LEAN at DEEP

- To date, 36 teams have participated in Kaizen events
- More than 300 staff participants
- Wide range of projects including permitting and enforcement of air, waste, and water pollution control and land use programs, wildlife and fisheries
What is LEAN?

- LEAN is a growth strategy
- A process improvement approach that seeks to eliminate non-value added activities or waste
- An opportunity for continuous improvement
- Customer-focused – What do they value?
LEAN Defined

- An organization-wide process of improvement that provides an opportunity to examine existing processes and eliminate duplicative or unnecessary steps in order to best serve our “customers” (e.g., the environment, permit applicants).
## 7 Wastes + 1

<table>
<thead>
<tr>
<th>TOMDWIP+E</th>
<th>OFFICE EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>Poor office layout</td>
</tr>
<tr>
<td>Overproduction</td>
<td>Printing too many products</td>
</tr>
<tr>
<td>Motion</td>
<td>Re-entering data</td>
</tr>
<tr>
<td>Defects</td>
<td>Incomplete paperwork</td>
</tr>
<tr>
<td>Waiting Time</td>
<td>Meetings start late</td>
</tr>
<tr>
<td>Inventory</td>
<td>Inbox accumulates</td>
</tr>
<tr>
<td>Processing</td>
<td>Excessive approvals</td>
</tr>
<tr>
<td>Environmental</td>
<td>Printing drafts for review</td>
</tr>
</tbody>
</table>
Example - Permitting Wastes

- ECOS/EPA have identified several common permitting process wastes, including:
  - Incomplete applications
  - Backlogs
  - Approval bottlenecks
  - Redundant review or data entry
  - Lack of templates
5S

Used before and after a Kaizen event
Manifested in DEEP’s annual clean-out days and authorized record disposal

5S
1. Sort (dispose of what isn’t needed)
2. Set in order (organize what remains)
3. Shine (clean)
4. Standardize (maintain guidelines for the first three S – so they become routine)
5. Sustain (develop a steady habit)

DEEP’s 2009 Clean-out
Recycled Content

- 8 tons of paper which saved:
  - 32,800 kwh of electricity
  - 72 barrels of oil
  - 480 lbs air pollutants
  - 56,000 gallons of water
  - 80 lbs of corrugated cardboard
  - 3 gallons of batteries

DEEP Clean-outs have also restocked the ReSupply Center which has saved the agency about $12,000 to date.
The Value of Lean to DEEP

- Become more efficient
- Provides staff with an opportunity to identify and implement improvements
- Frees up more time to address new challenges
- Help with the integration of energy and environmental protection
Lean Successes

- **Water Enforcement Program** - order issuance time now reduced by more than 200 days
- **Storage Tank Inspections** - exceeding inspection quotas with no additional staff
- **Environmental Land Use Control (ELUR) Application Process** - reduced initial application response time from 97 days to 16 days
- **Office of Long Island Sound Programs (OLISP) Permitting** - reduced permit review time by 70% (566 to 167 days)
LEAN – Kaizen

- “Kaizen event” or “LEAN event” are two names for the same thing
- “Kaizen” combines two Japanese words that mean “to take apart” and “to make good”
- Kaizen events often involve value stream mapping (VSM)
- VSM develops a visual of the process flow, from start to finish. Helps to identify waste
Team Charter

- Developed by the Sponsor, Champion and Team Leader
- Identifies the opportunity for improvement
- Defines the scope of the project
- Names team members
- Identifies project goals and key performance indicators
Who is the Customer?

- The beneficiary or target of the process
- Important to frame the process analysis in the eyes of the customer
- Opportunity to invite the customers to Lean event to provide valuable input
Value Stream Mapping (VSM)

- A visual representation of the process involved in delivering a product or service to customers
- Teams map the current state
- Identify waste, especially waiting and transport
- Teams use the current state VSM to build the future state, also visualized using VSM

<table>
<thead>
<tr>
<th>Type</th>
<th>New</th>
<th>Old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value added</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Non-Value Added</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>Waiting</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>Not Necessary</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Transport</td>
<td>10</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>106</td>
</tr>
</tbody>
</table>
Standardized Work

- Develop standardized work to reduce waste, especially the need for review and oversight.
- Why standard work?
  - Establish routine for work to be performed.
  - Develop baseline for future improvements.
  - Improve quality performance through repeatability.
  - Avoid overproduction.
    - Avoid “reinventing the wheel”.
Let Value Flow to Customer

- Value Flows to customer
- Remove impediments
  - Silos
  - Unnecessary meetings, documents, approvals
  - Error correction loops
  - Poor hand off between tasks, waiting time
  - Firefighting
  - Improve balancing of priorities
Visuals

- Provide constant gentle pressure, quickly indicate progress and organize project
- implementation tasks
Key Performance Indicators (KPIs)

- A way to measure progress
  - Know whether efforts are achieving goals
  - Be aware of whether adjustments are needed (PDCA)
- Example - ELUR Lean Team KPIs:
  - % of applications deemed “complete” on 1st submittal
  - # days to determination of administrative completeness

