INTEGRATED SOLID WASTE MANAGEMENT PLAN
NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

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Prepared for:

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
Environmental Department

and

Yorktown Avenue, Building 903
Jacksonville, FL 32212-0030

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ACRONYMS AND ABBREVIATIONS

AEDA	Ammunition, Explosives, and Dangerous Articles
AF	Appropriated Funds
AFCEE	Air Force Center for Environmental Excellence
AFCESA	Air Force Civil Engineer Support Agency
BEQ	Bachelor Enlisted Quarters
BOSC	Base Operations Support Contractor
BUMED	Bureau of Medicine and Surgery
C&D	Construction and Demolition
CBH	Combined Bachelor Housing
CDC	Child Development Center
CED	Construction Equipment Division
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMA	Commodity Market Analysis
CNO	Chief of Naval Operations
CO	Commanding Officer
DLA	Defense Logistics Agency
DoD	Department of Defense
DODI	DoD Instruction
DoN	Department of the Navy
DRMO	Defense Reutilization and Marketing Office
DSA	Direct Sales Authority
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EQB	Environmental Quality Board
EQI	Environmental Quality Initiative
FEAD	Facilities Engineering and Acquisition Division
FY	Fiscal Year
GHG	Greenhouse Gas
GPC	Government Purchase Cardholder
GPP	Green Procurement Program
HDPE	High Density Polyethylene
HWMP	Hazardous Waste Management Plan
ISWMP	Integrated Solid Waste Management Plan
LDPE	Low Density Polyethylene
MDEQ	Mississippi Department of Environmental Quality
MILCON	Military Construction
MMR	Military Munitions Rule
MoM	Measure of Merit
MSW	Municipal Solid Waste (non-hazardous solid waste)
MWR	Morale, Welfare, and Recreation

ACRONYMS AND ABBREVIATIONS (continued)

NAF	Non-Appropriated Funds
NAFIs	Non-appropriated Fund Instrumentalities
NASA	National Aeronautics and Space Administration
NAVFAC	Naval Facilities Engineering Command
NAVFAC SE	Naval Facilities Engineering Command Southeast
NBHC	Navy Branch Health Clinic
NCBC	Naval Construction Battalion Center
NCFSU3	Naval Construction Force Support Unit THREE
NCTC	Naval Construction Training Center
NEX	Navy Exchange
NFESC	Naval Facilities Engineering Service Center
NGI&S	Navy Gateway Inn and Suites
OCC	Old Corrugated Cardboard
OIC	Officer in Charge
ONP	Old Newspaper
OPNAVINST	Chief of Naval Operations Instruction
PAR	Performance Assessment Representative
PAO	Public Affairs Office
P2	Pollution Prevention
P2-ADS	Pollution Prevention Annual Data Summary
PET	Polyethylene Terephthalate (plastic beverage bottles)
PPV	Public-Private Venture
PWD	Public Works Department
QRP	Qualified Recycling Program
RCRA	Resource Conservation and Recovery Act
SAA	Satellite Accumulation Area
Seabee	Naval Construction Battalion
SOP	Standard Operating Procedure
SSC	Stennis Space Center
SSPP	Strategic Sustainability Performance Plan
TRI	Toxics Release Inventory
UFGS	United Facilities Guide Specifications
USACE	U.S. Army Corps of Engineers

DEFINITIONS

Definitions are based on information from a combination of Federal and private organizations.

Acquisition	The acquiring by contract with Navy funds of supplies or services (including construction) by and for the use of the Federal government through purchase or lease, whether the supplies or services are already in existence or must be created, developed, demonstrated, and evaluated.
Aluminum Can	Any food or beverage container that is composed of at least 94 percent aluminum.
Appropriated Funds	Money set aside by Congress through a formal process for a specific use.
Baler	A machine used to compress waste or recyclables into bundles to reduce volume. Balers are often used on newspaper, plastics, and corrugated cardboard.
Bulk Density or Density	The weight of a volume of material, including voids normal to the material, often expressed in pounds per cubic yard (lb/cy).
Bulky Waste	Large items of non-hazardous solid waste including, but not limited to, appliances, furniture, large auto parts, non-hazardous construction and demolition materials, trees, branches, and stumps which cannot be handled by route compaction type collection vehicles, and also require special processing and disposal methods.
Chipper	A size reduction device having sharp blades attached to a rotating shaft (mandrel) that shear or chip off pieces of debarked pulp logs, tree branches, or brush. Produced chips have clean cuts, in contrast to those produced by grinding.
Commander	The Navy official in charge of a naval shore command, activity, installation, office, or unit. The term is generally synonymous with commanding officer (CO), officer in charge (OIC), chief, director, or other title for the head of the organization.
Commercial Waste	Solid waste generated by establishments engaged in business operations other than manufacturing. This category includes, but is not limited to, solid waste resulting from the operation of stores, markets, office buildings, restaurants and shopping centers.
Commingled Recyclables	A mixture of several recyclable materials in one container.
Composting	The controlled process for managing the biological degradation of organic materials, which are broken down into a useful product, such as mulch or a soil amendment.
Construction and Demolition (C&D) Debris	Waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings, and other structures. Includes: roofing, piping, dry wall, wood, bricks, concrete and similar materials, but excluding asbestos-containing materials.
Contaminant	Unwanted material that renders the other materials unacceptable to the user.

DEFINITIONS (continued)

Curbside Collection Programs	Recyclable materials are collected at the curb by the PPV in front of the generator's residence, often from a special container, to be brought to various processing facilities.
Disposal	The management of solid waste through landfilling, incineration, or transformation at permitted solid waste facilities.
Diversion	An activity to divert solid waste from landfill disposal or incineration, including reuse, donation, recycling, and composting/mulching. Diversion activities must be in accordance with all applicable DoD, DoD Component, federal, state, and local requirements. Waste-to-energy recovery is not considered diversion for the solid waste diversion goal although it is applicable to the energy reduction goals of EO 13423.
Diversion Rate	A measure of the amount of waste material being diverted for recycling compared with the total amount that was generated. The diversion rate is calculated as the rate at which non-hazardous solid waste is diverted from landfills and incinerators. Composting, mulching, recycling, reuse, and donation are generally accepted waste diversion methods. $\left(\frac{\mathbf{R}}{\mathbf{R}+\mathbf{L}}\right)\times\mathbf{100} = \textbf{\textit{Diversion Rate \%}}$ **R** = amount (in tons) of non-hazardous solid waste (excluding construction and demolition [C&D] debris) that is composted, mulched, recycled, reused, donated, or otherwise diverted from a disposal facility **L** = amount (in tons) of solid waste (excluding C&D debris) transferred to a disposal facility (landfill or incinerator)
Defense Logistics Agency (DLA)	Provides technical assistance to generating activities and receives excess materials and authorized turn-ins from generating activities.
Drop-off Center	A method of collecting recyclable or compostable materials in which the materials are taken by individuals to collection sites and deposited into designated containers.
Ferrous Metals	Any iron or steel scrap that has iron content sufficient for magnetic separation.
Generation Rate	Measures the total waste generated on an installation – total waste is the sum of the disposal amount and the recycled/reused amount.
HDPE (High Density Polyethylene)	A type of plastic, identified by the Society of Plastics Industry code number 2.
Household Hazardous Waste	Wastes from products purchased by the general public for household use which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial known or potential hazard to human health or to the environment when improperly treated, disposed of, or otherwise managed.

DEFINITIONS (continued)

Infectious Waste	Infectious waste is liquid or solid waste containing pathogens in sufficient numbers and of sufficient virulence to cause infectious disease in susceptible hosts exposed to the waste. Examples include: sharps, liquid or semi-liquid blood or other potentially infectious body fluids, pathological wastes, medical items from isolation rooms contaminated or likely to be contaminated with blood or other potentially infectious materials.
Integrated Solid Waste Management (ISWM)	A comprehensive approach to managing non-hazardous solid waste that encompasses waste prevention, recycling, composting, and disposal programs. Through ISWM, DoD components seek to determine the most cost-effective, energy-efficient, least-polluting ways to deal with the various segments of, and the items typically found in, an installation or facility solid waste stream.
Land Clearing Debris	Stumps, wood, brush, and leaves from land clearing operations.
Material Recovery Facility	A facility equipped with manual and/or automatic machinery to separate recyclable materials from mixtures to individual grades or types, in order to prepare them to meet market requirements.
Mixed Office Paper	Various grades of uncoated paper generated in a typical office environment, commonly referred to as "anything that ends up in a file cabinet." Sometimes referred to as file stock. Included are envelopes, including window style envelopes; manila file folders; copy paper, bond paper, computer paper, and other types of uncoated paper. Mixed office paper does not include coated paper such as magazines.
Mixed Paper	A mixture of newspapers, magazines, and cardboard.
Mulch	Ground or chipped wood and brush wastes.
MSW	Includes non-hazardous solid waste generated in households, commercial and business establishments, institutions, light industrial process wastes, agricultural wastes, mining wastes, and sewage sludge. In practice, specific definitions may vary among jurisdictions.
Non-Appropriated Funds (NAFs)	Cash and other assets received by Non-appropriated Fund Instrumentalities (NAFIs) from sources other than monies appropriated by Congress. NAFs are Government funds; these funds are used for the collective benefit of military personnel, their dependents, and authorized civilians who generate them. These funds are separate from funds recorded in the books of the Treasurer of the United States.
Non-Ferrous Metals	Metals that are derived from metals other than iron and steel alloys in steel, including aluminum, copper, brass, bronze, lead, zinc, and other metals to which a magnet will not adhere.
Old Corrugated Cardboard (OCC)	Cardboard manufactured in multiple layers, with one or more inner layers consisting of a series of alternating ridges and grooves.

DEFINITIONS (continued)

Organic/Green Waste	Waste, typically originating from plant or animal sources, which may be broken down by other living organisms; often generated from maintaining or altering public, commercial, or residential landscaping, including, but not limited to, yard clippings, leaves, tree trimmings, prunings, brush, and weeds.
Other Plastics	All plastic resin types except polyethylene terephthalate (PET) containers, film plastics, and high density polyethylene (HDPE) containers.
Other Select Wastes	Waste oils, ethylene glycol based antifreeze, lead-acid batteries, and C&D debris are considered to be other select waste for the P2-ADS report.
Participation Rate	A measure of the number of people participating in a recycling program compared to the total number who could be participating.
PET (Polyethylene Terephthalate)	A type of plastic, identified by the Society of Plastics Industry code number 1.
PPEP (Pollution Prevention Equipment Program)	Centrally funded and managed program to purchase P2 equipment for eligible Navy activities. Solid waste equipment, such as balers, shredders, composting equipment, and waste containers, can be obtained through this program.
Qualified Recycling Program (QRP)	A recycling program that meets requirements of Chief of Naval Operations Instruction (OPNAVINST) 5090.1C. The program enables an installation to receive revenue from the sale of recyclable materials.
Recycling	A series of activities, including collection, separation, and processing, by which products or other materials are recovered from the solid waste stream for use in the form of raw materials in the manufacture of new products other than fuel for producing heat or power by combustion.
Residential Solid Waste	Solid waste originating from single-family or multiple-family dwellings.
Resource Recovery	The extraction and use of materials that are used as raw materials in the manufacture of new products, or the conversion into some form of fuel or energy source. An integrated resource recovery program may include recycling, waste-to-energy, composting, and other components.
Reuse	The subsequent uses of a product after the initial/first use without any change in its identity.
Roll-off Container	A large waste container that fits onto a winch type truck with rails that can be picked up and dropped off using the winch. These are produced in capacities of 12 to 40 cy and may accept waste loose with the open-top style, or may use a compaction device to increase the waste density. Compaction-style roll-off containers are commonly used for non-hazardous solid waste, and open-top containers are used for C&D debris.
Sanitary Landfill	An engineered land burial facility for the disposal of solid waste which is so located, designed, constructed, and operated to contain and isolate the solid waste so that it does not pose a substantial present or potential hazard to human health or the environment. Waste is spread in thin layers, compacted, and covered with a fresh layer of soil each day to minimize problems with pests, aesthetics, diseases, air pollution, and water pollution.

DEFINITIONS (continued)

Solid Waste Management	The systematic administrative activities which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, or disposal of solid waste.
Solid Waste Management	The systematic administrative activities which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, or disposal of solid waste.
Source Reduction	The design, manufacture, acquisition, and reuse of materials so as to minimize the quantity and/or toxicity of waste produced. Source reduction prevents waste either by redesigning products or by otherwise changing societal patterns of consumptions, use, and waste generation.
Source Separation	Separation of recyclable materials, such as paper, glass, and aluminum, from the waste stream by the waste generator.
Tenant	An activity or unit that has a separate Unit Identification Code that occupies space within the geographical boundaries of another, larger, activity or installation. Tenants usually receive services from the host activity. Examples include a shore intermediate maintenance activity at a naval station, a public works center as a naval base, a naval base, a naval aviation depot at a naval air station, and the Naval Facilities Engineering Service Center at the NCBC Port Hueneme.
Tin Can or Tin Container	Any food or beverage container that is composed of steel with a tin coating.
Ton	A “short ton” equal to 2,000 lb.
Vector	A living animal, insect, or other arthropod which transmits an infectious disease from one organism to another.
Waste Diversion	To divert solid waste from landfills or processing facilities, through reuse, recycling, or composting.
Waste Generation	The amount (weight or volume of the overall waste stream) of materials and products as they enter the waste stream before materials recovery, composting, and combustion (incineration) takes place.
Waste Reduction	The reduction of the quantity, in pounds or tons, of material which becomes waste.
White Goods	Discarded, enamel-coated major appliances, such as washing machines, clothes dryers, water heaters, stoves, air conditioners, and refrigerators.
Wood Waste	Solid wastes consisting of wood pieces or particles that are generated from the manufacture or production of wood products, harvesting, processing, or storing of raw wood materials, or construction and demolition activities.
Yard Waste	Any waste generated from maintaining or altering public, commercial, or residential landscaping, including, but not limited to, yard clippings, leaves, tree trimmings, prunings, brush, and weeds.

CERTIFICATION

I hereby certify that I or my agent have visited and examined the facility, and being familiar with the requirements of OPNAVINST 5090.1C and NAVFAC, UG-2084-ENV Integrated Solid Waste Management Plan Guide, I attest that this Integrated Solid Waste Management Plan has been prepared in accordance with good engineering practices, that the Plan is adequate for this facility, and in accordance with the Department of the Navy requirements.

Engineer: Jon K. Overholtzer, P.E.

Signature: Jon Overholtzer

Registration Number: 1640

State: Mississippi

Date: July 9, 2013

Seal

EXECUTIVE SUMMARY

BACKGROUND AND PURPOSE

Naval Facilities Engineering Command, Southeast (NAVFAC SE), contracted with CH2M HILL, Inc. to update the Integrated Solid Waste Management Plan (ISWMP) for Naval Construction Battalion Center Gulfport, Mississippi (NCBC Gulfport). "Integrated solid waste management" refers to and includes a range of activities, such as generation, collection, storage, transport, processing, and final disposition, whether by reuse, recycling, waste-to-energy, or landfilling. This ISWMP enhances the installation's ISWMP dated April 2009 to conform to the current Department of Defense (DoD) policies and Federal regulations. Chief of Naval Operations Instruction (OPNAVINST) 5090.1C Chapter 16 sets forth the requirement to develop installation ISWMPs. Specifically, this ISWMP complies with OPNAVINST 5090.1C, Federal laws, regulations, and policies, and Mississippi and Harrison County laws, ordinances, policies, and regulations.

One of the guiding Executive Orders (EOs) for this ISWMP is EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, dated 5 October 2009, which distinguishes non-hazardous solid waste separate from construction and demolition (C&D) debris. These specific targets include (EO 13514, paragraph 2(e)):

- Diverting at least 50 percent of non-hazardous solid waste, excluding C&D debris, by the end of fiscal year (FY) 2015
- Diverting at least 50 percent of C&D debris by the end of FY 2015

This EO is supported by the DoD FY 2012 Strategic Sustainability Performance Plan (SSPP), 20 September 2012, which identifies goals and implementation strategies to achieve waste diversion. (http://www.denix.osd.mil/sustainability/PlansGuidance.cfm).

This ISWMP integrates the various non-hazardous solid waste and C&D management programs currently in place at NCBC Gulfport, including the Qualified Recycling Program (QRP) and will guide the installation to further maximize its material diversion. The specific purpose of this ISWMP is to accomplish the following:

EXHIBIT ES-1
NCBC Gulfport Welcome Sign

- Define and document the installation's current ISWM Program.
- Establish goals for improving non-hazardous solid waste and C&D management through ISWM.
- Identify specific actions required to achieve the ISWMP goals.
- Promote compliance with applicable Federal, State, local, and DoD solid waste management regulations and policies in order to achieve a 50 percent diversion rate goal for non-hazardous solid waste and C&D by the end of FY 2015.

The following wastes are excluded from the scope of this ISWMP:

- Regulated hazardous wastes
- Bio-hazardous wastes
- Industrial process waste
- Radioactive wastes

These wastes are managed by other programs at NCBC Gulfport.

OVERVIEW

Field work for this ISWMP was performed from 4-8 February 2013. The ISWMP presents the findings from information obtained during field activities and subsequent telephone and written communication with NCBC Gulfport personnel, contractors, and public agency officials.

Exhibit ES-2 lists NCBC Gulfport's diverted recyclables in FY 2012 and shows the original calculated non-hazardous solid waste diversion rate of 32.9 percent, which excludes C&D debris. Based on the data collected during the February 2013 site visit, including personnel interviews and weight estimation, the non-hazardous solid waste diversion rate was revised to a slightly higher total of 35.9 percent in FY 2012, as presented in Exhibit ES-3. The figures presented show additional waste diversion not documented, recorded, or known by the Solid Waste (SW) Manager before the site visit.

NCBC Gulfport has not yet met the EO 13514 goal of a non-hazardous solid waste diversion rate of 50 percent required by the end of FY 2015. However, according to the analysis of the field survey and other data compiled during the February site visit, the installation has the potential to increase its diversion rate beyond the 50 percent goal, as shown in Exhibit ES-4. To reach the goal of a 50 percent diversion rate by 2015, the following recommended actions serve as potential guidance on the current operations of the QRP and base personnel.

- Implement source reduction and recycling initiatives, as summarized in Chapters 4 and 5. These will serve as value-added enhancements to the programs in current operation and may be further coordinated and directed by the SW Manager. Suggestions include increasing involvement in the current initiatives, increasing general public awareness and training in source reduction and recycling, and expanding the network with the local community of donation/recycling vendors.
- Increase program training and awareness through teaming with Morale, Welfare, and Recreation (MWR) for special events and the QRP Manager for shop and new staff training as specified in Chapter 9. Increasing recognition of the QRP in MWR efforts can be a positive contribution for current and future initiatives to be presented to members aboard NCBC Gulfport.

Consistent with EO 13514, it is recommended that the SW Manager and QRP Manager continue to collect data regarding quantities of non-hazardous waste disposed and recycled. It is important to capture data from areas that are not recorded currently such as the Commissary, Camp Keller contractor recycling, and Thrift Store diversion.

In addition, the QRP Manager is encouraged to continue to regularly review market data for recyclable commodities trends and alternative diversion opportunities, as well as pollution prevention opportunities. As demonstrated in Appendix A, having additional vendors provide recycling for items such as wooden pallets and plastics could result in a significant revenue

increase while achieving the 50 percent non-hazardous solid waste diversion DoD goal. Additionally training and awareness of the capability to recycle these items will likely increase recycling and resulting revenue.

EXHIBIT ES-2
2012 Non-Hazardous Solid Waste Diversion Rate

RECYCLABLES	**LB**	**TONS**
Paper and Paperboard	360,000	180.0
Plastics	600	0.3
Metals (includes aluminum cans)	1,480,000	740.0
Antifreeze	13,220	6.6
Other (non-food)	15,380	7.7
Lead-Acid Batteries	86,360	43.2
RECYCLING TOTAL	**1,955,560**	**978**
Non-Hazardous Solid Waste Landfill	3,860,000	1,930.0
Waste to Energy	131,400	65.7
DISPOSAL TOTAL	**3,991,400**	**1,995.7**
TOTAL NON-HAZARDOUS SOLID WASTE GENERATED	**5,946,960**	**2,973.7**
Original 2012 Diversion %[a]	**32.9**	**32.9**

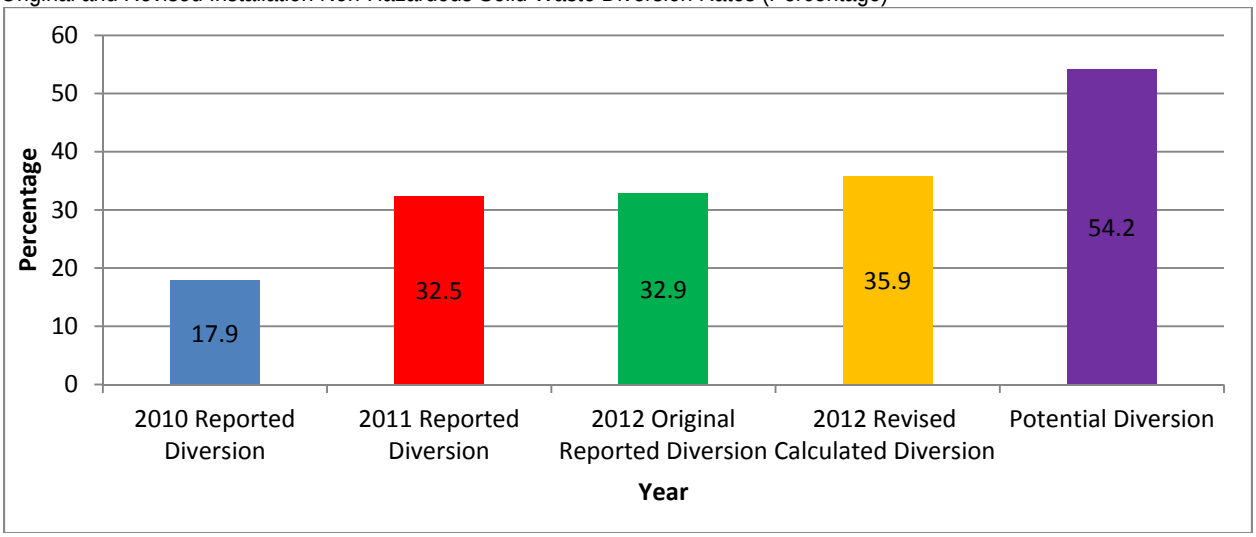
[a] Diversion rate is same as FY2012 EDMWEB Data provided by Stanley Smith

EXHIBIT ES-3
Revised 2012 Non-Hazardous Solid Waste Diversion Rate

RECYCLABLES	**LB**	**TONS**
Previously Identified	1,955,559	978
Thrift Store *(Interviewed Alyssa/Thrift Store Manager)*	35,125	17.6
Navy Lodge *(Interviewed Ms. Janice Baker/Navy Lodge Supervisor)*	4,849	2.4
Commissary *(Interviewed Mr. Walter Taylor/Commissary Supervisor)*	222,456	111.2
Camp Keller Ammo Reuse *(Interviewed Contractor with ECS)*	13,440	6.7
RECYCLING TOTAL[a]	**2,231,429**	**1,115.7**
DISPOSAL TOTAL	**3,991,400**	1,995.7
TOTAL NON-HAZARDOUS WASTE GENERATED	6,222,829	3,111.4
Revised Calculated Diversion %	35.9%	35.9

[a] Increased diversion rate based on additional 2012 recycling data not initially reported but obtained during site visit

EXHIBIT ES-4
Original and Revised Installation Non-Hazardous Solid Waste Diversion Rates (Percentage)



In the past 4 years, the total amount of C&D debris diverted has been almost 100 percent, as presented in Chapter 6. The installation has consistently exceeded the DoD C&D diversion goal of 60 percent, which must be achieved by 2015. The nature of C&D materials in a given year can greatly impact how much of the total C&D debris can be recycled. The diversion rate is expected to stabilize as C&D recycling requirements are included in future contracts.

OVERALL RECOMMENDATIONS

- Based on findings from the February field survey, strategies there are opportunities to recover greater quantities of mixed paper, cardboard, and scrap metals (including aluminum cans). Promoting the QRP through educational and informational efforts and making recycling mandatory for all personnel will aid in additional recovery efforts.
- A collection efficiency study could be performed, focusing on streamlined collection procedures, collection route schedule, level of service to auxiliary facilities, improvements in set-out rates, contamination, materials handling, and local area markets.
- The SW Manager is encouraged to continue communicating issues, changes, and potential improvements to the non-hazardous solid waste and recycling programs at the monthly department head meetings or quarterly subcommittee meetings of the Environmental Quality Board.
- For non-hazardous solid waste dumpsters that were found to have quantities of recyclables, place appropriate informational signs, placards, or markings requiring materials of specific categories to be recycled and not placed in the dumpsters will assist in educating personnel.
- Additional or larger recycle bins are recommended to be strategically placed at NCBC Gulfport to make recycling more convenient.
- The SW and QRP Managers are encouraged to increase personnel ISWM awareness by working with the Public Affairs Office to promote the ISWM and Recycling Programs, including placing articles on the NCBC Gulfport Facebook site. In addition, the NCBC's environmental website link may be updated with correct program information on ISWM.

- QRP revenue could be used to fund strategic base-wide programs to provide recognition of employees and tenants of NCBC Gulfport, emphasizing the value of their recycling efforts. This could be accomplished with increased sponsorship of MWR projects.
- In alignment with the DoD SSPP, a Commodity Market Analysis (economic analysis) of potential waste diversion opportunities could be conducted to determine if they can create a positive economic benefit for the installation or when new materials are added to the Recycling Program. If conducted, it is recommended that the assessment be based on industry and market research as described in Chapter 5 and the market research data provided in Appendix A.

CHAPTER 1
INTRODUCTION

Integrated Solid Waste Management (ISWM) Program development includes identifying materials that are significant components of the waste stream, understanding waste quantities, and evaluating recycling and diversion opportunities for all solid waste stream components. This plan addresses four main ISWM Program objectives:

- Characterize the waste streams of installation activities.
- Estimate types and quantities of municipal solid waste (MSW) generated during the current year, including non-hazardous solid waste requiring disposal and materials recovered for recycling.
- Discuss opportunities for further focus on the "Waste Management Hierarchy" (Exhibit 1-1) that emphasizes source reduction and reuse, recycling/ composting, energy recovery (waste-to-energy), and treatment and disposal (landfilling); sometimes referred to as the ISWM hierarchy.
- Evaluate existing recycling markets, prices, and other local alternative markets.

EXHIBIT 1-1
Waste Management Hierarchy

Source: EPA website: http://www.epa.gov/wastes/nonhaz/municipal/hierarchy.htm

PURPOSE AND AUTHORITY

This ISWMP has been prepared to comply with OPNAVINST 5090.1C, Federal laws, regulations, and policies, and Mississippi and Harrison County laws, ordinances, policies, and regulations. Further, this ISWMP sets forth recommendations to comply with solid waste reduction and recycling objectives set forth by the Navy and actions needed to carry out those recommendations.

NCBC GULFPORT DESCRIPTION

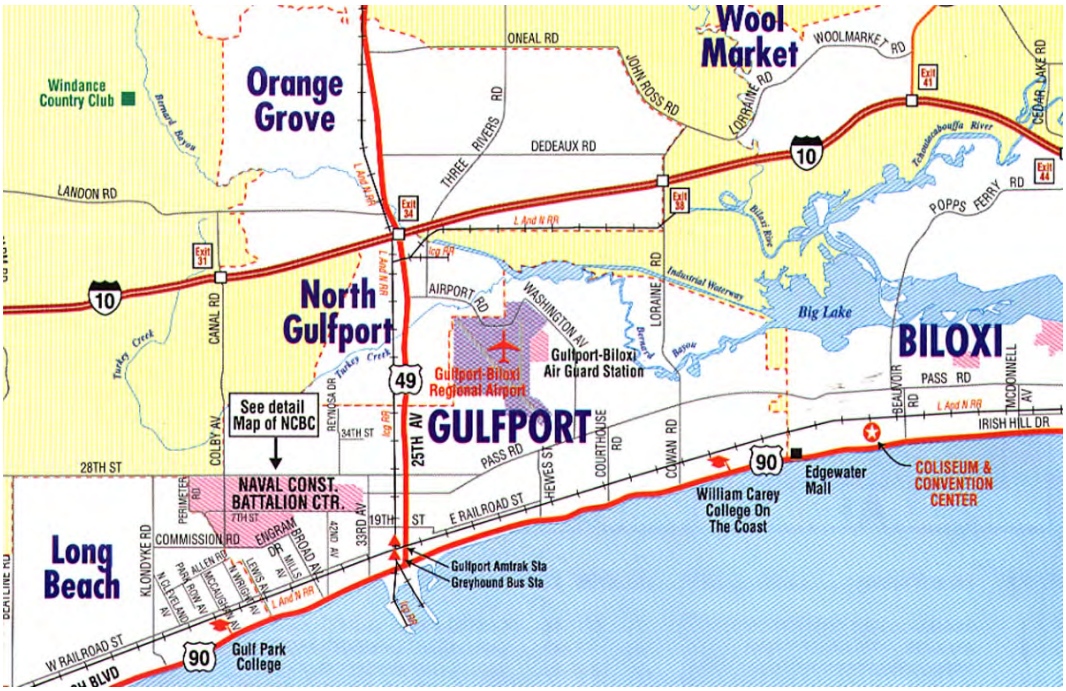
Location

NCBC Gulfport is located in southern Mississippi on the Mississippi Sound, within the City of Gulfport. Gulfport is approximately 100 miles from New Orleans, Louisiana and 11 miles west of Biloxi, Mississippi. The Biloxi-Gulfport-Pascagoula metropolitan area has a population of approximately 370,702 (U.S. Bureau of Census website, 2010) and includes Harrison, Hancock, and Jackson Counties. Exhibit 1-2 presents a map of the Gulfport area.

Land Use

NCBC Gulfport encompasses approximately 1,098 acres of land. Recently, much of NCBC Gulfport has been undergoing extensive changes in land development. NCBC Gulfport is reducing landscaping efforts in many of the less developed areas of the site. Large open areas remain for NCBC Gulfport's mission and training programs, and wooded areas remain for training and aesthetics.

EXHIBIT 1-2
NCBC and the Surrounding Area



Mission

NCBC serves as the cornerstone of military construction operations for the United States by providing public works functions at naval bases in the U.S. and abroad. Naval Construction Battalion (Seabees) are operational in war-times, as well as times of contingency and peace.

The mission of NCBC Gulfport is to maintain and operate facilities and provide services and material in support of Naval Construction Force Units, to include Amphibious Construction Fleet Units, the Maritime Prepositioning Force (Enhanced), and other fleet and assigned organizational units deployed from or home-ported at NCBC Gulfport, and to perform such other functions and

tasks as may be assigned by higher authority (NCBC Gulfport website; https://www.cnic.navy.mil/gulfport/About/MissionAndVision/index.htm, 24 February 2013).

