

3.0 Environmental Management System

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The U.S. Department of Energy (DOE) requires Hanford Site contractors to develop and operate under an Integrated Safety Management System (ISMS). In accordance with contract obligations, contractors maintain an Environmental Management System (EMS) that is consistent with ISO 14001, *Environmental Management Systems*, standard. In 2015, all but one Hanford Site contractor established ISMS as mandated by their contracts with DOE. These systems are intended to protect workers, the public, and the environment by integrating environmental, safety, and health considerations into the way work is planned, performed, and improved. DOE verified that Hanford Site entities incorporated appropriate environmental program elements within their ISMS under the authority of [DOE M 450.4-1, Integrated Safety Management System Manual](#). The dates that DOE approved the Hanford Site contractor's ISMS are provided in Table 3-1. Table 3-2 lists applicable DOE orders and their approval dates.

Performance related to EMS must be reported annually to DOE Headquarters (DOE-HQ). Each contractor is given an overall ranking of red, yellow, or green based on the previous fiscal year's performance. Rankings for Hanford Site contractors are provided in Table 3-1 along with rankings for both DOE Richland Operations Office (DOE-RL) and Office of River Protection.

Table 3-1. DOE Contract Actions and Contractor Implementation. (2 Pages)

Actions, Implementation	Richland Operations Office			Office of River Protection			
	HPMC	CHPRC	MSA	WCH	WHL	BNI	WRPS
Contractor Start Date	Oct 1, 2012	Oct 1, 2008	Aug 24, 2009	Aug 27, 2005	Nov 22, 2015	Dec 11, 2000	Oct 1, 2008
DOE Approval of Contractor ISMS	NA	Nov 2009	Jan 2011	Nov 2007	Oct 2016	Feb 2003	Sept 2009
Direction to Implement DOE EO 13423	Oct 2012	Oct 2008	Aug 2009	June 2009	Nov 2015	NA	Oct 2008
Direction to Implement DOE EO 13514	NA	June 2012	May 2011	Oct 2012	Nov 2015	NA	Mar 2011
Direction to Implement DOE O 430.2B	NA	June 2009	Aug 2009	June 2009	NA	NA	Oct 2008
Direction to Cancel DOE O 430.2B	NA	July 2012	July 2012	Oct 2012	NA	NA	Sept 2014
Direction to Implement DOE O 450.1A	Oct 2012	June 2009	Aug 2009	June 2009	NA	NA	Oct 2009
Direction to Cancel DOE O 450.1A	Oct 2012	July 2012	Dec 2012	Oct 2012	NA	NA	Sept 2014
Direction to Implement DOE O 436.1	Sept 2014	July 2012	July 2012	Oct 2012	Nov 2015	NA	Oct 2013
Contractor EMS Established	Oct 2012	Nov 2009	Dec 2009	Sept 2009	Sept 2016	NA	Sept 2009

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Actions, Implementation	Richland Operations Office			Office of River Protection			
	HPMC	CHPRC	MSA	WCH	WHL	BNI	WRPS
ISO 14001 Certification	NA	Jul 2012/ 2015	Sept 2011/ 2014	NA	NA	NA	NA
DOE Declared DOE O 450.1A Conformance	NA	Dec 2009	Dec 2009	Nov 2009	NA	NA	Sept 2009
Most Recent Declaration of Conformance	March 2016	Jul 2015	Sept 2014	Sept 2015	Sept 2016	NA	Sept 2015
Contractor EMS Scorecard Rating	Green	Green	Green	Green	Green	Red	Green
EMS Scorecard for 2015	Green			Yellow			

BNI=Bechtel National, Inc.
 CHPRC=CH2M Plateau Remediation Company
 EMS=Environmental Management System
 HPMC=HPMC Occupational Medical Services
 MSA=Mission Support Alliance, LLC
 WCH=Washington Closure Hanford, LLC
 WHL=Wastren Advantage, Inc.
 WRPS=Washington River Protection Solutions, LLC

Table 3-2. DOE Order and Executive Order Issuance.

Order	Approval Date
DOE Order 450.1	January 15, 2003
Executive Order 13423	January 26, 2007
DOE Order 430.2B	February 27, 2008
DOE Order 450.1A	June 4, 2008
Executive Order 13514	October 8, 2009
DOE Order 436.1	May 2, 2011
Executive Order 13693	March 25, 2015

As the services and infrastructure contractor for the Hanford Site, Mission Support Alliance (MSA) developed a sustainability plan (HNF-54800) for the Hanford Site in 2016 with input from Site contractors. The plan describes the energy management program and identifies planned energy efficiency, water conservation, transportation fleet management, and sustainable buildings activities, as required by [DOE O 436.1, Departmental Sustainability](#). Environmental objectives were established and maintained in 2016, as were plans for recycling, environmentally preferred procurement management, and electronic asset stewardship. Sustainability plans from fiscal year (FY) 2001 through present are available on the MSA website.

