

# *NDCEE*

National Defense Center for Energy and Environment

## Use of Technology for More Efficient Waste Management

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**DoD Executive Agent**

Office of the  
Assistant Secretary  
of the Army  
(Installations and  
Environment)

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**Technology Transition – Supporting DoD Readiness, Sustainability, and the Warfighter**

# Report Documentation Page

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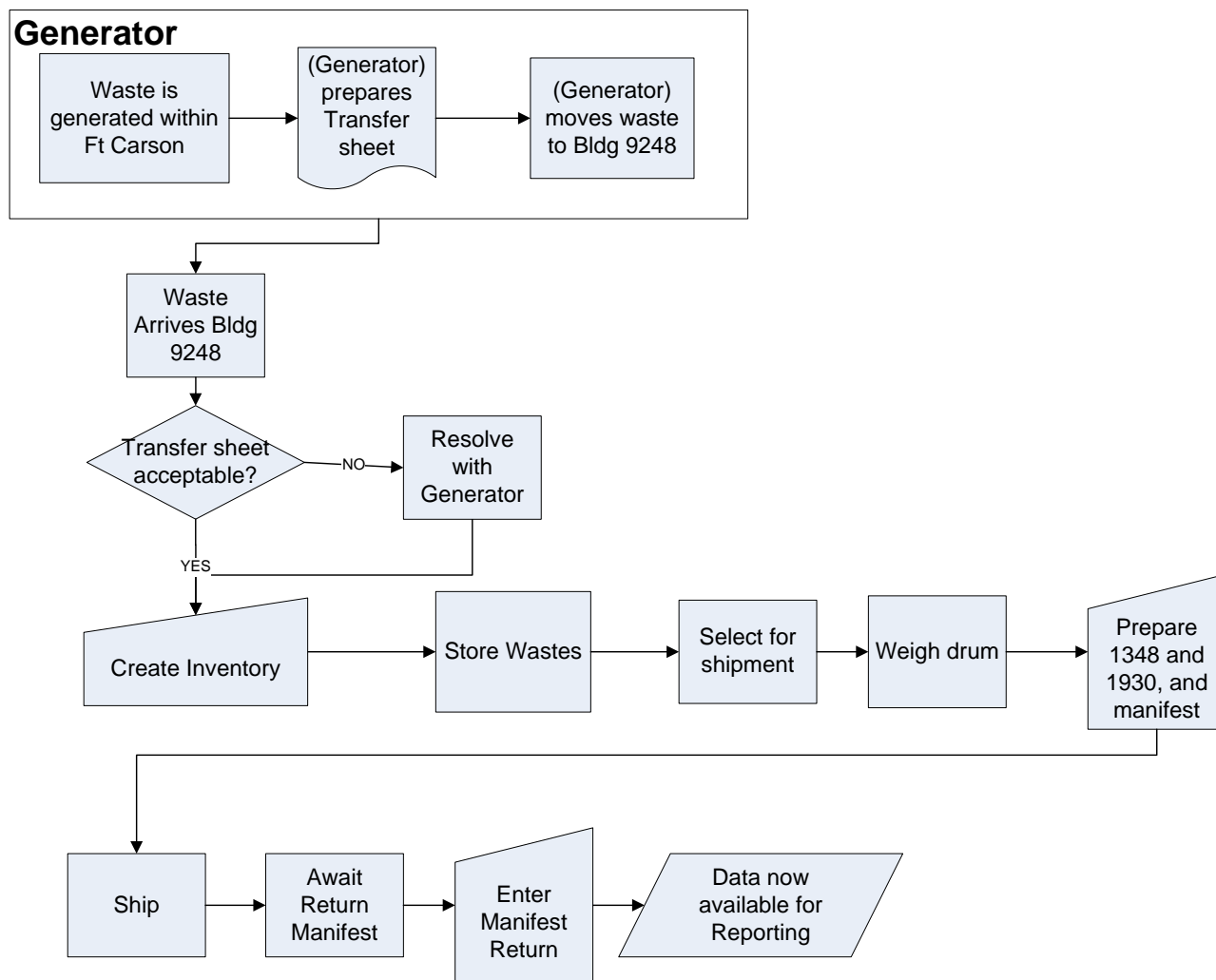
# Overview

- Waste Management at Ft. Carson
- Software tracking system
- Tracking system benefits

# Waste Management at Ft. Carson

- 220 square mile base
- Over 80 units or buildings that may generate waste
- Over 80 Manifests in 2008
- Over 30 tons hazardous and non-hazardous wastes
- Ambitious Pollution Prevention Goals

