued and non-valued added, in the current process and future desired state.

Type of Process	Current # of Processes	Future # of Processes
Value added = Green	10	10
No Value Added = Pink	23	0
No Value Added but Necessary = Yellow	36	22
Waiting = Purple	18	11
Transport = Blue	27	16
Total	114	59
% REDUCTION IN THE NUMBER OF TOTAL STEPS = 51%		



Customer Feedback

- Customers: P&W, PSEG New Haven, Malcolm Pirnie, Williams Consulting, Fuss & O'Neill
- Pre-application meeting to take place 300 days prior to permit expiration
- Applicant concerned with sufficient time to comment on key elements in the development of the draft permit
- Concerned with SNC issues across all media; definition and consequences
- The more information early on in the process the better: Pre-application meeting, site visit etc.
- Supportive of the new time frame; want more time to review the draft permit before NTD
- Application instructions are not clear concerning Inventory of Raw Chemicals – use chemical name, compounds present and CAS number

Project Team Charter - Revisited

Goals (Metrics):

- Reduce time for Technical Review of individual NPDES permit applications by 50% - **Now 51%**
- Reduce WPLR's draft permit review time by 50% - **Now 61%**

New Goals

- Reduce # of days from 925 to 284; reduce timeframe to NTD by 70%
- Reduce backlog of NPDES Permit applications to 0% for Majors
- Reduce backlog of NPDES Permit applications to 0% for Minors

Key Performance Indicators (Metrics)

- Track % of initial draft permits accepted by applicants
- Track % of draft permits that go to hearing
- Track 3 test cases
- Track Pre-application meetings (300 days prior to permit expiration)
- Track # of TRLs sent to each applicant and applicant's response time
- Track time to develop 1st draft of the permit (141 days)
- Track time it takes for the applicant to get the 1st draft permit
- Track time it takes for the applicant to comment on 1st draft permit
- Track the "Negotiation Process" time for each applicant (Using SIMS to track)

1 to 2 Month Project Tasks

- Refine NPDES Permit Application & develop a checklist
- Train/educate permitting staff on Future Plan
- Revise forms such as buckslip, etc.
- Implement a schedule for future staff strategic meetings
- Develop "Water Quality Calculations" and "Reasonable Potential Analysis" Spreadsheets
- Delegate signatures of NOI/NOS & Minor NPDES permits
- Initiate 3 model test cases with New Review Process; insert existing permit backlogs into the new "Negotiation Process"
- Develop a Site Visit Checklist
- Develop "E-mail Checklist Form" to e-mail draft permits to Applicants

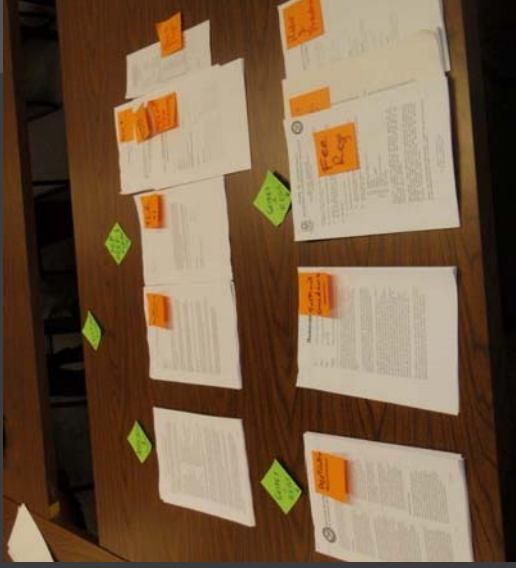
6 Month Project Tasks

- Develop SOPs for permit engineers
- Develop SOPs for P&S and Fisheries staff
- Develop revised letter template for pre-application meeting
- Develop coordination steps with other DEP programs
- Resolve Industrial Stormwater permitting issues
- Develop strategies for compliance history issues/Enforcement Coordination – dealing with multi-media Significant Non Compliance (SNC)

1 Year Project Tasks

- Conduct in-house training on “Quality Calculations” and “Reasonable Potential Analysis” Spreadsheets
- Schedule training/outreach sessions for Stakeholders
- Assess the status of 3 model test cases
- Assess progress with backlog permits
- Upload the “Future Plan” on the DEP website

Templates - Revisions



Benchmarks

DEPARTMENT OF ENVIRONMENTAL PROTECTION

...conservens, protecting and improving and environment of the state...