Several contractors have made their environmental policy and environmental aspects available to the public through company internet websites (Table 3-3). An EMS is a systematic approach to environmental performance ensuring planned activities lead to continual improvement and demonstrating to stakeholders a commitment to the environment.

Table 3-3. Hanford Site Environmental Management System Internet Links.

Contractor	Website	Category
CHPRC	http://chprc.hanford.gov/files.cfm/prc-pol-sh-5053.pdf	Policy
MSA	http://msa.hanford.gov/files.cfm/ems.pdf	Policy, Aspects
WCH	http://www.washingtonclosure.com/about_us/environmental_stewardship	Policy, Aspects
WRPS	http://wrpstoc.com/tank-operations/environmental-management/	Policy, Aspects

3.1 Environmental Performance Measures

In consultation with DOE and other Hanford Site prime contractors, MSA tracks environmental performance measures for the Hanford Site. Performance measures address the goals of DOE O 436.1 and [Executive Order 13693, “Planning for Federal Sustainability in the Next Decade.”](#) The measures developed in response to these Orders include regulated waste reduction, toxic and hazardous material reduction, sustainable acquisition, compliance with electronic product environmental assessment tool standards, sanitary waste diversion, construction waste diversion, electricity use, facility fuel use, water use, vehicle fuel use, numbers of alternative fuel vehicles, on-time environmental deliverables, environmental inspections, environmental non-compliances, and greenhouse gas reduction. Baseline data were obtained in accordance with guidance in the Orders.

Where no guidance was available, data from 2009 or 2010 were used to establish performance baselines. Performance measurement data are used as a tool to ensure environmental goals within the DOE Orders are appropriately managed. Performance related to EMS must be reported annually to DOE-HQ.

3.1.1 Fleet Management

The acquisition target for alternative fuel vehicles was not met in 2016 (Figure 3-1). DOE requires that a minimum of 75% of all non-mission critical light-duty vehicles purchased during FY 2016 be alternative fuel vehicles (DOE O 436.1).

3.1.2 Alternative Fuel Use

The alternative fuel use target was surpassed for FY 2016; however, the target for petroleum-based fuel use was missed (Figure 3-2). Mission and contract structure changes since 2005 continue to challenge target achievement. The requirement specifies that Hanford Site contractors’ fleets operate alternative fuel vehicles exclusively on alternative fuels to the maximum extent possible to reduce the amount of petroleum-based fuels used annually by 20% by FY 2015 or 2% annually relative to a FY 2005 baseline and maintain that level thereafter, and increase the amount of alternative fuels used annually by 10% or 2% annually by FY 2015 relative to a FY 2005 baseline and maintain that level thereafter.