# Waste Management Business Process at Ft Carson (using software)

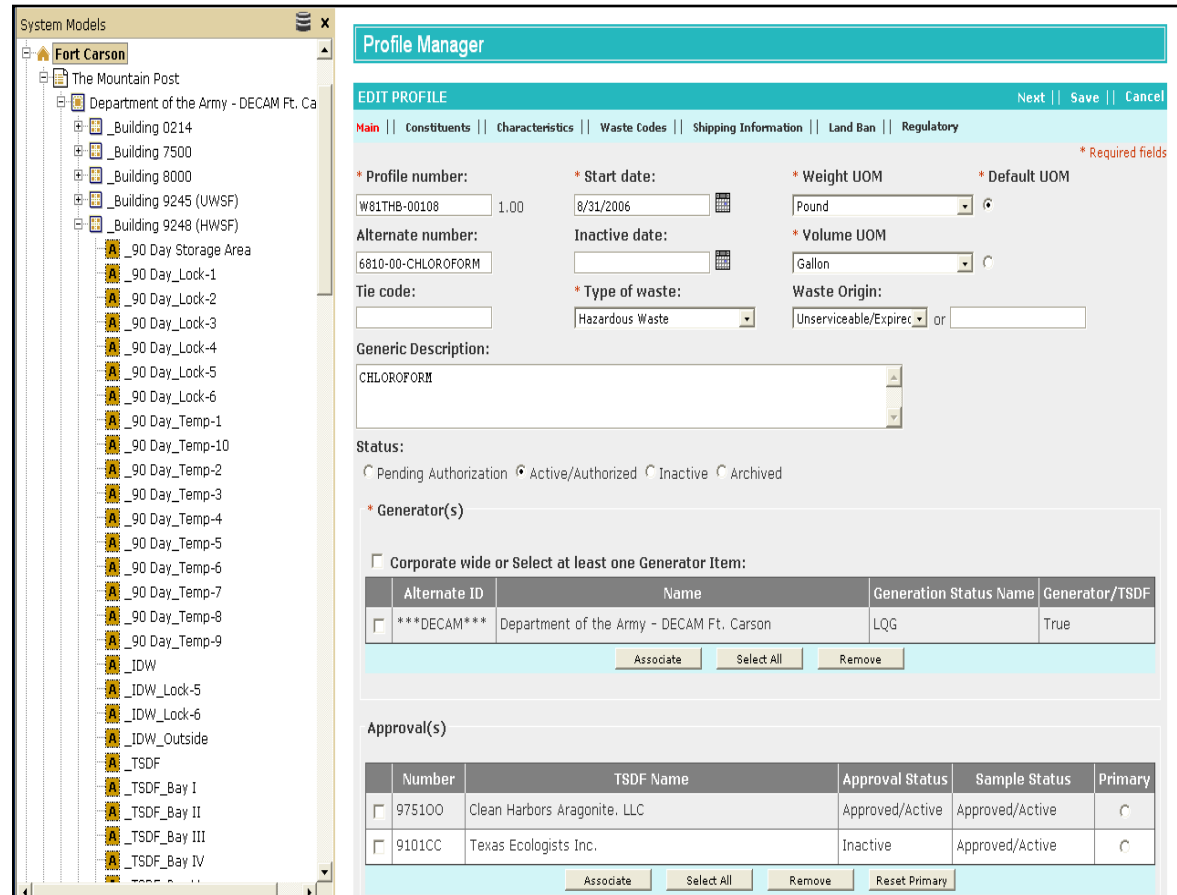


# Ft. Carson Waste Reduction Goals

- Reduce Hazardous Waste disposal 30% by 2012
- Eliminate Hazardous Waste by 2027

# Waste Management Software System at Ft. Carson

- Starting in 2006, Ft. Carson began to use Enviance Waste Manager System
- Major Purposes:
  - Streamline operations
  - Improve accuracy
  - Provide basis for reduction



The screenshot displays the 'Profile Manager' window for editing a waste profile. The left pane shows a tree view of 'System Models' for 'Fort Carson', including various buildings and storage areas. The main window is titled 'EDIT PROFILE' and contains the following information:

- Profile number:** W81THB-00108 (1.00)
- Start date:** 8/31/2006
- Weight UOM:** Pound
- Default UOM:** Gallon
- Alternate number:** 6810-00-CHLOROFORM
- Inactive date:** (empty)
- Volume UOM:** Gallon
- Tie code:** (empty)
- Type of waste:** Hazardous Waste
- Waste Origin:** Unserviceable/Expired or (empty)
- Generic Description:** CHLOROFORM
- Status:** Active/Authorized
- Generator(s):**
  - Corporate wide or Select at least one Generator Item:


Alternate ID	Name	Generation Status Name	Generator/TSDF
***DECAM***	Department of the Army - DECAM Ft. Carson	LQG	True
- Approval(s):**

Number	TSDF Name	Approval Status	Sample Status	Primary
975100	Clean Harbors Aragonite, LLC	Approved/Active	Approved/Active	<input checked="" type="radio"/>
9101CC	Texas Ecologists Inc.	Inactive	Approved/Active	<input type="radio"/>