- DEP Search
- DEP MAIN MENU
- DEPARTMENTAL DIVISIONS
- OUTDOOR RECREATION
- NATURAL RESOURCES
- AIR/LAND/WATER QUALITY MANAGEMENT
- PERMITS & LICENSES
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Help for 05/15/2009

State Land for Sale

Prizing season is now open

News for 05/15/2009

State Land for Sale

Wilderness

Wilderness

Wilderness

Nebraska Department of Environmental Quality

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Welcome to the Nebraska Department of Environmental Quality.

We hope you find our information helpful. Our mission is to protect the quality of Nebraska's environment, our air, land, and water resources. We do this by enforcing the state's environmental laws and regulations and providing assistance, both to industry and citizens, to help them understand and comply with these laws and regulations. We also help citizens and businesses understand how they can help protect the environment and stimulate the economy.

Recovery Grants Available to Reduce Diesel Emissions in Nebraska

May 7, 2009 - A new area of NDEQ's work provides information about agency programs that help reduce diesel emissions. The Diesel Emissions Reduction Act (DERA) of 2005 allows federal grants to be used to fund projects that reduce diesel emissions from diesel-powered vehicles or equipment. Recovery Act grants totaling over \$17 million are available to help fund these projects. For more information, visit the Diesel Emissions Reduction Act website.

May 4, 2009 - NDEQ is requiring projects for grant funding to be completed by July 1, 2009. For more information, visit the Diesel Emissions Reduction Act website.

NEQO News

NEQO News

NEQO News

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Comments/Observations from the LEAN Team:

- What we learned – how few value added steps there are
 - old system was an endless do loop
 - change is possible - you need to believe
 - how effective we can be with LEAN
- “WOW” moments – current process time vs. value added steps
 - customers very supportive of the change
 - 10 value added steps in 900 days
- What went well – working well together (constructive criticism)
 - customers’ positive responses
 - managerial support to do pre-Kaizen preparation
- Other – recommend having pre-Kaizen preparation

Pre-Kaizen Event Goals: May 2009 vs. Post Kaizen Event Results/Key Performance Indicators: October 1, 2010

- Reduce the time for technical review of individual NPDES permit applications by 50% (10 days) Review: Estimated <10 days. **MET Pre-Kaizen GOAL**
- Reduce WPLR’s P&S draft permit review time - by 50% (xxx days)*
Time for P&S review: *Not tracked.
- Reduce backlog of NPDES permit applications to <10% for Majors (X=12)
Reduce backlog of NPDES permit applications to 0% for Majors: 11 issued and 1 pending; realized a 92% reduction. **MET Pre-Kaizen GOAL**.
- Reduce backlog of NPDES permit applications to <30% for Minors (X=14)
Reduce backlog of NPDES Permit applications to 0% for Minors: 10 issued and 4 pending; realized a 71% reduction. **MET Pre-Kaizen GOAL**.
- Reduce # of days from 925 to 284 to process application/reduce timeframe to Notice of Tentative Determination by 70% X= 5 applications 217 days average; realized a70% reduction. **MET Pre-Kaizen GOAL**.
- (Notes: Total number of Majors = 35; Total number of Minors = 40; Total Power Plant Applications = 11/note that 6 applications are considered as backlog)

Comments/Status Updates

Task: Develop SOPs for P&S staff. There was a change in this task which had Permit Engineers drafting SOP for Water Quality Based NPDES Permitting, draft September 2010. The Draft SOP was sent to WPED managers for their review and approval.