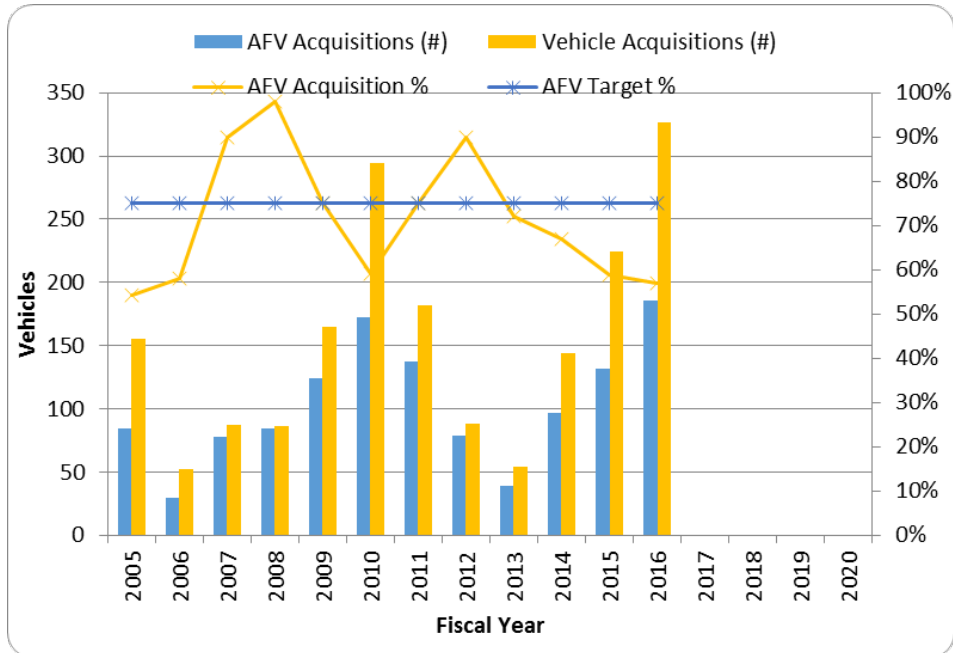


Figure 3-1. Fleet Management – Acquisitions FYs 2005–2016 with Target Objectives through 2020.

NOTE: AFV stands for alternative fuel vehicle

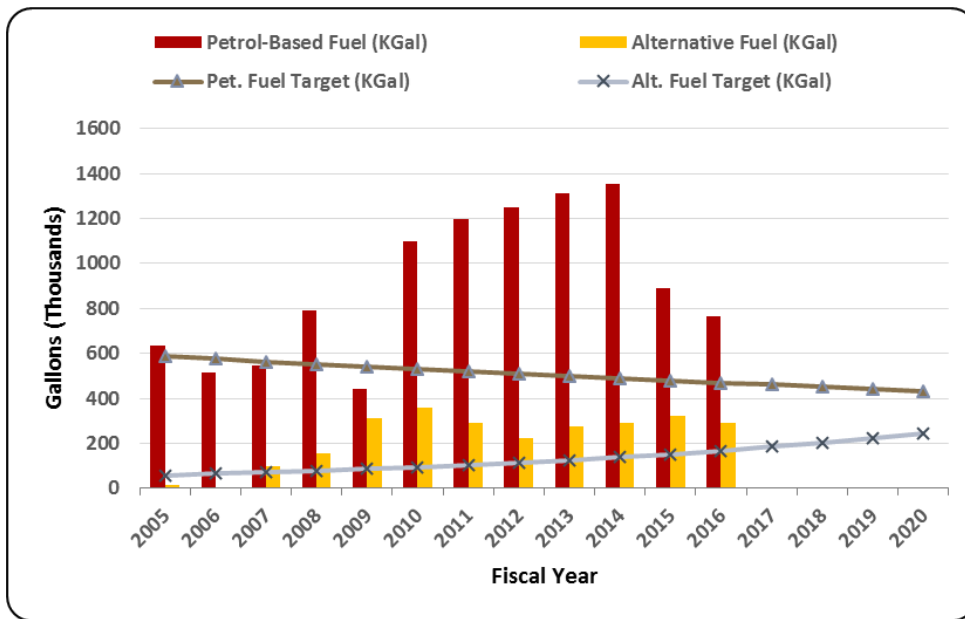


Figure 3-2. Vehicle Fuel Use – FYs 2005–2016 with Target Objectives through 2020.

3.1.3 Potable and Non-potable Water Use

The target objectives for potable and non-potable water were met in FY 2016 (Figure 3-3). As specified by Executive Order 13693. Water use requirements stipulate the reduction of potable water consumption intensity by 2% annually through FY 2025 or 36% by the end of FY 2025, relative to a baseline of water consumption in FY 2007. Correspondingly, there is a requirement to reduce non-potable water use by 2% annually through the end of FY 2025 or 30% by the end of FY 2025 relative to a FY 2010 baseline.

3.1.4 Electricity Use

As directed by Executive Order 13693, this metric has changed to track renewable electric energy as a percentage of the total electricity usage. Requirements call for renewable electric energy account for not less than 10% of the total electricity use in FY 2016 to 2017 and working towards 30% of total usage by FY 2025. The target objective for renewable electric energy was met in FY 2016 (Figure 3-4) representing 28.6% of total electricity usage. Renewable electric energy is defined in Executive Order 13693 as electricity produced or displaced by solar, wind, biomass, landfill gas, ocean, geothermal, geothermal heat pumps, microturbines, municipal solid waste, or new hydroelectric generation.

3.1.5 Facility Fuel Use

The target objectives for facility fuel use were met in FY 2016 (Figure 3-5). Objectives were established to demonstrate improvements in energy efficiency and effective management of energy use. The target requirements include reducing energy use by 3% annually (or 45% through the end of FY 2020) relative to the FY 2003 baseline.