# Enviance Waste Manager System

- Web-based
- Comprehensive
- Flexible and configurable
- Military capable

[Calendar](#)  
[Desktop](#)  
[Profile](#)  
[Help](#)  
[Log Out](#)

powered by:  


Message Center

Task Manager

Template Manager

Company Manager

Waste Detail Manager

Shipment Manager

Report Manager

Document Manager

Admin/Security Manager

System Models

- Fort Carson
  - The Mountain Post
    - Department of the Army - DEC
      - \_Building 0214
      - \_Building 7500
      - \_Building 8000
      - \_Building 9245 (UWSF)
      - \_Building 9248 (HWSF)
        - A** \_90 Day Storage Area
        - A** \_90 Day\_Lock-1
        - A** \_90 Day\_Lock-2
        - A** \_90 Day\_Lock-3
        - A** \_90 Day\_Lock-4

### View Data Manager

VIEW CONTAINER DATA

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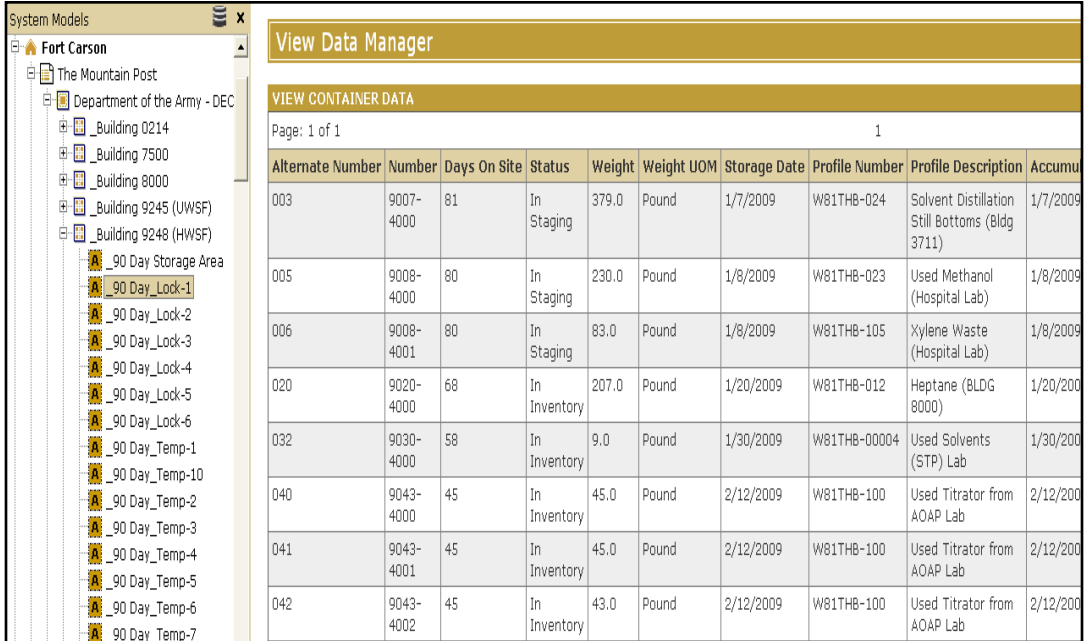
Alternate Number	Number	Days On Site	Status	Weight	Weight UOM	Storage Date	Profile Number	Profile Description	Accumula
225A	8177-4000A	111	In Inventory	33.0	Pound	6/25/2008	W81THB-010	Used/Spent Thinner (BLDG 8000)	6/25/2008
225B	8177-4000B	111	In Inventory	30.0	Pound	6/25/2008	W81THB-010	Used/Spent Thinner (BLDG 8000)	6/25/2008
308	8225-4000	63	In Inventory	0.0	Pound	8/12/2008	W81THB-015	NiCad Battery	8/12/2008

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# Waste Management System

- Tracks waste storage (containers)
- Tracks storage times
- Provides easy method for auditing container status
- Ties containers back to their generating unit
- Allows easy entry of relevant Turn-in sheet data
- Tracks types of wastes and quantity



The screenshot shows a software interface with a tree view on the left and a data table on the right. The tree view is titled 'System Models' and shows a hierarchy starting with 'Fort Carson', followed by 'The Mountain Post', 'Department of the Army - DEC', and several buildings. Under the buildings, there are '90 Day Storage Area' and '90 Day Lock' items. The data table is titled 'View Data Manager' and contains 'VIEW CONTAINER DATA'. The table has 10 columns: Alternate Number, Number, Days On Site, Status, Weight, Weight UOM, Storage Date, Profile Number, Profile Description, and Accumu. The table shows 10 rows of data for various containers.