NCBC functions as a training site for Seabees, a site for naval procurements/storage/dispatch, and a center for training and housing of other military tenants.

History

The construction battalion (Seabees) has been the Navy's military construction branch since the opening of the Advanced Base Depot at Gulfport in 1942. Seabees have been housed at NCBC Gulfport since 1942. NCBC first housed civilian construction workers who enlisted to serve in World War II. Their initial task was to continue naval construction operations in Europe and the Pacific Theater.

In the 1960s, the second generation of NCBC enlisted men was deployed to Vietnam. Seabees served the Navy in Vietnam by building camps and roads to support and facilitate U.S. military efforts. Near the end of the Vietnam War, Seabees were redeployed around the world. They were tasked with the repair and renovation of various Navy and Marine Corps stations that had fallen into disrepair during the Vietnam era.

This work continued until the 1990s. In August of 1990, the Seabees arrived in Saudi Arabia to pave the way for Operation Desert Storm. Today, Seabees continue to play a major role in the global war on terrorism. They provide construction in war zones and are ready to deploy on short notice to any location in the world.

Seabees also conduct humanitarian missions worldwide, including earthquake and hurricane recovery efforts here in the United States. Throughout the last two decades, the Seabees have been called upon to serve their country both domestically, in clean-ups after Hurricanes Andrew, Katrina, Ivan, and Isaac, and abroad, at Guantanamo Bay, Croatia, Afghanistan, Iraq, and Bosnia-Herzegovina.

ORGANIZATION AND USE OF THE ISWMP

This ISWMP addresses the range of topics necessary for solid waste management at NCBC and includes the following chapters:

- **Chapter 1 – Introduction**

Provides an introduction to NCBC and includes listings of regulations, directives, laws, and policies impacting solid waste and recycling.

- **Chapter 2 – NCBC Gulfport Solid Waste Generation**

Updates NCBC's waste characterization based on employee and housing population records, visual observations, and discussions with Gulfport personnel.

- **Chapter 3 – Waste Collection, Transport, and Disposal**

Includes an assessment of the existing solid waste and recyclables collection and disposal system.

- **Chapter 4 – ISWM Program**

Examines existing and potential strategies and practices to reduce solid waste generated at NCBC Gulfport. Implementation of solid waste reduction measures (which include waste prevention as well as source reduction and reuse) and green purchasing can help NCBC Gulfport comply with EO 13423 and Department of Defense (DoD) and Department of Navy (DoN) guidelines.

This chapter also includes documentation of existing practices. Recommendations for revisions to storage, collection, and processing activities to improve performance and compliance with DoN and DoD guidelines are also provided.

- **Chapter 5 – Qualified Recycling Program**

Discusses the NCBC Gulfport QRP and presents strategies for improving the program to meet the diversion goal of 50 percent by the end of FY 2015. See Chapter 5 for a discussion of which materials are recycled at NCBC Gulfport.

- **Chapter 6 – Construction, Demolition, and Storm Debris Management**

Provides documentation of current and alternative practices for C&D and storm debris management.

- **Chapter 7 – Infectious Medical Waste**

Describes the existing medical waste management system and practices. In addition, management needs are identified and recommendations presented.

- **Chapter 8 – Institutional, Contractual, and Recordkeeping Practices**

Includes a description of the military, economic, and historical factors that form institutional barriers at NCBC Gulfport. Changes that can be implemented with, or without, changes in institutional factors are identified. Recordkeeping, reporting practices, and recommended improvements which are needed to meet solid waste and recycling goals are assessed.

- **Chapter 9 – Information and Education Plan**

Presents a description of existing programs and outlines goals and objectives. Methods of dissemination and means of communication are suggested.

- **Chapter 10 – Roles and Responsibilities**

Includes an organizational chart showing relationships among personnel with solid waste and recycling functions. A discussion of the roles and responsibilities of NCBC Gulfport personnel is presented.

Waste and waste-generating functions not incorporated into this ISWMP include the following materials: regulated hazardous waste, engine coolant, tires, industrial wastes and other special waste.

LAWS AND REGULATIONS

Solid waste is regulated by government agencies at Federal, State, regional, county, and local levels. Each element of a sound solid waste management system must comply with government agency requirements. This section presents an abbreviated listing of Federal (including Navy), State, and local requirements for solid waste management at NCBC Gulfport.

Federal Laws

Pertinent Federal Laws are summarized in Exhibit 1-3. To access Federal Laws, use the following website: http://www.epa.gov; select “Laws & Regulations” and then select the category of Law or Regulation of interest.

EXHIBIT 1-3
Federal Laws

Law	Description
Resource Conservation and Recovery Act (RCRA) – Subtitles C, D, and F (F-Section 6002)	RCRA protects human health and the environment from potential hazards associated with waste disposal, conserves energy and natural resources, reduces the amount of waste generated, and ensures that wastes are managed in an environmentally sound manner.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)	CERCLA, commonly known as Superfund, was signed into law on 11 December 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Over 5 years, $1.6 billion was collected and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites. CERCLA: • Established prohibitions and requirements concerning closed and abandoned hazardous waste sites • Provided for liability of persons responsible for releases of hazardous waste at these sites • Established a trust fund to provide for cleanup when no responsible party could be identified

Federal Regulations

To access Federal Regulations (see Exhibit 1-4), use the following website: http://www.ecfr.gov/cgi-bin/. From this page, select Title 40 Protection of Environment. Specific regulations can be found in Volumes 24, 25, and 26, Chapter 1, Subchapter I – Solid Wastes.

EXHIBIT 1-4
Federal Solid Waste Regulations

Regulation	Regulation Name	Description
40 Code of Federal Regulations (CFR) 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste	Establishes requirements and recommended practices for the storage, collection, and management of solid waste, and for the operation of vehicles used in the collection, transport, and handling of waste.
40 CFR 246	Source Separation for Materials Recovery Guidelines	Contains recycling requirements for the recovery of paper, corrugated containers, and other consumer goods.
40 CFR 247	Guidelines for Procurement of Products that Contain Recycled Material	Contains guidance regarding “buy recycled” practices that will stimulate the recovered materials market.
40 CFR 260-271	Hazardous Waste Management Guidelines	Contains RCRA definition of a solid waste and lists the criteria for characterization as a hazardous waste.
40 CFR 273	Universal Waste Guidelines	Contains the definition of universal wastes and establishes requirements for collection and management of these wastes, facilitating environmentally sound collection and proper recycling or treatment.

Federal Executive Orders (EOs)

To access EOs (see Exhibit 1-5), use the following website: http://www.ofee.gov.

EXHIBIT 1-5
Solid Waste-Related Executive Orders

EO Number	EO Title	EO Description
13514	Federal Leadership in Environmental, Energy, and Economic Performance	This is the most recent EO that establishes goals, targets, and requirements for Federal agencies. It builds on, but does not replace, EO 13423. In addition to guidance, recommendations, and plans which are due by specific dates, EO 13514 lays out the following numerical solid waste targets for agencies: • Achieve 50 percent or higher diversion rate: – Non-hazardous solid waste by FY 2015. – Construction and demolition (C&D) debris by FY 2015. • Ensure 95 percent of all new contracts, including non-exempt contract modifications, require products and services that are energy-efficient, water-efficient, biobased, environmentally preferable, non-ozone depleting, contain recycled-content, non-toxic, or less-toxic alternatives. This EO also sets non-numerical solid waste targets that agencies are required to reach, such as: • Implement source reduction to minimize waste and pollutant generation. Related to EO 13514 is the DoD Strategic Sustainability Performance Plan (FY2012), which presents its sustainability objectives, goals, and program.
13423	Strengthening Federal Environmental, Energy, and Transportation Management	This EO supersedes (revokes and replaces) EOs 13101, 13123, 13134, 13148, and 13149. The order sets goals in the areas of energy-efficiency, acquisition, renewable energy, toxics reductions, recycling, renewable energy, sustainable buildings, electronics stewardship, fleets, and water conservation. In addition, the order requires more widespread use of Environmental Management Systems as the framework in which to manage and continually improve these sustainable practices.

DoD Requirements

To review DoD requirements see Exhibit 1-6:

EXHIBIT 1-6
Solid Waste-Related DoD Requirements

Requirement Number	Requirement Name	Description
DoD Plan	*Strategic Sustainability Performance Plan (SSPP)*	The DoD SSPP established goals to minimize and optimally manage solid waste: • 50% of Non-Hazardous Solid Waste Diverted from the Waste Stream by FY 2015, and thereafter through FY 2020. • 60% of Construction and Demolition Debris Diverted from the Waste Stream by FY 2015, and thereafter through FY 2020.
DoD Instruction (DODI) 4715.4	*Pollution Prevention*, June 1996	This document provides explicit guidance for pollution prevention (P2) activities. It reiterates the Waste Management Hierarchy principle and establishes DoD's P2 Measures of Merit (MoMs) for reductions in Toxics Release Inventory (TRI) releases, hazardous waste reduction, and non-hazardous solid waste diversion.
DODI 4715.4	*Environmental Compliance*	This DODI implements policy, assigns responsibilities, and prescribes procedures for achieving compliance with applicable EOs and Federal, State, interstate, regional, and local statutory and regulatory environmental requirements.

EXHIBIT 1-6
Solid Waste-Related DoD Requirements

Requirement Number	Requirement Name	Description
U.S. Code	*10 USC § 2577 - Disposal of Recyclable Materials*	This policy describes the authority of the Secretary of Defense for prescribing regulations to provide for the sale of recyclable materials held by a military department or defense agency and for the operation of recycling programs at military installations.
DoD Memorandum	*New DoD P2 Measure of Merit*, May 1998	This memorandum establishes a new solid waste MoM to replace those in DODI 4715.4. The new MoM states that installations must "ensure that the diversion rate for non-hazardous solid waste is greater than 40 percent, while ensuring integrated non-hazardous solid waste management programs provide an economic benefit when compared with disposal using landfilling and incineration alone" by the end of FY 2005.
DoD Memorandum	Office of the Under Secretary of Defense, *Revised P2 and Compliance Metrics*, October 2004	On 12 October 2004, DoD issued revised P2 and Compliance Metrics to measure the effectiveness of DoD P2 and compliance programs in support of the DoD missions. These metrics apply to all DoD installations worldwide. Implementation of these metrics began by Calendar Year or FY 2005.
DoD Memorandum	*DoD Integrated (Non-Hazardous) Waste Policy*, February 2008	This memorandum establishes DoD solid waste diversion goals to be achieved by 2010. It states: "The diversion goal for non-hazardous solid waste without C&D debris is 40 percent by 2010. The goal for C&C debris is 50 percent diversion by 2010." Additionally, the memorandum requires all DoD Component installations to implement ISWM to achieve the goals set forth in EO 13423.
DoD Memorandum	*Qualified Recycling Program (QRP) Guidance*, April 2003	This memorandum supplements DODI 4715.4, paragraph 6.2.3.3. The memorandum gives direction on conducting and reconciling sales and financial records, using net proceeds from the sale of recyclables, handling costs associated with recycling programs, and considering outsourcing opportunities. DoD Components must incorporate this guidance into their respective QRP guides.
DoD Memorandum	Office of the Under Secretary of Defense, Recycling of Firing-Range Scrap Consisting of Expended Brass and Mixed Metals Gleaned from Firing-Range Clearance through Qualified Recycling Programs, May 1996	This defines policy for ammunition, explosives, and dangerous articles (AEDA) collected from firing ranges when installations directly sell the metals. Metals must be certified safe before being processed by QRPs, and QRP personnel must be trained to recognize and segregate AEDA.
DoN Memorandum	*Affirmative Procurement Program for Items Containing Recovered Materials,* September 1996	This memorandum defines the interim Navy instruction for requirements for products containing recovered material and the establishment of DoN affirmative procurement program.
UG-2039-ENV	*DoN Qualified Recycling Program (QRP) Guide*, July 2000	This document outlines QRP development and operational procedures for Navy shore activities.

EXHIBIT 1-6
Solid Waste-Related DoD Requirements

Requirement Number	Requirement Name	Description
UG-2084-ENV	*Integrated Solid Waste Management Plan (ISWMP) Guide*, April 2009, Naval Facilities Engineering Command (NAVFAC)	This document addresses all elements of ISWMP development, including: diversion goals, ISWM strategies, plan development and implementation, waste stream analysis, awareness programs, and potential impediments to implementation. This document is provided in Appendix B.
UG-209-ENV	*Fiscal Year 2011 EPR Portal Solid Waste Module*	This document contains reporting instructions to assist solid waste reporters in preparing annual solid waste data submittals for FY 2011 using the U.S. Navy Environmental Portal website (EPR Portal) available at: https://eprportal.cnic.navy.mil.
OPNAV INSTRUCTION P5090.1C	*Environmental Readiness Program Manual*	Chapter 16 of OPNAVINST 5090.1C is entitled "Solid Waste Management and Resource Recovery Ashore," and is applicable to all Navy installations worldwide that generate 1 or more tons of solid waste per day. These installations must follow the solid waste reporting, solid waste management planning, recycling requirements, and affirmative procurement requirements outlined in this chapter.
UG-2039-ENV	Qualified Recycling Program Guide, July 2000, Naval Facilities Engineering Service Center (NFESC)	This document provides information about developing and operating region wide and installation wide Qualified Recycling Programs (QRP) for naval shore activities. This guide does not discuss solid waste management or recycling per se, but focuses on the financial and managerial aspects of operating a QRP.

Mississippi Laws

The State of Mississippi maintains solid waste laws (see Exhibit 1-7) which govern disposal site, landfill and transfer station practices. NCBC Gulfport has hired a contractor to transport non-hazardous solid waste to the appropriate facility. The non-hazardous solid waste contractor is obligated to conform to the State of Mississippi solid waste laws. NCBC Gulfport is not directly responsible for conformance to these laws, but may monitor non-hazardous solid waste contractor compliance.

EXHIBIT 1-7
Mississippi Solid Waste Laws

Law	Description
Code of 1972, Title 17, Chapter 17 – Solid Waste Disposal	The State of Mississippi established this set of solid waste laws which govern disposal site, landfill, and transfer station practices.

Mississippi Regulations

The State of Mississippi has adopted Federal regulations which pertain to universal waste and used oil standards. To access Mississippi regulations (see Exhibit 1-8), use the following website: http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf?OpenDatabase.

EXHIBIT 1-8
Mississippi Regulations

Regulation	Regulation Name	Description
HW-1, Part 273	Standards for Universal Waste Management	Related to the storage, collection, handling, transportation, processing, and disposal of solid waste.
HW-1, Part 279	Recycled Used Oil Management Standards	Establishes regulations for used oil generators, transporters, processors, re-refiners, burners, and marketers of recycled used oil.
SW-4	Waste Tire Management Regulations	Establishes regulations for persons who store, process, or dispose waste tires.

Regional and County Policies

The Mississippi Department of Environmental Quality (MDEQ) regulates environmental practices in the state. Solid waste practices are regulated by The Office of Pollution Control; Solid Waste Policy, Planning, and Grants Branch. This branch is responsible for the regulation, planning, policy, and financial assistance related to non-hazardous solid waste disposal in Mississippi.

MDEQ offers general solid waste guidance on various programs related to proper solid waste management found at the following location: http://www.deq.state.ms.us/MDEQ.nsf/page/SW_General_Solid_Waste_Guidance?OpenDocument.

Gulfport has a code of ordinances at: http://library.municode.com/index.aspx?clientId=15137. The City Ordinances outline requirements for solid waste in Chapter 4, Health and Sanitation Article VI Garbage, Trash, and Weeds.

Infectious/Medical Waste

Infectious/medical waste regulations are listed in Exhibit 1-9.

EXHIBIT 1-9
Infectious/Medical Waste Regulations

Regulation	Regulation Name	Description
Federal		
29 CFR 1910	Occupational Safety And Health Standards – Part 1910.1030, Blood borne Pathogens	Federal regulations should be incorporated into all Navy Directives. Federal regulations regarding medical wastes can be found through the U.S. Environmental Protection Agency (EPA) website: http://ecfr.gpoaccess.gov; select "Title 29 – Labor." Specific regulations can be found in Volume 6, Chapter XVII, Subtitle B- Regulations Relating to Labor.
DoD		
File No. 6280.1A	Management Of Infectious Waste	To access the Navy medical waste directive, use the following website: http://navymedicine.med.navy.mil.

EXHIBIT 1-9
Infectious/Medical Waste Regulations

Regulation	Regulation Name	Description
State		
SW-2	Mississippi Nonhazardous Solid Waste Management Regulations	MDEQ has not yet developed comprehensive regulations regarding the transportation and management of infectious medical waste. However, the proper transportation, management and disposal of infectious medical waste in Mississippi are regulated under the general provisions of the Mississippi Solid Waste Law and the Mississippi Nonhazardous Solid Waste Management Regulations located at the following website: http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf/.

CHAPTER 2

NCBC GULFPORT NON-HAZARDOUS SOLID WASTE GENERATION

INTRODUCTION

This chapter describes the generation and composition of non-hazardous solid waste at NCBC Gulfport. Current non-hazardous waste management practices are discussed along with current and future non-hazardous solid waste needs based on installation mission, size, and economic/environmental considerations. Non-hazardous waste stream characterization is also discussed, with identification of materials to target for source reduction, reuse, and recycling. Non-hazardous solid waste characterization was accomplished during the 4-8 February 2013 site visit using two methods: general survey and comparison of activity data.

OBJECTIVES

This chapter has three objectives:

- Describe NCBC Gulfport and its main functions in the context of identifying types of non-hazardous solid waste generators.
- Assess the quantities of non-hazardous solid waste recycled and disposed in recent years.
- Estimate types and quantities of non-hazardous solid waste generated in the current year, including materials recovered for recycling and non-hazardous solid waste disposal.

NCBC GULFPORT DESCRIPTION

Installations that generate an average of 1 or more tons of solid waste per day on an annual basis must enter their annual solid waste data in Chief of Naval Operations' (CNO N45) Environmental Portal website (EPR Portal). Information from this portal is used to characterize waste at NCBC Gulfport. Additional in-house recordkeeping data were obtained from installation personnel interviews. Data collection from the following installation staff provided the information presented in this chapter:

- NCBC Gulfport Environmental Division SW Manager and other Public Works Department (PWD) Supervisors
- QRP Manager/Recycling Center Supervisor
- Industrial and Commercial Activity Supervisors

Administrative and Operation Facilities

NCBC Gulfport is host to 13 major tenant commands that provide a variety of functions for naval activities and military support worldwide. The major commands at NCBC Gulfport are:

- 20th Seabee Readiness Group (SRG)
- Naval Mobile Construction Battalion ONE (NMCB1)
- Naval Mobile Construction Battalion SEVENTY-FOUR (NMCB 74)
- Naval Mobile Construction Battalion ONE THIRTY-THREE (NMCB 133)
- 22nd Naval Construction Regiment Gulfport
- Naval Construction Training Center (NCTC)
- Naval and Marine Corps Reserve Center (USMC Reserve)

- Marine Corps Reserve
- Mobile Inshore Underwater Warfare Unit 212 (MIUW 212)
- Naval Meteorology and Oceanography Professional Development Center (NMOPDC)
- Post Security Unit 308
- Naval Construction Force Support Unit THREE (NCFSU3)

(*The Navy on the Mississippi Gulf Coast*, 2009).

NCBC Gulfport operations also include office space for general management (CO) and similar functions.

Population

NCBC Gulfport's population varies due to its training mission, especially when battalions are deployed. The current population for FY 2012 is approximately 7,180. Exhibit 2-1 shows population data. The population includes civilian employees as well as active duty service members from the Navy, Army, Marine Corps, Air Force, Coast Guard, and their dependents.

EXHIBIT 2-1
Population Profile of NCBC Gulfport

POPULATION PROFILE[1]	2010	2011	2012
Military			
Resident	2,767	2,846	2,912
Non-Resident	2,972	3,000	2,996
Civilian			
Resident	0	0	0
Non-Resident	1,245	1,260	1,272
Total	6,984	7,106	7,180

Notes: 1) Source: P2-ADS Solid Waste Operations reports (fiscal years [FY])

Housing

NCBC Gulfport currently has seven communities of family housing units for married officers. In addition, there are 365 units of housing for married enlisted personnel. An additional 205 units were added in May of 2010. The Combined Bachelor Housing (CBH) has a total of 1,295 units, with 969 units for permanently assigned enlisted personnel (86 units are temporary structures) and 326 units for transients. The new Bachelor Enlisted Quarters (BEQ) currently houses Army, Navy, and Air Force "A" school students. NCBC Gulfport is also home to military reservists who have weekend duty once per month and 2-week training exercises once per year.

The total average occupancy of the family housing units is approximately 90 percent for assigned full-time enlisted military personnel and their families. Many families are put on a waiting list while other civilian and military personnel assigned to NCBC Gulfport live off-base in the surrounding area.

Residents of base housing units generate several non-hazardous solid waste types, including glass, plastic, newspaper, aluminum cans, old clothes, cardboard, batteries, wood, food waste, and rubber. Mattresses are currently disposed through DLA. The resident communities experience a high flow of solid waste because of the amount of people inhabiting them. There are 12 dumpsters located around the BEQ buildings. It would be beneficial to place signs or placards describing

prohibited and recyclable items on or around the dumpsters to act as a constant reminder for residents to participate in the QRP.

Near one of the BEQ communities, the QRP has purchased a four-compartment trailer-mounted recycling container (Exhibit 2-2). The compartments hold mixed paper, plastics, and aluminum. A bin for cardboard recycling could be utilized nearby or the signs on the container could state more clearly the potential for cardboard recycling in the mixed paper compartments. Containers of this type are not on the general recycling pick-up rotation and were nearly overflowing with recyclables during the site visit. Recreational or communal areas of the BEQ, such as the entrance hall, where residents gather frequently would benefit from bins for common recyclable items disposed of by individuals, such as plastic bottles and aluminum cans.

EXHIBIT 2-2
Recycling Bin at BEQ

Public-Private Venture (PPV) Housing

Since October 2007, management of all on-base family housing units has been under a PPV contract with Balfour Beatty, PLC. The PPV contract allows for family housing units to be owned by a private entity and governed by a business agreement in which the Navy has limited rights and responsibilities. The private entity is responsible for the construction, renovation, maintenance, and day-to-day management of the housing. The PPV is set up under a 50-year lease contract for housing unit management. For on-base housing units, the Department of the Navy (DoN) owns the property and the buildings used in PPV housing, and the PPV contractor is responsible for management of the housing community. Balfour Beatty contracts with a local non-hazardous solid waste contractor for non-hazardous solid waste and recycling collection at all on-base family housing units. During the time of the site visit, tonnage was not being reported to the SW Manager and was therefore not included in the non-hazardous solid waste and recycling quantities on the P2-ADS or in this ISWMP.

Visitors Lodging

For military personnel visiting NCBC Gulfport, guests can chose to stay at the Stethem Memorial Navy Lodge or the Navy Gateway Inn and Suites (NGI&S). The Navy Lodge is a privately owned endeavor unlike the NGI&S, which is a DoD facility. The Lodge is a 30-unit motel designed to serve NCBC Gulfport guests. The Navy Lodge has also completed construction of a new 60-unit hotel lodge building to accommodate guests. The NGI&S has two locations within the fence line totaling 232 rooms. The types of non-hazardous solid wastes generated include newspapers, plastics, aluminum, cardboard, mixed paper, and glass. The Navy Lodge currently collects and recycles plastic bottles and newspapers and donates old sheets and towels. In addition, every 4 to 5 years during unit rehabilitation, the Lodge has a yard sale for old furniture and recycles 60 percent of its old mattresses.

Considering the high volume of guests coming in and out, it would be beneficial for these areas to increase their involvement in the QRP. General awareness flyers and signs could be posted around common areas where guests throw away trash. Bins for recycling plastic bottles and aluminum cans in common areas like the lobby would increase the potential for guests to actually recycle

their non-hazardous solid wastes. The custodial services could also benefit from having a bin for recyclable plastic and cardboard from various supplies and cleaners to be recycled. Exhibit 2-3 shows cardboard boxes from breakfast service and supply receiving in the Navy Lodge dumpster.

EXHIBIT 2-3
Cardboard in a Navy Lodge Dumpster

Community Facilities

Several personnel support service facilities are located at NCBC Gulfport. Examples include a medical/dental clinic, a Child Development Center (CDC), and the Fleet & Family Service Center (a fully accredited facility that offers a wide variety of programs and services to commands and families on the Mississippi Gulf Coast). There is also a Thrift Store, Seabee Museum, Navy Exchange (NEX), NEX gas station and mini-mart, public car wash, credit union, Commissary, and a Hancock Bank.

The medical and dental clinics at NCBC Gulfport generate both non-hazardous solid waste and infectious medical waste. Non-hazardous solid waste generated by the clinics is taken to a waste collection container by the custodial staff. Chapter 7 discusses the various types of waste generated by the clinics. Infectious medical waste cannot be disposed of in the non-hazardous solid waste stream, but rather by a certified infectious waste hauler.

The types of waste generated at these buildings vary by the types of activities occurring. The CDC offers a variety of daily activities and after school programs for children of base personnel. Meals are served throughout the day and as a result the non-hazardous solid waste dumpster receives large amounts of cardboard boxes from bulk food items and empty plastic bottles of juices and milk. The CDC would benefit from having more accessible locations, such as big bins in front of the Commissary and NEX and other areas people visit on a regular basis, for recycling cardboard and plastics.

The Thrift Store is a base operation which accepts donated goods for resale and provides inexpensive used items such as clothes, toys, books, shoes, and furniture. The Thrift Store functions as a method of non-hazardous solid waste diversion as it recycles old items from base personnel. Employees of the Thrift Store recycle their own plastic and aluminum waste by bringing items home for municipal recycling pick-up. A bin for plastic and aluminum recycling could be placed near the Thrift Store to support employees' current recycling initiatives.

A variety of recreational activities and facilities are offered through Morale, Welfare, and Recreation (MWR). These include a youth sports field, recreation center, gymnasium, swimming pool, a 4-hole golf course and club-house, an auditorium/theater and Liberty Center with BeeHive Bar. Dining and entertainment facilities are also provided for military and civilian personnel and visitors. These include The Grill Restaurant, Pizza Brothers, and Colmer Dining Hall (Galley). There are also two fast food restaurants, McDonald's and Subway, within the installation. Many of these areas are used frequently by families and trainees aboard NCBC Gulfport.

The Liberty Center currently recycles plastic and aluminum cans but has noticed issues with people disposing of non-hazardous solid waste in the marked recycling bins. Therefore, additional awareness training and flyers for high traffic areas for the younger trainees coming into NCBC Gulfport are recommended. There are multiple big screen TVs and computer monitors with advertisements and messages looped on the screen and in screensaver settings. These displays would be a great avenue for recycling messages to be noticed by younger base personnel. The Fitness Center is another area which has a high flow of base personnel, many of whom toss out empty plastic bottles and cans. Currently the center has one bin for plastic and aluminum recycling and the Fitness Center staff collect their paper and empty plastic containers and turn in to the Recycling Center

EXHIBIT 2-4
Cans in the Dumpster at the Galley

The dining area non-hazardous waste streams are generally characterized by food preparation and disposal, including tin and aluminum cans (Exhibit 2-4), plastic containers, food waste, cardboard (CB) containers and boxes, and general municipal waste. The Recycling Center currently accepts tin cans, but they must be rinsed before they can be recycled. It is important for the Galley employees to rinse the cans and for the QRP to provide them with a designated bin for cans and plastic containers generated during food preparation. Staff at other dining areas around the base deal with large quantities of boxes from receiving supplies, and could be made aware that they can recycle their cardboard waste. Restaurants such as Subway and McDonald's can urge customers to recycle their drinking cups because these locations use large quantities of cups and many customers are not aware of the ability to recycle materials of this type.

The MWR also supports the Auto Hobby Shop for base personnel to bring cars for general maintenance and repair. The shop generates used oil and oil filters, used parts, empty plastic containers, mixed paper from the office area, plastic bottles, cardboard boxes from parts and supplies, and empty aluminum cans. Currently, the empty plastic containers are triple-washed and disposed of in the non-hazardous solid waste dumpster and paper is thrown in with non-hazardous solid waste as well. Personnel at the shop suggested having a paper shredder for the types of files they must dispose of and a bin to put shredded paper in for recycling. In addition, the crews at the hobby shop need a larger plastic bin than the one currently available to recycle the empty containers of various fluids they use in the shop and triple-wash for disposal.

NCBC Gulfport also includes the Shields RV Park, which is used by full-time staff and visiting retired or active military personnel. The RV camping facilities are located off 9th Street. The campground offers 60 sites that include full hook-ups and an onsite laundry facility. The types of waste generated at the RV Park are general household non-hazardous solid wastes such as paper, plastic, aluminum/tin, and cardboard.

TENANT COMMANDS

Operations include office space for general management (CO) and similar functions. Tenant commands and NCBC Gulfport personnel generate office-related non-hazardous solid wastes and in some cases, industrial waste. Tenant commands stationed at NCBC Gulfport have distinguishable waste streams, as discussed below.

NEX and Supply

NEX and Supply facilities receive shipments of food and goods. They are responsible for processing and distributing these goods. NEX operates a gas station, a mini-mart, McDonald's, and Subway. These facilities generate non-hazardous solid waste, recyclables, and regulated universal wastes. The NEX facilities and Commissary are each on their own disposal contract separate from the basewide contract. Both contracts have strong recycling programs that recycle plastics (HDPE/low density polyethylene [LDPE]/PET), aluminum/tin, wooden palette, cardboard, and mixed paper. It is recommended that the QRP Manager maintain complete records of the NEX and Commissary's recyclable generation rates to include in base-wide diversion calculations. McDonald's and Subway pay the NEX for their non-hazardous solid waste and grease pick-ups. The NEX mini-mart has a large bin for cardboard recycling in the back of the building (Exhibit 2-5).

EXHIBIT 2-5
Cardboard Bin at NEX Mini-mart

Naval Construction Training Center

The mission of NCTC is to train personnel in skills necessary to complete a construction mission. The unit is also tasked with Disaster Recovery Training to prepare enlisted personnel for disaster recovery missions.

EXHIBIT 2-6
Plastic Bottles in a Dumpster at NCTC

These activities generate non-hazardous solid waste, C&D debris, recyclable, universal, and hazardous wastes. Waste generation at the NCTC facilities is similar to that at the CDC as this area is a learning center which also offers snacks and drinks for students. Therefore, dumpsters become filled with empty cardboard boxes (Exhibit 2-5), empty plastic bottles and aluminum cans (Exhibit 2-6), old notebooks and used training materials, scrap metals, and construction supplies. The Training Center students practice construction and demolition in a classroom-like setting and in an outdoor space. The Center generates waste cement/lime/sand mixture used in practicing cinder block building construction in a large roll-off near the area. The roll-off bin is emptied twice per month and the contents landfilled. This construction waste may prove useful for filling sandbags or building up land around the base susceptible to erosion from storms. The NCTC would benefit from the addition of cardboard, paper, plastic, and aluminum recycling bins. A large four-compartment bin similar to the one near the BEQ would be a positive addition to the Center. This will be an important location for educational and awareness materials.