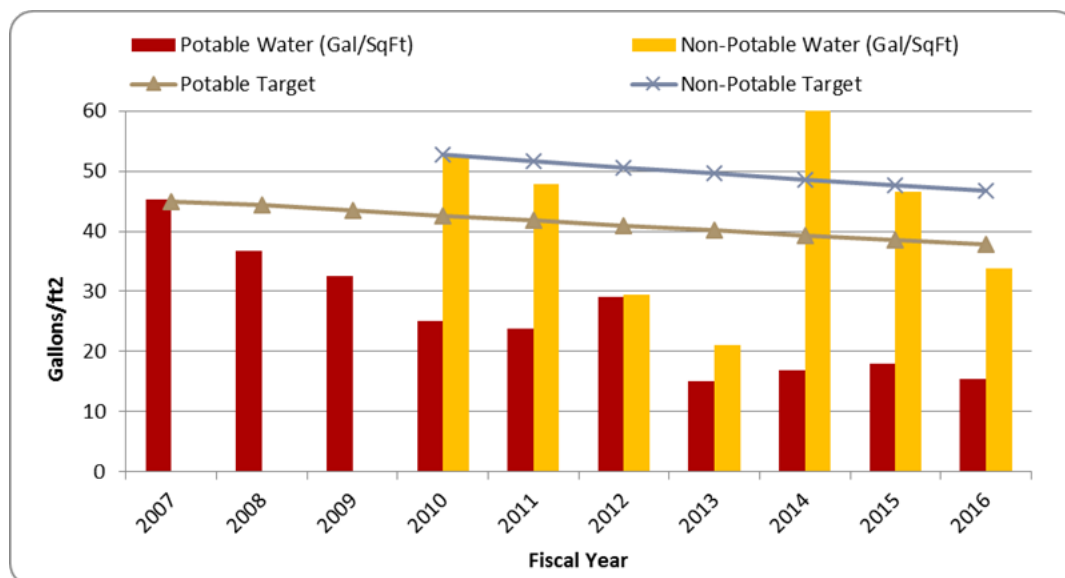


Figure 3-3. Water Use – FYs 2007–2016.

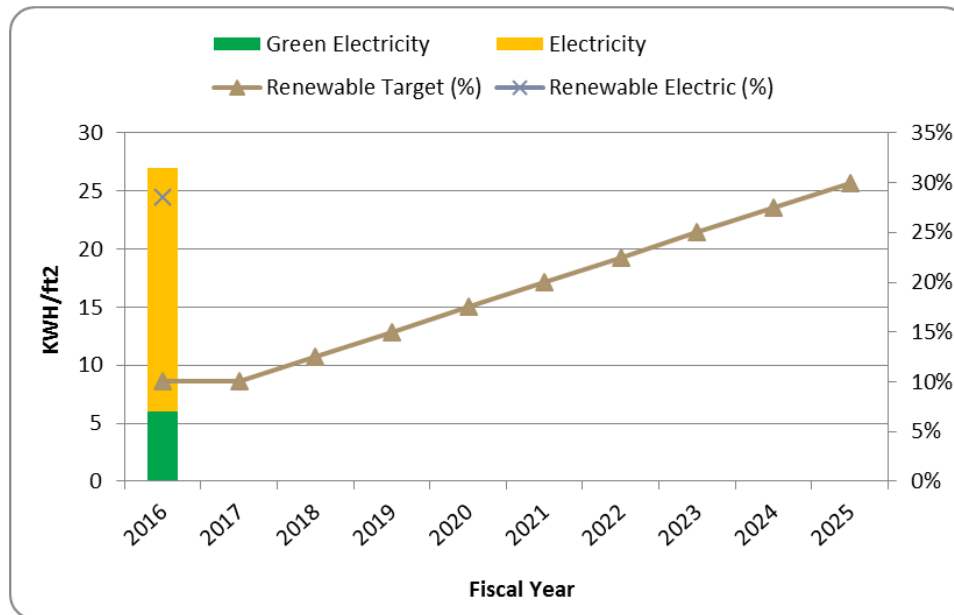


Figure 3-4. Electricity Use – FY 2016 with Target Objectives through 2025.