Alternate Number	Number	Days On Site	Status	Weight	Weight UOM	Storage Date	Profile Number	Profile Description	Accumu
003	9007-4000	81	In Staging	379.0	Pound	1/7/2009	W81THB-024	Solvent Distillation Still Bottoms (Bldg 3711)	1/7/2009
005	9008-4000	80	In Staging	230.0	Pound	1/8/2009	W81THB-023	Used Methanol (Hospital Lab)	1/8/2009
006	9008-4001	80	In Staging	83.0	Pound	1/8/2009	W81THB-105	Xylene Waste (Hospital Lab)	1/8/2009
020	9020-4000	68	In Inventory	207.0	Pound	1/20/2009	W81THB-012	Heptane (BLDG 8000)	1/20/2009
032	9030-4000	58	In Inventory	9.0	Pound	1/30/2009	W81THB-00004	Used Solvents (STP) Lab	1/30/2009
040	9043-4000	45	In Inventory	45.0	Pound	2/12/2009	W81THB-100	Used Titrator from AOAP Lab	2/12/2009
041	9043-4001	45	In Inventory	45.0	Pound	2/12/2009	W81THB-100	Used Titrator from AOAP Lab	2/12/2009
042	9043-4002	45	In Inventory	43.0	Pound	2/12/2009	W81THB-100	Used Titrator from AOAP Lab	2/12/2009

# Waste Container Tracking: Optimized for Ft. Carson and Department of Defense Activity Address Code (DoDAAC)

Custom Fields

Container

Generating Building and Unit  
Bldg 8000 DOL/AOAP Lab

Alternate POC  
Alternate POC Phone Number

APC  
B101

Chain of Command Battalion/Civilian Division Level  
AOAP Lab or

Chain of Command Brigade/Directorate/Tenant Level  
Directorate of Log or

Chain of Command Company/Branch Level  
-- SELECT -- or

Chain of Command Major Command/Garrison Level  
Garrison or

DODAAC  
W90AWB

Generating Building  
Bldg 8000

Generating Unit  
AOAP Lab

Primary POC  
Tom Trowell

Primary POC Phone Number  
526-4991

- Custom fields to customize tracking of generating unit and other data from the Turn-in sheet *for each container*
- Similar approach to track National Stock Numbers (NSN), Contract Line Item Numbers (CLIN) and related data on each waste profile
- Allows waste to be tracked back to generating unit
- Improves data consistency and control of CLIN and other important data

# Interacting with Defense Reutilization and Marketing Office (DRMO)

**Batch Manager**

**EDIT BATCH** Save || Cancel \*Required Fields

\* Number

\* Generator Department of the Army - DECAM Ft. Carson Select

Group Reference  or

Created Date 1/9/2009 2:48 PM

Created By Cavanaugh, Robert

Items

Select	Number	Profile Number	Parent Name	Type	Container Type	Waste Type
<input type="checkbox"/>	4132-980-PPE	W81THB-390 (version 1.00)	None given	Container	DM	Other
<input type="checkbox"/>	9079-4001	W81THB-023 (version 1.07)	_Building 9248 (HWSF)_90 Day_Lock-1	Container	DM	Hazardous Waste
<input type="checkbox"/>	9056-4001	W81THB-109 (version 1.00)	_Building 9248 (HWSF)_90 Day_Lock-1	Container	DM	Hazardous Waste
<input type="checkbox"/>	9030-4000	W81THB-00004 (version 1.03)	_Building 9248 (HWSF)_90 Day_Lock-1	Container	DF	Hazardous Waste
<input type="checkbox"/>	9043-4002	W81THB-100 (version 1.00)	_Building 9248 (HWSF)_90 Day_Lock-1	Container	DM	Hazardous Waste

\* One or more items associated to batch are shipped

Apply selected action after save

- Group one or more containers
- System creates DRMS-1930 and DD-1348-1A forms required by DRMO
- User prints the 1348 and 1930 reports for DRMO
- DRMO arranges the shipment and prepares the manifest
- Track the manifest in the system

# DRMS-1930 and DD-1348-1A Forms

- Formerly hand-written or manually created
- Now automated

1930 and 1348 Report	
HAZARDOUS WASTE PROFILE SHEET	
PART I	
<b>A. General information</b>	
1. Generator's name <input type="text" value="Department of the Army - DECAM Ft. Carson"/>	Waste profile no. <input type="text" value="W81THB-390"/>
2. Facility address <input type="text" value="1638 Elwell Street Bldg 6236 Fort Carson CO"/>	3. Generator USEPA ID <input type="text" value="CO22100201"/>
5. Zip code <input type="text" value="80913"/>	4. Generator state ID <input type="text"/>
6. Technical contact <input type="text"/>	7. Title <input type="text"/>
Phone <input type="text"/>	
<b>B.</b>	
1. Name of waste <input type="text" value="IDW Non-Hazardous"/>	
2. USEPA /or /State waste codes <input type="text"/>	
3. Process generating waste <input type="text" value="IDW"/>	
4. Projected annual volume/units <input type="text"/>	5. Mode of collection <input type="text" value="DF"/>
6. Is this waste a dioxin listed waste as defined in 40 CFR 261.31? (e.g., F020, F021, F022, F023, F026, F027 or F028) <input type="radio"/> Yes <input checked="" type="radio"/> No	
7. Is this waste restricted from land disposal? (40 CFR 268) <input type="radio"/> Yes <input checked="" type="radio"/> No	