The Solid Waste Enforcement Team's KPIs, which includes percent of formal actions drafted and average number of days it takes to draft a formal action.
## Project Implementation Phase

- Typically lasts 12 months
- Teams typically hold weekly meetings for the first 2 months and monthly meetings after that
- Teams can be divided into sub-groups, based on project implementation tasks

### Inland Water Resources Sufficiency Review Project Implementation Plan

![Project Implementation Plan Table]

1. **Plan Do Check Act Project Plan (PDCA)**
2. **LEAN TEAM PLAN** (Draft Plan to be Presented to)

<table>
<thead>
<tr>
<th>TASK ACTIVITY</th>
<th>TASK OWNER(S)</th>
<th>PARTICIPANTS</th>
<th>LEAN TEAM PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Intake Project Plan</td>
<td>Carol</td>
<td>Carol, Jeff, M.</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>Search for site</td>
<td>Jeff</td>
<td>Sarah, Bob</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>RegExp, Work Plan, Budget &amp; Feasibility</td>
<td>Bob</td>
<td>Bob, Jeff</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>Create Net Guidance Documents, Staff, Staff</td>
<td>Mike, Tom</td>
<td>Staff</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>Update Record Retention Guidelines</td>
<td>Doug</td>
<td>H</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>Prepare, Presentation, Internal Training</td>
<td>Greg</td>
<td>Jane</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>Develop Training for Staff</td>
<td>Bob, Jeff</td>
<td>Bob, Jeff</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>Pre Application Meeting Set-up hours</td>
<td>Jill, Bob</td>
<td>Jill, Bob</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>IT - Hookup to Planets &amp; Purchases, ADBIBE, Professional/Other systems</td>
<td>Dave</td>
<td>Dave</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
<tr>
<td>Create a shared lockspace</td>
<td>Jeff, Carol</td>
<td>Staff, Mgmt</td>
<td>Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun, Jul</td>
</tr>
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**Color Code Key:**
- Green: In Target
- Yellow: Struggling
- Red: AO/08
- Blue: Future
Comments 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.
Building Capacity for LEAN

- Over 50 employees have received advanced LEAN training
- More than 300 employees have participated in Lean events.
- 15 staff shadowed our Sensei, Fred Shamburg, during last week’s Lean event
- Lean Coordinators/contacts identified for each Bureau
- Facilitator/Coordinator contacts meet regularly on LEAN implementation
Future LEAN Opportunities

- LEAN events scheduled for January and May 2012
- Submit LEAN ideas through your manager or supervisor or through web form provided on intranet
- E-mail Nicole Lugli, Agency’s LEAN Coordinator, if you want to participate in a future LEAN team
Water Quality Enforcement Program
Water Permitting and Enforcement Division

- Eliminate Wastes and/or non-value added steps found in administrative enforcement activities
- Identify ways to improve 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%
Current State as of 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 2007 = 14
  - Total Backlog of draft COs = 30
  - Last 5 years = 24
  - Greater than 5 years = 6
Future State

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

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Success

WPED Open/Closed Backlog NOVs

1 Year Goal Reduce Backlog by 711

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<thead>
<tr>
<th>Time</th>
<th>Open</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>900</td>
<td></td>
</tr>
<tr>
<td>2 Months</td>
<td>800</td>
<td>200</td>
</tr>
<tr>
<td>4 Months</td>
<td>700</td>
<td>300</td>
</tr>
<tr>
<td>6 Months</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>9 Months</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>
Success

- Reduced decision time by 30% to 42 days

**WPED Review & Decision Times**

- Supervisors Doc. Review Time
- Managers Doc. Review Time
- NOV Response review time
- Enf. Elevation Decision

*6/1/08 times are based on estimations.
Success

Goal: Reduce Drafting Time by 30%

Enf. Document Drafting/Completion*

*6/1/08 times are based on estimations.
Dam Safety Program

Teton Dam Failure
1976
The Regulatory Universe

- 3,000 dams under regulation of DEEP’s Dam Safety Program
- Of these, approximately 700 are high or significant hazard dams
- Dam Safety Program includes permitting, inspections, and enforcement and includes 3 engineers and 2 inspectors
- By regulation Dam Safety is required to inspect approximately 400 dams per year
  - Currently not meeting this requirement
What “Good” Looks Like

- 75% of Dam Safety Permit Applications received with fish passage determination
- Pre-application meetings for all dam safety permit applications
- Meet new timeframe goals
- Increase staff capacity to perform additional inspections including cross-training divisional staff
What “Great” Looks Like

- Electronic permit application submittal and processing
- Automated sufficiency reviews
- Owner responsible dam inspections
- Elimination of public notice period for in-kind dam repairs
Key Performance Indicators (Metrics)
Other Key Performance Indicators

- Number of dams repaired
- Certificate of Approvals issued vs repair permits issued
- Number of dam Inspections generating increased number of permits
Questions?

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Office of Planning and Program Development
Department of Energy and Environmental Protection

Nicole.lugli@ct.gov or 860-424-3611