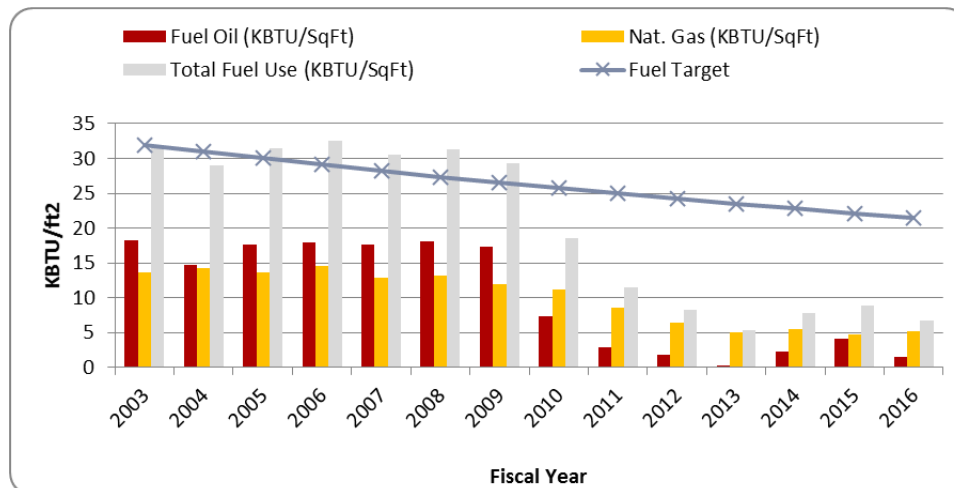


Figure 3-5. Facility Fuel Use – FYs 2003–2016.

NOTE: KBTU stands for one thousand British thermal units

3.1.6 Facility Energy Use

The target objective for facility energy use has been extended per Executive Order 13693. Requirements call for the reduction of energy use (a combination of electricity, fuel oil, and natural gas) by 25% by the end of FY 2025 or 2.3% annually relative to the FY 2015 baseline. The target objective was met in FY 2016 (Figure 3-6).

3.1.7 Electronic Product Environmental Assessment Tool (EPEAT)

The target objectives for the EPEAT were exceeded in FY 2016, with 100% of the purchases meeting the requirements (Figure 3-7). The requirements in Executive Order 13693 specify 95% of procured electronic assets (i.e., notebooks, computers, tablets, and monitors) must comply with the standard in

an effort to reduce or eliminate the environmental impacts of electronic assets by incorporating electronic stewardship practices.

3.1.8 Sanitary Waste Reduction.

The target objective for sanitary waste reduction requires the diversion of post-consumer materials suitable for reuse and recycling from landfills to a target of 50% annually by FY 2015 based on an FY 2009 baseline (Figure 3-8) and maintain that level thereafter. More Hanford Site sanitary waste was recycled than was sent to landfills in FY 2016.

3.1.9 Regulated Waste Reduction.

The target objective for regulated waste reduction was met in FY 2016 (Figure 3-9). Objectives for regulated waste reduction on the Hanford Site include eliminating or minimizing regulated waste generation 5% annually (based on FY 2009 generation) through source reduction, including segregation, substitution, and reuse. Regulated waste includes waste such as hazardous, universal, special, and state-regulated industrial not suitable for disposal in sanitary or construction and demolition landfills. Regulated waste from Hanford's ERDF is not included in Figure 3-9. Waste to this facility decreased in FY 2016 (Figure 3-10).

In addition to these metrics, each contractor has established company-specific performance measures within their EMS.

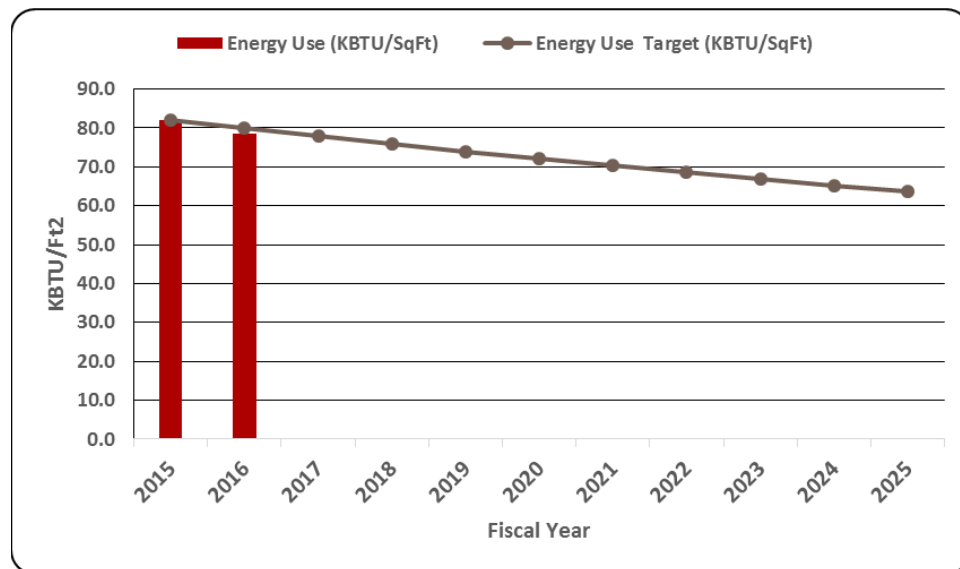


Figure 3-6. Facility Energy Use – FYs 2015-2016 with Target Objectives through 2025.