# Shipment Tracking

**Shipment**

---

SHIPMENT RECORD: Main Next || Save || Cancel

Main || Manifest Information || Total Costs || Associations

\* Required field

**General Information**

Shipment Status: on hold

\* Shipment Number:       Date/Time Shipped:        Type of Shipment:

Same as UHM No.     
  On Hold     
  No Shipment return

---

**\* Generator**

Preprinted Details

**Name**

**Street**

**City**       **State**       **ZIP**

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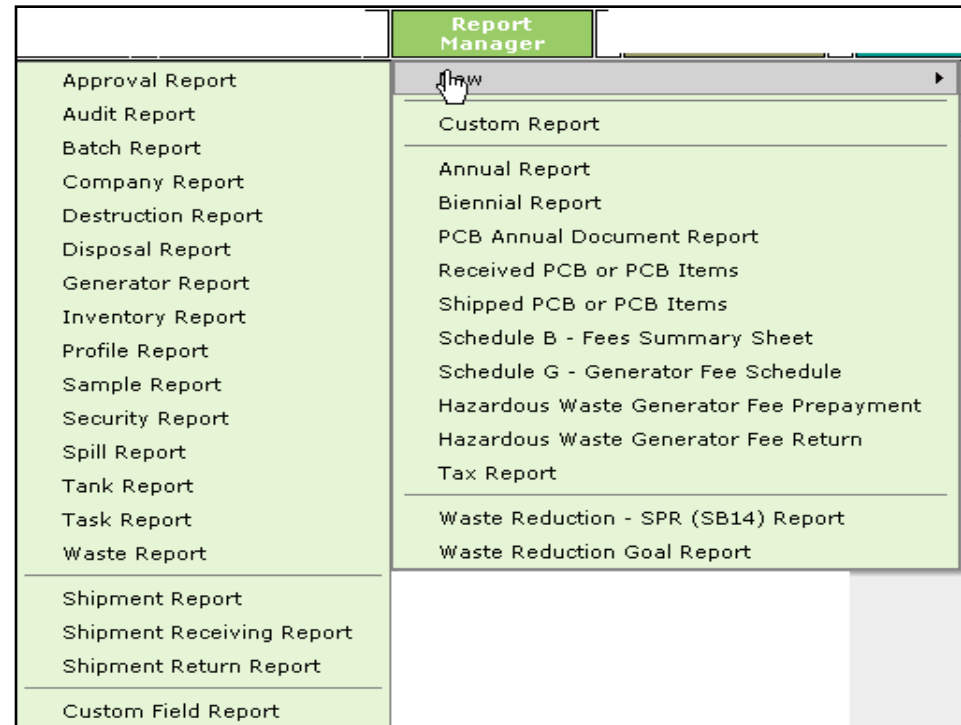
**Line Items**

DOT Shipping Description	Shipment By	Number of Containers	Container Type	Quantity	UOM	Line #	
<input type="checkbox"/> RQ, UN3432, Polychlorinated biphenyls, solid, 9, PGII	Container	1	DF	610	Pound	1	<input type="button" value="Print Labels"/>
<input type="checkbox"/> RQ, UN3432, Polychlorinated biphenyls, solid, 9, PGII	Container	1	DF	601	Pound	2	<input type="button" value="Print Labels"/>
<input type="checkbox"/> RQ, UN3432, Polychlorinated biphenyls, solid, 9, PGII	Container	1	DF	603	Pound	3	<input type="button" value="Print Labels"/>

- Tracks shipments
- Associates containers with shipments
- Tracks Manifest returns
- System notifies generator if manifest not returned within 30 days
- Can create exception reports for un-returned manifests

# Reporting

- Biennial
- User defined reports
- Custom reports
- Shipment reports
- Numerous standard and customized reports available
- Report format in HTML or Excel
- Daily Inventory Reports for Fire Department



# Financial Accountability to Generators

- System allows waste to be tracked back to Generating Unit
- Allows for charge-back to the generator
- **Provides an incentive for the generator to reduce waste generation** (for those required to pay for disposal)