Task: Develop and conduct in-house training on: “Water Quality Calculations” and “Reasonable Potential Analysis” Spreadsheets, Water Quality Standards, Impaired Waters other water quality issues and programs. *Status: No action.*

Schedule training/outreach sessions for Stakeholders. *Status: No action.*

Develop revised criteria for the negotiation process. *Status: No action.*

Connecticut DEP LEAN Celebration – Transferable Knowledge for Efficient & Effective Government

SUMMARY OF DEP LEAN PERMITTING PROJECTS

Long Island Sound Program Permit
Lean I – June 2008, Brian Thompson

Inland Water Resources Permit
Lean II – October 2008, Denise Ruzicka

NPDES Permit Processing Coordination
Lean IV - May 2009, Kim Hudak

Wastewater System Reairs & Upgrades
Lean V – October 2009, Kim Hudak

X-Ray Devices and Radioactive Materials
Lean VI - January 2010, Ed Wilds

Solid Waste Facility Individual Permits
Lean VII - May 2010, Diane Duva

NDDB Species Review Request Processing
Lean VI - January 2010, Rick Jacobson & Jenny Dickson

STANDARD WORK

- **Creating** checklists and developing SOPs for permit engineers, fisheries and other DEP Divisions. Staff assisted in the development of the Permitting Desk Reference available on the DEP Intranet site. The Industrial NPDES permit application review process, with a flowchart is linked to the relevant standard operating procedures (SOPs) and are available for all NPDES permit engineers to use. (NPDES)
- **Realizing** that the two separate Radiation Registration Programs, DTX and RMI, could share similar registration processes, allowed for consistency and predictability for the regulated community. This has opened the door to further cooperation between the DTX and RMI registration groups as exemplified by a sharing of staff time. Requiring registration in alternating years allows the two programs to assist each other in a synergistic and more cost effective manner. (Radiation)
- **Standardizing** routine work by establishing a two-stream work flow (Level 1 and Level 2 reviews). Routine reviews (L1) can be dealt with using standard responses and will no longer consume biologists' time or delay the processing of more complex reviews (L2). (NDDDB)
- **Identifying** certain application types for solid waste facility individual permits to target for fast tracking, such as renewal applications. (Solid Waste)

ELIMINATE WASTE

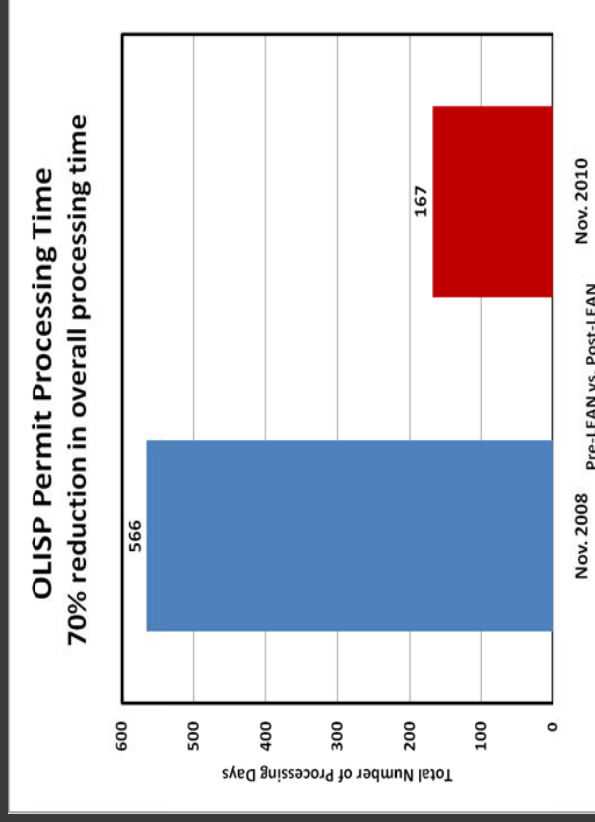
- **Eliminating** redundancy in the number of databases currently in use. Expected future SIM's enhancements to enable further consolidation to one database. This will streamline the process, afford considerable savings in staff time, and create a central repository of registration information. (Radiation)
- **Leveraging** existing technology by adopting SIMS as a process tracking and document sharing system. Staff from three different DEP locations now have shared access to maps, plans and other materials submitted with each request and can collaborate on a single response letter. Doing so reduced costs associated with distribution of materials to multiple offices and consolidated multiple letters to the applicant into one coordinated response. (NDDDB)
- **Tearing** down silos that were created over time through the administration of the various regulatory programs within the Division and merging the six programs into one regulatory entity the six separate regulatory programs and condensing it to two technical disciplines with one file lead. The LEAN team mapped out the current Sufficiency Review process by using a Swim Lane approach which clearly showed a lot of waste and duplicative effort between the programs and staff. (IWRD)
- **Streamlining** mailing lists means less mailings to do which saves the department time and money. (OLISP)