Naval Construction Force Support Unit Three

The NCFSU3 is dedicated to providing logistics support for long haul transportation and special equipment operation and maintenance. During times of peace, the unit trains for contingency missions and supports the Fleet and Unified Commanders. The NCFSU3 generates large amounts of recyclables, non-hazardous solid waste, C&D debris, universal wastes, and hazardous waste.

Camp Keller Firing Ranges

EXHIBIT 2-7
Ammo Boxes in the Dumpster at Camp Keller

Camp Keller is a satellite area of NCBC Gulfport encompassing four firing range bays. The site is an EPA regulated site with a current compliance status of No Violations. Military personnel use the site for weapons firing training. The site hosts a contractor, ECS, which teaches weapons training courses. Each bay is dedicated to either a specific weapon or range of targets. The wastes generated at Camp Keller include scrap wood, cardboard boxes from ammo (Exhibit 2-7), old paper and rubber targets, and empty aluminum cans and plastic bottles from trainees. The contractor collects empty metal ammo boxes and returns them to the Crane Army Ammunition Activity in Crane, ID. Typically a large shipping container is filled with 8 pallets of 140 ammo cans every 3 months for shipment to Crane. The site also hosts collection bins for brass recycling and plastic and aluminum recycling bins near the administrative office. Bays 1 and 3 would benefit from plastic and aluminum recycling, as vending machines are located at these sites. Bays 2 and 3 have a high flow of cardboard and a recycling bin could be added near this area.

Industrial and Supply Warehouses

NCBC Gulfport hosts many large warehouse spaces for supply shipping and receiving and other general storage space. The types of non-hazardous solid waste generated involve large amounts of cardboard, plastic shipping material, scrap wood and metal, and common employee wastes such as aluminum cans and plastic bottles and drink cups. The site visit team visited warehouse spaces 437, 225, 203, 274/273, and 400. These industrial warehouse areas could benefit from more bins for cardboard recycling. Some of the warehouses already had bins, but they were completely full and needed attention. It is recommended that the bins already present be emptied more frequently or that one member of each team be appointed recycling lead and contact the Recycling Center when any bin is noticed full. Warehouse 273/274 – PW Shops had plastics, newspaper, aluminum, paper, and cardboard in the dumpster outside of the warehouse and would benefit from more strategically placed recycling bins. Warehouse 400 personnel suggested that a bin inside the warehouse for aluminum cans and plastics could be useful. There is one cardboard recycling bin inside of Warehouse 400 – Construction Equipment Division (CED) but the area would benefit from an additional large bin for cardboard collection. The dumpster outside of this warehouse had scrap metal, scrap wood, rubber hoses, a 5-gallon bucket, oil filters, and aerosol cans. Warehouse 225 had cardboard inside a large roll-off bin (Exhibit 2-8) and there was a recycling container only 50 yards away. Public awareness efforts can be focused on non-military personnel working in these warehouses. In addition, marking all containers at these warehouse sites with specific signs requiring recycling for items like cardboard and plastic urging personnel to be active participants in the QRP would likely increase participation and compliance.

EXHIBIT 2-8
Cardboard in a Roll-Off at Warehouse 225

Exhibit 2-9 presents a suggested list of areas that would benefit from additional cardboard, plastic, paper or aluminum can recycling bins:

EXHIBIT 2-9
Areas in Need of Additional Recycling Bins

Bldg #	Facility	Plastic	Cardboard	Mixed Paper	Aluminum
448	Subway	1			
410	Seabee Lake	2	1		2
29/30	Thrift Store	1			1
400	CED	2	1		2
397	MWR Hobby Shop	1		1	1
452	Welcome Center	1			1
367	Galley	1	1		1
40	Cold Storage		1		
335	CDC	1	1		
273/274	Supply Warehouse	1	2		1
Multiple	NCTC	1	1	1	1
	Camp Keller Bay 1	1			1
	Camp Keller Bay 2		1		
	Camp Keller Bay 3	1	1		X
Multiple	BEQ	5			5
225	Warehouse	1			1
203	Warehouse	1	1		

Notes:
1) Recommend 56-gallon recycling bins or larger for plastics, mixed paper, and aluminum. Typical cost for bin is $300 (http://www.newpig.com/pig/US/glutton-recycling-container-can301?cm_cat=keyword_search).
2) Recommend 1 cubic yard recycling bin or larger for cardboard. Typical cost for bin is $500 (http://www.globalindustrial.com/g/office/garbage-recycling/containers-recycling/mobile-recycling-tilt-trucks).

SOLID WASTE QUANTITIES

The quantity of non-hazardous solid waste generated at NCBC Gulfport was calculated by adding the quantities of non-hazardous solid waste delivered to the landfill and the quantities of non-hazardous solid waste delivered to recycling facilities. Non-hazardous solid waste generation rate estimates do not include C&D debris or other select waste types. Private (PPV) residential waste generation rates, which include family housing areas, are not included in this plan.

NCBC Gulfport reports annual waste quantities generated (recycled and disposed) to the Naval Facilities Engineering Service Center (NFESC) in Port Hueneme, California. Waste quantities reported from the 2010-2012 P2-ADS are presented in Exhibit 2-10.

EXHIBIT 2-10
Historical Non-Hazardous Solid Waste Quantities (in Tons) at NCBC Gulfport

Recycled	2010	2011	2012
Metals	253	898	740
Paper and Paperboard	230	108	180
Plastic	0.72	0.60	0.30
Glass	0.33	-	-
Other Non-Food	-	-	7.69
Food (composted + recycled)	-	7	-
C&D Debris	100	9,560	27
Used Motor Oils	69.94	62.89	65.65
Antifreeze	-	4.28	6.61
Lead-Acid Batteries	33.26	50.81	43.18
Total Recycled[2]	**517.76**	**1068.69**	**977.78**
Total Solid Waste Disposed	**2,380.66**	**2,211.89**	**1,995.65**
Solid Waste Recycling Rate	**17.85%**	**32.58%**	**32.88%**

Notes:
1) Source: Solid Waste Annual Reports (2010 - 2012)
2) Not including C&D debris tonnage recycled

NCBC Gulfport receives solid waste disposal quantities from the non-hazardous solid waste contractor. Quantities for 8-cubic-yard solid waste containers or smaller are reported by using estimates. Actual weight tickets on 20-cubic-yard roll-offs or larger are submitted to the PWD Performance Assessment Representative (PAR). The PAR will continue to collect data regarding quantities of non-hazardous solid waste disposed and recycled.

In 2012, NCBC Gulfport operations generated approximately 2,973.43 tons of total non-hazardous solid waste (recycled and disposed). Of this total, 977.78 tons, or 32.88 percent, of the non-hazardous solid waste generated was recycled. There are no distinctions among non-hazardous solid waste quantities generated by tenants (not including PPV) since all non-hazardous solid waste is aggregated into the same collection vehicle and delivered to a local landfill. These results demonstrate that the DoD goal of 50 percent of non-hazardous solid waste diverted from the solid waste stream is not yet met.

NON-HAZARDOUS SOLID WASTE GENERATION PER CAPITA

The population of NCBC Gulfport remains relatively steady throughout the year; however, the portion of military personnel assigned fluctuates due to the training mission and reserve functions. The SW Manager collects population data at least on an annual basis (Exhibit 2-11).

EXHIBIT 2-11
Solid Waste Generation Per Capita

Year	Tons	Staff	#/Person/Year
2012	1,930	7,180	537.6
2011	2,149	7,106	604.8
2010	2,306	6,984	660.4

NON-HAZARDOUS SOLID WASTE CHARACTERIZATION

Non-hazardous solid waste characterization was performed for the following categories:

- Commercial and institutional
- Industrial
- Residential (CBH/BEQ)
- C&D

Non-hazardous solid waste characterization was accomplished during the 4-8 February 2013 site visit using a general survey and comparison of activity data. The field survey and SW Manager recordkeeping data are both useful for obtaining reliable data on program implementation. The Naval Facilities Engineering Command (NAVFAC) ISWMP Guide provides instruction on the types of field survey methods that can be implemented to measure and record the amounts of solid waste generated. The field survey methods used during the February 2013 site visit are listed in Exhibit 2-12.

EXHIBIT 2-12
Non-Hazardous Solid Waste Characterization Methods[a]

Method	Description	Associated Waste Categories
General Survey	This is an intermediate survey that is appropriate for non-hazardous solid waste reductions of up to 25 percent. However, a general survey – often recommended before a facility begins implementing source reduction, reuse, and recycling programs – does not provide an accurate account of all solid waste stream components. The steps for a general survey include: • Selecting survey areas and categories • Sampling the non-hazardous solid waste stream • Projecting results for the entire installation The accuracy of results depends on the number of categories sampled. A general guideline for selecting categories to be surveyed is to double the desired reduction amount, and then select one or more categories that add up to, or exceed, this amount.	Industrial, Commercial, Residential
Comparing Activity Data	Surveys performed at one activity might apply to a similar activity.	Data from 49 dumpsters were used to determine the waste generation for all 71 other dumpsters based on a weighted average.

[a] NAVFAC ISWMP Guide, Chapter 3.3.

As shown in Exhibit 2-12, the field survey consisted of general survey methods and comparing activity data. Exhibit 2-13 provides the results from the survey. Approximately 49 dumpsters within NCBC Gulfport were surveyed during the February 2013 site visit. The survey included inspection of the solid waste collection and recycling containers along with interviews with activity supervisors to discuss recycling procedures.

Of the 120 dumpsters at NCBC Gulfport, 49 were visually observed. Although a QRP currently exists so that cardboard, plastics, metals, and paper can be recycled, significant amounts were observed in many non-hazardous solid waste dumpsters (see Exhibit 2-13). Successful implementation of the recycling initiatives summarized in this ISWMP (Chapter 4) will likely result in NCBC Gulfport realizing the additional diversion needed to achieve a greater than 50 percent diversion rate.

EXHIBIT 2-13
February 2013 Non-Hazardous Solid Waste Characterization Field Survey

Building	Building Name	Dumpster ADMIN #	Dumpster Type (cy)[1]	Dumpster % Full[2]	Number of Times Dumpster Emptied/Yr[1,3]	Estimated Recyclable Weight Disposed/Yr (lb)[4]	Estimated Recyclable Weight Disposed/Yr (tons)
Commercial/Institutional							
331	Navy Lodge	NA055A	8	20%	104	9,402	4.7
331	Navy Lodge	NA055	6	60%	104	25,459	12.7
335	CDC	NA056	6	50%	52	6,552	3.3
328	Navy Lodge	NA053	8	80%	104	53,914	27.0
241	NCR	NA025	8	30%	104	15,350	7.7
	RV Park	NA086	8	80%	52	11,565	5.8
367	Galley	NA062A	8	5%	364	2,184	1.1
367	Galley	NA062B	8	5%	364	5,460	2.7
367	Galley	NA062C	8	0%	0	0	0.0
40	Cold Storage	NA008	6	25%	52	2,847	1.4
Residential							
314	BEQ	NA044	8	0%	260	0	0.0
314	BEQ	NA045	8	0%	156	0	0.0
315	BEQ	NA046A	8	10%	156	6,989	3.5
315	BEQ	NA046B	8	50%	156	19,344	9.7
317	BEQ	NA048A	8	10%	156	1,685	0.8
317	BEQ	NA048B	8	35%	156	9,173	4.6
306	BEQ	NA041	8	80%	156	68,390	34.2
309	BEQ	NA042B	8	40%	156	10,483	5.2
Industrial							
273	PW Facility	NA031	8	80%	52	2,330	1.2
274	PW Shops	NA032A	4	25%	52	6,968	3.5
274	PW Shops	NA032B	8	20%	52	1,206	0.6
465	Vehicle Maint.	UNK(new)	8	20%	104	8,486	4.2
402	CED	NA067	6	100%	104	13,728	6.9

EXHIBIT 2-13
February 2013 Non-Hazardous Solid Waste Characterization Field Survey

Building	Building Name	Dumpster ADMIN #	Dumpster Type (cy)[1]	Dumpster % Full[2]	Number of Times Dumpster Emptied/Yr[1,3]	Estimated Recyclable Weight Disposed/Yr (lb)[4]	Estimated Recyclable Weight Disposed/Yr (tons)
402	CED	NA068A	6	80%	104	19,469	9.7
402	CED	NA068B	6	60%	104	7114	3.6
402	CED	NA066	4	40%	104	29,286	14.6
397	MWR Hobby Shop	NA065	4	10%	52	1,321	0.7
452	Welcome Center	NA083	4	20%	104	15,434	7.7
	Camp Keller Range	CA200	8	0%	52	0	0.0
	Camp Keller Range	1011124	6	0%	52	0	0.0
	Camp Keller Range	1011122	6	5%	52		
	Camp Keller Range	1017122	6	20%	52	15,600	7.8
340	Gas Station	NA057	8	0%	156	0	0.0
365	NEX	NA060A	8	20%	156	17,722	8.9
365	NEX	NA060B	8	40%	156	12,979	6.5
365	NEX	NA060C	8	0%	156	0	0.0
203	NEX Warehouse	NA017	8	0%	156	0	0.0
203	NEX Warehouse	NA018	4	0%	52	0	0.0
72	NCTC SW Applied	NA010	8	5%	156	2,590	1.3
72	NCTC BU Applied	NA011	8	5%	156	250	0.1
441	NCTC SW TNG FAC	NA080	4	5%	52	1,165	0.6
441	NCTC SW TNG FAC	NA081A	4	80%	52	5,990	3.0
441	NCTC SW TNG FAC	NA081B	4	30%	52	4,056	2.0
225	Main Supply	NA022A	8	0%	52	0	0.0
225	Main Supply	NA022B	8	40%	52	10,400	5.2
274	PW Shops	NA033	6	30%	52	4,540	2.3
203	NEX N Corner	NA019	8	40%	52	6,656	3.3
437	OELF	NA078A	8	5%	52	0	0.0
437	OELF	NA078B	8	40%	52	9,235	4.6

EXHIBIT 2-13
February 2013 Non-Hazardous Solid Waste Characterization Field Survey

Building	Building Name	Dumpster ADMIN #	Dumpster Type (cy)[1]	Dumpster % Full[2]	Number of Times Dumpster Emptied/Yr[1,3]	Estimated Recyclable Weight Disposed/Yr (lb)[4]	Estimated Recyclable Weight Disposed/Yr (tons)
Average of Surveyed Dumpsters			**7**	**29%**	**108**	**9,680**	**4.8**
Weight Per Year for Dumpsters Surveyed					445,320.20 lb 222.66 tons		
Total Dumpsters Surveyed					49		
Total Dumpsters Installation-Wide[1]					120		
Weighted Average for Dumpsters Not Surveyed (Tons)					343.63		
Estimated Additional Recycle Weight (Tons)					566.29		
Documented + Undocumented Recycled Weight (Tons)[5]					1,115.71		
Total Potential Recyclables Weight (Tons)					1,682.01		
2012 Disposal Weight (Tons)					1,995.65		
Estimated Disposal Total (Tons)[6]					1,429.36		
Projected Additional Potential Diversion Rate (%) [7]					54.1		

Notes:

[1] Data provided by NCBC Gulfport

[2] Data determined during field survey site visit

[3] Dumpster pickup information provided by NCBC Gulfport

[4] Weighted average calculations based on EPA's standard volume-to-weight conversion factors at (http://www.epa.gov/wastes/conserve/tools/recmeas/docs/guide_b.pdf.) included in Appendix C.

[5] Includes original reported recyclables plus the revised calculated recyclables identified during the site visit

[6] Assumes the additional amount recycled would be removed from the amount disposed

[7] Estimate includes original reported recyclable data by NCBC Gulfport, the revised calculated recyclable data gathered during the site visit, and the estimated recyclables data based on field survey

Calculations from the field survey and additional reuse initiatives from Chapter 4 serve as a basis for estimating NCBC Gulfport's potential diversion rate of 54 percent. Percentages of various recyclable materials such as cardboard, plastic bottles, and aluminum cans found in dumpsters in strategic areas at the Center were quantified, including the landfill and recyclable tonnages from 2012 data. Simple weight calculations using EPA's Solid Waste Weight Conversions Data (Appendix C) were performed on the observed percentages to estimate the weight of recyclable materials found in dumpsters. These weights were then added to the 2012 recyclable tonnage and removed from 2012 landfill tonnage. In addition to dumpster survey recyclable weights, the additional reuse and recycle initiative tonnages mentioned in Chapter 4 were added to the total weight of recycled and reused items. The total weight of all original 2012 recyclables, revised calculated field survey recyclables was divided by the 2012 landfill tonnage less the recyclables found in dumpsters to result in a potential diversion rate of 54 percent.

Based on Exhibits 2-13 and 2-14, the installation is estimated to be able to reach the EO 13514 goal with additional initiatives discussed in this ISWMP.

EXHIBIT 2-14
Estimated Field Survey Recyclables

Estimated Recyclable Data Observed in Field Survey							
Paper	**Aluminum**	**Plastic**	**Cardboard**	**Scrap Wood**	**Scrap Metal**	**Mixed Textiles**	**Glass**
4%	5%	9%	18%	1%	1%	2%	1%

SUMMARY RECOMMENDATIONS

- Consistent with EO 13514, the QRP Manager and SW Manager are encouraged continue to collect data regarding quantities of non-hazardous solid waste disposed and recycled.
- Place informational signs, placards, etc. at dumpsters that were found to have quantities of recyclables. In addition, it is suggested that labels are added to all non-hazardous solid waste and recycling containers to indicate both acceptable and prohibited materials.
- Use the displays at the Liberty Center and Fitness Center to post recycling awareness and messages.
- Consider suggestions for additional or larger bins in strategic places, as noted throughout this chapter and shown in Exhibit 2-9.
- Consider appointing a recycling lead to visually checking recycling bins for signs of required maintenance and pick-up at each industrial process area, administrative area, and housing area.

CHAPTER 3

NON-HAZARDOUS SOLID WASTE COLLECTION, TRANSPORT, AND DISPOSAL

INTRODUCTION

This chapter presents an assessment of the existing non-hazardous solid waste and recyclables collection and disposal systems at NCBC Gulfport. Collection and disposal services for non-hazardous solid waste and recyclables are provided by a combination of NCBC Gulfport personnel and contractor services.

OBJECTIVES

This chapter has three objectives:

- Describe NCBC Gulfport's recyclables collection system.
- Describe NCBC Gulfport's non-hazardous solid waste collection and disposal system.
- Assess the existing non-hazardous solid waste and recyclables collection and disposal system.

RECYCLABLE MATERIALS PROGRAM

Recyclable materials collected from NCBC Gulfport operations include:

- Paper:
  - White, mixed, and color ledger
  - Shredded
  - Newspaper (ONP)
  - Phone Books
  - OCC
- Aluminum and Tin Cans
- Ferrous Metals
- Tires
- Used Oil
- Batteries
- Ammunition – Brass
- C&D debris
- Cooking Grease
- Plastics
  - HDPE #2
  - PET #1

NCBC Gulfport has several methods of collecting recyclables. These programs are managed through the QRP, the Hazardous Waste Management Program (HWMP), and the Defense Logistics Agency (DLA).

NCBC Gulfport Operations

Separation at Offices

NCBC Gulfport personnel are instructed to take recyclables (including any desk-side recycling containers) to centralized collection containers (64-gallon toters) in their building. Personnel may aggregate their recyclables unless there are designated containers for separating materials. On collection day, assigned building personnel transport the recycling containers to an outside location by their building. The QRP personnel collect recyclables from the containers by exchanging full containers for empty ones and placing the filled containers onto a trailer. Once the trailer is full, the QRP staff transport containers to the Recycling Center for further processing.

Offices that do not have centralized recycling containers (or desk-side containers) but wish to participate in the QRP must transport recyclables to the Recycling Center drop-off where individuals may place general metals, aluminum, paper, and old corrugated cardboard (OCC) into the designated containers. Drop-off is available 24 hours per day.

Separation at NEX and Commissary

The Commissary, the NEX and the Galley generate significant quantities of plastics (PET#1, HDPE#2, LDPE) and OCC. Both the Commissary and the NEX operate a baler. The Galley has a designated OCC container located adjacent to the building. Large green caged trailers and blue cardboard containers are also placed throughout NCBC Gulfport for establishments/tenants that generate OCC but not in sufficient quantities to warrant a baler. Every month an estimated 24 to 30 bales (700 lb/bale) of OCC and 2 bales (450 lb/bale) of plastic are transmitted through the Commissary and NEX. The Commissary and NEX have recycling bins for shredded office paper and mixed paper through the NCBC Recycling Center pick-up. Semi-perishable items, damaged items, and produce are donated to a local food bank once a week by pick-up service. Wooden pallets used in these areas are taken back by the distributor.

Tenants and Departments

Personnel are instructed to place OCC boxes into the designated OCC containers. The QRP personnel monitor the OCC containers. When the containers become full, the QRP staff either pull the green caged trailer back to the Recycling Center for baling or empty the designated OCC containers into a pick-up truck and transport the OCC back to the Recycling Center for baling. Personnel may also transport their OCC to the Recycling Center for drop-off. Certain areas where cardboard bins were full and needing attention were observed. In areas where there is a high flow of cardboard and other recyclables, it is suggested that the QRP purchase an additional baler or maintain a high frequency for recyclables pick-up. If an additional baler is purchased, it is recommended that it contain a large feed opening for OCC (i.e., feed opening 60inches by 60 inches), with at least a 20 horsepower motor. Costs of typical vertical, large feed opening balers with a shear blade are estimated to range from $20,000 to $30,000 in 2013 dollars, per conversations with the Recycling Equipment Corporation.

It may be beneficial for the personnel in these areas to assign one person as recycling lead to be in charge of monitoring the recycling bins and calling the Recycling Center when service is needed.

Tenants generating large quantities of metal are encouraged to arrange with the Recycling Center to have a scrap metal designated container placed beside their buildings. Pick-up of these containers is not performed by the QRP staff but by contract with a local area market. Proper signage displaying what items can be accepted and urging people to dispose of their metals in these bins only and not in non-hazardous solid waste dumpsters are recommended for areas with scrap metal bins.

Housing

Although curbside recycling collection is provided under the PPV contract through a separate non-hazardous solid waste contractor as mentioned above, residents can also take various recyclables to the Recycling Center drop-off or recycle OCC by placing it into one of the designated green caged containers located around NCBC Gulfport. Opportunities for PPV housing tenants to use the Recycling Center to its full advantage can be presented in various public address media around NCBC Gulfport such as signs, the entrance marquee, the *Seabee Courier*, etc.

Contractors

Contractors are responsible for providing their own containers for their project. Contractors wishing to participate in the NCBC Gulfport QRP may work with the SW Manager and QRP personnel for transporting materials to the Recycling Center for drop-off. Additional information regarding non-hazardous solid waste for contractors is presented in Chapters 3 and 6.

Hazardous Waste

The Hazardous Waste Manager is responsible for the proper collection and storage of select inorganic, organic, and universal waste. Personnel generating used oil, antifreeze, lead-acid batteries, fluorescent bulbs, and tires from repair and maintenance work are required to transport these materials to designated Satellite Accumulation Areas (SAAs) or the 90-day storage facility. SAAs are located throughout the base. Once hazardous waste materials have been accumulated within the 90-day accumulation period, then the Hazardous Waste Manager contacts DLA for collection.

A pick-up truck and trailer are primarily used for recyclables collection. The QRP staff drive to the collection site, collect a full toter, and exchange it for an empty toter. Recyclables are collected from all outside collection sites throughout the base that are participating in the Recycling Program. Generators of pallets and toner cartridges are responsible for delivering these materials to the Recycling Center area for appropriate disposal. Used oil is picked up by an offsite recycling contractor at the site of generation. QRP staff do not collect recyclables from family housing, Commissary, NEX, or CBH. As discussed in Chapter 2, there is a recycling trailer at one of the three sections of BEQ; however, the other two sections do not have recycling bins. Most recyclables are collected 1 day a week on Thursday by a two-person recycling crew. There is no set collection route; the crew begins collections at one side of the base and end at the other.

Auxiliary Facilities

The collection procedures at the auxiliary facilities discussed below are similar to the recyclables collection procedures at NCBC Gulfport. The QRP staff exchanges full toters with empty ones and places the full toters onto a trailer. Once the trailer is full, the QRP staff transports containers to the Recycling Center for further processing.

Stennis Space Center (SSC)

NCBC Gulfport has an agreement with SSC whereby they pay for collection of paper, cardboard, aluminum cans, and plastic. Recycling containers are located in each office building at a central location on each floor; some buildings have 10 to 13 toters. Recycling workers go into each building and replace each full container with an empty container. Currently, SSC is the main focus of the QRP, with the recycling crew spending 4 days a week at SSC.

Camp Keller Small Arms Range

As discussed in Chapter 2, the Camp Keller Firing Range training contractors currently recycle used ammo boxes by shipping them back to the manufacturer. Other boxes not acquired through the contractor are currently not being recycled but disposed of as non-hazardous solid waste. There are bins for recycling brass located at the range.

RECYCLABLE MATERIALS MANAGEMENT

As shown in Exhibit 3-1, recyclables are managed in several ways. Paper, cardboard, aluminum cans, scrap metal, and brass are sold to local buyers through the QRP. Tires and used oil are sold to buyers through DLA Scrap Venture. Details of any recycling initiatives performed by DLA should be documented and recorded by the SW Manager to include in all diversion rate tabulations. Further details about recyclables markets are included in Chapter 5. Used asphalt and concrete are picked up and recycled at no charge. Cooking grease is also picked up at no charge. No money is made from these transactions.

NON-HAZARDOUS SOLID WASTE COLLECTION

Janitorial Services

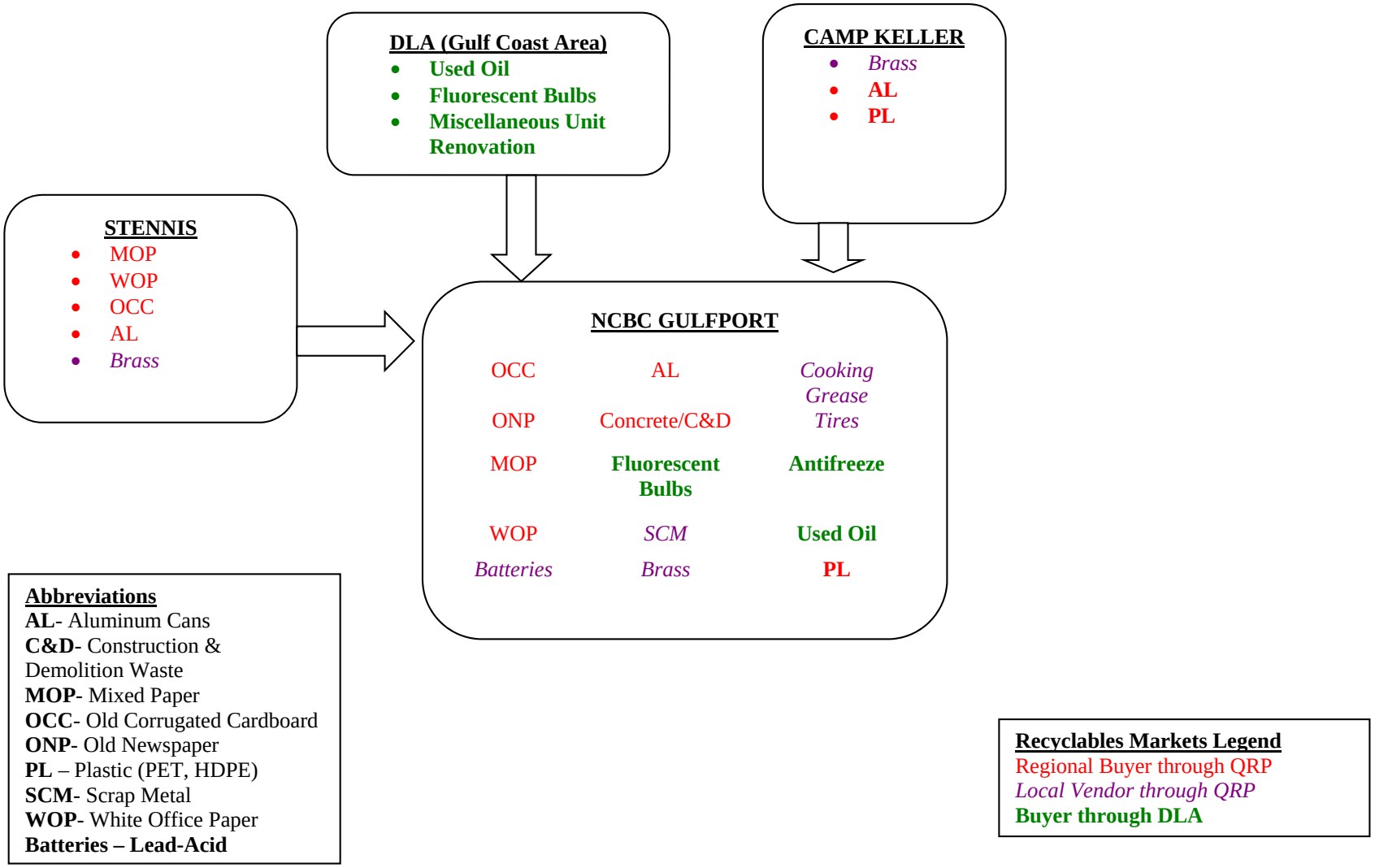
The Base Operations Support Contractor (BOSC) provides janitorial services for approximately 85 to 90 percent of the classrooms and office buildings at NCBC Gulfport. Janitorial staff collect non-hazardous solid waste from desk-side waste receptacles and in centralized locations such as lunch rooms and copy rooms during routine cleaning. All non-hazardous solid waste is transported to the nearest front-load non-hazardous solid waste collection container located adjacent to the building. The janitorial contractor does not handle infectious medical waste, hazardous waste, or recyclables.

Facilities not serviced by the janitorial contractor include:

- Family Housing
- Individual rooms of the CBH (except for an additional fee) and BEQ
- Industrial workshops
- The Commissary
- The NEX
- The Galley
- The Navy Lodge
- The NGI&S
- MWR facilities
- Other retail establishments

Areas not serviced by the janitorial staff are responsible for providing non-hazardous solid waste removal by their own means, either by personnel within the building or by contracted services. Family Housing is one example of a separate contracted service. Management of Family Housing is through a PPV. The PPV contractor, Balfour Beatty, has a contract for non-hazardous solid waste and recycling services with Applewhite Recycling Systems, LLC. The PPV contract allows family housing units to be owned by a private entity and governed by a business agreement in which the Navy has limited rights and responsibilities. The private entity is entirely responsible for construction, renovation, maintenance, and day-to-day management of the housing. The PPV is set up under a 50-year lease contract for housing unit management. NCBC Gulfport has no responsibility for non-hazardous solid waste and recycling at the PPV family housing. Accordingly, non-hazardous solid waste quantities generated from family housing are not included in the annual non-hazardous solid waste quantities. If residents deliver recyclables from family housing to the installation's Recycling Center, the volume can be included in the annual non-hazardous solid waste quantities reported by NCBC Gulfport.