Date Placed	Generating Unit	Generating	Profile Description	Pounds	Profile EPA	CLIN	Disposal Cost Per Pound	Disposal Cost
1/6/2009	DPW-ENV	Bldg 9248	Fluorescent Lamps	538		9800UL	1.51	812.38
1/6/2009	DPW-ENV	Bldg 9248	PCB Articles Ballasts	610	PCB 1	7014AA	1.25	762.5
1/7/2009	DPW-ENV	Bldg 9248	Solvent Distillation Still Botto	379	D001	910200	1.19	451.01
1/8/2009	MEDDAC-2 (lab)	Bldg 7500	Used Methanol (Hospital Lab)	230	F003,D001	950100	1.75	402.5
1/8/2009	MEDDAC-2 (lab)	Bldg 7500	Xylene Waste (Hospital Lab)	83	F003,D001	950100	1.75	145.25
1/16/2009	DPW-ENV	Bldg 9248	Fluorescent Lamps	539		9800UL	1.51	813.89
1/20/2009	AOAP Lab	Bldg 8000	Heptane (BLDG 8000)	207	D001,D008	910200	1.19	246.33
1/20/2009	DPW-ENV	Bldg 9248	PCB Articles Ballasts	601	PCB 1	7014AA	1.25	751.25
1/21/2009	FLRC	Bldg 0749	Silicon Brake Fluid	254	N001	990200	0.99	251.46
1/21/2009	FLRC	Bldg 0749	Used Grease	429	N001	990400	0.94	403.26
1/21/2009	K/DOL MAINT PAINT SH	Bldg 8000	Used Grease	373	N001	990400	0.94	350.62
1/21/2009	K/DOL MAINT PAINT SH	Bldg 8000	Used Grease	441	N001	990400	0.94	414.54
1/21/2009	K/DOL MAINT PAINT SH	Bldg 8000	Used Grease	371	N001	990400	0.94	348.74
1/23/2009	MEDDAC-1 (warehouse)	Bldg 7500	Used fixer (Hospital)	250	D011	940200	0.96	240
1/29/2009	DPW-ENV	Bldg 9248	PCB Articles Ballasts	603	PCB 1	7014AA	1.25	753.75
1/30/2009	FCSS	Bldg 3900	COD Digestion Solution	9	D011,D002,D003	920100	1.95	17.55
1/30/2009	FCSS	Bldg 3900	Nessler's Reagent (STP LAB)	10	D002,D009	920100	1.95	19.5
1/30/2009	FCSS	Bldg 3900	Used Solvents (STP) Lab	9	F003,D001	950100	1.75	15.75

# Benefits of the Software System

- Reduce risk to the site by improved data quality
- Increased efficiency
- Data to be used to publish progress towards Hazardous Waste reduction goals, and identify challenges in reaching them

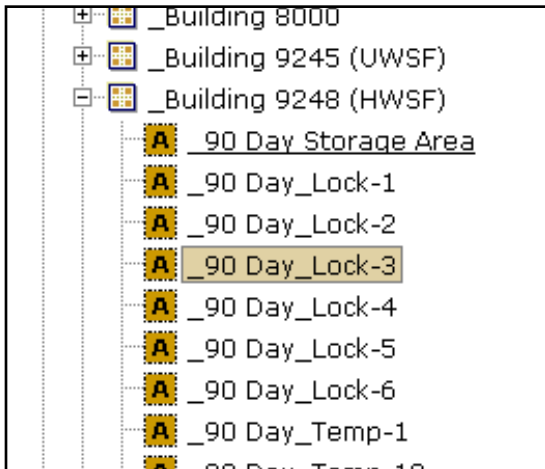


# Improved Data Quality for Waste Management

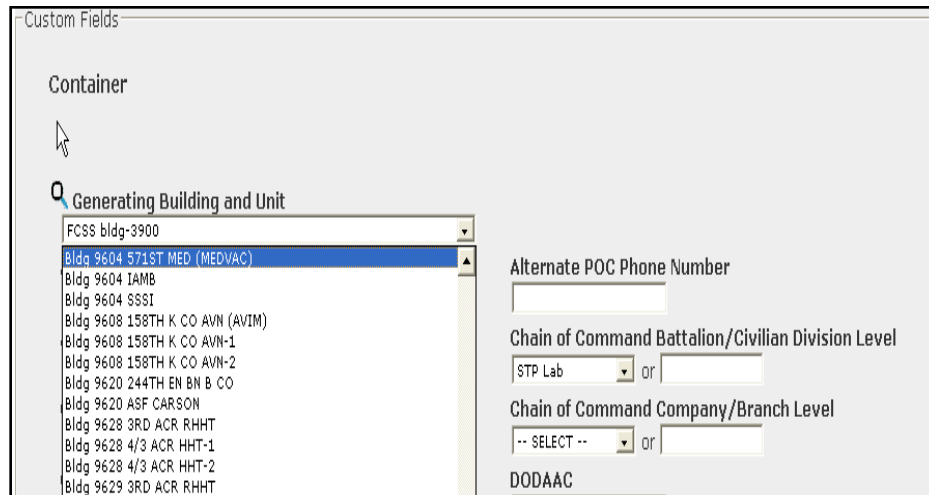
- Streamlined profiling reduces the number of waste profiles
- Automatic generation of 1348 and 1930 reduces data entry errors