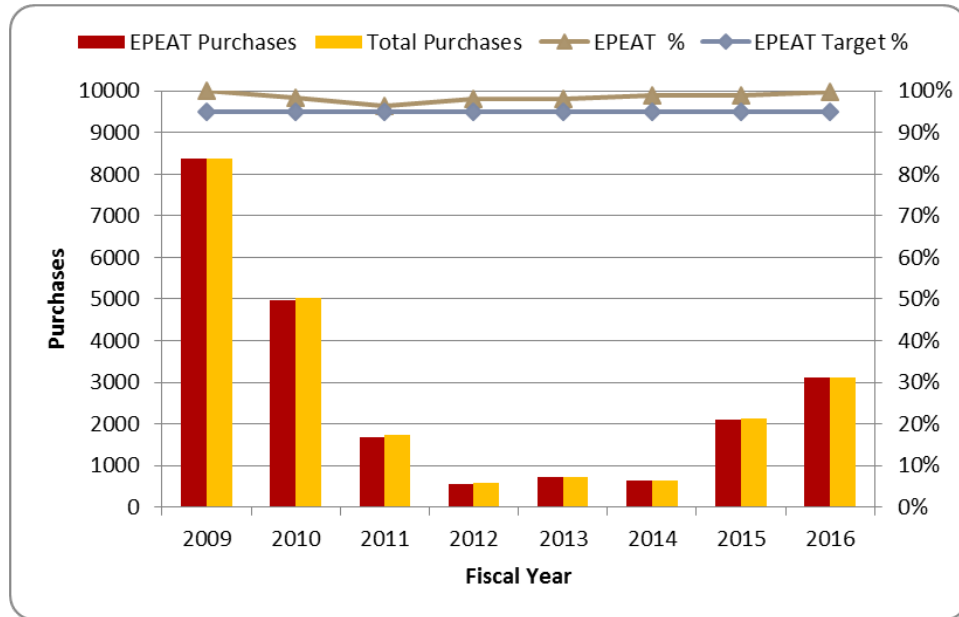


Figure 3-7. Electronic Product Environmental Assessment Tool Standards Compliance – FYs 2009–2016

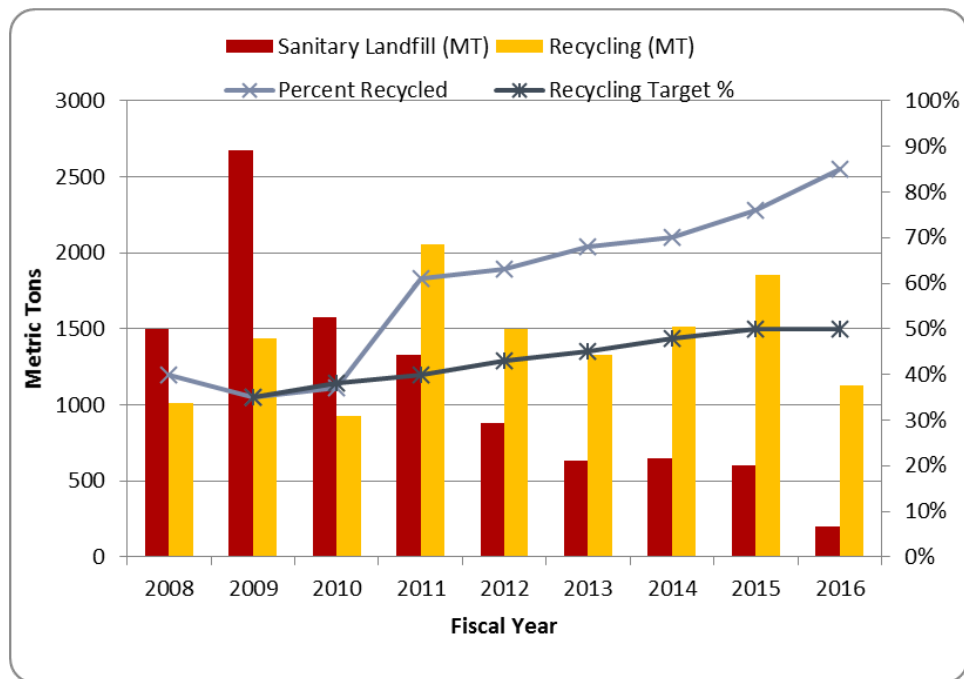


Figure 3-8. Sanitary Waste Reduction – FYs 2008–16.