EXHIBIT 3-1
Recycling Collection Services and Markets



Non-hazardous solid waste collection schedules for each building are detailed in the janitorial services contract and in Appendix D. The PAR provides quality assurance and contract surveillance for the janitorial contract. Inspections of janitorial performance are made every other week. After discussions with NCBC Gulfport personnel and observations, NCBC Gulfport is receiving satisfactory janitorial service.

CBH and BEQ

Residents in the CBH are responsible for transporting their non-hazardous solid waste to the nearest non-hazardous solid waste collection container located adjacent to their building. The janitorial contractor cleans common areas and laundry rooms. Janitorial service is also available for CBH individual rooms for an additional fee. Because of the high turnover of residents here and the limited amount of recycle training for temporary tenants, it is recommended that signs, placards, and other awareness media be placed around the dumpster at these living quarters. This type of awareness training shows which items can be recycled and which are prohibited from being disposed as non-hazardous solid waste.

NON-HAZARDOUS SOLID WASTE CONTAINERS

The non-hazardous solid waste contractor furnishes all non-hazardous solid waste collection containers as specified by the non-hazardous solid waste contract. The size and type of non-hazardous solid waste collection containers varies from 2 through 8-cubic–yard front-load containers, to 20- and 40-cubic-yard, open-top roll-off containers. The open-top roll-off containers are located in strategic places around the base, which have a lower frequency of pick-ups. If requested, additional containers may be furnished at additional line item costs for special events. Events may include battalion deployment, department/tenant moves, etc. Non-hazardous solid waste collection containers are picked up according to the schedule listed in Appendix D of the non-hazardous solid waste collection contract. Non-hazardous solid waste collection frequencies vary from daily to weekly, depending on the mission of the individual facility and the amount of non-hazardous solid waste generated. Some front-load containers and roll-off containers are collected on an on-call basis.

Waste containers are cleaned at varying frequencies. Some containers are cleaned weekly or quarterly while most are cleaned only once per year.

Contract Surveillance

The PAR monitors the non-hazardous solid waste contractor’s adherence to the non-hazardous solid waste collection contract. The PAR performs spot-checks of non-hazardous solid waste collection containers, every 2 weeks and more often if complaints are called in by the non-hazardous solid waste contractor or a tenant/unit command.

These spot-checks of non-hazardous solid waste containers are recommended to continue. These checks aid in monitoring and assessing collection needs (e.g., container placement, size, and frequency of collection) and compliance with the non-hazardous solid waste collection contract. Conducting the spot-checks prior to collection times is critical to assess whether prohibited materials are present and to note the percentage of container fullness. If prohibited materials are found, remedial actions are recommended to be taken to prevent recurrences. A waste container check list can be used for this purpose, and a copy forwarded to the SW Manager. Additional items for the PAR to note during spot-checks include the condition of the non-hazardous solid waste collection container (i.e., doors close, no holes, no rust, exterior surface painted in a uniform color, and cleanliness). Non-hazardous solid waste collection containers, some of which are temporary

and some permanent, are relocated periodically. It is suggested that the PAR work with the non-hazardous solid waste contractor to keep an up-to-date container inventory and list of locations. A sample inspection checklist that can be used by the PAR is included in Appendix G.

NON-HAZARDOUS SOLID WASTE DISPOSAL

Non-hazardous solid waste collected at NCBC Gulfport by the non-hazardous solid waste collection contractor is transported to Pecan Grove Landfill (Subtitle D landfill) located in the southern half of Harrison County near the City of Pass Christian. The 2012 tipping fee, as reported on the P2-ADS, was $30.00 per ton for non-hazardous solid waste.

ASSESSMENT OF RECYCLABLE AND NON-HAZARDOUS WASTE COLLECTION AND DISPOSAL SYSTEMS

Recycling Collection

NCBC Gulfport's recycling program continually looks for new materials and non-hazardous solid waste streams to add to the program and provides collection services to base-wide locations and auxiliary facilities such as SSC and Camp Keller. Recycling also has developed an important relationship with local markets for collection of scrap metals on-base. However, there is still one area of the recycling program that can be improved. NCBC Gulfport needs an increase in the number of recycle bins throughout the installation. Exhibit 3-2 indicates areas needing additional recycling bins based on the field survey and personnel interviews conducted during the site visit.

EXHIBIT 3-2
Candidate Areas for Additional Recycling Bins

Bldg #	Facility	Plastic	Cardboard	Mixed Paper	Aluminum
448	Subway	X			
410	Seabee Lake	X	X		X
29/30	Thrift Store	X			X
400	CED	X	X		X
397	MWR Hobby Shop	X		X	X
452	Welcome Center	X			X
367	Galley	X	X		X
40	Cold Storage		X		
335	CDC	X	X		
273/274	Supply Warehouse	X	X		X
Multiple	NCTC	X	X	X	X
	Camp Keller Bay 1	X			X
	Camp Keller Bay 2		X		
	Camp Keller Bay 3	X	X		X
Multiple	BEQ	X			X
225	Warehouse	X			X
203	Warehouse	X	X		

Participation

NCBC Gulfport operates a regional and local QRP by collecting materials from auxiliary facilities in the Gulf Coast area and around the base. Based on observations during the site visit, many non-hazardous solid waste dumpsters still contain measureable amounts of recyclables. This indicates that base-wide recycling participation and tonnage could be increased with an emphasis on recycling program awareness.

To increase recycling participation and tonnage from office sites and tenants, an education program could be implemented that includes instructions for personnel in individual buildings to transport the non-hazardous solid waste to the outdoor receptacle. Assigning one person from each high waste area to be a recycling lead may encourage people to take more ownership of the QRP. This person may be someone who already feels passionate about recycling and would be proactive about monitoring the fullness of the recycling bins and calling the Recycling Center when pick-up is needed. Making recycling user-friendly is the key to recycling success. Another strategy to increase participation on-base would be to incorporate the collection of recyclables into the janitorial contract to reduce the effort required of office personnel.

The recycling collection crew provides service to NCBC Gulfport and SSC. However, a large-scale collection efficiency study, if performed, would identify weaknesses in the collection process and alternative methods to improve efficiency and the amount of recyclable materials collected. The study could identify opportunities for improvements in set-out rates, contamination, materials handling, and local area markets through a Commodity Market Analysis (CMA), which is further described in Section 5.

A further assessment of the QRP is discussed in Chapter 5.

Non-Hazardous Solid Waste Collection

NCBC Gulfport is generally satisfied with the services provided by the non-hazardous solid waste collection contractor. The PAR and the non-hazardous solid waste collection contractor have a good working relationship, which helps when corrective actions are needed in various situations. Prohibited materials (such as aerosol cans and used oil filters) were observed at a few containers and it was noted that there were no signs on these containers indicating prohibited materials. Areas around the non-hazardous solid waste collection containers were clean and accessible and were in good condition. Furthermore, based on discussions with the PWD and field observations, NCBC Gulfport appears to be provided with an adequate level of service in terms of the number of containers, scheduled collection frequencies, etc.

Further efforts could be made to help reduce the occurrence of prohibited materials disposed of inside or next to the MSW collection containers. Although illegal dumping is not a major problem at NCBC Gulfport, waste aerosol cans, tires, and used oil and oil filters are regulated materials and are of most concern. Posting “NO Tires, Aerosol Cans, Used Oil, or Oil Filters” signs next to or on MSW containers would assist with these efforts.

SUMMARY RECOMMENDATIONS

Collection Procedure

During observations of the recycling collection procedure and during the field interviews, three issues were identified; those issues and the associated recommendations are presented below and are the responsibility of the SW Manager and QRP Manager:

- Users sometimes confuse recycle containers with garbage containers, leading to contamination of the recyclables. This issue can be minimized by placing proper labels on both types of containers.
- Recycling workers are also slowed down when containers are only partially full. They combine the materials from partially full containers by hand until they have a full toter. Sometimes it takes several partially full containers and several stops before they can fill one toter. This issue can be addressed by developing more efficient collection procedures and additional education

efforts. Also designating a recycling lead for each building may increase the efficiency of the pick-up process.

- It is recommended that an additional OCC baler be purchased for the recycling center. As noted above, the cost for a typical vertical, large feed opening baler with a shear blade can range from $20,000 to $30,000.
- It is recommended that NCBC Gulfport conduct a survey to determine if a more efficient collection route at NCBC Gulfport is possible. At present, there is no set recycling collection route at NCBC Gulfport; crews begin collections at one side of the base and end at the other. A more efficient and predictable collection route and schedule could greatly improve collections on-base by providing service to more buildings and collecting more recyclables.

Recycling Collection

- The SW and QRP Managers are encouraged continue to develop and promote a base-wide recycling program that focuses on recycling awareness for personnel.
- The QRP Manager is encouraged to determine whether adding the collection of recyclables into the janitorial contract is feasible.
- The QRP staff are encouraged label all outdoor recyclable containers to avoid accidental recyclable contamination.
- Perform a collection efficiency study that focuses on streamlined collection procedures, collection route schedule, level of service to auxiliary facilities, improvements in set-out rates, contamination, materials handling, and local area markets.
- Urge employees and tenants to contact the Recycling Center when they see a bin needing service and suggest assigning a recycling lead at each high non-hazardous solid waste area.
- Provide additional recycling bins for areas listed in Exhibit 3-2.

Non-Hazardous Solid Waste Collection

- The PAR is encouraged to continue to spot-check non-hazardous solid waste containers on a quarterly basis or more often due to the large number of construction and demolition projects on-base.
- The PAR is encouraged to evaluate the appropriateness of the non-hazardous solid waste collection schedule and note recyclable materials, contaminants, and other prohibited items in the containers. The QRP Manager and PAR should coordinate with the non-hazardous solid waste contractor to post “NO Tires, Used Oil” signs next to or on non-hazardous solid waste containers to reduce the occurrence of illegal dumping.
- The SW Manager is encouraged to use unit rates of non-hazardous solid waste generation and unit costs for collection and disposal as tools to assist in planning, management, and budgeting and for comparison with other military installations.
- Based on the February 2013 site visit, it is recommended that the PAR conduct periodic surveys of containers just prior to scheduled collection times to assess whether service frequency and/or container capacity can be reduced. The PAR is encouraged to conduct an inventory of non-hazardous solid waste and recycling collection containers, addressing:
  - Location

- Container condition
- Usage rates
- Proper disposal by personnel
- Container size and collection frequency

These surveys and the inventory may assist in determining how to reduce the cost of non-hazardous solid waste disposal service so that the current reduction in non-hazardous solid waste volume can be reflected in its associated cost.

CHAPTER 4

ISWM PROGRAM

INTRODUCTION

This chapter examines existing and potential strategies and practices to reduce, reuse, recycle, compost/mulch and dispose of non-hazardous solid waste generated at NCBC Gulfport. Implementation of non-hazardous solid waste reduction measures (which include non-hazardous solid waste prevention or source reduction and reuse) and green purchasing can help NCBC Gulfport comply with EO 13423 and DoD and DoN guidelines.

OBJECTIVES

This chapter has two objectives:

- Discuss opportunities for further focus on the ISWM hierarchy principle that emphasizes source reduction and reuse, recycling, composting/mulching, followed by waste-to-energy (energy recovery), and landfilling (see Exhibit 1-1).
- Identify recycling strategies and targets to help meet and exceed DoD waste diversion goals.

SOURCE REDUCTION AND REUSE

Waste reduction includes both waste prevention and reuse. These are the most preferred means of waste management, as shown on Exhibit 1-1, EPA's solid waste management hierarchy.

The EPA defines waste prevention, also known as source reduction, as "the practice of designing, manufacturing, purchasing, or using materials (such as products and packages) in ways that reduce the amount or toxicity of trash created." Source reduction prevents the generation of waste in the first place, so it is the preferred method of waste management. Examples of source reduction include designing products to use less raw materials in production and to make products that have longer useful lives.

Reuse is defined as using objects or materials over again, or finding new uses for them so they are not thrown away. Reusing items reduces waste at the point of use because it delays or avoids their entry into the waste collection and disposal system. Examples of reuse include crushing broken-up concrete and using it as an aggregate for road base; and reusing empty food jars to store food, nails, buttons, etc.

Source reduction and reuse—the top priority in the Waste Management Hierarchy—may include elimination, reuse, substitution, green procurement, P2, innovative buying policies, and management practices that minimize waste generation. To have a successful source reduction program, personnel need to be trained and the messages reinforced through promotional efforts. For NCBC Gulfport, source reduction and reuse can result in cost savings through reduced purchasing costs and lower waste disposal costs. While source reduction is the preferred method under the DoD ISWM policy, source reduction programs do not contribute toward waste diversion rates per the DoD SSPP.

Source reduction at NCBC Gulfport consists of the following:

- **Green Procurement Program (GPP):** Green Procurement is defined, by DoD policy, as the "purchase of products and services in accordance with 'green' procurement preference program."

- **Pollution Prevention:** P2 refers to the implementation of practices that reduce or eliminate the creation of pollutants through process improvements, technology upgrades, use of less toxic materials, and waste recycling/reuse. Common P2 activities at the installation involve material substitution, process changes, and use of P2 equipment.
- **Reuse and Management Practices:** Reusing is preferable to recycling because the materials do not need to be reprocessed. Items normally discarded as non-hazardous solid waste, such as clothes, appliances, furniture, and office supplies (binders, file folders, etc.), can be reused as originally intended or as used or repaired products.

The current NCBC Gulfport source reduction initiatives are listed below:

1. Thrift Shop–Donation of goods is a form of source reduction. The Thrift Shop is a convenient place to donate clothes, books, furniture, and other goods.
2. Contracting requires that a recovered materials form be completed for each contract to determine the use of green products. Contractors are required to use designated recovered products unless they are not available in the service area location, purchase costs are prohibitive, or the product does not perform like the original product. Government Purchase Cardholders (GPCs) are trained to purchase recycled-content goods when possible.
3. Facility Maintenance staff perform low maintenance landscape design that limits the amount of green waste produced, and grass clippings typically are left on the ground rather than being disposed of in the landfill.
4. Vendors at the Commissary as well as shops throughout the installation reuse wooden pallets until they are no longer usable; the Commissary donates food to the local food bank.
5. The Supply Department uses pre-fabricated metal cages or short cages for the shipment of supplies in support of the Naval Expeditionary Force.
6. The Construction Equipment Division (CED) uses a water-based parts washer that eliminates the use of solvents, and longer lasting gel-cell batteries are purchased, reducing the amount of waste batteries.
7. NCBC Gulfport has an ongoing agreement with a local company for base-wide paving projects. This company removes all waste concrete from the base and reuses it for other projects or as rip-rap for shoreline restoration.
8. NCBC Gulfport has implemented a GPP and seeks to purchase and use products made from recycled materials.
9. NCBC Gulfport manages waste reduction in the office and warehouses through the following practices:
    - Use electronic media (such as hard drives) for document and data archival rather than paper.
    - Use central bulletin boards and e-mail for broadcast communications.
    - Reuse products and supplies; e.g., (1) use reusable office supplies such as refillable pencils; (2) encourage employees to reuse common items such as file folders, interoffice envelopes, and report binders; and (3) use ceramic mugs rather than disposable cups.
    - Reuse cardboard boxes.

- Reuse packaging from incoming shipments for outgoing shipments.

10. The NCBC Gulfport QRP has a good relationship with the local community and donates scrap or non-hazardous solid waste materials to local organizations when possible, examples include:
    - Light fixtures and bathroom fixtures from old buildings that were being demolished or remodeled were donated to Harrison County Schools.
    - Approximately 10,000–12,000 pounds of paint no longer useful to NCBC operations was donated to local sport tournaments and local schools.
    - Shredded paper is regularly donated to the local SPCA for reuse as animal bedding and to local companies for use as insulation.
    - Reams of slightly yellowed paper from SSC were donated to local schools and the base Child Care Center.
11. Although some offices and tenant agencies practice source reduction, NCBC Gulfport does not have a formal source reduction program. Based on the NAVFAC ISWMP Guidance, a form source reduction program is needed to successfully maintain the most preferred solid waste diversion initiatives.

SOURCE REDUCTION SUMMARY RECOMMENDATIONS

Source Reduction and Reuse

- NCBC Gulfport, with assistance from the SW Manager, is encouraged to develop a base-wide source reduction program. This program has the potential to reduce the non-hazardous solid waste generated at NCBC Gulfport. The source reduction program can incorporate practices that have already been implemented by Supply, CED, and the Commissary and also identify similar solutions for other generators at NCBC Gulfport.
- The SW Manager is encouraged to oversee and support source reduction and reuse initiatives, including efforts among CBH/BEQ residents. This effort could be in conjunction with the QRP Manager recycling awareness efforts and could establish Installation source reduction polices such as double-sided copying/printing and printing only the number of copies necessary.
- The SW Manager should provide source reduction and reuse training for NCBC Gulfport personnel and reinforce messages through promotional efforts.
- NCBC Gulfport should maintain a good relationship with the local community and organizations for donation opportunities.
- The SW Manager is encouraged to coordinate with personnel from the departments and tenants throughout NCBC Gulfport to assist in implementing and providing training for source reduction initiatives. The PWD and the Public Affairs Office (PAO) are recommended as the priority departments. Developing a set of standard operating procedures (SOPs) would help reinforce the importance of source reduction. Some source reduction and reuse recommendations are presented in at the end of this chapter.

Green Procurement

The SW Manager should comply with the Navy's GPP with respect to buying products with recycled content in the use of raw materials. Approaches to comply with the program include:

- Employee education about the GPP, its possibilities, and procedures is recommended. These messages can be cascaded to reach facility operators, supply and procurement personnel, and individuals who buy material with credit cards. A sample GPP brochure that could be used for improved employee education is attached in Appendix E.
- The Supply and Procurement Department are encouraged to work together with the SW Manager on developing and implementing GPP practices and procedures.
- The procurement and maintenance of durable equipment and supplies is proactively recommended.
- Internal and external promotional initiatives to boost awareness of NCBC Gulfport's GPP among personnel, contractors, and vendors are recommended.

Recycling

Recycling is removing reusable materials from the waste stream and remanufacturing them into new products. NCBC Gulfport has a Navy-required QRP to address and promote recycling, as discussed in Chapter 10. Through the QRP, the following recyclable materials are collected from NCBC:

- Paper:
  - White, mixed, and color ledger
  - Shredded
  - ONP
  - Phone Books
  - OCC
- Aluminum and Tin cans;
- Ferrous Metals
- Tires
- Used Oil
- Batteries
- Ammunition – Brass
- C&D debris
- Cooking Grease
- Plastics
  - HDPE #2
  - PET #1

Recycling results in less solid waste collection and lower overall disposal costs, as shown in Exhibit 4-1. However, costs avoided as a result of diverting non-hazardous solid waste from the disposal system do not accrue to the QRP within the existing non-hazardous solid waste collection/disposal and recycling systems. Instead, these avoided costs serve to reduce disposal fees imposed by the solid waste collection contractor.

EXHIBIT 4-1
Recycle Cost Avoidance

	Recycled (Tons)[a]	Total Avoided Costs ($)	Avoided Cost/Ton ($/Ton)	Installation Population	Recycle/ Person (Ton)
FY2012	977.78	$341,969.69	$349.74	7,180	0.14
FY2011	1,068.69	$308,323.78	$288.51	7,106	0.15
FY2010	517.31	$142,531.28	$275.52	6,984	0.07

[a] Recycled tons and cost from EDMWEB Data provided by Stanley Smith/SW Manager

Based on analysis of the data compiled during the February 2013 site visit (Exhibit 2-12), the installation could reach the EO13514 50 percent non-hazardous solid waste goal with implementation of the recommendations listed below.

RECYCLING SUMMARY RECOMMENDATIONS

- Although cardboard, plastics, metals, and paper are currently recyclables within the QRP, significant amounts were observed in many dumpsters (Exhibit 2-13). Increase of the non-hazardous solid waste diversion rate can be accomplished by increasing program training and awareness through the recommendations in Chapter 9 along with the strategic installation of the additional recycle bins discussed in Chapter 3. These recommendations must be implemented by the SW Manager and QRP Manager.
- Continue the QRP Manager's process of reviewing market trends for recyclable commodities and alternative means of diversion and P2 opportunities as needed.

Recycling Practices for Undocumented Recyclables

During the site visit, interviews were conducted with personnel at various facilities aboard NCBC Gulfport who indicated that some minor recycling activities were not being reported to the SW Manager. This situation was remedied by instructing personnel to report all recycling activities to the SW Manager in the future. Based on these interviews, additional source reduction and recyclable streams are estimated for FY 2012, as indicated in Exhibit 4-2. These additional FY 2012 streams increased the NCBC Gulfport non-hazardous solid waste diversion rate from 32.9 percent to 35.9 percent for FY 2012.

EXHIBIT 4-2
2012 Diversion Rate Post Site Visit

Recyclables	LB	TONS
Previously identified		978
Thrift Store (Source Reduction)	35,125	17.6
Navy Lodge (Recycling)	4,849	2.4
Commissary (Recycling)	222,456	111.2
Camp Keller Ammo (Reuse currently only by ECS)	13,440	6.7
RECYCLE TOTAL	**2,231,429**	**1,115.7**
LANDFILL TOTAL	**3,991,400**	**1,995.7**
2012 Diversion Post Site Visit (percentage)	**35.9%**	**35.9%**

Recyclable Materials and Markets

Currently, NCBC Gulfport coordinates the pick-up of recyclable materials through the QRP. The location of NCBC Gulfport does not appear to present a challenge to the marketing of recyclable materials, since there are many recycling vendors in the Gulfport area; however, to maintain a successful QRP, reliable local recycling markets are needed. The opportunity to recycle commodities would be based on an installation-specific CMA, which is further described in Section 5. Important features and services of markets used, as well as select alternative markets that were contacted, are tabulated in Appendix A. Prices paid for recyclables are usually market prices. Other factors can take on greater significance than price, such as making sure that each truckload approaches maximum capacity for cost-effective transportation and making efforts to minimize contamination that could increase the risk of having a load rejected. The majority of the NCBC Gulfport area markets (i.e., collectors, dealers, and processors, but no final markets) provide services involving containers, transportation, and processing.

Composting/Mulching

GSE Facility Services is the grounds maintenance contractor responsible for maintaining all areas of NCBC Gulfport, including grass cutting, trimming, and pruning tree limbs and branches, as well as for planting trees, flowers, and other vegetation year-round. Generally, mowed grass clippings remain on the ground as fertilizer (i.e., grasscycling). Tree and shrub remnants obtained from trimming and pruning are brought to the Recycling Center area for chipping and mulching.

There is currently no composting program at NCBC Gulfport.

Organic (food and landscaping) waste represents a major component of the waste stream on a weight basis. If an installation has a significant waste stream and the local market conditions are favorable (high disposal fees, high energy revenue from the sale of biogas), an installation could implement an organic waste processing facility. The opportunity to recycle these commodities would be based on an installation-specific CMA, which is further described in Section 5.

The construction of an organic waste facility would allow yard waste generated on the installation to be composted onsite. Food scraps could be accepted at the facility if it were constructed appropriately. A collection program for food scraps also would be developed for collecting scraps from cafeterias and restaurants on the installation.

This alternative generally consists of processing source separated organic waste (yard trimmings, wood waste, food waste, etc.) to create a compost material for reuse. The organic waste facility would accept and process separately collected yard trimmings (leaves, grass, brush, etc.) by removing contaminants and shredding, composting, and screening the material. The facility could also accept separately collected organic waste (food waste, mixed paper, cardboard, wood waste, etc.). Different types of products (mulch, fine compost, and coarse compost) can be produced depending on the size of the screens and removal of the material within the process. There are a variety of organic waste technologies available to increase waste diversion, including the following:

- Grinding of yard waste for production of mulch
- Grinding of food waste, then processing at wastewater treatment plant (can recover biogas through digestion)
- Windrow composting
- Aerated static pile composting
- Enclosed vessel composting
- Anaerobic digestion to generate biogas.

This facility could combine biosolids with organic waste to increase the cost-effectiveness of the program.

COMPOSTING/MULCHING SUMMARY RECOMMENDATIONS

A future analysis for the SW Manager is to explore the potential for outsourcing composting operations with the grounds maintenance contractor. Composting could be included in the next grounds maintenance contract, requiring the contractor to collect organic waste from the installation and process for various organic waste markets that divert the material from landfilling, such as mulch, composting, and biomass. The contractor would need to provide all material processing and marketing and ensure that finished products meet market and industry minimum

specifications, such as the U.S. Compost Quality Council pathogen reduction requirements for finished compost. The contractor would also need to comply with requirements that all materials are diverted and that only appropriately permitted facilities are used. Possible end uses for finished product could include compost and mulch for bulk commercial application or at the installation (the contract would need to address buy-back), landfill alternative daily cover, and biomass feedstock. It should be noted that composting does not necessarily need to occur onsite for NCBC Gulfport to receive credit for the diversion of waste since there is a great competition for land use onsite.

Waste-to-Energy

DoD policy defines diversion as an activity to divert non-hazardous solid waste from landfill disposal or incineration, including reuse, donation, recycling, and composting/mulching. Waste-to-energy plants produce clean, renewable energy through the combustion of non-hazardous solid waste in specially designed power plants; therefore, waste-to-energy conversion is not considered diversion, but is applicable to DoD energy reduction goals. The DoD considers both incinerators and waste-to-energy plants disposal facilities. A variety of energy-based technologies are available to reduce the volume of waste requiring disposal. If an installation has a significant waste stream and the local market conditions are favorable (high disposal fees, high energy revenue), an installation could implement a thermal-based volume reduction facility.

For the last 3 years, only used oil has been sent off-base for waste-to-energy processing at an average of 65 tons per year. Since waste-to-energy is not considered diversion, no recommendations for additional waste-to-energy activities are identified in this ISWMP.

Landfilling

Landfilling is considered a last choice solution in managing non-hazardous solid waste that cannot be managed through source reduction and reuse, recycling, or composting.

When effectively implemented, ISWM reduces non-hazardous solid waste disposal and handling costs because it avoids or lessens expenses associated with landfilling. Based on the data in Exhibit 4-3 and current source reduction and recycling initiatives, it is determined that the ISWM Program has helped reduce non-hazardous solid waste landfill disposal from 2,306 tons in FY 2010 to 1,930 tons in FY 2012; however, the cost for disposal services has steadily increased.

EXHIBIT 4-3
2012 Non-Hazardous Solid Waste Landfilled

	Solid Waste Landfilled (tons)	Solid Waste Landfilled ($)	$/Ton	Installation Population	$/Person	Solid Waste Landfilled/Person (tons)
FY 2012	1930	675,000	$349.74	7,180	$94.01	0.27
FY 2011	2149	620,000	$288.51	7,106	$87.25	0.30
FY 2010	2306	635,281	$275.52	6,984	$90.96	0.33

SW Landfilled tons and cost from EDMWEB Data provided by Stanley Smith

LANDFILLING SUMMARY RECOMMENDATION

- The SW Manager should audit landfill operations periodically to identify opportunities to target specific recyclable materials for enhanced public education and outreach.

CHAPTER 5

QUALIFIED RECYCLING PROGRAM

INTRODUCTION

This chapter discusses the NCBC Gulfport QRP. This chapter also presents strategies for improving the program in order to meet the EO diversion goal of 50 percent.

OBJECTIVES

This chapter has two objectives:

- Assess performance of the existing QRP.
- Identify additional QRP recycling strategies and targets to help meet EO goal.

EXISTING QRP

OPNAVINST 5090.1C requires that all Navy installations generating 1 ton or more of non-hazardous solid waste per day implement and maintain a QRP. A QRP is a designated recycling program in which proceeds from the sale of recyclable materials are credited to the installation. The program includes concerted efforts to divert or recover recyclable materials from the installation's non-hazardous solid waste streams, as well as efforts to identify, segregate, and maintain or enhance the marketability of the diverted materials.

NCBC Gulfport has operated a recycling program for approximately the past 18 years. A written QRP instruction, NCBC GPT Instruction 1700.12B, has been issued for NCBC Gulfport. The NCBC Gulfport QRP currently employs four full-time staff, who are supervised by the QRP Manager. The QRP Manager's duties include the entire range of activities in the QRP program from recycling education to signing timesheets and managing the QRP revenue.

In the past at NCBC Gulfport, the QRP Manager has been the same person as the SW Manager; however, these roles are currently performed by separate individuals who must coordinate their non-hazardous solid waste management efforts in order to efficiently and effectively implement this ISWMP.

Environmental Quality Board

NCBC Gulfport established an Environmental Quality Board (EQB), with members being appointed by the CO. Per the QRP guidelines, the EQB is required to meet bi-annually, while a subcommittee of the EQB is required to meet quarterly. The first meeting of the EQB was held in September 2008. The purpose of the EQB is to determine how QRP funds are to be spent. The subcommittee can make recommendations and suggestions to the EQB on needs of the recycling program. The SW Manager and QRP Manager are encouraged to work with the EQB to implement this ISWMP and recommendations included herein.

DLA

The DLA provides mission support for the DoD. Located at most major military installations, DLA facilitates the redistribution and sale of various types of government property. NCBC Gulfport reports to the DLA office at Eglin Air Force Base in Crestview, Florida. This DLA was formerly referred to as the Defense Reutilization and Marketing Office (DRMO).

Direct Sales Authority (DSA)

In the past, military installations were required to return recycled materials originally purchased with appropriated funds (AF) through the DLA unless specific DSA was granted by the DLA. Currently, items are either returned to the DLA or sent directly to a DLA-approved vendor by NCBC Gulfport. Such items include, but are not limited to: tires and used oil. Once materials are deemed scrap by the DLA, they are accepted and sold through the NCBC Gulfport QRP. They are counted toward the EO 13514 diversion goal. Materials that are bought with non-appropriated funds (NAF) and donated items do not need DLA approval to be sold through DSA.

Through DSA and after proper verification, NCBC Gulfport can solicit bids and sell the materials directly to local recycling markets for increased profitability rather than through DLA. Materials approved for sale through DSA must meet two verification criteria:

- The material must not be included in exclusion lists in the QRP Development Guide of July 2000.
- The material must be deemed non-reusable or scrap by DLA.

Equipment, Facilities, and Storage Available for Recycling

As discussed in Chapter 3, the QRP staff is responsible for operating the QRP at NCBC Gulfport. Equipment and facilities owned by NCBC Gulfport and available for use are listed in Exhibit 5-1.