PLAN & COMMUNICATE

- **Teaming** up with professional organizations DEP was able to leverage their websites and periodic meetings to inform this targeted audience, bringing more facilities that should have registered into compliance with State law. (Radiation) **Including** stakeholders both during the Ka... .. keeps t... .. communication channels open. (Subsurface)
- **Changing** application content to be specific in requirements such as topographic surveys for OLISP; Creating fact sheets and minimum requirements for design, construction, and installation, in the case of subsurface sewage disposal systems; focusing on obtaining higher quality information from applicants so that NDDDB staff are performing reviews with fewer delays related to insufficient submissions; and, placing example applications for solid waste individual permits on the DEP website.
- **Instituting** pre-application coordination with local officials and other agencies to ensure OLISP is consistent with a wide variety of standards including Harbor Management Commission, local Shellfish Commission, and CT Dept of Agriculture. In Solid Waste Permitting, updated permit renewal notification letters offer the option of a pre-application meeting for Solid ... Individual Permi... In the NPDES Permitting Program, an application is pre-assigned to the engineer who meets with applicant at least 300 days prior to the permit expiration to discuss the submittal of the application and any compliance, fisheries and WQ issues.

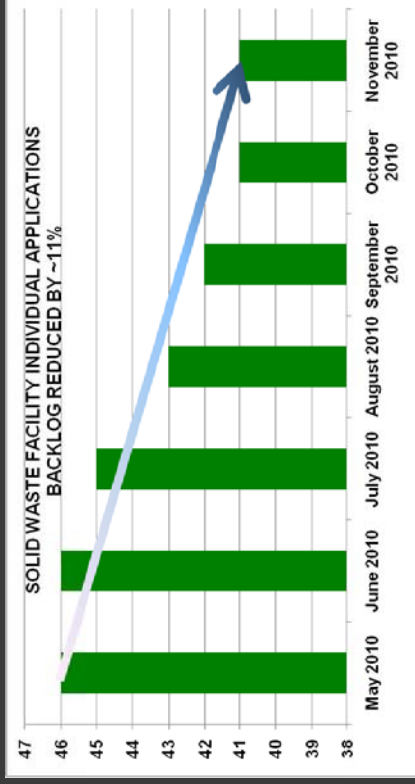
Office of Long Island Sound Program

This graph illustrates the average processing times for Structures, Dredging and Fill and Tidal Wetland applications. As the graph reflects, the average processing time since LEAN implementation is 167 days. OLISP has reduced its total permit processing time by 72%.



Solid Waste Permitting Program

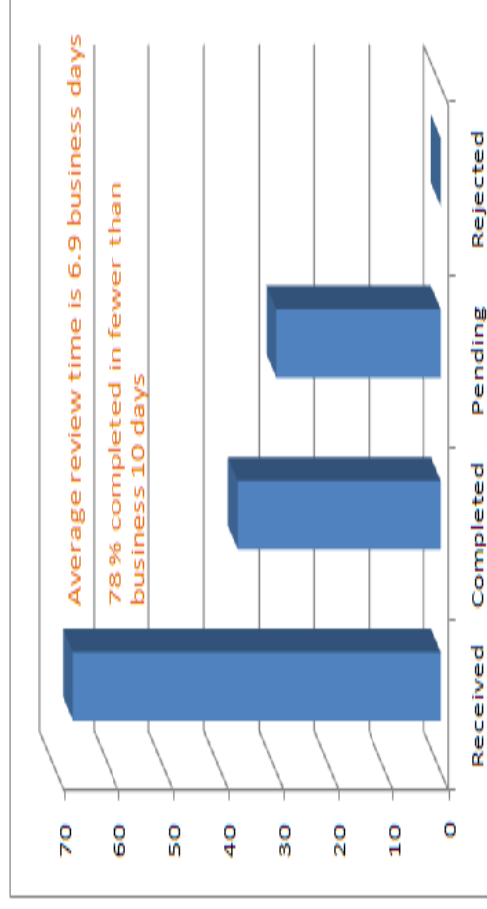
This graphic illustrates that in six short months the Solid Waste Facility Individual Permit Team has reduced the backlog by 11% and should exceed their goal of a 20% reduction in 12 months.