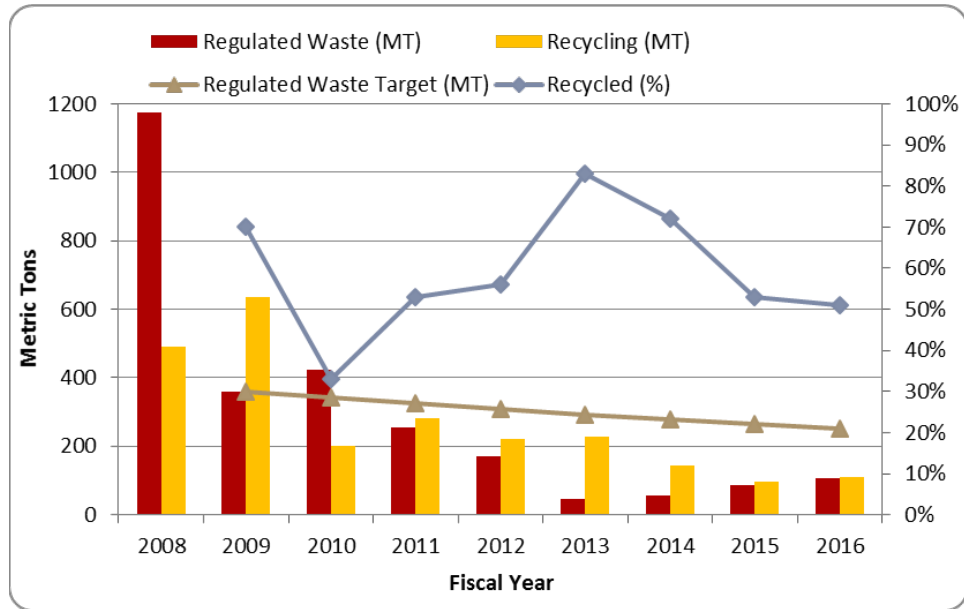


Figure 3-9. Regulated Waste Reduction – FYs 2008–2016

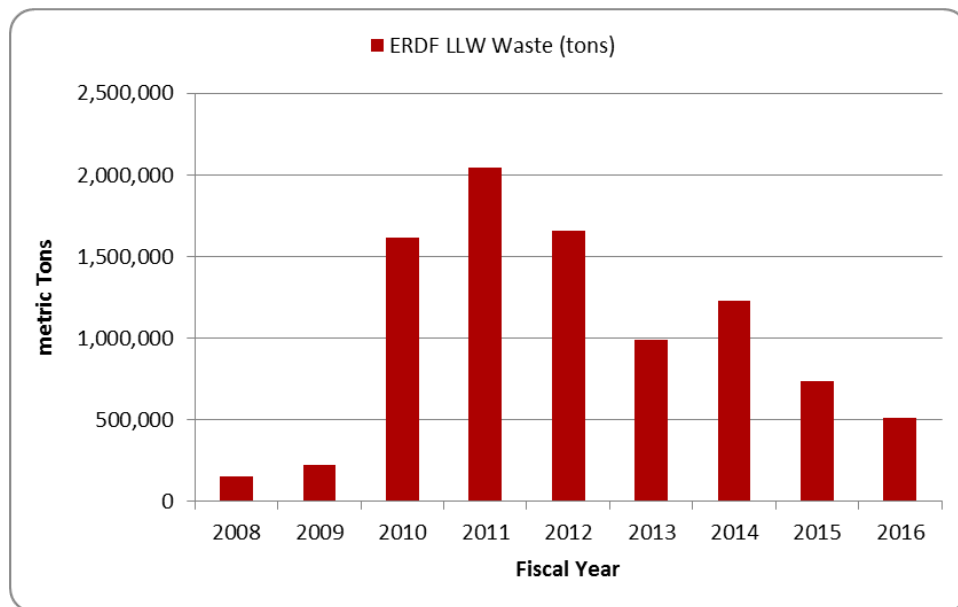


Figure 3-10. Onsite Waste Disposal – FYs 2008–2016 at the Environmental Restoration Disposal Facility.