EXHIBIT 5-1
Equipment and Facilities Available for QRP

Description	Quantity*
Blue, Grey, and Green 85-gal Wheeled Toters	____
Blue 8-gal desk-side bins	____
Blue 22-gal containers	____
Blue 8-cy cardboard containers	____
Flatbed Truck	1
Pickup Truck	1
Cardboard Trailers	5
Pallet Jack	2
Pallet Scale	1
Forklift	1
Self-tying Horizontal Baler	1
Horizontal Baler	1
Can Densifier	1
Brass Deformer	1
Paper Shredder	1
Spools of wire for baler	varies
Metal Recycling Building w/ 2 roll-up doors	1

Note: *Quantities not provided for recycling containers.

The QRP Manager maintains a current list of all recycling containers and pick-up locations to assist with monitoring recycling participation and to provide an appropriate level of service to all on-base and off-base facilities. Proper container size and pick-up frequency ensure that facilities are appropriately serviced and to achieve peak efficiency. The QRP Manager maintains a current list of all recycling equipment and maintenance logs to track program costs.

Recycling Center

The Pollution Prevention Complex is a paved 4.5-acre fenced, site and was established at NCBC Gulfport in 2008. The complex houses the Recycling Center (Building 275) and a 90-day storage facility (Building 276) for hazardous waste. **The P2 Complex is fenced and gates are locked when closed** to prevent unauthorized dumping of materials not accepted in the QRP. A small 24-hour drop-off area is located outside the fence where individuals may place general metals, aluminum, paper, and OCC into the designated containers. The scrap metal container in the drop-off area is provided by a local scrap metal buyer. This buyer owns the container and provides additional containers throughout the base at no additional cost.

The fenced area around the Recycling Center is adequate for the storage of recyclables and seems sufficient to accommodate the expected growth in the amount of recyclables collected and the addition of new materials for processing. The QRP Manager designates storage areas around the Recycling Center.

QRP Staff

QRP staff members are considered NAF employees who are hired and paid by MWR. MWR is reimbursed by revenue from the QRP. During the February site visit, the QRP staff consisted of two full-time and two part-time personnel. The staff works 4 days a week collecting recycling materials from SSC and 1 day a week for NCBC Gulfport. Materials are taken to the Recycling Center where they are either sorted or stored until enough has been collected for sale to local area markets.

The Recycling Center separates materials collected and tracks material weight in logbooks. However, the logbooks do not designate the recyclable weight differences between SSC and NCBC Gulfport. The QRP staff spends 4 days a week collecting materials from SSC; this leaves little time to provide recycling education and address issues such as phone calls on questions about the QRP, unscheduled collections, and staffing the drop-off center at the Recycling Center.

Program Participation

Based on interviews with the QRP Manager, participation in the QRP varies widely throughout NCBC Gulfport and is greatly influenced by Command involvement. The QRP has been focused on clean-up of debris and proper collection and storage of universal/hazardous waste. Since opening the new Recycling Building in August 2008, participation has increased, but there is still a lack of base-wide participation. Improvements are needed in the areas of education for materials accepted and procedures for how to recycle. This gives the base a unique opportunity to make major improvements to the Recycling Program.

Recycling Program Needs

The SW Manager, with the assistance of the PAR, may consider whether it would be effective to have the janitorial staff perform desk-side collection of recyclables and transport to centralized collection points in buildings. This service may lead to increased participation of individuals, who are currently required to take their own desk-side containers to centralized collection points. Increased participation would increase quantities of recyclables and thereby increase revenues.

There is also a need to have additional QRP administrative support (a part-time or full-time administrative assistant) for the invoicing, timesheets, and other day-to-day responsibilities required to maintain the QRP. Increased participation would increase quantities of recyclables and this increased revenue could be used to support the new QRP administrative assistant.

RECYCLING PROGRAM COSTS

Effective recycling through the QRP can recover value for materials diverted from the non-hazardous solid waste stream in addition to avoiding disposal costs. Success requires being able to identify opportunities to sell recyclable material and understanding the full impact on non-hazardous solid waste programs based on recycling costs, sales, proceeds, and avoided costs. A recycling program cost assessment includes the cost of collection and processing and also the cost avoidance for landfill disposal (Exhibit 5-2). Current QRP expenses typically include wages for four civilian employees, maintenance/repair of vehicles and equipment, and supplies. NCBC Gulfport also receives payment for collection of recyclable materials at SSC.

EXHIBIT 5-2
Recycling Program Cost Avoidance

	Recycled (Tons)	Landfill Tipping Fee ($/ton)	Landfill Total Avoided Costs ($)	QRP Expenses ($)	Recycle Revenue ($)	Total Avoided Costs ($)
FY2012	928.00	$ 30.00	$ 27,840.00	$ 37,721.99	$ 347,782.00	$ 337,900.01
FY2011	1006.6	$ 30.00	$ 30,198.00	$ 32,000.00	$ 454,096.78	$ 452,294.78
FY2010	484.1	$ 33.00	$ 15,975.30	$ 10,000.00	$ 213,646.75	$ 219,622.05

Data from EDMWEB Data provided by Stanley Smith

Performing a cost assessment of the recycling program is recommended any time there are significant increases in materials processed and when new materials are added to the program. This assessment should be based on industry and market research as described in a Memorandum for Assistant Secretary of the Navy dated 1 February 2008 along with the market research data provided in Appendix A.

MATERIALS PROCESSING AND STORAGE

This section focuses on the processing of recyclables. Upon delivery to the Recycling Center, contaminants (non-recyclables) are removed from the collection containers (either toters or caged trailers), sorted by type, and processed accordingly.

Inorganic waste and universal wastes are regulated materials and considered hazardous materials if they are not recycled. The Environmental Department oversees the management of these materials and they are processed and stored in accordance with the NCBC Gulfport Hazardous Waste Management Plan.

Paper

Paper accounts for a significant quantity of the NCBC Gulfport Recycling Program. The largest contributor of paper materials is SSC.

Mixed Paper

NCBC Gulfport QRP collects paper in a single stream. The Environmental Department performed a small-scale efficiency study on the processing of paper. The overall conclusion of the study was that it was too labor-intensive to sort paper into various grades (excluding OCC) to be sold to local area markets.

Mixed paper is delivered to the Recycling Center in toters on the collection trailer. Full 64-gal toters are wheeled into the Recycling Center and emptied into a Gaylord box next to the baler; the paper materials are then manually fed into the paper baler. Empty toters are returned to the

container storage area outside. Mixed paper bales are weighed then set aside until enough has accumulated for pick-up by a local market.

Shredded Paper

Paper that has been through a destruction machine is considered shredded paper. Shredded paper is delivered to the Recycling Center in bags on the collection trailer. The bags are then emptied into the Gaylord box next to the paper baler. The shredded paper is then manually fed into the paper baler. Shredded paper bales are sold separately, for more money, than the mixed paper bales. Empty toters are returned to the container storage area outside. Shredded paper bales are weighed and set aside until enough has accumulated for pick-up by a local market.

Old Corrugated Cardboard (OCC)

The Commissary and the NEX both generate large amounts of cardboard. These tenants operate their own baler and store the bales near their buildings until there is enough to be picked up by a local area buyer. Sale and pick-up of OCC by the Commissary and NEX are separate from the QRP; however, to create better alignment, these diversion weights should be consistently provided to the QRP Manager. QRP staff uses green caged trailers, blue cardboard containers, and toters to collect OCC around the base. QRP staff monitors these containers until they are full, then transport them to the Recycling Center.

Small-volume cardboard is delivered in 85-gal toters and large-volume cardboard is delivered in the green caged trailers. The blue cardboard containers are manually emptied into a green caged trailer during collection. Toters are individually emptied into the baler or a large caged trailer. The caged trailers are pulled into the Recycling Center through the roll-up door and then backed up next to the cardboard baler. The cardboard material is manually fed from the collection trailer to the cardboard baler. Empty toters and trailers are returned to the container storage area outside. OCC bales are weighed and set outside for storage and later collection.

Metals

Ferrous

Ferrous metals include all types of steel and iron, such as steel cans, aerosol cans, and copper. Aerosol cans are properly punctured and crushed before being managed by DLA as scrap metal. Scrap metal from equipment and furnishings is managed by DLA. If DLA does not have a market or if the transport of the material is too costly, DLA allows the material to be managed through the QRP. Most of the ferrous metal is turned over to the QRP as scrap from the DLA.

The current metals market accepts all types of metals collected. Based on interviews, the metals handling contractor is timely and has reasonable rates. The contractor is often willing to delay material sales and store the metals if the market value is low. This contractor provides drop-off containers around the base for the recycling of scrap metal. The QRP Manager oversees the placement and pick-up schedule of these containers.

Non-ferrous

Non-ferrous metals include numerous types of aluminum and non-aluminum materials, such as aluminum cans, tin, and brass. Non-ferrous metals are collected around the base, dropped off at the Recycling Center, or contributed through DLA.

Aluminum Cans - Aluminum cans are gathered through recycling collections at NCBC Gulfport, the Camp Keller Firing Range, and SSC. Aluminum cans may also be dropped off at the Recycling Center.

Aluminum cans are delivered to the Recycling Center in a green caged trailer. The caged trailers are pulled into the Recycling Center through the roll-up door and then backed up next to the can densifier. The aluminum can material is manually loaded into the can densifier. Aluminum blocks are weighed and set outside for storage and later collection.

Brass – The Recycling Center has the deformer equipment necessary to process brass ammunition. This machine requires frequent maintenance. A regional buyer has been established to take the brass when a sufficient quantity has accumulated. The Recycling Center also has a separate fenced, locked area inside the building for storage of brass. All handling of brass ammunition and operation of the deformer equipment must be performed by certified personnel as required by Navy Military Munitions Rule (MMR) Implementation Policy SER N457F/452-98, 27 July 1998 and DODI 6055.9-std.

Plastics

Currently NCBC Gulfport collects plastics through its recycling collection procedure. The mixed plastics are kept in a 40–cubic-yard roll-off container from which the local plastic recycling vendor collects only the specific plastics which are able to be recycled at their facility. Any plastics not taken by the vendor are sent with non-hazardous solid waste to be landfilled.

Glass

The QRP currently collects glass on a limited basis due to a lack of recycle vendors for glass.

Organics

Green Waste

NCBC Gulfport does not mulch or chip yard waste. Yard waste from tree and shrub pruning is put into a 30-cubic-yard roll-off container that is taken to a landfill by the non-hazardous solid waste contractor. The landfill does not have a green waste program; therefore, green waste is not recycled. However, it is recommended that the SW Manager explore the local market to identify opportunities to beneficially re-use green waste that may qualify for recycling credit. For example, Brinson Farms is identified in Appendix A as a processor of green waste and other organics. If the cost for collection and processing of green waste at Brinson Farms is less than the cost for collection and disposal, then it is an option that should be explored further.

Food Waste

Food waste is not currently segregated at NCBC Gulfport. Instead it is collected at the point of generation and disposed. However, Brinson Farms is identified in Appendix A as a processor of green waste and other organics. If the cost for collection and processing of source separated food waste at Brinson Farms is less than the cost for collection and disposal, then it is an option that should be explored further.

Wood Pallets

Wood pallets are either sent back with vendors or reused on-base if in acceptable condition. Surplus wood pallets and broken pallets are placed into waste collection containers and disposed in the landfill. Currently there are no wood pallet recycling vendors in the area. Potential wood

pallet recycling vendors are listed in Appendix A. The Recycling Center has adequate space for wood pallet storage if a wood pallet recycling program is implemented.

Inorganic Wastes

Used Oil

Used oil is generated from vehicle maintenance and repair and is stored in SAA at work centers around the base, including the Supply Department, Auto Hobby Shop, the NEX, and the CED. Used motor oil is also accumulated and collected from satellite locations at Camp Keller Firing Range, Lakeside Barracks, and SSC. After collection by personnel designated by Hazardous Waste, used oil is stored in a double-walled vault or stored in 55-gal drums until pick-up. The oil is collected by an approved DLA contractor and provided on a routine basis.

Universal Wastes

Fluorescent Bulbs

Fluorescent bulbs are generated when bulbs are replaced during routine maintenance in offices, barracks, and work areas. Personnel designated by Hazardous Waste collect unbroken bulbs and place them into cardboard boxes for transport to the 90-day storage facility. Broken bulbs are put into 55-gal drums. Fluorescent bulbs are collected from SAAs at SSC, Camp Keller, and Lakeside Barracks. Bulbs are stored in the 90-day storage facility until enough have accumulated to be picked up by an approved DLA contractor.

Batteries

Batteries containing lithium, lead-acid (rechargeable), magnesium, mercury, nickel-cadmium, and silver are generated in the same locations as used oil and collected and stored in the same way. Shops generating waste batteries are provided leak-proof containers for storage at their SAA until transported to the 90-day storage facility. Broken batteries are treated as hazardous waste. Although batteries are picked up by an approved DLA contractor, no revenue is obtained from these transactions.

Another recycling option for rechargeable batteries (and cell phones) is available through Call2Recycle®. Call2Recycle® is a free service that has been successfully implemented at military installations. NCBC Gulfport can take advantage of this free program by becoming a collection site. Contact information for Call2Recycle® is provided in Appendix A.

Electronics

Discarded televisions and computer monitors that were purchased with AF must be turned into DLA. DLA manages the reutilization or recycling of this waste.

Toner Cartridges

Toner cartridges include all non-usable or expired laser printer and inkjet printer cartridges, fax machine toner cartridges, and refillable copier drum cartridges. NCBC Gulfport has recently implemented a toner cartridge recycling program through use of a local market. Although this program is still being developed, personnel may drop off cartridges at the Recycling Center. Cartridges are stored at the Recycling Center in tri-wall containers.

Other Materials

Tires

Used vehicle tires are generated by various maintenance activities and are delivered to the CED storage yard. The gas station (operated by NEX) also generates tires and stores them outside behind the NEX. The DLA is responsible for management of waste tires that accumulate in the CED storage yard. The DLA has established a DSA Scrap Venture contract for waste tire pick-up.

NCBC Gulfport residents and personnel are able to take all tires generated from personnel vehicles to the Recycling Center. This has significantly decreased incidents of tire disposal by the base residents into the non-hazardous solid waste dumpsters. It is recommended that the SW Manager monitor tire storage areas on-base to ensure that they remain in compliance with Mississippi Department of Environmental Quality (MDEQ) Waste Tire Regulation SW-4. NCBC Gulfport is not required to have a permit for waste tire storage as long as the site does not hold more than 500 waste tires, or hold more than 100 waste tires for a period exceeding 90 days.

Cooking Oil and Grease

Used cooking oil and grease are generated from food service entities throughout NCBC Gulfport such as the Galley, restaurants, and fast food establishments. The Galley has an underground grease trap with 1,800-gallon capacity for all materials that are washed down the drain. Cooking oil is collected separately and stored in a designated container. The Galley has set up a private contractor to dispose of the grease and cooking oil waste. As part of the NEX, McDonald's also generates grease waste on-base and uses a private contractor for collection and disposal.

COMMODITY MARKET ANALYSIS

Consistent with Executive Order 13514, once the solid waste program is evaluated, the next step is a CMA. This analysis combines an economic analysis of diversion opportunities with market research for commodities. The following section describes the activities to be performed under a CMA.

Economic Analysis of Diversion Opportunities

The purpose of performing an economic analysis of potential waste diversion opportunities is to determine if the opportunity can create a positive economic benefit for NCBC Gulfport. The analysis includes evaluating options to address gaps or opportunities for improvement with current diversion or recycling activities. Options should be identified in terms of history of successful implementation elsewhere at a comparable scale. The options can be evaluated in terms of cost/benefit and local markets, with priority aligned with DOD's SSPP, applicable federal regulations, as well as relevant DoD policies to determine impacts and/or constraints affecting non-hazardous solid waste management.

This economic analysis includes a review of potential waste diversion opportunities to determine if each opportunity can create a positive economic benefit, consistent with the requirements of the QRP. Additionally, QRP policy requires installation recycling managers to conduct periodic market and economic research analysis to identify the best price for materials sold through the QRP and to determine if recycling the material will result in an economic benefit to the government.

Market Research

The purpose of performing market research is to identify current and potential items for diversion through the QRP and non-QRP recycling, donation, composting, or other diversion opportunities.

Market research will evaluate potential vendors for recycled material to determine if the installation can obtain a better return for their recyclable commodities. Recycling markets are discussed later in this section and NCBC Gulfport area recycling markets are presented in Appendix A. The sales price of the commodity is an important factor that must be evaluated, but the CMA must include other considerations such as minimum weight, processing requirements, and quality requirements. The CMA Report may determine the ability to add a commodity to the QRP or divert the material through other recycling, composting, or processing.

Decision Criteria

Following an evaluation of alternatives, the implementation of programs that are aligned with DOD's ISWM policy and SSPP, including QRP-based economic decision criteria, will increase the amount of waste diverted from disposal facilities. Programs may include source reduction, donation/materials reuse, recycling, mulching/composting, and processing. The decision and evaluation process used by the QRP Manager and installation QRP Committee to add a commodity to a diversion program will depend on the program.

For non-QRP the cost to divert the commodity must be less than avoided cost of disposal. Cost avoidance calculations should take into consideration the startup, operations, maintenance, closure, and monitoring of onsite landfill. For diverting those commodities not required by law, the additional costs to the QRP must be less than the avoided costs plus revenue from the item sale. QRP costs should include labor cost for collection, transportation, and management, as well as non-labor costs for contracts, materials, and program advertising.

RECYCLABLES MARKETS

In order to succeed, recycling programs need to utilize established, reliable markets that emphasize customer service. Many markets exist and operate locally, with a single facility serving as processors and marketers to larger processors, brokers, or end user mills. These companies are dependent upon demand and price levels set by the mill companies. For NCBC Gulfport, certain components of a successful recycling program take on greater significance, such as: ensuring that each truck-load approaches maximum capacity; and making efforts to minimize contamination.

Because NCBC Gulfport has received DSA, the QRP Manager is responsible for arranging collection services from processing companies and performing research to obtain the highest price for the sale of recyclable materials. Once a price is agreed upon, the company then comes to the Recycling Center and collects the materials.

Use of a market research software or company could provide assistance to the QRP Manager on the best times to sell recyclable materials. Exhibit 5-3 provides a list of companies that could provide this type of service and their cost.

EXHIBIT 5-3
Recyclable Market Researchers

Company/website	Services	Cost
Recycling Markets http://www.recyclingmarkets.net/	• Full access to Secondary Fiber Mill Prices • Full access to Metals, Plastics, Glass Prices • Access to all Historical Pricing Data Charts • Low - High - Median - National Average Pricing Data • Online access to Databases – Over 13,000 Recycling Companies (all commodities) – Over 5,000 Recycled Product Listings – Highlighted Company Listing	$395/year
Metal Prices https://www.metalprices.com/subscribe/Index	(METAL ONLY) • Each metal has a main page with metal specific news & prices • View LME and NYMEX/COMEX live feeds • Historical database and charts instantly ready for presentation • Realtime data feeds can be exported directly to an Excel spreadsheet • View prices by metric tonnes (MT), gross tons (GT), net tons (NT), kilograms (KG), or pounds (LB) • Domestic and export steel scrap prices from key North American cities and a National Index. • Cities: Birmingham, Chicago, Cincinnati, Detroit, Houston, New Orleans, Pittsburgh, Philadelphia, St Louis • Export – East / West Coast • Subscribers have access to setting their own price alerts on the LME and NYMEX/COMEX using their smart phone.	$180/month
Kitco http://www.kitco.com/market/	(METAL ONLY) • Limited and dated base metals prices and quotes - Industrial metals - Copper, Aluminum, Nickel, Zinc, Lead	Free
Scrapmonster http://www.scrapmonster.com/register/globalprice	(METAL ONLY) • East Coast, Midwest, and West Coast Scrap Prices • Prices are updated daily, and include historical data and graphs • Scrap Metals, Precious Metals & E-Scrap Prices included	$250/year

Paper

All paper recycled at NCBC Gulfport is combined into one estimate for reporting. Based on the 2013 field survey 22 percent of paper (4 percent mixed and shredded paper and 18 percent cardboard) was observed to be disposed of as non-hazardous solid waste. Paper includes cardboard, mixed paper, and shredded paper. This is a high percentage of missed recyclables given

the non-hazardous solid waste quantities generated at NCBC Gulfport and compared to other Navy facilities.

Strategies to increase recycling of paper include:

- Providing desk-side containers for the collection of office paper at each workstation
- Monitoring the program and providing assistance with issues that arise
- Promoting the QRP through education and information distribution
- Making recycling mandatory for all personnel
- Incorporating the collection of recyclables into the janitorial contract to reduce the effort required of office personnel

Paper accounts for a significant percentage of the NCBC Gulfport non-hazardous solid waste stream and an increase in paper recycling would have a significant impact on the ability to reach and sustain the 50 percent recycling goal. By increasing the paper recycling rate, NCBC Gulfport is likely to meet the non-hazardous solid waste recycling goal. Although this increase in recycling rate is aggressive, it is not unrealistic considering the initiatives that could be used to increase personnel participation.

A future analysis is also recommended that NCBC Gulfport perform a re-evaluation of the Recycling Program for paper to identify additional resources to increase paper collection and processing capacity as participation and quantities increase. Similarly, it is recommended that NCBC Gulfport re-evaluate its options with regard to segregating paper by grades to assess whether greater revenue would result from maximizing the value of the paper stream components.

Cardboard

OCC accounts for a significant portion of all paper recycled. OCC is one of the easier materials to recycle because relatively large volumes are generated in relatively few locations. Due to storage issues and revenue from the sale of the material, NCBC Gulfport will continue to bale OCC. By baling OCC, less space is required for storage and it allows for more materials to be put onto a truck by the hauler.

Strategies to capture more OCC will bring NCBC Gulfport closer to the overall 50 percent target. To accomplish this, NCBC Gulfport will implement several strategies, including:

- Gaining management support for enforcing recycling as a required job duty
- Promoting the QRP through education and information distribution
- Providing additional containers for collection of OCC in all locations where OCC is generated (see Exhibit 3-2)

Mixed Paper

Mixed paper consists of items such as white office paper, file stock, envelopes, colored ledger, and file folders. Mixed paper represents an opportunity for progressing toward the 50 percent overall diversion goal by building on an existing system. Specifically, it is recommended that NCBC Gulfport continue the practice of commingling paper materials and baling them, as the market will accept them. More revenue would be received by from separating the materials, but there is not enough time or manpower.

If market prices fall dramatically for mixed paper, it is suggested that NCBC Gulfport consider separating the paper into grades. Recovered paper collected separately by grade (e.g., white office

paper, newspapers, and magazines) can generally provide a more valuable recovered material and price. Shredded paper can continue to be collected and baled when necessary.

Plastics

Plastics are collected in recycle bins located in common areas. Based on the 2013 field survey, 9 percent of plastics were observed to be disposed of as non-hazardous solid waste. Strategies to increase the recycling rate for aluminum include:

- Educating NCBC Gulfport personnel and residents
- Increasing the number of locations of plastic receptacles, such as one in each common area and near all vending machines (see Exhibit 3-2)

Metal

Aluminum Cans

Aluminum cans are collected in much the same way as paper and plastics. Though collection costs are typically high, due to low density (approximately 30 cans per lb), costs are mitigated when aluminum cans are collected at the same time as other materials, such as office paper. This existing system needs improvements to fully benefit from this opportunity.

Incremental costs for increasing capabilities will be lower than the current average costs because the system is already in place.

Based on the 2013 field survey, 5 percent of aluminum cans were observed to be disposed of as non-hazardous solid waste. Strategies to increase the recycling rate for aluminum include:

- Educating NCBC Gulfport personnel and residents
- Increasing the number of locations of aluminum can receptacles, such as one in each common area and near all vending machines (see Exhibit 3-2)

It is recommended that NCBC Gulfport continue to bale (densify) aluminum cans. Less space is required for storage and it allows for more materials to be put onto a truck by the hauler. It is also recommended that NCBC Gulfport consider placing centralized collection containers beside vending machines, in common areas of barracks, and in areas where people congregate such as clubs and recreational facilities. Lastly, NCBC Gulfport may consider performing a re-evaluation of the recycling program for aluminum cans to identify additional resources to increase aluminum can collection and processing capacity as participation and quantities increase.

Scrap Metal

A high target for scrap metal recycling is consistent with experience at other installations recycling these materials. Scrap metals, both ferrous and aluminum, are generated primarily by construction, renovation, and demolition activities; these materials are typically handled by contractors. Personnel generate scrap steel through repair projects and various training activities by the Seabees throughout NCBC Gulfport. The base has designated containers for drop-off of scrap metal generated by military and civilian personnel. Based on the 2013 field survey, only 1 percent of scrap metal was observed to be disposed of as non-hazardous solid waste. NCBC Gulfport will continue to coordinate with the existing local area market for collection of scrap metal. This market is providing an excellent level of service, as they are willing to hold the materials until the market

prices are high and provide additional containers upon request. This market will be able to accommodate an increase in materials due to increased participation.

Other Materials

Mattresses

Based on discussions with installation staff, NCBC Gulfport replaces approximately 1,000 mattresses every few years. Mattresses were identified by NCBC staff as a candidate waste stream component to assess under the CMA framework. As reported by NCBC staff, the mattresses are "full" sized, contain innersprings, and are covered in vinyl. At this time, the number of mattresses replaced at any one time is not expected to increase over a 20-year period. The challenge with mattress management, whether disposed or recycled, is more their volume than their weight. As presented in Section 2, Mattresses are currently disposed through DLA. However, there have been advances in mattress recycling in recent years and at least one vendor has expressed interest in recycling the mattresses from NCBC Gulfport. Contact information for this vendor, Nationwide Mattress Recycling, is presented in Appendix A.

Within the framework of a CMA, which is defined above, the following issues were considered:

1. The history of successful implementation elsewhere at a comparable scale.
2. The number of vendors available to provide the service.
3. Favorable recycling cost when compared to the disposal cost.

The answer to items 1 and 2 is yes. In terms of the cost, the following assumptions were used:

- Number of mattresses: 1,000
- Estimated mattress weight: 50 pounds
- Estimated total weight: 25 tons
- Disposal cost: $30 per ton
- Estimated disposal cost: $750

As part of the CMA, Nationwide Mattress Recycling was contacted to secure a cost quote to recycle the mattresses. Based on the assumptions that the mattresses are a full size with innersprings and vinyl covered, Nationwide Mattress Recycling quoted a price of $19 per mattress or $19,000 total to collect and recycle NCBC Gulfport's mattresses. While this cost does not support mattress recycling through the QRP at this time, even if the collection cost associated with disposal is considered, it is recommended that NCBC Gulfport re-evaluate this option as the mattress recycling market matures. In the meantime, NCBC Gulfport may choose to evaluate non-QRP options such as joining the Navy Lodge when it sells its mattresses or donating its mattresses to local homeless shelters or to a local charity.

Summary Recommendations

It is recommended that the SW Manager and the QRP Manager work with the EQB to implement this ISWMP and recommendations herein. Other recommended actions include:

- Conduct a detailed analysis of the QRP that includes the following elements of a CMA
    1. Methods to improve the operational efficiency of the program (routing, collection, and processing, and consider contamination, materials handling, and local area markets).

2. A determination of program capacity needs to accommodate the expected increase in recyclable materials generated and expected increase in participation.
3. Cost avoidance from collection of various materials versus landfilling.
4. Analysis of the program's organizational structure and management needs (i.e., a cost-benefit analysis to determine whether NAF employees or government personnel should be used to operate the Recycling Center and whether it would be effective to have the janitorial staff perform desk-side collection of recyclables).

- Record recycling quantities for each material listed in this chapter to facilitate an annual program performance assessment. If quantity data are unavailable, estimates could be used. Increasing public education, program monitoring, and enforcement would increase the quantity and quality of material collected through the QRP.

Interviews during the February 2013 site visit indicated that personnel were often unaware of how to recycle their non-hazardous solid waste; therefore, increased recycling awareness is needed for the base.

- Require the non-hazardous solid waste collection contractor to report yard waste quantities to the QRP Manager who can then monitor green waste generation rates for possible future recycling opportunities.
- To facilitate greater participation in the QRP, evaluate locating recycling receptacles at each individual’s desk and aggregating containers should be placed in as many convenient central locations as possible, such as common areas in offices, operations facilities, warehouses, tenants, and recreational areas, whether they are located inside or outside the buildings.
- Based on evaluations from the February field survey (see Exhibits 2-5 and 2-6), implement strategies to recover greater quantities of mixed paper, cardboard, and scrap metals (including aluminum cans). Promoting the QRP through educational and informational efforts and making recycling mandatory for all personnel will aid in this recovery effort.

CHAPTER 6

CONSTRUCTION, DEMOLITION, AND STORM DEBRIS MANAGEMENT

INTRODUCTION

C&D debris is generated by construction, demolition, renovation of existing structures, land clearing, removal or construction of roads and utilities, and other activities that generate bulky wastes. General characteristics, regulatory requirements, landfilling options, and recycling opportunities for C&D debris differ from those for non-hazardous solid waste, and therefore the materials must be managed differently. Contracts must follow Federal and State environmental laws, DoD regulations, military service-specific regulations (for tenant activities), and EOs. Both EOs and DoD regulations separate non-hazardous solid waste from C&D debris. Separation of these two waste streams encourages higher C&D debris diversion rates that can result in increased economic benefits for the installation and use of materials that are both recyclable and recycled. The most stringent C&D target is from the DoD SSPP:

- 60 percent of Construction and Demolition Debris Diverted from the Waste Stream by FY 2015, and thereafter through FY 2020.

Contracts for recycling and disposal may be negotiated, under regulations prescribed by the Contracts Administrator, without regard to specific solid waste management needs, so it is vital that the NCBC Environmental Division be able to participate in contract negotiations and work with the Facilities Engineering and Acquisition Division (FEAD).

OBJECTIVES

This chapter has three objectives:

- Describe existing C&D debris generation, collection, disposal, and recordkeeping practices.
- Identify management and recordkeeping requirements.
- Present waste diversion strategies.

EXISTING PRACTICES

Collection

C&D debris is typically collected in open-top roll-off containers. Most roll-off containers are 20-, 30-, or 40-cy units. Contractors are required to provide their own containers and to dispose of the contents off the base.

Disposal

NCBC Gulfport prohibits placement of C&D debris in front-load non-hazardous solid waste collection containers. Contractors are responsible for the handling and off-base disposal of all wastes generated by their projects.

The most convenient approved facilities for recycling or C&D debris disposal sites are Waste Management's Pecan Grove Landfill and Macland Ash Landfill in Pascagoula. Typical contract language states that waste materials become the property of the contractor and must be disposed of at DoD approved and permitted disposal facility. Many of the contractors use local recycling markets and landfills for disposal of C&D debris.