1	2	3	4	5	6	7	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
W81THB 8365-4000 41														UNIT PRICE		DOLLARS		CTS		1. TOTAL PRICE		2. SHIP FROM		3. SHIP TO																																								
A														1		75 22		75		4. MARK FOR		HW																																										
***DECAM***														5. DOC DATE		6. NMFC		7. FRT RATE		8. TYPE CARGO		9. PS																																										
FCSS														10. QTY. RECD		11. UP		12. UNIT WEIGHT		13. UNIT CUBE		14. UPC		15. SL																																								
(719) 526-9721																13.0																																																
Fort Carson CO 80913														16. FREIGHT CLASSIFICATION NOMENCLATURE																																																		
EPA ID CO2210020150														457																																																		
DRMO Colorado Springs														17. ITEM NOMENCLATURE																																																		
Building 318 (719) 526-4480														Laboratory procedures																																																		
Ft Carson CO 80913-5044														18. TY CONT		19. NO CONT		20. TOTAL WEIGHT		21. TOTAL CUBE																																												
EPA ID CO2210020150														DF		1 - 5.0		13.0																																														
6810-00-SOLVENT (STP)														22. RECEIVED BY				23. DATE RECEIVED																																														
Freight Classification																																																																
UN1993, Waste Flammable liquids, n.o.s., (hexane, methanol), 3, PGII																		_90 Day_Lock-1																																														
Used Solvents (STP) Lab																		W81THB-00004																																														
CLIN: 950100																		Bill To: W51HQF																																														
Signature																		Packing equals / exceeds DOT 49 CFR 173178																																														
																		4/3/2009																																														
																		Date																																														

# Efficiency Improvements



- Simplified container tracking:
  - Create containers at the main storage location
  - Specify where they are stored using a tree structure
- Allows Administrator access (and control over) code tables
  - Consistency



# Efficiency Improvements (cont)

- Biennial Report:
  - Stream-lined creation of Biennial
  - Audit report allows for QA of Biennial data

Biennial Report	
Back    Cancel	
OMB#: 2050-0024 Expires 11/30/2009	
<b>SEND COMPLETED FORM TO:</b> The Appropriate State or EPA Regional Office.	United States Environmental Protection Agency <b>RCRA SUBTITLE C SITE IDENTIFICATION FORM</b>
<b>1. Reason for Submittal</b> (See instructions on page 9)  MARK ALL BOX(ES) THAT APPLY	<b>Reason for Submittal:</b> <input type="checkbox"/> To provide Initial Notification of Regulated Waste Activity (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities) <input type="checkbox"/> To provide Subsequent Notification of Regulated Waste Activity (to update site identification information) <input type="checkbox"/> As a component of a First RCRA Hazardous Waste Part A Permit Application <input type="checkbox"/> As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # _____) <input checked="" type="checkbox"/> As a component of the Hazardous Waste Report
<b>2. Site EPA ID Number</b> (page 10)	EPA ID Number CO2210020150
<b>3. Site Name</b> (page 10)	Name: Department of the Army - DECAM Ft. Carson
<b>4. Site Location Information</b> (page 10)	Street Address: 1638 Elwell Street Bldg 6236
	City, Town, or Village: Fort Carson State: CO

# Efficiency Improvements (cont)

- Previously, management reports created by paper summary of waste management records
- Now they are automated, and available either as HTML or Excel reports

Facility Name: Department of the Army - DECAM Ft. Carson									
Address: 1638 Elwell Street Bldg 6236									
EpaID: CO2210020150									
Manifest Doc No.	Line Number	Description-Stream	Profile	EPA Codes	State Codes	Weight (Ton)	Disp Loc	TSDF	TX-Code
002222843	1	IDW PPE (F039)	W81THB-322			0.08	AR	Rineco	
002222843	2	IDW Liquid Purge Water (F039)	W81THB-303			0.02	AR	Rineco	
002222843	3	IDW Liquid Purge Water (D040, F039)	W81THB-305	F002		0.09	AR	Rineco	
004863029	1	PCB Articles Ballasts	W81THB-00001	PCB 1		0.31	LA	Lamp Recyclers of Louisiana (LE)	
004863029	2	PCB Articles Ballasts	W81THB-00001	PCB 1		0.30	LA	Lamp Recyclers of Louisiana (LE)	
004863029	3	PCB Articles Ballasts	W81THB-00001	PCB 1		0.30	LA	Lamp Recyclers of Louisiana (LE)	
004863019	1	Used Solvents (STP) Lab	W81THB-00004	D001		0.01	KY	American Environmental Services, INC. (KY)	
004863019	2	Chemical residue from aerosol cans	W81THB-109	D039, D040, D001, D035		0.20	KY	American Environmental Services, INC. (KY)	
004863019	3	Used Titrator from AOAP Lab	W81THB-100	D022, D001, D018, D010		0.07	KY	American Environmental Services, INC. (KY)	
004863019	4	COD Digestion Solution	W81THB-008	D011, D002, D009, D007		0.02	KY	American Environmental Services, INC. (KY)	
004863019	5	Nessler's Reagent (STP LAB)	W81THB-029	D002, D009		0.02	KY	American Environmental Services, INC. (KY)	
004863019	6	Dust Filters (Bulb Crusher)	W81THB-025	D009		0.01	KY	American Environmental Services, INC. (KY)	
004863019	7	Used fixer (Hospital)	W81THB-102	D011		0.55	KY	American Environmental Services, INC. (KY)	