3.2 Hanford Site Awards and Recognition

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3.2.1 HPMC Occupational Medical Services

HPMC OMS self-declared conformance to ISO 14001:2004 on March 17, 2016. DOE-RL conducted the external audit on March 21, 2016. This contract requirement due April 30, 2016, was completed ahead of schedule.

3.2.2 CH2M Plateau Remediation Company

The Environmental Compliance & Quality Assurance Organization conducted an independent assessment to review implementation of CH2M Plateau Remediation Company's (CHPRC) EMS as described in PRC-MP-EP-40182, *Environmental Management System Manual*, and its conformance with ISO 14001:2004. Employee awareness of CHPRC's Environmental Policy and environmental roles and responsibilities was assessed, and an effectiveness review of FY 2015 EMS audit corrective actions was conducted. CHPRC's internal audit was followed up by a required external surveillance audit. NSF-International Strategic Registrations, Ltd., an American National Standards Institute National Accreditation Board-accredited certification body for the international standard ISO 14001, conducted its annual surveillance audit of the CHPRC EMS June 20–23, 2016. Two auditors reviewed CHPRC documents, visited four CHPRC Projects, interviewed CHPRC workers to discuss CHPRC implementation of the International Organization for Standardization (ISO) core elements, and met with CHPRC senior staff members to gauge management commitment. Five "system strengths" were noted. No non-conformances and two opportunities for improvement were issued, and no Corrective and Preventative Action Plan was necessary. The auditors concluded that CHPRC remains compliant with the ISO 14001 standard and recommended continuation of ISO 14001 certification for another year.

3.2.3 Mission Support Alliance, LLC

MSA completed its required surveillance audit for FY 2016 to maintain its ISO 14001:2004 registration with a follow up surveillance audit and reassessment audit in FY 2017 to the ISO 14001:2015 revision. MSA's EMS coordinator also presented the 2016 Environmental Leadership Award. The award was established to recognize outstanding environmental performance by employees. This year's winner was the MSA Asphalt Reuse Team.

Two road projects used pulverized, existing asphalt and recycled it for new road base. These projects established MSA's efforts in diverting construction and demolition waste from landfill as a regular practice on the Hanford Site. With about 960 and 1,900 tons of material diverted from the construction and demolition landfill, the benefits went beyond landfill diversion and demonstrated opportunities in cost savings and resource conservation.

The Hanford Site was selected recently as an honorable mention by DOE for its submission for the 2017 Presidential Migratory Bird Federal Stewardship Award. Managed by contractor MSA, Hanford's avian protection program was recognized for monitoring key avian species, evaluating potential cleanup activity impacts and taking active protective measures where needed, as well as training Site personnel about migratory bird protection and protecting and enhancing important migratory bird habitats for FY 2016. The program focused on key species including ferruginous hawks, burrowing owls, American white pelicans, bald eagles, and sage-steppe passerines (including the sagebrush sparrow).

At more than 375,000 ac (151,757 ha), the Hanford Site represents one of the largest remaining native shrub-steppe communities; with diverse habitats including cliffs and riverine, the site provides permanent or transitory habitat for more than 200 bird species. Strong relationships with agencies, such as the U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife (WDFW), and Bonneville Power Administration, led to the Hanford Site becoming a leader in developing monitoring and compliance expectations for migratory birds.

Responsible for ecological monitoring at Hanford, DOE contractor MSA was a major contributor to the 2016 Ferruginous Hawk Survey program initiated by the WDFW and the Sagebrush Songbird Survey Program, run by WDFW and the Washington Audubon Society. The company also works with local agencies, including Blue Mountain Wildlife, to rehabilitate injured birds and release of a rehabilitated owl in October 2016.

3.2.4 Washington River Protection Solutions, LLC

In 2016 and 2017 the Washington River Protection Solutions (WRPS) Quality Assurance Organization conducted an independent assessment to review implementation of WRPS's EMS as described in TFC-PLN-123, *EMS Description*, and its conformance with ISO 14001:2004. The Quality Assurance Organization performs annual independent assessments of the WRPS EMS and divides the elements of ISO evenly over a 3-year time period so that all the elements of ISO have been thoroughly assessed between the required External Independent Triennial Audits for Declaration of Conformance to the ISO 14001 Standard. The last triennial conformation audit was held in July 2015. There were no non-conformances found in either of the internal independent assessments or the 2015 triennial external audit.

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