Recordkeeping and Quantity

During the time of the site visit, it was reported by the SW Manager that great strides in C&D debris recycling and recordkeeping have been made and that contractors submit C&D debris tonnage data to NCBC Gulfport in accordance with C&D contract specifications requiring waste reporting. Thus, NCBC Gulfport has consistent historical records on quantities of C&D debris generated, disposed, refused, or recycled by contractors.

Using reported tonnage, Exhibit 6-1 shows C&D debris tonnages reported since 2008.

EXHIBIT 6-1
C&D Debris Tonnage Data

Year	Generated (Tons)	Disposal (Tons)	Recycled (Tons)
2008	395	87	308
2010	100	0	100
2011	9,560	0	9,560
2012	27	0	27

Source: –2008, 2010-2012 P2-ADS, 2009 data not available

MANAGEMENT AND RECORDKEEPING REQUIREMENTS

C&D debris has long consumed valuable landfill capacity. EO 13514 and DoD SSPP have played a large role in contributing to the sense of recycling responsibility among many installations by creating diversion goals. To achieve these goals, military installations are encouraged to employ an ISWM hierarchy (see Exhibit 1-1) that includes source reduction and recycling techniques.

To comply with DoD and DoN policies and directives, NCBC Gulfport is required to report C&D debris quantities generated, reused, recycled, and disposed. Reuse and recycling are the preferred options and are therefore encouraged. Existing guidance documents explaining how to accomplish these objectives are discussed below.

Construction & Demolition Waste Management Pocket Guide

The Air Force Center for Environmental Excellence (AFCEE) produced a *Construction & Demolition Waste Management Pocket Guide* explaining how C&D debris management can lower disposal costs; showing designers, construction managers, and other waste management team members how to manage C&D debris; identifying and explaining how to comply with environmental concerns when managing C&D debris; and providing C&D debris management tools. To use the Guide, go to:

http://www.recyclecddebris.com/rCDd/Resources/Documents/GuideCDPocket.pdf

Guide Specification UFGS 01 74 19

Unified Facilities Guide Specifications (UFGS) are a joint effort of the U.S. Army Corps of Engineers (USACE), the NAVFAC, the Air Force Civil Engineer Support Agency (AFCESA), and the National Aeronautics and Space Administration (NASA). UFGS are for use in specifying construction for the military services. Current guide specification section 01 74 19 (old section 01572), *Construction and Demolition Waste Management*, can be found at: http://www.wbdg.org/ccb/browse_org.php?o=70.

UFGS 01 74 19 states that Government policy is to: "use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling and reuse." It also requires the contractor to prepare a C&D Waste Management Plan that:

- Requires approval.
- Provides guidance for the content and implementation of the Plan.
- Describes specific approaches to recycling/reuse of C&D debris.
- Identifies specific waste materials to be recycled, or salvaged for resale or reuse.

Another requirement is for the construction contractor to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed of and to submit periodic reports. It is recommended that copies of these reports be provided to the SW Manager.

Though UFGS 01 74 19 has been adopted by NAVFAC, it has not been implemented by Military Construction (MILCON). MILCON is still enforcing the previously issued guide specifications 01573N, *Construction and Demolition Waste Management for Design-Build* and 01575N, *Temporary Environmental Controls* but UFGS 01 74 19 is slated for implementation in the near future. Until MILCON implements UFGS 01 74 19, NCBC Gulfport is only responsible to enforce guide specifications 01573N and 01575N.

Upon MILCON implementation, UFGS 01 74 19, it is recommended that it be adapted for each project. Designers, specification writers, and project managers can develop specific criteria for minimum salvage or recycling levels, in lieu of generalizations such as "to the maximum possible." The contractor's C&D Waste Management Plan is to be reviewed and approved by contract specialists in FEAD.

Using UFGS 01 74 19 in construction contracts and enforcing its provisions can increase NCBC Gulfport's waste diversion. Compliance with the intent of the guide specifications is the responsibility of the FEAD.

DIVERSION STRATEGIES

Significant environmental and economic benefits can be realized by diverting C&D waste from disposal facilities. Recycling materials reduces the need to extract, consume, and process virgin resources such as water, timber, and minerals. A reduction in the transportation impacts of shipped manufactured material include reduced energy use and greenhouse gas (GHG) emissions.

Installations can reduce disposal costs and generate revenue from the recovered value for material diverted from disposal and avoided waste disposal costs. Successful implementation of a C&D recycling program requires knowledge of the opportunities to sell reusable and recyclable C&D material and understanding the full impact on waste management programs based on recycling costs, sales proceeds, and the avoided cost of disposal. Financial savings are nearly always associated with material reuse and/or recycling, often 50 percent or greater.

Barriers to C&D debris management include resistance to changing current practices, limited diversion markets, limited market awareness, perceived higher cost, and perceived requirement for additional job-site space. As a result, installations may not be motivated to manage C&D debris in any manner other than through disposal.

Implementing UFGS 01 74 19

MILCON has adopted UFGS 01 74 19, so all construction, demolition, and renovation contracts must include a specification section titled "Section 01 74 19, Construction and Demolition Waste Management." This specification section requires the contractor to do the following:

1. Submit a C&D Waste Management Plan for approval.
2. Record and report tonnages of C&D debris reused, recycled, and disposed.

For the specification to be effective, the Government's project manager or engineer must enforce its provisions.

Use of this specification will have little or no impact on construction costs, especially since it has been included in previous contracts but not enforced.

FEAD - Facilities Engineering and Acquisition Division

A representative of the FEAD will attend pre-construction meetings for all projects to provide information and guidance. The FEAD representative is encouraged to work with the SW Manager to provide guidance on non-hazardous solid waste recycling and disposal options.

Guidance requires contractors to submit quantity reports at monthly or other pre-agreed intervals. Enforcement by project managers and engineers in FEAD and PWD is required to obtain complete disposal, reuse, and recycling information. It is recommended that copies of these reports be forwarded to the SW Manager for inclusion in the P2-ADS.

Educational Approaches

Current NCBC Gulfport educational approaches to further the intent of UFGS 01 74 19 and 01573N are:

- Include reuse and recycling goals and requirements in project specifications. By including goals and requirements, NCBC Gulfport can signal its commitment to reuse and recycling C&D debris and make contractors aware of their responsibilities from the project outset.
- Encourage contractors to recycle small or moderate quantities of recyclables by placing OCC and other source separated materials in recycling containers at the Recycling Center or elsewhere at NCBC Gulfport.
  - An example of this would be OCC generated from construction of new housing units.
  - If requested, contractors can be provided with a designated scrap metal container for donation to the recycling program.
- Educate contractors and crews on material recovery techniques and procedures such as sorting and storage methods, recoverable materials, and removal techniques to minimize contamination problems and increase recovery rates.
- Require contractors to hold their subcontractors accountable for material recovery.

Educational approaches to further the intent of UFGS 01 74 19 and 01573N are:

- Require the establishment of a tree recovery and green waste composting program. An arborist can assess the condition of the trees on the site. Reusable trees can be removed, potted, and placed or donated for redevelopment reuse. Trees and bushes that are not reusable can be removed, chipped and ground, and used for ground cover at other locations on base or taken

offsite for composting. The contractor can use the material or make the material available to the installation for their use.

- Set up an aggressive resource recovery program by engaging local for-profit companies and non-profit organizations, (such as Habitat for Humanity, ReUse Alliance and IRN), in the recovery of reusable lead free fixtures that are deconstructed from the facility. Recovered items should include appliances (e.g., dishwashers, refrigerators, and stoves), cabinetry, windows, doors, and some types of flooring. The recovery program can put reusable items back into good use, reduce the volume of items that would normally be landfilled, and generate positive publicity for the project.

The SW Manager can use variations of the above implementation steps to continue promotion and education of contract officers, project managers, and construction contractors.

Major benefits of C&D debris reuse and recycling include reducing the cost of materials in construction and the cost of disposal of waste materials. Other benefits that can be gained include:

- More accurate prediction of waste generation rates for building projects
- Increased revenue from the sale of the recovered materials
- Conservation of valuable natural resources

Source Separation

Concrete and Asphalt

NCBC Gulfport typically reuses concrete and asphalt as aggregate for roadways, parking pads, etc., as it costs contractors to buy aggregate.

Metals

Steel and non-ferrous metals can be marketed to local metal recyclers. Steel attached to other materials (i.e., reinforcing bars in concrete) would require mechanical processing, which is not available; thus, not all steel generated as C&D debris can be recycled.

Paper Products

Construction and renovation projects frequently receive materials packaged in cardboard boxes in quantities sufficient to justify storing the cardboard in a separate roll-off container and subsequently delivering it either to a local market or to the Recycling Center. Other waste paper typically has to be disposed of with the other mixed waste, unless there are large quantities of certain grades of paper.

Wood

Wood in C&D debris could be marketed or reused when separated from mixed wastes. In certain circumstances, decommissioned lumber may be reused by turning into the Recycling Center. Due to its bulky nature, waste wood typically requires the use of a roll-off container.

Soil

Soil is generated by grading and excavation activities associated with various types of construction, renovation, and demolition projects. Typically top soil is removed and stockpiled on the construction site and then reused on that project. Contracts to date typically prevent moving soil from one location to another on-base for various reasons such as concern for contaminants. NCBC Gulfport may store soil in stockpile areas for future reclamation.

Storm Debris

Storm debris is usually a mixture of various materials and typically requires separation through mechanical processing. Storm debris should be managed in accordance with NCBC Gulfport's Base Disaster Preparedness Plan. A few opportunities for recovery may exist using machine separation of components. Two examples of such opportunities include: (1) where materials can be readily isolated; (2) where the bulk of the storm debris consists of one metal component.

SUMMARY RECOMMENDATIONS

NAVFAC Guide Specification

- Upon implementation of UFGS 01 74 19 by MILCON, writers of construction contract documents; i.e., FEAD, PWD, and NAVFAC SE contract authors and administrators should comply with the intent of Guide UFGS 01 74 19.

Program Monitoring

- The FEAD and PWD should continue to require their construction contractors to (1) submit a Waste Management Plan, and (2) submit monthly reports of quantities and types of waste materials disposed, reused, and recycled.
- Contractors should be advised that recyclable materials can be taken to the Recycling Center. The Recycling Center should be prepared to receive and process these materials (e.g., metals, OCC, etc.) from construction and demolition projects.
- An Environmental Department representative is encouraged to attend all pre-construction meetings, and provide guidance on recycling and disposal options. It is further suggested that this information be provided to the SW Manager, which will require communication between the FEAD and Environmental Department.
- The Environmental Department, FEAD, and PWD contracting officers are encouraged to work together to be sure that all construction projects at NCBC Gulfport contain requirements for C&D debris recycling and tonnage reporting.
- Storm debris should be managed in accordance with NCBC Gulfport's Base Disaster Preparedness Plan.
- The facility is encouraged to require the establishment of a tree recovery and green waste composting program. An arborist can assess the condition of the trees on the site. Reusable trees can be removed, potted, and placed or donated for redevelopment reuse. Trees and bushes that are not reusable can be removed, chipped and ground, and used for ground cover at other locations on base or taken offsite for composting. The contractor can use the material or make the material available to the installation for their use.
- The facility is encouraged to set up an aggressive resource recovery program by engaging local for-profit companies and non-profit organizations, (such as Habitat for Humanity, ReUse Alliance and IRN), in the recovery of reusable fixtures that are deconstructed from the facility. Recovered items should include appliances (e.g., dishwashers, refrigerators, and stoves), cabinetry, windows, doors, and some types of flooring. The recovery program can put reusable items back into good use, reduce the volume of items that would normally be landfilled, and generate positive publicity for the project.

CHAPTER 7

INFECTIOUS MEDICAL WASTE

INTRODUCTION

The Bureau of Medicine and Surgery (BUMED) defines infectious waste as: "*liquid or solid waste containing pathogens in sufficient numbers and of sufficient virulence to cause infectious disease in susceptible hosts exposed to the waste*[1]." These wastes are generated at medical and dental treatment facilities. Laws and regulations controlling the management of these wastes differ in many respects from those for non-hazardous solid waste and hazardous wastes. Websites regarding these laws and regulations are presented in Chapter 1.

The Navy Branch Health Clinic (NBHC) is required to comply with BUMED Instruction 6280.1A, which provides guidelines for the definition, segregation, packaging, and handling, storage, treatment, transport, disposal, monitoring, and training for infectious waste management. The NBHC is also required to comply with any State or local regulations and guidance documents.

OBJECTIVES

This chapter has two objectives:

- Assess the existing infectious medical waste management system.
- Assess management needs and recommend improvements.

DESCRIPTION OF EXISTING SYSTEM

NBHC is considered an ambulatory care facility and therefore does not provide overnight care for patients.

Generation

Infectious medical waste is generated in NBHC's medical treatment and immunization rooms, the laboratory, and the dental clinic's exam/treatment rooms. Infectious medical waste (usually sharps) is also generated on occasion at the preventive care treatment areas. Appropriate receptacles are placed in each room where infectious medical waste is generated.

Infectious Waste Receptacles

When infectious medical waste is generated, it is placed into designated receptacles that are lined with red plastic bags that are impervious to moisture and have strength sufficient to preclude ripping, tearing, or bursting under normal conditions of usage. The receptacles have a bio-hazardous waste symbol imprinted on the lid and side.

Red-bagged waste is collected daily or as needed throughout the day by Navy battalion staff or clinic staff (corpsmen or medical assistants) who have been trained in proper infectious medical waste handling procedures. Personnel tie up the bags and take them to the designated storage facility located outside, adjacent to the NBHC. The storage facility is kept locked and restricted to authorized personnel only. Doors are marked with the universal biological hazard symbol. Personnel are required to enter information about the infectious medical waste (such as the date, time, and amount) taken to the storage facility each time they perform the task.

[1] Bureau of Medicine and Surgery, BUMED Instruction 6280.1A, Guidelines for Infectious Waste, 21 January 94.

Sharps

Used sharps generated during medical and dental treatments are another source of infectious medical waste. Sharps must be handled separately from other types of waste to prevent personnel injury.

Used sharps are disposed of in replaceable rigid, puncture-resistant, wall-mounted sharps receptacles. Each receptacle has an adhesive-backed label on which the installation date is written. Receptacles are checked daily by designated personnel at each medical facility. When approximately 75 percent full, the receptacles are replaced. All receptacles are closed before removal or replacement to prevent spillage or protrusion of contents during handling, storage, or transport. The containers are taken to the outside designated storage facility and aggregated with other infectious medical waste. As with red-bagged waste, personnel are required to enter information into the logbook for waste taken to the storage facility.

Sharps generated at offsite areas and the CDC are handled in the same way as the sharps at the NBHC. After preventive care treatment areas, all containers are closed and transported directly to the outside designated storage facility and aggregated with other infectious medical waste and information is entered into the logbook.

Storage Requirements

Per BUMED 6280.1A and the State of Mississippi Medical Waste Standards, the NBHC may store infectious medical waste up to 7 days without refrigeration. Currently, the infectious waste hauler collects waste once a week. It is recommended that NBHC personnel continue to perform proper procedures for infectious waste collection and storage.

MANAGEMENT NEEDS

Training

The NBHC holds periodic infection control training sessions for all medical personnel. These training sessions address issues such as proper waste handling procedures and exposure control, as required by BUMED 6280.1A.

Improper placement of infectious medical waste in non-hazardous solid waste containers can become a compliance issue. State fines may be imposed on NCBC Gulfport if infectious medical waste is found at the landfill where non-hazardous solid waste is disposed. In general, NBHC does not have a problem with non-hazardous solid waste being thrown into the infectious medical waste receptacles. Medical personnel perform random spot checks to ensure that the waste is disposed of properly. Chapter 9 addresses approaches for information and education to be used during training sessions to emphasize the importance of proper waste handling.

Reporting

Per State regulations, the infectious waste contractor assumes ownership of the infectious medical waste once collected. The contractor is required to properly manage the waste and deliver it to a properly permitted facility for disposal. This does not affect NBHC's responsibilities to acquire the services of a legitimate medical waste collection company and to confirm that the company is handling and disposing of the waste properly. It is recommended that the contract manager in charge of NBHC's infectious waste contract require copies of the annual operating permits for the waste collection contractor and the destruction facility.

NBHC has a good working relationship with the current infectious waste contractor. Although not required by the State, the contractor leaves a copy of the manifest with NBHC staff upon each weekly collection. Once the waste has been taken to a proper destruction facility, the contractor certifies the subsequent destruction on the same manifest for each collection and submits an invoice with a copy of the destruction paperwork.

All paper work is filed in the Medical Clinic's management office, but personnel do not keep running totals of the infectious waste quantities. It is recommended that NBHC personnel compile waste quantities on a monthly basis and submit the amounts to the PWD Environmental Division along with copies of the annual operating permits. This familiarity will enable the PWD Environmental Division to respond to issues raised by regulators and can serve as a check on compliance with environmental regulations. This also would allow for determination of unit costs for disposal (i.e., cost per lb and cost per week) and for any future need to change contractors or use an alternative type of disposal system.

SUMMARY RECOMMENDATIONS

Based on discussions with NBHC personnel and field observations, NBHC appears to be in compliance with BUMED 6280.1A and the State of Mississippi Medical Waste Standards.

NBHC Personnel

- Continue to perform proper procedures for infectious waste collection and storage.
- Continue to stress the importance of proper waste disposal procedures to all staff at training sessions.
- Consider using approaches from Chapter 9 to stress the importance of proper waste disposal.

Infectious Waste Contract Manager

- Require copies of the annual operating permits for the waste collection contractor and the destruction facility.

PWD Environmental Division

- Become familiar with the infectious waste management system at NBHC for responding to issues raised by regulators and serve as a check on compliance with environmental regulations.

CHAPTER 8

INSTITUTIONAL, CONTRACTUAL, AND RECORDKEEPING PRACTICES

INTRODUCTION

The purpose of this chapter is to document the institutional, contractual, and recordkeeping issues and practices relating to solid waste management and recycling at NCBC Gulfport. Accurate documentation of the collection, processing, and disposal activities at NCBC Gulfport will facilitate the preparation of the P2-ADS and allow tracking of the DoN's progress in meeting the DoD Measure of Merit (MOM) goals.

OBJECTIVES

This chapter has three objectives:

- Identify the institutional issues and changes to existing structure needed for meeting solid waste management and recycling goals.
- Assess contractual issues and recommended changes.
- Assess reporting and recordkeeping practices and identify actions needed to meet solid waste management and recycling goals.

INSTITUTIONAL ISSUES

Existing Structure

The range of services and facilities provided by NCBC Gulfport for its tenants and residents results in a variety of solid waste management and recycling tasks, as discussed in previous chapters.

The PWD serves as the governmental function for overseeing the solid waste management and recycling program services. The PAR provides quality assurance for the non-hazardous solid waste contract, while the BOSC (Government Contracting Resources) administers the non-hazardous solid waste contract and provides quality control and conducts contract surveillance for adherence to the contract. Personnel in the PWD and the BOSC appear to have a solid working relationship with each other. This relationship is vital for coordination of various solid waste management and recycling activities.

The FEAD supervisor oversees both the solid waste management and recycling programs. Exhibit 8-1 shows the organizational structure of the PWD.

Management Support

Effective solid waste management and recycling require ongoing support from NCBC Gulfport management. Issuance of an Instruction directing implementation of this ISWMP is the first and most basic step of management support. Beyond that step, support is needed in other outward ways to remind personnel that solid waste management and recycling are important.

With a multitude of mission-and non-mission-critical priorities, it is important to have strong ongoing management support and authority for addressing compliance, enforcement, and other issues affecting solid waste management and recycling. Senior management support (e.g., NCBC Gulfport's CO, Public Works Director, members of the EQB, etc.) can:

- Emphasize the importance of solid waste management and recycling.

- Address solid waste and recycling when the broader topic of environmental goals is discussed.
- Provide funding for improving the solid waste management and recycling programs.

Periodic mention of solid waste and recycling in informational or news-type publications (as addressed in Chapter 9), especially those widely distributed, also lends support to the solid waste management and recycling programs.

Support has been shown for the Recycling Program through the funding and opening of the Recycling Center in August 2008; this command support is encouraged to continue as a prominent part of efforts to improve the Recycling Program. Examples of these efforts, as outlined in Chapter 9, include improving recycling signage, conducting public awareness initiatives on the QRP and proper non-hazardous solid waste disposal, and increasing recycling bin presence in strategic areas around NCBC Gulfport.

CONTRACTUAL ISSUES

This subsection addresses issues related to non-hazardous solid waste collection and disposal services provided by contractors.

Non-Hazardous Solid Waste Contract

As noted earlier, the BOSC oversees the non-hazardous solid waste collection contract for NCBC Gulfport. Family Housing is overseen by a separate contract through a PPV contractor. The contract for non-residential solid waste is structured with payment based on a unit cost per ton.

Based on discussions with solid waste and contract support personnel and field observations, NCBC Gulfport appears to be receiving an adequate level of service from the non-hazardous solid waste contractor.

Contract Monitoring

Some overflowing of non-hazardous solid waste collection containers occurs when battalions are home-ported, but when the battalions are deployed, very little non-hazardous solid waste is generated from their areas. There have also been instances of prohibited materials around non-hazardous solid waste collection containers (such as used oil filters, aerosol cans, tires, and batteries). Increased education about the Recycling Program will help to minimize the occurrence of prohibited materials.

It is recommended that the PAR continue to provide quality assurance checks for the non-hazardous solid waste contract, including random spot-checks of non-hazardous solid waste collection containers (i.e., monthly or quarterly) for:

- The non-hazardous solid waste contractor's adherence to the contract
- Monitoring and assessing non-hazardous solid waste collection needs to determine if service needs to be adjusted
- Occurrence of prohibited materials

Construction, Demolition, and Renovation Contracts

Enforcement of contract specifications and provisions is a continual effort, and recommended for PWD project managers and engineers for the, FEAD, and NAVFAC. Specifically, it is

recommended that the SW Manager provide assistance to contract specialists as contracts are being written as well as at the various project meetings.

As noted in Chapter 6, all construction, renovation, and demolition contracts for NCBC Gulfport include the provisions of Guide Specification UFGS 01 74 19. For the specifications to be effective, the NCBC Gulfport project manager must enforce their provisions. Use of the specifications has little or no impact on construction costs, although their use and enforcement may generate complaints from contractors.

RECORDKEEPING AND REPORTING PRACTICES

Recordkeeping is important for monitoring and evaluating system performance, planning future operations, and assessing compliance with contract reporting requirements. Such information is used to identify areas needing improvement, to assess costs of program operations, to plan program changes, and to estimate the impact of those changes. Additionally, waste reports are required to comply with Navy requirements and to allow calculation of the portion of total generated waste that is diverted from disposal through recycling, reuse, source reduction, and donation.

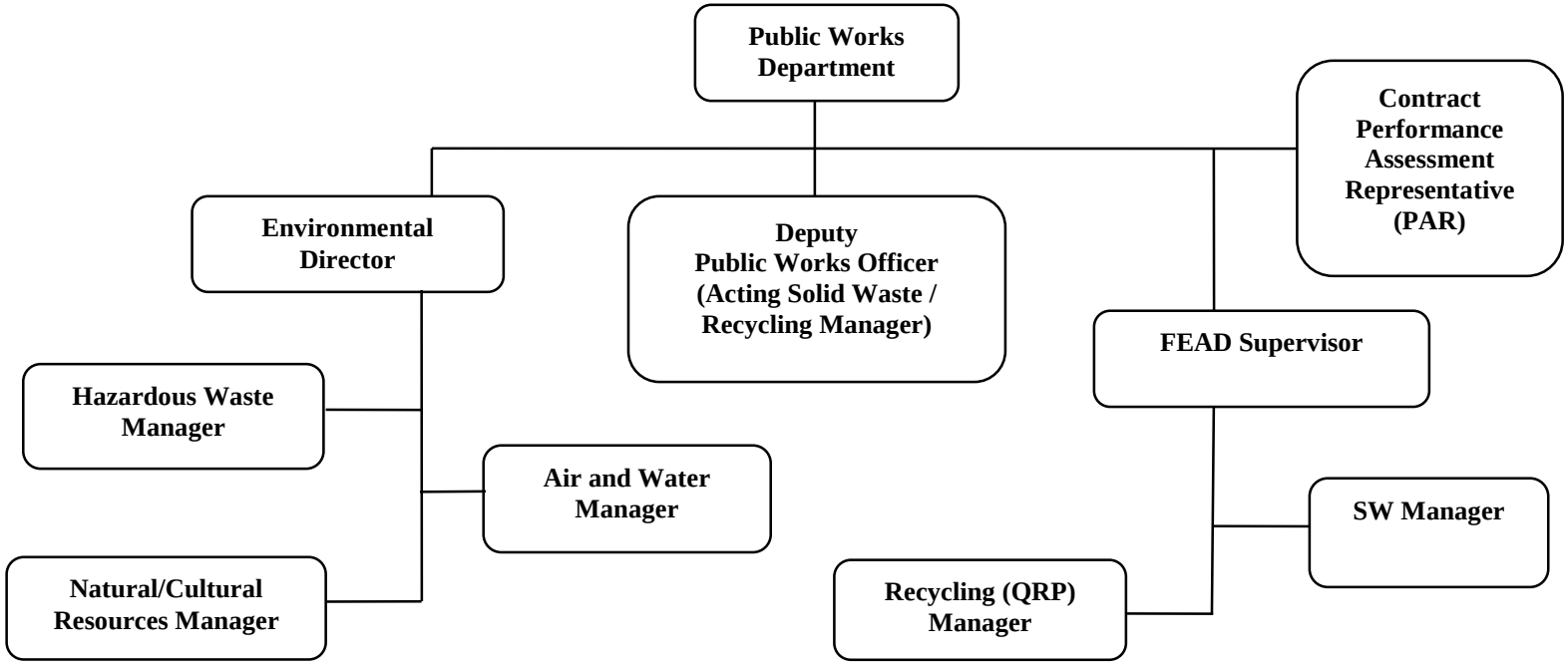
Deficiencies in information (qualitative and quantitative) exist in several areas of the solid waste management and recycling programs. Improvements in recordkeeping and reporting are needed. Reports require the compilation of data from numerous departments and tenants at NCBC Gulfport. Cooperative efforts are needed between these departments and tenants to obtain accurate data in a useable format. Instructions on the type of information needed, contact information, and how the data are to be compiled are needed to fill out reports properly.

SUMMARY RECOMMENDATIONS

Institutional, contractual, recordkeeping issues have been addressed in this chapter as well as throughout this ISWMP. In order to maintain effective and efficient solid waste management and recycling programs, it is recommended that NCBC Gulfport:

- Obtain solid waste quantities from the BOSC for non-hazardous solid waste quantities collected from all non-hazardous solid waste collection containers throughout NCBC Gulfport, and separate quantities for landscaping debris collected in roll-off containers (quarterly or monthly).
- Require reporting of recycling quantities from the NEX, Commissary, MWR, DLA and other retail establishments on materials that are not recycled through the NCBC Gulfport QRP (quarterly or annually) for inclusion in the Solid Waste Annual Reports.
- Obtain current population data from Fleet & Family Services (quarterly or annually).
- Obtain information on GPP and how it is implemented at NCBC Gulfport.
- Encourage contractors to dispose of recyclable materials through the NCBC Gulfport Recycling Program. This will allow for better tracking of tonnages as well as increasing proceeds from the sale of materials.
- Estimate quantities of materials that are reused or donated, such as to the Thrift Shop.

EXHIBIT 8-1
Public Works Department Organizational Chart



CHAPTER 9

INFORMATION AND EDUCATION PLAN

INTRODUCTION

The success of this ISWMP depends on personnel awareness, cooperation, interest, and action. Before personnel can be expected to cooperate and act, they must be informed of requirements and opportunities, as well as instructions on what actions to take. In some cases, new personnel may not have received recycling training. In these cases, promotional efforts provide a chance to inform them of program details. Because communication about recycling has been infrequent, personnel may be only partially aware of materials included in the program and the importance of their participation. This chapter describes needs and strategies to educate personnel regarding the non-hazardous solid waste and recycling systems. To achieve the EO 13514 goal of 50 percent non-hazardous solid waste diversion by the end of FY 2015, it will be vital for NCBC Gulfport to implement these recommendations.

OBJECTIVES

This chapter has two objectives:

- Assess existing Information and Education efforts.
- Identify sources of information to be used to implement an Information and Education Plan to encourage increased participation by military and civilian personnel in solid waste management and recycling programs.

CURRENT EFFORTS

Currently, the SW Manager, QRP Manager, and PAO periodically use a variety of ways to inform NCBC Gulfport personnel, contractors and visitors about the solid waste and recycling programs such as:

- Participation in coordination/staff meetings with department heads is useful for informing other areas of changes to the solid waste and recycling programs and coordinating solid waste/ recycling requirements with base activities.
- QRP's sponsorship of Seabees Day and other special events, such as Earth Day, offers the opportunity to attract attention to and increase awareness of solid waste management and recycling approaches.
- The SW Manager works with the FEAD representative in providing direction to contractors regarding the management of solid waste/recycling and C&D debris through the contract specifications and during pre-construction meetings and/or contract kick-off meetings. This process has been a key to success in NCBC Gulfport attaining 100 percent solid waste diversion in C&D debris.

INFORMATION AND EDUCATION IMPLEMENTATION

It is recommended that the SW Manager and QRP Manager work with the PAO to promote the solid waste and recycling programs, as the more impact the QRP has on individuals by making them feel that they are "owners" in the program, the more participation it will likely receive. Similarly, involving the public in program goals will instill a feeling of ownership among base personnel. If personnel understand the EO goal to raise diversion to 50 percent by 2015, members

of the community may gain more appreciation for recycling in general. In addition, if the community felt rewarded for their participation in the QRP, willingness to recycle would increase base-wide.

NCBC Gulfport is encouraged to use a multi-media approach to promote the ISWM and QRPs and to increase public awareness, including articles in the installation newspaper, electronic mail and sign notifications, social networks, posters, contests, awards, school outreach activities, and other promotional activities. NCBC Gulfport is encouraged periodically distribute materials that illustrate goals with text, tables, and graphics as appropriate. Although the means of communication may change depending on the audience, a consistent message may be used. It is vital that this message emphasize the fact that recycling revenues benefit NCBC Gulfport by allowing MWR to provide various programs and recreational activities for the base. High recycling tonnages also allow the base to be recognized by the DoD for its efficiency in operating its Recycling Program. The following subsections present general means and methods of communication that may be productive for NCBC Gulfport.

Verbal Communication

Verbal communication can be most effective because the person delivering the message has a captive audience, can interact with the audience, and can answer questions. This type of interaction can give participants feedback that can be used to promote a sense of investment that is important to the program's success.

The primary limitation of verbal communication is that the message is conveyed at a fixed point in time, may be quickly forgotten, and is labor-intensive compared to other forms of communication. The monthly department head meetings or quarterly subcommittee meetings for the EQB are good opportunities to use verbal communication about program changes and opportunities for improvements to the program.