NDDB Species Review

This graphic illustrates the status of the NDDB reviews received since DEP implemented the use of SIMS on Oct 1, 2010 and started using the new NDDB request form. Prior to implementing SIMS, DEP had an incomplete picture of status and turnaround times of NDDB review requests.

Status of NDDB Reviews Oct. 1, 2010 - Nov. 19, 2010



**Connecticut DEP LEAN Celebration –
Transferable Knowledge for Efficient & Effective Government**

**SUMMARY OF DEP
COMPLIANCE/ENFORCEMENT LEAN PROJECTS**

Water Enforcement Program
Lean I - June 2008, Kim Hudak

Solid Waste Enforcement Program
Lean II – October 2008, Diane Duva

Storage Tank Compliance Inspection
Lean II - October 2008, Peter Zack

Title V Major Source Inspection
Lean IV - May 2009, Bob Girard

Teamwork

- **Collaborating** with partners such as local officials, enlisting their assistance in collection of facts. To borrow from the health care industry this enables a 'coordination of care' to optimize the case assessment and development roles of local and/or state officials invest_i atin_ atin_ al dum_ in_ complaints_ Solid Waste.
- **Communicating** between divisions has become part of our daily routine because of the LEAN process. We now recognize two groups of internal customers in the Title V permit lifecycle, permitting and field engineers. Increasing communication has resulted in the recommendation to standardize the permit, inspection report, and source reporting that were embraced by internal customers and external customers. (Air Inspection)
- **Constant gentle pressure** through weekly meetings between managers and enforcement supervisors provides better communication so the flow of enforcement actions is timelier. (WPED)
- **Transferring** new software technology and a shared universe of sources to the Stage II Gasoline Dispensing Facility inspection group means efficiencies gained by one group benefits another inspection unit within the agency. (ESRUST)

Visual Measures & Standard Work

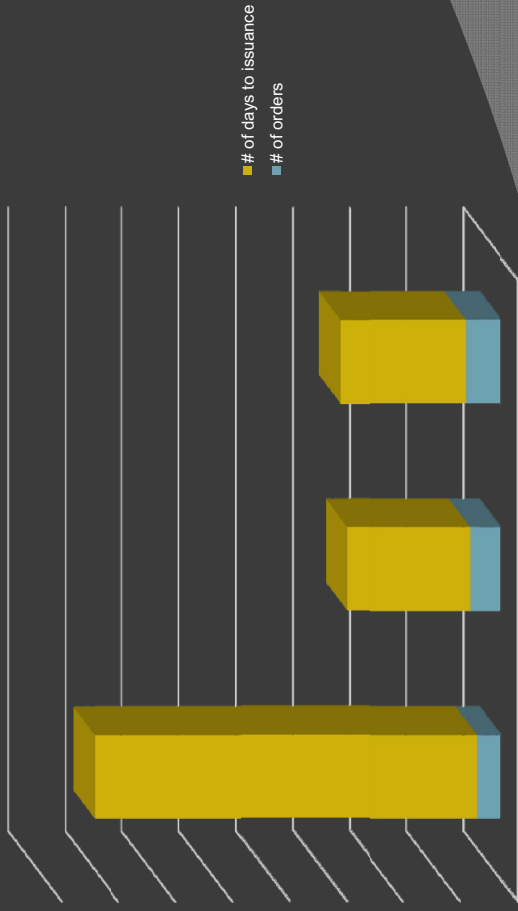
- **Leveraging technology** by integrating the use of electronic tracking for status of each case helps to keep the staff's case load on track. Identifying next steps keeps work flowing and assists the managers in identifying status of the caseload. (Solid Waste)
- **Providing visual status boards including key performance indicators** allows staff, supervisors, and managers, an opportunity to see work load demands on an ongoing basis and keep on top of deadlines. (WPED, Solid Waste, & Air Inspection)
- **Revising and updating standard operating procedures** and providing training means staff perform tasks, such as inspections and cold case closures, consistently, ensuring that regulatory requirements are being met. (Solid Waste & Air Inspection)
- **Leveraging institutional knowledge**, by standardizing penalty calculations and enforcement order formats makes the process more consistent and efficient to the point of issuing orders in the field. (WPED)
- **Standardizing** the inspection template so that notices of violation can be automatically generated from the inspection report template, avoids duplication of work. (UST)