# Waste Reduction Goals

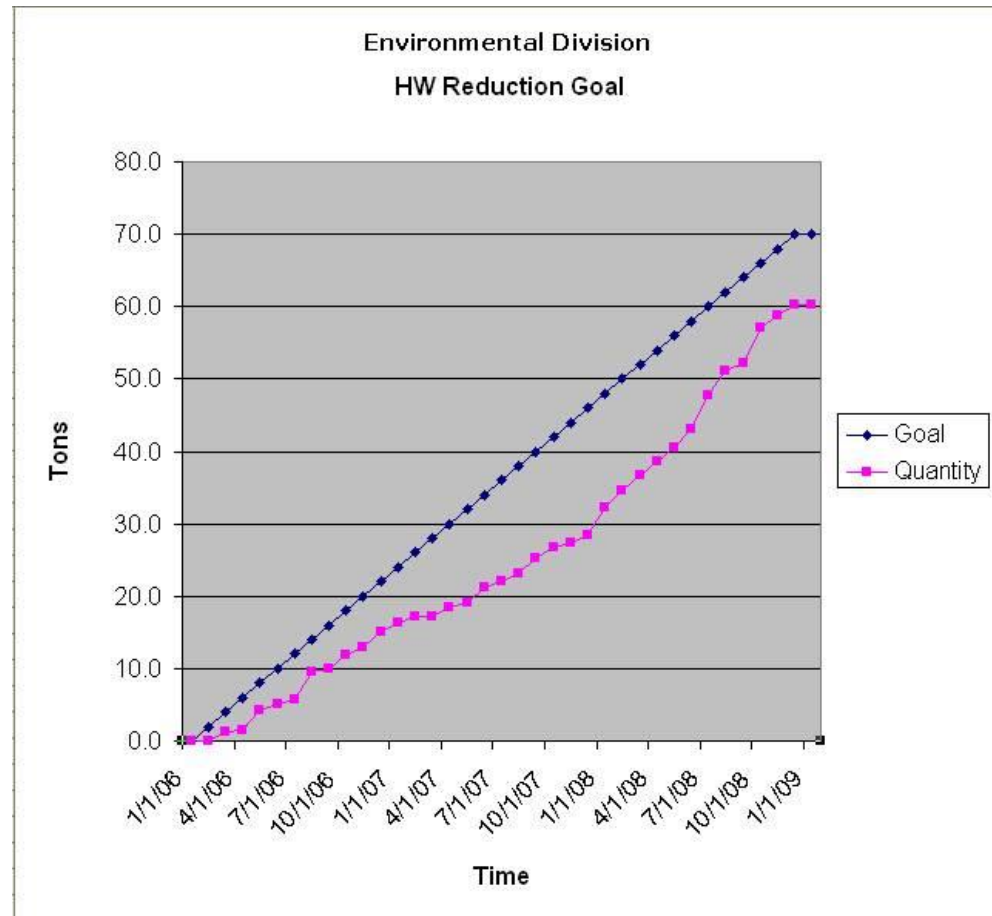
- Data needed to drive reduction:
  - Who generates?
  - What is generated?
  - How much is generated?
  - What are trends in waste generation?

# Waste Reduction Goals

- System facilitates tracking of:
  - Source
  - Waste Type
  - Generation frequency
  
- This data is available:
  - Real-time
  - To all users, as appropriate

# Tracking Waste Reduction Trends

- System provides the data necessary to track trends in waste generation
- Can track trends by waste stream, generator or groups of profiles
- Can track trends over different time spans – weeks, months, years



# Summary

- Enviance Waste Management system used to track data required by Ft. Carson waste management
- Custom configured to meet Ft. Carson needs
- Automates reports and data required by DRMO
- Reduces duplicate entry
- Reduces Biennial reporting time
- Increases data accuracy and consistency
- Allows for trending and waste reduction reporting
- Secure and controlled access for users (based on their job functions, authority, etc.)



# Contact Information

## Government Technical Monitor

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