Print Media

One of the main advantages of using printed communication materials is the ability to use images (photos, charts, graphs, and tables) to attract attention and visually convey information. Printed materials can be posted or retained by the recipient for future reference. Using images from the DoD reinforces a consistent environmental and P2 image. A disadvantage of printed materials is that they are only useful if personnel read them.

Newsletters can be used to update one or more specific audiences. For example, the NCBC Gulfport Environmental Division could assist the Supply Department in preparing a newsletter (at least annually) for purchasing agents and GPCs. The newsletter can address new suppliers of recycled-content products, give examples of recent environmentally preferable purchases, and provide answers to frequently asked questions. Appendix E provides a sample GPP brochure that can be used for this type of awareness communication.

Bulletin board factsheets provide short messages to increase awareness and provide reminders. These printed materials can be colorful and contain graphics to attract attention. The SW Manager could also work with the PPV to provide non-hazardous solid waste management and recycling factsheets to family housing residents in conjunction with recycling information in training materials provided to new residents. In addition to printed material, residents can be invited to inquire about information on recycling, and the NCBC Gulfport Environmental Division can address any questions. Appendix F provides a sample factsheet that can be used for this type of awareness communication.

As with verbal communication, print media can give participants feedback to create a sense of investment that is important in a program's success.

Recycling/environmental images can be used frequently and consistently to help the QRP increase visibility and stimulate interest. Signs, posters, brochures, and other printed materials can also be consistent in their use of the QRP's color scheme, logo, and mascot (if one is used). In some cases, the MDEQ's state-wide campaign "The Recycling Guys" could be used to educate the public on the importance of recycling.

As indicated earlier, the installation population is highly variable due to the training mission of NCBC Gulfport. However, all personnel assigned to NCBC Gulfport receive a Fleet & Family Welcome Aboard packet. A factsheet flyer on non-hazardous solid waste and recycling materials could be included in this packet.

Signage

Signs serve as permanent communication tools to convey information and as reminders to people walking or riding past the sign. It is suggested that signs present concise and clear messages and as with any promotional program, the use of standardized message and associated colors and logos is encouraged. It is important to publicize the existence of the Recycling Center to personnel and family housing residents. NCBC Gulfport residents may not know where the Recycling Center is located. The following signs are suggested:

- Recycling Center instructional sign: The intention of this sign is to draw attention to the facilities and highlight services offered. A separate free-standing sign presenting hours of operation, listing materials accepted for recycling, describing drop-off procedures, and describing the program in general can be placed in a conspicuous location at the facility. Display the QRP Manager's name, responsible personnel, a phone number to call during business hours, and the DoN/DoD environmental logos on the explanatory sign is also suggested.
- Prohibited and instructional non-hazardous solid waste /recycling container signage: The majority of the recycling containers did not appear to have signage identifying what types of recyclable materials are to be placed in them. Therefore, it is recommended that labels be placed on all non-hazardous solid waste and recycling containers. Examples are adhesive-backed decal-type signs for recycling containers or stenciled lettering for prohibited materials on non-hazardous solid waste containers.
- Place directional signs at various locations to assist participants in finding the facilities and to serve as reminders of the program to all personnel walking or riding by.
- The NCBC Gulfport entrance marquee could also be used to promote installation-wide recycling awareness and provide updates to the installation's status in achieving the 50 percent diversion rate.

The recycling logo is imprinted on the plastic receptacles inside buildings. However, no signage describing materials accepted is provided. Using appropriate images from the QRP consistently on all facilities will likely help the program increase visibility and stimulate interest. Consistent use of the QRP color schemes, and logo are recommended for all signs, posters, brochures, and other printed materials. Because military personnel frequently change duty stations, it is recommended that NCBC Gulfport use standard recycling images so that the QRP reinforces a

consistent Navy-wide QRP image. Wording such as "NCBC Gulfport Recycling Program" also may be used.

Electronic Communication

Electronic communications include e-mail and various forms of Internet activity. An all-NCBC Gulfport e-mail messages can be sent to everyone at the installation with an e-mail account to announce non-hazardous solid waste and recycling resources to be made available at special events, such as Seabee Day, Earth Day, and America Recycles Day, or to announce recycling results after the event.

In addition to being available around the clock, electronic notices can provide links to other information providers, such as the EPA, DoD, DoN environmental and recycling programs, and points of contact to obtain additional information.

To access NCBC's website, go to: https://www.cnic.navy.mil/Gulfport/index.htm. Currently there is one environmental link on the base's website, which can be located by selecting "Operations and Management" from the bar across the upper portion of the website, then clicking on "Environmental Support" in the menu on the left side of the screen. A narrative of NCBC Environmental Mission Statement then displays. There are also phone numbers listed for environmental and recycling staff. The website also has a link for NCBC's environmental instructions. The website also offers electronic access to the base news publication, *Seabee Courier*, which has a bulletin in every issue with recycling information for base personnel.

It is recommended that the NCBC Gulfport Environmental Division create a web page link for recycling information, including the point of contact for additional information. Web sites, in addition to being available around the clock, also allow for links to other information providers, such as the EPA and the Navy Recycling Program. A web page requires ongoing maintenance and updates to keep the information current. Information on the web site also is limited to people with Internet access, although that number continues to grow.

Based on February 2013 interviews with MWR and PAO personnel, the most effective method to deliver messages is through the NCBC Gulfport Facebook page, http://www.facebook.com/pages/Naval-Construction-Battalion-Center-Gulfport/161404016711. The SW Manager is encouraged to work with the PAO to author targeted posts on the NCBC Gulfport Facebook page, at least semiannually, for information and education awareness. The posts can be used to present information such as:

- Recycling progress, using a graph or chart depicting tons recycled and money saved
- A list of materials accepted for recycling
- Descriptions of end products produced from recycled materials
- Special notices, reminders, tips, or trivia
- Answers to frequently asked recycling, reuse, and source reduction questions
- A telephone number to call for answers to questions

Special Events and Sponsorships

Special events offer the opportunity to attract attention and increase awareness of ISWM and recycling approaches. More permanent MWR projects could be sponsored from QRP revenue to promote the QRP by displaying the impact installation recycling has on MWR; such actions could raise awareness and encourage site personnel to recycle. Therefore, it is recommended that the

SW Manager partner with MWR to take advantage of special events and sponsorships to increase QRP awareness, using materials and activities such as the following:

- Displays could be used to show items accepted or not accepted in the QRP, products made from recycled materials, or hazardous waste that must be diverted from the solid waste stream.
- Highly visible recycling collection containers, such as aluminum can recycling collection containers and the recycling trailers, could be brought to event locations.
- NCBC Gulfport Environmental Department lead the planning of special education and awareness communications for NCBC sponsored events, such as Energy Awareness Week, Earth Day in April, Seabee Day in March, Easter Egg Hunt, Halloween and Christmas activities, Mud Run in September, and America Recycles Day in November. Sharing the results from the special events in print publications may instill a sense of pride and create momentum for increased recycling. In addition, it should be noted that certain special events are funded with recycling dollars.

RESOURCES AVAILABLE

Numerous educational resources are available for solid waste management, source reduction and reuse, recycling, and composting. Exhibit 9-1 provides examples of resources available.

Effectiveness Measurement

Integral to any information and education program is the measurement of its effectiveness, which can help to determine whether or not a particular strategy should be used, revised, or dropped. A variety of measurement approaches are available, and the approach chosen should be appropriate for and be in alignment with the strategy being evaluated. Examples are:

- Conduct field surveys of various NCBC Gulfport shop participation in the QRP before and after new information and education programs are implemented.
- Measure the quantity of contaminants pulled from certain QRP activities (such as corrugated cardboard or office paper) before and after information and education activities are conducted.

Part of measuring effectiveness is to provide the same feedback to all program participants. It is recommended that both good and bad news be reported, so that participants' commitment to abide by program policies will be reinforced by knowing the results of their efforts. Good news reinforces positive feelings about participation. When bad news is reported (e.g., incidents of illegal dumping and falling short of recycling goals), it is recommended that it be followed by suggested corrective actions so personnel will understand efforts that are needed to improve performance.

SUMMARY RECOMMENDATIONS

To improve non-hazardous solid waste management and to increase recycling, reuse, and source reduction, an Information and Education Program is recommended, including the following elements:

- Use the methods described above in this chapter to aid in managing the development and implementation of non-hazardous solid waste and recycling information and education programs. Prior to initiating changes to the non-hazardous solid waste and recycling programs, it is suggested that the SW Manager ensure all equipment, personnel, and educational materials (i.e., flyers, signs, pamphlets, etc.) are in place.

- Work with the PAO for promotion of the non-hazardous solid waste management and recycling program, including feature articles in the NCBC Gulfport Facebook site, for information and education awareness. In addition, update the NCBC's environmental link for correct program information on solid waste and recycling.
- Communicate (at a minimum) issues, changes, and potential improvements to the solid waste and recycling programs at the Monthly department head meetings or quarterly subcommittee meetings for the Environmental Quality Board.
- Use recycling/environmental images frequently and consistently to help the QRP develop visibility and identity. Signs, flyers, factsheets, posters, brochures, and other printed materials should be consistent in their use of the QRP's color scheme, logo, and mascot. An example brochure and factsheet are presented in Appendices E and F, respectively.
- Label all non-hazardous solid waste and recycling containers.
- Present opportunities for PPV housing tenants to use the Recycling Center to its full advantage in various public address media around NCBC Gulfport such as signs, the entrance marquee, the *Seabee Courier*, etc.
- Develop effectiveness measurement tools prior to implementation of "new" information and education initiatives, to capture "before" and "after" results.

EXHIBIT 9-1
Educational Material Resources

Resource	Website	Types of Programs	Educational Materials/Promotional Events
Federal (USEPA)	http://epa.gov/recycle/index.html	Waste minimization and recycling programs with emphasis on public education and awareness and provides technical assistance to local governments, businesses, and others who request help	Publications by topic may be downloaded. Examples include: • Buying recycled • C&D debris • Organic materials • Source reduction
Navy (NAFAC)	Naval Facilities Engineering Command (NAVFAC), Engineering Service Center: https://portal.navfac.navy.mil/portal/page/portal/NAVFAC/NAVFAC_WW_PP/NAVFAC_NFESC_PP/ENVIRONMENTAL/EQIFS/	Navy's Environmental Quality Initiative (EQI) is a comprehensive initiative focused on maximizing the use of pollution prevention to achieve and maintain compliance with environmental regulations. Factsheets were designed to encourage activities to use pollution prevention technologies and methods. The overall goal of the series is to promote sustained environmental compliance at the lowest life-cycle cost	Navy Environmental Quality Fact Sheets include: • Solid waste management • Hazardous waste management • Petroleum, oils, and lubricants
State (MDEQ)	Recycling and Solid Waste Reduction Program, under the Office of Pollution Control: www.deq.state.ms.us/MDEQ.nsf	The goals of the Recycling and Solid Waste Reduction Program are to: • Increase the amount of recycling and composting in the state. • Increase awareness and efforts of non-hazardous and hazardous waste pollution prevention. • Increase awareness and efforts of buying products manufactured from recycled materials • Educate the public of the importance of recycling and solid waste reduction.	Educational resources include some of the following: • Litter bags • Coloring books • Recycling presentations • Example recycling signs for collection containers
Local	Harrison County Beautification Commission: http://www.mscoastbeautiful.org/programs.asp	Its mission is to implement Keep America Beautiful (and similar) programs which combine education with hands-on stewardship to make Harrison County's communities cleaner, greener, safer and more livable	Promotional events sponsored by the County include: • Household Hazardous Waste Collection Days • Christmas Tree Recycling Program • Telephone Book Recycling • Great American Cleanup • Annual Household Waste “Big Day” Collection

CHAPTER 10

ROLES AND RESPONSIBILITIES

INTRODUCTION

This chapter gives an overview of each responsible party's roles and responsibilities relative to the Solid Waste and QRPs.

OBJECTIVES

The objective of this chapter is to describe the roles and responsibilities of each department involved with the Solid Waste and QRPs.

The first step in program implementation is identification of parties responsible for the various actions and establishment of schedules for these actions. Exhibit 10-1 identifies responsibilities of each responsible party organized according to area of responsibility, such as source reduction, reporting, and others:

EXHIBIT 10-1
Solid Waste Management Roles and Responsibilities

Responsible Party	Area of Responsibility	Frequency
Commanding Officer and EQB	Provide NCBC Gulfport ISWM Program with sufficient resources to implement this Plan.	Ongoing
NCBC Gulfport Environmental Director	Direct programs to develop, implement, and administer management and engineering procedures and policies that will achieve and maintain full compliance with Federal, State, and local environmental regulatory requirements for the installation and Tenant Commands related to solid waste.	Ongoing
	Provide briefings to the CO on ISWM initiatives, objectives, successes, and needs, and identify any necessary corrective action.	Annually
	Budget and request funding for solid waste management and recycling services.	Annually
	Obtain funding for NCBC Gulfport Solid Waste and QRP recycling and equipment through the Navy, Operation and Maintenance, Naval Reserve (OMNR), and/or the Environmental Project Requirement (EPR) System.	Ongoing
	Serve as strong environmental advocate to other departments.	Ongoing
NCBC Gulfport SW Manager	Implement this ISWMP to comply with Federal, State, local, DoD, EO, and Navy requirements.	Initially, then ongoing
	Obtain information from the PAR on types of materials found in waste containers. Add signage to collection containers.	
	Develop a formally recognized source reduction program with SOPs and training.	Initially
	Manage the development and implementation of the ISWM education programs, including obtaining funding.	Initially, then ongoing
	Along with the QRP Manager, educate personnel regarding materials that should not be placed with solid waste for collection. Provide information regarding proper methods to dispose of these wastes.	Initially, then ongoing
	Develop and distribute various print media factsheets, brochures, and posters for publication in the welcome package and for distribution to personnel and contractors (i.e. develop and update a web page for recycling on the NCBC Gulfport Website).	Initially, then ongoing

EXHIBIT 10-1
Solid Waste Management Roles and Responsibilities

Responsible Party	Area of Responsibility	Frequency
NCBC Gulfport SW Manager (continued)	Develop effectiveness measurement tools prior to implementation of new information and education initiatives, to capture "before and after" results.	Initially, then ongoing
	Obtain contractor estimated tonnages of C&D debris recycled and reused.	Annually
	Obtain information on green purchasing and how it is practiced at NCBC Gulfport.	Initially
	Work with PWD, Supply, and Procurement to implement green purchasing practices and procedures.	Initially
	Provide basic instructions on how to manage solid waste for inclusion in the welcome package for new personnel.	Initially, then ongoing
	Work with PWD, Supply, and Procurement to implement green procurement practices and procedures.	Initially, then ongoing
	Obtain information regarding disposal facility used by contractors, as a means to manage potential liability.	Initially, then annual
	Present a green purchasing training session for department and tenant purchasing agents.	Initially, then annually
	Receive, review, and compile non-hazardous solid waste, C&D debris, and recyclable quantities for entry into the EPR Portal. Data should be obtained from the collection contractor, NEX, Commissary, and Groundskeeping.	Monthly
	Implement a requirement that quantities of non-hazardous solid waste and C&D debris generated and disposed, and quantities recycled, donated, and reused, be reported monthly.	Monthly
	Serve as the installation point of contact for questions, complaints, or other notification regarding solid waste management and recycling.	Ongoing
	Provide guidance to procurement personnel to purchase products containing recovered materials,	Ongoing
	Oversee spot-checks of waste and recycling collection containers (i.e., quantity, waste material type, capacity, condition, location and frequency of service) to identify opportunities to change service frequency and/or container capacity as waste quantities change.	Ongoing
	Facilitate the donation of used furniture that DLA will not accept.	Ongoing
	Publish articles in *NCBC Gulfport's Facebook website* regarding the installation's recycling initiatives to educate and provide information regarding policies.	Ongoing
	Coordinate with MWR to plan special events using recycling dollars for recycling education and awareness at NCBC Gulfport.	Ongoing
	Monitor local markets for materials generated by C&D activities, including metals, wood, concrete, asphalt, land clearing debris (including soil and rock), etc.	Ongoing
	Promote the reuse of products and supplies, and use supplies and materials more efficiently. Develop and distribute via email a list of source reduction methods to all personnel (e.g., make fewer copies; route one copy of documents to several readers).	Ongoing

EXHIBIT 10-1
Solid Waste Management Roles and Responsibilities

Responsible Party	Area of Responsibility	Frequency
NCBC Gulfport SW Manager (continued)	Promote reductions in the number of documents that are copied and the number of copies made. Set printers to print double sided as a default setting.	Ongoing
	Promote the use of electronic communication when possible, to reduce the amount of printing.	Ongoing
	Strengthen existing relationships with Tenant Commands to increase solid waste and recycling awareness and meet applicable compliance requirements.	Ongoing
	Report on progress and achievements, as well as problems with solid waste management at NCBC Gulfport's department and tenant meetings. Distribute this information via the web page, emails, and publications.	Quarterly
	Estimate quantities of materials that were reused or donated.	Annually
	Obtain current population data from PAO.	Annually
	Based on demographic data for NCBC Gulfport, calculate costs for solid waste management per employee per year, pounds disposed and recycled per employee per year, and MSW recycling rates. Use these rates and overall quantities and costs in period-to-period comparisons (i.e., current vs. prior years) to evaluate collection and disposal and recycling system performance, and for planning purposes.	Annually
	Budget and request funding for solid waste management and recycling services.	Annually
	Review construction contract specifications prior to issuance for bid to ensure that Guide Spec. 01 74 19 has been appropriately adapted.	For each new contract
	Serve in a coordinating and review role to ensure that the provisions of Guide Spec 01 74 19 are included in construction, demolition, and renovation contracts, and that these provisions are enforced.	For each new contract
	Review and provide comments on C&D Waste Management Plan submittals from contractors.	For each new contract
QRP Manager	Work with the NCBC Gulfport Environmental Division to provide recycling training for existing and new employees.	Initially, then ongoing
	Pass recycling quantities along to the SW Manager for preparation of the P2-ADS that includes DLA recycle data.	Initially, then ongoing
	Maintain a current list of all recycling containers, equipment, and storage areas, including container locations and maintenance logs.	
	Receive, review, compile, and report on recyclable quantities reported by the monthly collection and recycling contractor. Verify that all recycled and reused material is counted.	Monthly
	Provide NCBC Gulfport Environmental Division with recycling quantities for inclusion in the EPR Portal.	Monthly
	Maintain required accounting records and supporting documentation for all proceeds received from the sale of recyclable materials for disbursement of funds for authorized purposes.	Monthly
	Work with the NCBC Gulfport Environmental Division to obtain recycling quantities from tenants and other departments on-base for materials that are not recycled through the QRP.	Quarterly

EXHIBIT 10-1
Solid Waste Management Roles and Responsibilities

Responsible Party	Area of Responsibility	Frequency
QRP Manager (continued)	Monitor and provide assistance in reporting estimated quantities of recycled materials.	Ongoing
	Monitor and find recycle markets for the QRP	
	Take actions that will allow the Recycling Program to retain its QRP status, and when fully effective, will achieve the 50% non-hazardous solid waste diversion goal set for FY 2015.	Ongoing
	Monitor unit costs for collection of recyclables and avoided cost of disposal.	Ongoing
	Budget and allocate resources necessary for an effective information and education program, including material, personnel, and financial resources.	Ongoing
	Increase participation by locating recycling receptacles at desks, central locations, common areas in offices, operations facilities, warehouses, tenants, recreational areas, etc.	Ongoing
	Budget and request funding for recycling services.	Ongoing
	Use recycling/environmental images frequently and consistently to help the QRP develop visibility and identity.	Ongoing
	Communicate issues, changes, and potential improvements to the QRP at department head meetings and at pre-construction, demolition, and renovation meetings.	As needed
PWD, FEAD and GPCs	Follow EPA's procurement guidelines in compliance with RCRA Subtitle F requirements and EO requirements to purchase products containing recovered materials.	Ongoing
	Comply with EO 13514 regarding the diversion goal.	Ongoing
	Obtain and use information from the NCBC Gulfport Environmental Division about source reduction, reuse, recycling, and ISWM.	Ongoing
FEAD	Append NAVFAC Guide Spec 01 74 19 to each contract for construction, demolition, and renovation to promote recycling, including reporting.	Ongoing
	Document diverted quantities of soil and rock for clean fill (reuse) applications on construction and demolition projects.	Ongoing
	Provide information (from the QRP Manager) to contractors about local markets for materials generated by construction and demolition activities, including metals, wood, concrete, asphalt, and clearing debris (including soil and rock), etc.	Ongoing
	Participate in pre-construction meetings with contractors to inform them of Navy policy and contract specifications regarding C&D debris generation, recycling, and disposal and enforce those requirements during construction.	Ongoing
	Inform contractors of NCBC Gulfport policies by attaching an environmental policy document to contract.	Ongoing
	Require contractors to report actual quantities by weight records and/or by load counts and estimated volumes and weights.	
	Write contracts to include penalties for illegal dumping violations and types of facilities where waste is to be taken for proper disposal.	

EXHIBIT 10-1
Solid Waste Management Roles and Responsibilities

Responsible Party	Area of Responsibility	Frequency
FEAD (continued)	Gather quantity and composition data from contractors to measure contractor performance for recycling. Conduct post-project assessments to identify recycling potential on future projects.	Quarterly
	Attend training session with NCBC Gulfport Environmental Division to discuss requirements on certain GPPs containing recycled materials; local sources of recycled content products and refurbished toner cartridges; how to check with DLA for used government products instead of buying new; how to perform simple life cycle cost and waste generation comparisons to evaluate purchasing options, etc.	Annually
	Revise collection and processing approaches that would: a) reduce costs for overall waste management and recycling; b) reduce recycling operations personnel labor requirements; and c) balance collection and processing capacity as diverted quantities increase.	Annually
	Conduct survey with NCBC Gulfport Environmental Division to review service requirements to identify opportunities to change service frequency and/or container capacity as waste quantities disposed change.	Annually
	Structure solid waste contracts to separate collection and disposal costs. Disposal costs should be a pass-through on a unit cost per ton basis.	Contract Renewal
	Educate and inform groundskeeping and landscape designers, planners, and contractors that their designs have an impact on waste quantities and that NCBC Gulfport has a goal to reduce landscape waste generated.	Ongoing
Tenants	Inform the NCBC Gulfport SW Manager about waste material reuse, recycling, and green procurement efforts and provide quantity data (quantities diverted, reused, recycled, and disposed) to them.	Ongoing
	Comply with the ISWM and recycling practices established by PWD, prevent unauthorized waste disposal, and participate in recycling and reuse efforts.	Ongoing
	The Navy Branch Health Clinic must continue to perform proper procedures for infectious waste collection and storage.	

Appendix A
NCBC Gulfport Area Recycling Markets

Appendix A
NCBC Gulfport Area Recycling Markets

Company Name By Category	Area Code/ Telephone	Facility Location	Materials Handled	Other Co. Info	Price Basis/Current Price	Services Offered/ Notes
Paper						
Sumrall Recycling	(601) 758-0378 Dale Logan	Sumrall, MS	OCC, ONP, MP, MOP	S, R	MP/OCC/ONP/MOP – Market Value	Currently used at Commissary Pick-up service available for >15 tonnes mixed recycling
Plastic						
Sumrall Recycling	(601) 758-0378 Dale Logan	Sumrall, MS	PET, HDPE, LDPE	S, R	PET – $0.05/lb HDPE - $0.05/lb LDPE Clear Film - $0.05/lb	Currently used at Commissary Pick-up service available for >15 tonnes mixed recycling
Advanced Disposal	(228) 207-0569 Gerald Green		PET, HDPE	M, R	Pick-up at no cost	Currently picks up plastics but not under their SW contract
Glass						
Target	(228) 233-3301	D'Iberville, MS	CG, BG, GG	M, N	No cost to drop-off	Small bin in front of store, only drop-off, glass gets shipped to distribution facility in Madison, AL
Metals						
Sumrall Recycling	(601) 758-0378 Dale Logan	Sumrall, MS	AL, Tin	S, R	AL – $0.20/lb Tin – No rebate	Currently used at Commissary Pick-up service available for >15 tonnes mixed recycling
PCs, Toner/Printer Cartridges						
Magnolia Data Solutions	(601) 919-0062 Barrett White	Jackson, MS	Electronics/ Batteries	S, L	Old PCs - $0.15/lb for a ton No fee or revenue for printer cartridges, batteries, TVs, monitors	Pick-up service available for a fee
C&D						
Williams Paving and Material Recycling	(228) 392-6182 Bill Lacy	Biloxi, MS	Concrete, Asphalt, Rebar	S, L	No cost to drop-off	Drop-off available for concrete, asphalt,

Appendix A
NCBC Gulfport Area Recycling Markets

Company Name By Category	Area Code/ Telephone	Facility Location	Materials Handled	Other Co. Info	Price Basis/Current Price	Services Offered/ Notes
Wood Pallets/ Scrap Wood/ Yard Waste						
The Pallet Exchange Network	(251) 709-7021 Ed Forness	Gulfport, MS	Wood pallets, Scrap Lumber	S, L	$1 / pallet (48" x 48" in good condition)	Pick-up service, potentially will buy scrap wood boards if in good condition
Applewhite Recycling Systems, LLC	(228) 497-4130	Gautier, MS	Wood pallets, lumber, yard waste	S, L	Pick-up service	Goes to other recycling vendors just a pick-up service, Current vendor for PPV
Mattresses						
Nationwide Mattress Recycling	(877) 311-0172	Framingham, MA	Mattresses	M, N		Will deliver box trucks or trailers for a fee.
Batteries						
Interstate Battery	(228) 396-5446 Bill Robbins	D'Iberville, MS	Lead-Acid Batteries	M, R	Pick-up service at no cost	Current vendor picks up every Wednesday
Call2Recycle, Inc.,	(877) 723-1297	Atlanta, GA	Rechargeable batteries and cell phones	M, N	Ship at no cost	Will provide collection and shipping containers
Food Waste/Organics						
Brinson Farms / Eagle Green Energy, INC	(601) 792-5028 John Logan	Prentiss, MS	Food waste/organics	S, L	Pick-up service for a tipping fee	Delivers trucks every 2 weeks

Legend:

OCC – old corrugated cardboard
ONP – old newspaper
MP – mixed paper (with coated paper)
MOP – mixed office paper
CG – clear glass
BG – brown glass
GG - green glass

MSW – municipal solid waste
C&D – construction and demolition debris
PET – polyethylene terephthalate (No. 1 containers)
HDPE – high density polyethylene (No. 2 containers)
LDPE – low density polyethylene (Clear Film)
AL – aluminum cans
ST – steel cans
SCM – ferrous and non-ferrous scrap metal
WP – wood pallets
WW – wood waste

Number of Facilities
M – Multiple
S – Single
Geographic Scope
N – National
R – Regional
L - Local

Appendix B
ISWMP Guide 2009

ENGINEERING SERVICE CENTER
Port Hueneme, California 93043-4370

User Guide
UG-2084-ENV

INTEGRATED SOLID WASTE MANAGEMENT PLAN (ISWMP) GUIDE

April 2009

Prepared by: Compliance Guidance Branch/Environmental Quality Division

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EXECUTIVE SUMMARY

Navy installations face multiple challenges regarding non-hazardous solid waste management: landfills (both on- and off- base) are reaching capacity; disposal costs are escalating; and, stricter solid waste and recycling regulations are being promulgated at all levels of Government, including the Department of Defense (DoD). In accordance with DoD policy, and to more effectively address these challenges, the Navy has adopted the philosophy of "integrated" solid waste management (ISWM) to improve efficiency and foster increased diversion of non-hazardous solid waste from landfills and incinerators.

This Guide assists those responsible for solid waste management at Navy installations – Environmental Coordinators, Planners, Public Works Officers, and Facility Maintenance Officers, and ultimately installation Commanding Officers – by providing a generic framework for developing and implementing an Integrated Solid Waste Management Plan (ISWMP). It addresses all elements of ISWMP development including: diversion goals, ISWM strategies, plan development and implementation, waste stream analysis, awareness programs, and potential impediments to implementation. A generic template is also included, which can be tailored to account for variations in location, State legislation, mission, recyclable markets, and other factors unique to individual installations. Success Stories highlighting increased diversion of non-hazardous solid waste are provided in Appendix A. Additional appendices provide reference material to assist with ISWMP development.

Navy installations must make every effort to maximize non-hazardous solid waste diversion to reduce the volume of waste disposal and minimize the overall cost of disposal. The ISWMP Guide will ensure that Navy ISWMPs reflect a thorough understanding of the composition of their waste streams, available options for diversion or disposal, and associated costs and cost avoidance. In turn, ISW Managers will have the information needed to make systematic waste diversion or disposal decisions based on a more refined environmental management hierarchy in keeping with DoD and Navy policy.

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CHAPTER 1: INTRODUCTION

1.1 Purpose

This guide, which supersedes the Solid Waste Management Plan (SWMP) Guide (NEESA 5.0-004) dated September 1993, provides guidance to Navy installations in developing an Integrated Solid Waste Management Plan (ISWMP).

1.2 ISWMP Guide Objectives

The objectives of this guide are to promote compliance with DoD and Navy ISWM policies and to help the Navy achieve DoD goals for increased diversion of non-hazardous solid waste from landfills and/or incineration. Key DoD and Navy ISWM requirements are summarized below:

***DoD Integrated (Non-Hazardous) Solid Waste Management Policy*, Office of the Under Secretary of Defense (Installations and Environment) Memorandum (February 1, 2008).**

- Implements the solid waste and recycling requirements of Executive Order 13423 by requiring facilities to maintain waste prevention and recycling programs in the most cost-effective manner possible and setting solid waste diversion goals for DoD.
- Sets a 40% diversion goal, by 2010, for non-hazardous solid waste, without construction and demolition (C&D) waste.
- Sets a 50% diversion goal, by 2010, for C&D waste.
- Requires DoD Component installations to implement Integrated Solid Waste Management (ISWM) to achieve these goals.

OPNAVINST 5090.1C, Chapter 16

- "All Navy installations worldwide that generate one ton or more of solid waste per day shall develop and implement an ISWMP and a Qualified Recycling Program (QRP)".
- "All Navy installations worldwide that generate one or more tons of solid waste per day must follow the solid waste reporting, solid waste management planning, recycling requirements, and affirmative procurement requirements outlined in this chapter."
- "Installations shall design these programs as total systems that consider relative economic advantages of the latest technology as well as the potential for resource recovery. Installations shall develop ISWMPs using the following priority basis:
  - Source reduction
  - Reuse
  - Recycling
  - Disposal via landfill or incineration

In addition to focusing on the above policy, the ISWMP Guide also ensures non-hazardous solid waste management programs at installations are implemented according to the operational and procedural requirements of existing Federal, State, and local laws. Generally speaking, the primary focus of the ISWMP Guide centers on evaluating an array of individual, priority-based

solid waste management options, including solid waste diversion, recycling, incineration, composting, and landfilling, for each type of waste identified at the installation.