Efficiency/Preparation

- **Building in shorter internal timeframes** to meet the agency's Enforcement Response Policy required timeframes, resulting in environmental benefit sooner. (Solid Waste & WPED)
- **Managers working on the business instead of in the business**, freeing the managers for other priorities resulting in environmental compliance sooner. Managers will be more involved with negotiation on an as needed basis, but less involved for standard work. (WPED)
- **Instituting Plan, Do, Check, Act at the working level.** The facility case files are now being prepared for by office staff supporting the field engineers in advance. This allows the field engineers to be more effective in their full compliance evaluation verification, compliance with numerous state and federal requirements. (Air inspection)
- **Streamlining** enforcement through a new Incentivized Penalty negotiation, for routine types of violations covered under the agency's Civil Penalty Policy, the program offers the maximum reductions the Penalty Policy allows if facilities rapidly return to compliance and meet deadlines resulting in timely consent order issuance. (Solid Waste)
- **Automating** the inspection report format so that reports can be generated and printed out in the field immediately following the inspection. By enabling the technology to work for the field staff the customer receives feedback in a more timely manner. (UST)

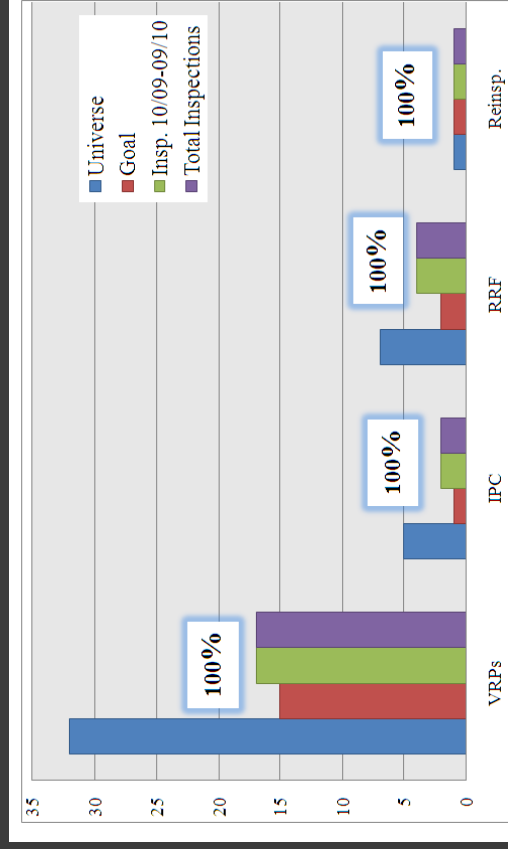
Water Enforcement Program

Standard work, changes to the way we use of permitted formats were the result of LEAN and the results are amazing, reducing order issuance time by more than 200 days from 336 days to 110 days.



Solid Waste Enforcement Program

By eliminating the backlog and revising standard operating procedures, the Program now is able to focus inspections on a larger percent of the permitted facilities to ensure compliance.





Thank you