1.3 ISWM

The ISWM philosophy (discussed more extensively in Chapter 2) optimizes the design and operation of an installation's non-hazardous solid waste program through an integrated analysis of all comprehensive, cost-effective alternatives. ISWM includes the following concepts:

- **Source Reduction and Reuse:** minimize the initial waste stream input.
- **Recycling & Composting:** reduces the volume of the waste stream requiring disposal.
- **Disposal (Landfilling and Incineration):** activities used to manage waste that cannot be prevented through source reduction and reuse, or recycled or composted.

An effective installation ISWMP promotes compliance with existing Federal, State, and local solid waste laws applies the above ISWM concepts, and ensures a coordinated evaluation of all solid waste stream elements from source generation to disposal. More specifically, the installation ISWMP: identifies applicable Federal, State and local regulations governing non-hazardous solid waste management and recycling, documents current waste management practices; evaluates current and future needs based on installation mission, size, and economic/environmental considerations; and identifies required resources to implement the selected program options.

1.4 Scope

The ISWMP Guide does not include hazardous waste management practices, except for those hazardous waste materials that might legally enter the solid waste stream (e.g., household cleaning chemicals).

The ISWMP Guide applies to all installations worldwide who generate more than one ton of solid waste per day. Overseas installations shall ensure shore-based solid waste management compliance under the Final Governing Standards (FGSs) as developed by Executive Agents for each country hosting significant DoD installations.

When FGSs have not been issued, Navy shore installations will comply with the DODI 4715.5 Overseas Environmental Baseline Guidance Document (OEBGD), applicable and substantive host nation solid waste control laws (as required by Executive Order 12088), U.S. law with extraterritorial effect, and applicable treaties (including the Status of Forces Agreement (SOFA)). For additional information on overseas environmental compliance ashore, refer to OPNAVINST 5090.1C, Chapter 21.

1.5 ISWMP Guide Elements

This guide, which assists users in the preparation of an ISWMP, consists of the following chapters and appendices:

Chapter 1: Introduction
States the ISWMP Guide's primary objectives and scope.

Chapter 2: Integrated Solid Waste Management (ISWM)
Defines ISWM in more detail, particularly implementation, management, and benefits.

Chapter 3: Collecting Solid Waste Information
Discusses solid waste characterization.

Chapter 4: Analyzing Solid Waste Information
Provides information on data analysis recommendations and recordkeeping options.

Chapter 5: Determining the ISWM Resource Structure & Promoting ISWM Program Awareness
Outlines example roles and responsibilities of those involved in ISWM at the installation-level. Also includes sample ISWM promotion activities.

Chapter 6: Additional Implementation Components - Impeding Factors, Contingency Planning & Action Items
Presents information and examples on potential plan deterrents, contingency planning, and action item identification.

Chapter 7: ISWMP Template
Exemplifies how installation ISWMPs should look. This chapter pulls together the various components discussed in Chapters 1-6.

Appendix A: ISWM Program Success Stories
Includes brief descriptions of several, successful installation ISWM Programs.

Appendix B: Solid Waste Types
Compliments Chapter 3, and provides users with descriptions and examples of the various solid waste types (specifically recyclable commodities).

Appendix C: Lists of References
Provides the Integrated Solid Waste (ISW) Manager with additional solid waste references and websites.

Appendix D: Recycling Policy Guidance Memorandum
Gives direction on conducting and reconciling sales and financial records, using net proceeds from the sale of recyclables, handling costs associated with recycling programs, and considering outsourcing opportunities.

Appendix E: Sample Environmental Language for Contracts
Provides several bulleted samples of language, which may be used in applicable contracts to incorporate source reduction, recycling, affirmative procurement, and pollution prevention activities. Also included is sample language for construction and demolition (C&D) contracts.

Appendix F: ISWMP Sample Statement of Work (SOW)
Contains a sample SOW that may be modified accordingly and used to secure contractor support for developing an installation ISWMP.

Appendix G: Sample Installation ISWM Instruction
Outlines how to write the ISWM implementing instruction.

Appendix H: Definitions
Contains solid waste-related definitions.

CHAPTER 2: INTEGRATED SOLID WASTE MANAGEMENT (ISWM) BACKGROUND INFORMATION

2.1 Introduction

Developing an effective and meaningful ISWM Program necessitates comprehensively evaluating all aspects of solid waste management. This process not only facilitates informed, installation-wide decision making with respect to solid waste management, but it supports the Department of Navy (DoN) as a whole in reaching essential objectives, such as:

- Complying with all applicable Federal, State, local, and DoN regulations regarding solid waste management and recycling;
- Reducing, reusing, and recycling solid waste to the maximum degree achievable; and,
- Achieving the DoD diversion goals of 40% of non-hazardous solid waste without construction and demolition (C&D) waste and 50% of C&D waste from incineration and landfills. [1]

2.2 ISWM Background: Diversion

The last objective introduces the featured concept – diversion. DoD policy defines diversion as an activity to divert solid waste from the landfill disposal or incineration, including, reuse, donation, recycling, and composting/mulching. Waste to energy conversion is not considered diversion, but is applicable to DoD energy reduction goals.

The DoD diversion goals are intentionally broad to provide Navy installations the flexibility to develop whatever strategies needed to manage non-hazardous solid waste programs and meet diversion goals. However, despite its apparently flexible nature, the goals fall short in "zero waste" policy promotion.

As such, in order to optimize its mission through diversion, DoD is looking toward integrated solid waste management.

2.3 Integrated Solid Waste Management

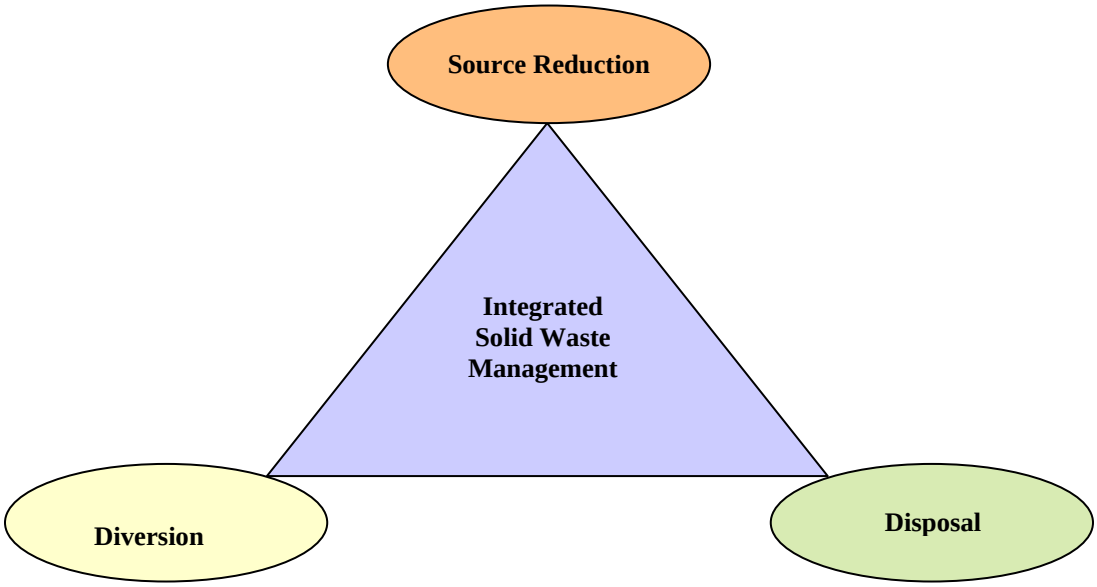
Integrated solid waste management (ISWM), a concept introduced by the U.S. EPA in the early 1990s, is a comprehensive approach to managing non-hazardous solid waste that encompasses waste prevention, recycling, composting, and disposal programs. Instead of solely focusing on solid waste disposal activities, the ISWM approach minimizes the initial generation of materials through source reduction, then through reuse and recycling further reduces the volume before disposal via landfill or incineration.

[1] Memorandum from the Deputy Under Secretary of Defense (Installations and Environment), dated 01 Feb 2008 – Subject: DoD Integrated (Non-Hazardous) Solid Waste Management Policy.

An effective ISWM Program combines the most cost-effective activities for non-hazardous solid waste management, and at the same time affords the flexibility to handle the ever changing regulatory and market environments.

ISWM Programs comply with applicable regulations, and focus on a "use hierarchy" principle that emphasizes source reduction and reuse first, followed by donation, recycling, composting, waste-to-energy, and landfilling as a last choice. Education and awareness are vital pieces of all Navy ISWM Programs.

Figure 2.1 – Integrated Solid Waste Management



2.3.1 Source Reduction

Source reduction is the practice of designing, manufacturing, purchasing, and/or using materials (including packaging) or products in ways that reduce the amount or toxicity of waste generated before they are discarded. Source reduction also involves the reuse of materials or products.

When effectively implemented, source reduction cuts waste disposal and handling costs because it prevents/lessens expenses associated with recycling, composting, landfilling, and incineration. Source reduction also conserves resources, reduces pollution, and removes risks and liabilities associated with disposal. This is why source reduction ranks first among waste management options – it has virtually no negative effect on the environment, it conserves energy and resources, and does not require new facilities.

Source reduction differs from recycling in that it focuses on reducing waste at the source through a multitude of strategies, such as environmentally preferable purchasing, affirmative

procurement, pollution prevention, and reuse. Most Navy shore installations should already have several, if not all, of these source reduction strategies in place.

Some widely applicable source reduction examples are provided below:

- Advertise source reduction programs.
- Avoid excess packaging when selecting product brands.
- Borrow or rent things infrequently needed.
- Buy durable products instead of disposable or cheaply made ones.
- Buy items you can recycle and/or re-use.
- Eliminate unnecessary forms, reports, and publications.
- Conduct brainstorming sessions to generate new waste reduction ideas. Good suggestions should be rewarded.
- Proofread documents on the computer screen before printing.
- Double-sided copying.
- Redesign processes to reduce generation of solid waste.
- Ship items on returnable/reusable pallets and containers.
- Try to repair used or worn items instead of replacing them.
- Donate used/unwanted clothing/toys.
- Establish a thrift store.
- Use alternative landscaping techniques to reduce yard waste.

2.3.1.1 Purchasing Programs

Naval Supply Systems Command (NAVSUP) is the purchasing agent for the Navy. NAVSUP has developed a Green Procurement Program Implementation Guide to help Navy personnel understand and execute the DoD Green Procurement Program (GPP) policy. Elements include:

- **Environmentally Preferable Purchasing (EPP)** - EPP is a Federal-wide program, established by 40 CFR 247, that requires all government agencies give preference to products and services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal of the product or service. Unlike the mandates for recycled content, biobased, and energy efficiency, there is no designated list of covered EPPs or a requirement for waiver.

- **Recovered Material (Affirmative Procurement (AP))** - AP involves the practice of purchasing products that are manufactured from recovered and/or recycled materials. These products, identified by EPA in their Comprehensive Procurement Guidelines (CPG), are known as "Guideline Items." Once items are designated, procuring agencies are required to purchase the EPA-designated items

with the highest recovered material content level practicable. The EPA-designated items covered by the CPG are listed on the CPG website.[2]

2.3.1.2 Pollution Prevention (P2) - Simply stated, P2 eliminates the production of pollutants at their source. P2 can often be achieved through a variety of activities, including: minor changes in manufacturing processes, substitution of non-polluting products for polluting ones, and packaging simplification.

Preventing pollution at the source isn't difficult. In fact, P2 can be easily and inexpensively worked into everyday activities, and is applicable to all types of pollution-generating activities (e.g., vehicle washing, oil changing, painting, re-fueling, landscaping, pesticide application, etc.). Some widely applicable P2 tips are provided below:

- To decrease paper use, maximize the use computers, e-ticketing and other electronic media (e.g., emails, CDs, databases, book marking web pages instead of printing them out, etc.) and replace disposable paper towels with hand dryers.
- To decrease green waste, leaving grass clippings on the lawn for mulch and fertilizer
- To avoid buying excess materials, set limits on the number of items needed for a job and purchase items made for multiple uses (i.e., rechargeable batteries).
- To avoid disposal of waste packaging, negotiate with suppliers to take back pallets and boxes.

Specific process-related examples should be available in the installation's P2 Plan, which provides a forum for installations to evaluate their current practices and identify ones that need to be changed. It is a good idea to mention the P2 Plan in the ISWMP, as this document will likely contain a more detailed look at installation-specific P2 activities.

2.3.1.3 Reuse - Reuse involves identifying materials that may be used again rather than discarded. Reused items do not require reprocessing. As such, reuse is typically preferred over recycling. Reused items may be used either for the same purpose, or a different one. Some practical, cost effective examples include:

- Reuse cardboard boxes and office supplies
- Use durable coffee mugs
- Refill empty bottles
- Repurpose furniture
- Convert empty jars into empty food containers
- Reuse packaging material (e.g., bubble wrap, peanuts, styrofoam)
- Adopt deconstruction practices in all demolition projects. Deconstruction refers to measures taken that promotes reuse and recycling and takes special care of human health and the environment. By conducting deconstruction, usable building materials are recovered and can be reused on other projects or sold.

[2] For additional information on CPG items, visit http://www.epa.gov/cpg/products.htm.

Additional guidance is found in the Guidance for the Reduction of Demolition Waste Through Reuse and Recycling, U.S. Army Corps of Engineers, Public Works Technical Bulletin No. 200-1-23, 10 March 2003. (http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_23.pdf)

- Create a waste exchange within the installation where activities can transfer usable items to other activities.

2.3.2 Diversion

2.3.2.1 Recycling - Recycling is a series of activities that includes collecting recyclable materials that would otherwise be considered waste, sorting and processing recyclables into raw materials such as fibers, and manufacturing raw materials into new products. Often recyclable materials are collected through the QRP program[3]. Many of the common items include:

- Cardboard
- Aluminum and Steel cans
- White Office Paper, Computer Paper, and Newspaper
- Glass Bottles
- Ethylene Glycol Based Antifreeze
- Lead Acid Batteries
- Used Oil
- Metal Scrap from Resource Management System (RMS) Activities
- Expended Range Brass Properly Certified as Safe and Inert
- Scrap Wood
- Washers, Dryers, and Water Heaters
- Refrigerators without the CFC
- Plastic Bottles
- Electrical Copper Wiring from demolished buildings

2.3.2.2 Composting - Composting, another form of recycling, is the controlled aerobic decomposition of organic matter (e.g., yard and food wastes), into a soil-like material called humus. End uses include mulches and soil conditioners used in landscaping and gardens.

Compost not only keeps organic wastes out of landfills, but it has numerous other benefits, such as providing nutrients to the soil, increasing beneficial soil organisms (e.g., worms and centipedes), and assisting in pollution remediation.

Not all Navy installations operate composting programs. However, for those that do, the program(s) typically include the elements shown in Table 2.1.

[3] Refer to UG-2039-ENV: DoN Qualified Recycling Program (QRP) Guide, July 2000**,** for additional information on items that can be included in a QRP program.

Table 2.1 – Typical Composting Activities

Composting Program Elements[4]	Brief Discussion
Program Structure/Operations	Program oversight generally falls under Environmental, PW, or MWR. Operational procedures typically include collecting wastes, dropping wastes off at a centralized location on the installation, and aerating the material until a soil-like material is produced. Program managers should know: the types of waste collected; size of the compost area; management procedures (e.g., storage and processing areas); monitoring procedures and frequency; permit requirements; equipment; and, cost avoidance.
Targeted Wastes/Materials	Installation composting programs may consist of yard waste (leaves and grass clippings). Or, they may be a compostable municipal solid waste program, using food wastes, yard wastes, and other compostable materials (e.g., shredded paper, biosolids).
End Uses	Specific end uses (including how to handle surplus material) will vary from installation-to-installation, but will include products such as mulches and soil conditioners.
Promotion Activities	Examples of installation promotion activities may include: developing installation-wide composting awareness training; annual Christmas tree collections; and advertising surplus material (mulches and soil conditioners)

2.3.2.3 Donation – Donations can be provided through chapter 6 of DoD Instruction 4160.21-M, *Defense Reutilization and Marketing Manual*. The chapter contains policies and procedures pertaining to the donation, loan or exchange of excess and surplus property.

2.3.3 Solid Waste Disposal

Disposal activities, such as incineration, waste-to-energy, and landfilling, are used to manage remaining waste that cannot be prevented, reused, or recycled. An installation's disposal options often depend on the existing facilities (e.g., installation landfills, regional or local landfills, incinerators, waste-to-energy plants) available for their use. Disposal activities are discussed in more detail below:

- **Incinerators/Waste-to-Energy Plants:** Incinerators are furnaces for burning waste under controlled conditions. Waste-to-energy plants produce clean, renewable energy through the combustion of municipal solid waste in specially designed power plants

[4] Use these categories as a guide when defining composting programs in the ISWMP, if applicable.

equipped with the most modern pollution control equipment to clean emissions. Waste-to-energy plants can decrease volume by 60-90% while recovering energy from discarded products. Mass burn, modular combustion units, and refuse derived fuels are three basic types of waste-to-energy facilities.

The DoD considers both incinerators and waste-to-energy plants disposal facilities. Any Navy installation operating/using an incinerator or waste-to-energy plant should already know (or have access to via the state/county solid waste agency) the following information:[5]

- Facility description and location (including the types of wastes accepted and excluded)
- Permit status
- Facility operation (including hours of operation and waste transfer sites)
- Recordkeeping requirements
- Current processing rate and capacity (including 10- and 20-year disposal rate projections)
- Percentage of installation waste stream going into incinerator/waste-to-energy plant
- Environmental controls

- **Landfills:** Sites designated for the burial of solid wastes. Landfills are constructed to reduce hazards to public health and safety, and meet all Federal requirements (e.g., an impermeable lower liner to block the movement of leachate into ground water, leachate collection systems, gravel layers to control methane, etc.).

  Depending on need and availability, Navy installations may use one or several different types of landfills, including an installation landfill, off-installation landfill (regional, municipal, or county landfill), and/or construction and demolition debris landfill. As such, installations should already have important information for each of the landfills used, like the following[5]:

  - Landfill description and location (including the types of wastes accepted and excluded)
  - Permit status
  - Landfill operation (including hours of operation and waste transfer sites)
  - Recordkeeping requirements
  - Current disposal rate and capacity (including 10- and 20-year disposal rate projections)
  - Closure/post closure plans (and associated costs)
  - Annual operating and maintenance costs
  - Percentage of installation waste stream going into landfill
  - Environmental controls

[5] Use these categories as a guide when defining solid waste disposal in the ISWMP as applicable.

2.4 Developing and Implementing an ISWMP

Planning is an integral step in developing an ISWMP. As such, waste management planners should consider, for example, installation, financial, economic, technical, and environmental factors. These factors differ from installation-to-installation. Based on these factors, each installation has the challenge of analyzing and selecting waste management activities that best suits its needs.

Because ISWM involves both short- and long-term choices, it is important to set achievable goals or objectives, such as those listed below:

- Document all ISWM procedures, techniques, and practices used to manage solid waste in the installation ISWMP.
- Comply with all legally applicable Federal, State, local, and DoD regulations regarding recycling and the management and disposal of solid waste.
- To reduce waste stream volume, maximize pollution abatement, and conserve natural resources, the installation ISWMP will include: source reduction programs that lessen the initial amount of material entering the installation, and Qualified Recycling Programs.
- Keep costs to a minimum through comprehensive solid waste management, planning, and an effective solid waste reduction and recycling program.

Once the ISWMP has been developed and written, it must be implemented. ISWM implementation is a continuous progression, so anticipate adjustments along the way. Always evaluate system inefficiencies, and answer questions/make modifications that will improve or expand solid waste management activities. Remember to be flexible and creative when implementing an ISWM Program. Table 2.2 consolidates ISWM planning and implementation procedures. Reviewing this information will be particularly helpful for Navy installations that need to revise existing solid waste management plans to include ISWM, and/or installations that have already adopted ISWM. Primary ISWM development/implementation steps are discussed in greater detail throughout the Guide.

Table 2.2 – Important Questions to Consider When Developing and Implementing an ISWMP

ISWM Development/ Implementation Steps	Questions to Consider
Identify Needs (Refer also to Chapters 3, 4, and 7 for additional information)	
Select Integrated Solid Waste (ISW) Manager	• Can the existing Solid Waste Manager fill this position?
Conduct Solid Waste Characterization	• What types of waste are currently generated and in what quantities? • Has recordkeeping and reporting been accurate for the existing solid waste management system?

Table 2.2 – Important Questions to Consider When Developing and Implementing an ISWMP

ISWM Development/ Implementation Steps	Questions to Consider
Review Existing System	
Review Existing Solid Waste Management Plan (SWMP) and Qualified Recycling Program (QRP)	• Which sections of the plan require revision/updating? • How is waste currently managed (e.g., solid waste and recycling storage facilities/collection procedures, solid waste contracts, available disposal options, etc.)? • Which solid waste management activities can be integrated?
Review Existing Regulations (Refer also to Chapter 7 and Appendix C for additional information)	
Review Regulations Pertaining to Solid Waste Management and Recycling	• Are there any existing areas out of compliance? If so, what changes must be made? • Have all new regulations (Federal, State, local, DoD) been identified?
Organize Decision-Making Framework (Refer also to Chapters 5 and 7 for additional information)	
Establish ISWM Decision-Making Framework	• Who will make the decisions? • How will this framework differ from the one established for the solid waste management program?
Establish Objectives (Refer also to Chapters 6 and 7 for additional information)	
Review Existing Solid Waste Management (SWM) Goals and Develop/Modify to Include ISWM	• Are there any factors affecting ISWM decision-making? If so, should they be addressed? • What are the primary ISWM action items? What were they for SWM? • Have contingency plans been necessary?
Identify Applicable Regulations and Policies	
Review applicable Federal, State, and local regulations as well as DoD and Navy Policies applicable to ISWM	• Do local disposal facilities restrict certain items (e.g. no soil or construction debris sent to local incinerators)? • Is recycling mandatory for any materials/commodities subject to the ISWMP? • Are changes needed to existing SWM practices to achieve DoD diversion goals?
Identify ISWM Options	
List specific ISWM activities that will promote compliance with applicable regulations (e.g. Implement Green Procurement Initiatives, Recycle Glass, Plastics, and Metals from base housing, Composting Programs)	• What ISWM activities should be selected for the Plan? • How do these activities differ from those in the SWMP? • What new equipment/infrastructure is required?
Compare Options	
Evaluate ISWMP Options for Cost Effectiveness and Practicability	• Which options are the most cost effective? • Will these options be effective in the long run? • Where will the funds be obtained to implement these options? • How do these differ from those in the SWMP?

Table 2.2 – Important Questions to Consider When Developing and Implementing an ISWMP

ISWM Development/ Implementation Steps	Questions to Consider
Develop the ISWMP (Refer also to Chapter 7 for additional information)	
Select the Above Components into an ISWMP	• How much of the original SWMP data can be used in the ISWMP? • When are new infrastructure, equipment, and/or personnel required? • Can funding be combined and a contractor hired to handle all aspects of solid waste collection and disposal?
Implement the ISWMP (Refer also to Chapters 5 and 7 for additional information)	
Conduct Selected ISWMP Activities	• When will ISWM activities be initiated? • How do these activities differ from those in the SWMP? • Will ISWM promotion, education, and awareness initiatives/activities sufficiently advertise the program?
Evaluate the Waste Management System	
Review the status of solid waste generation from all sources at least annually. Determine ISWM Program Effectiveness/Weaknesses	• What adjustments/improvements can be made to the ISWM Program? • How does the new ISWM Program compare against the original SWM Program?

2.5 ISWM Benefits

Installations will benefit from ISWM in numerous ways, such as:

- Enhancing efficiency and effectiveness of all aspects of solid waste management.
- Optimizing the use of all non-hazardous solid waste diversion opportunities before considering disposal.
- Improving overall understanding of the installation's entire solid waste stream with an increased emphasis on source reduction, reuse, and recycling.
- Increasing the Navy's ability to meet the diversion rate goals and comply with state and local requirements.
- Augmenting local field operations through centralized oversight.
- Expanding the cost-effectiveness of hauling through increased focus on function efficiencies by solid waste professionals.
- Improving reporting accuracy and reliability through reporting from a single source, the ISW Manager.

2.6 ISWM Funding

The ISWM Program Manager must ensure that sufficient funding is established to effectively implement the ISWMP so that all applicable Federal, State, and local solid waste management regulatory requirements are met.

2.7 Identifying the ISWM Resource Structure

The overall effectiveness of any ISWM Program revolves around clear and unambiguous lines of authority and responsibility. As such, the ISW Manager must identify all key players in the ISWM resource structure – including those with overarching control to personnel with more specific involvement regarding developing and/or implementing an ISWM Program. Fortunately for installations with existing solid waste management programs, transitioning to ISWM should not trigger extensive resource restructuring. Except for minor adaptations in specific roles and responsibilities, at most installations those parties already responsible for various aspects of solid waste planning, collection, disposal, and recycling should maintain their respective functions.

The proceeding sections provide ***example*** roles and responsibilities for all those likely involved (at most installations) in ISWM implementation. These individual departments/personnel function together supporting the ISWM Program; and, also act as in-house solid waste information tools/resources.[6] In order to facilitate coordination (e.g., information gathering and program development/enhancements) and implementation, the ISW Manager must identify/establish points of contact in each ISWM resource element.[7]

The ISW Manager should include a ***tailored organizational chart and examples to fit individual installation needs***.

2.7.1 Installation/Regional Commanding Officer

- Overall responsibility for ISWM. Ensure installation-wide/regional compliance with applicable Federal and State laws, regulations, Executive Orders, Navy instructions/policies, and local requirements pertaining to recycling and solid waste management.
- Ensure implementation and sustainment of the ISWM program.
- Perform various QRP-related set up roles, such as:[8]
  - Serve as Chairperson of the QRP Committee (please see section 2.7.14 for more information on the QRP Committee), or choose an individual to function as chair.
  - Establish a QRP Committee.
  - Select a QRP Manager.
  - Make QRPs available to all tenant commands and tenant contractors.
- Ensure development of an ISWM Program that minimizes initial input to the solid waste stream through source reduction; reduces waste stream volume via reuse and recycling (by working in concert with the installation QRP); and, disposes of solid waste through the effective combination of composting, incineration, or landfill treatment.

[6] Non-installation information sources can also include private contractor/municipality, local recycling centers, and landfills.

[7] The ISW Manager should develop a listing of installation-specific ISWM Program resources. Refer also to Section 6.2 on ISWM contingency planning.

[8] Refer to UG-2039-ENV: DoN Qualified Recycling Program (QRP) Guide, July 2000**,** Chapter 2, "Establishing a Qualified Recycling Program (QRP)," for more specific information regarding an Installation Commanding Officer's QRP-related roles.

- Promote and support the expansion of the QRP (e.g., taking on newly identified recyclable commodities).
- Encourage ISWM partnership programs with other services, other DoD activities, Federal Agencies, municipalities, and community organizations.
- Ensure each Department Head designates a Recycling Coordinator.

2.7.2 Tenant Commanding Officers/Officers in Charge

- Comply with all applicable Federal and State laws, regulations, Executive Orders, Navy instructions/policies, and local requirements pertaining to recycling and solid waste management.
- Designate, in writing, Recycling Coordinators for their department or command. The Recycling Coordinator will coordinate with the QRP Manager, and organize department or command efforts pertaining to solid waste management, affirmative procurement, source reduction, recycling, and reuse.
- Support ISWM by reducing the amount of solid waste generated through procurement of "green" products and those with less/reusable packaging; procuring only necessary quantities; investigating new recyclable commodities and reuse opportunities; and, modifying daily operations to reduce solid waste (e.g., keep a stack of previously used paper near printers to use for drafts or internal memos; make double sided copies).
- Support QRP by identifying, collecting, separating, and removing contaminants from recyclable items.
- Ensure required training (e.g., solid waste, recycling, affirmative procurement) is resourced, accomplished, and documented.

2.7.3 Public Affairs Office

- Assist with the promotion and publicity of the installation QRP and ISWM Program.

2.7.4 Public Works (PW)

- Ensure that solid waste storage, collection, transportation, and disposal are conducted in accordance with Federal, State, local, Navy regulations.
- Perform solid waste collection and transportation activities, such as: dumpster purchase, placement, and movement; route planning with full or partial pickup and disposal; transfer station operations; handling solid wastes resulting from maintenance and operations of vehicles and road construction (concrete, asphalt); handling of green wastes (housing areas, ballparks); and, all associated recordkeeping.
- Coordinate design and construction of approved recycling projects.

2.7.4.1 Environmental

- Review current and future environmental regulations, instructions, legislative laws, and local requirements.

- Report SW data in accordance with applicable regulations and data calls.
- Monitor ISWMP conformance with applicable environmental regulations and track Notices of Violation (NOVs).

2.7.5 Facilities Engineering Acquisition Division

- Ensure contracts contain language requiring contractors to turn over job generated scrap metal(s) to the installation for recycling; and, make certain contractors deliver their scrap metal to the area designated in the contract.[9]
- Make sure contracts include source reduction, recycling, and affirmative procurement (e.g., using environmentally preferable products when possible, and submitting a recycling report with weight slips). For construction and demolition (C&D) contracts, incorporate language ensuring measures for salvage, reuse, and recovery of materials (i.e., green demolition, deconstruction).[10]
- Coordinate with QRP Manager to discuss recycling improvements. Modify contracts if necessary.
- Maintain records of weight tickets from demo/green demo. Provide records to ISW Manager.

2.7.6 Integrated Solid Waste (ISW) Manager

The primary function of the ISW Manager is to oversee development of the ISWM Program and ensure full implementation via the following roles and responsibilities:

- Program and budget for resource requirements needed to effectively manage the IWSM program.
- Review and monitor compliance with all relevant environmental regulations pertaining to solid waste management and recycling. Ensure compliance of tenant commands. Recommend policy changes as applicable.
- Anticipate future solid waste regulations and objectives for minimization, diversion, projected landfill closures, and economic feasibility.
- Review solid waste and recycling contracts for effectiveness, and monitor contractor performance.
- Complete formal educational programs, such as:
  - QRP/Ordnance and Explosives Recognition and Safety (http://ulc.usace.army.mil/)
  - DoD Qualified Recycling Program Management Course (WENV 160)(Air Force Institute of Technology, Civil Engineer & Services School) (**http://www.afit.edu/cess/Course_Desc.cfm?p=WENV%20160**)

[9] Optional as this may not be cost effective for all activities or regions.

[10] Appendix E contains several bulleted examples of language that can be used to incorporate source reduction, recycling, and affirmative procurement into contracts. Also included is sample language for C&D contracts.

- Attend solid waste and recycling seminars and conferences, such as:
  - Solid Waste Association of North America Annual Conference (WasteCon)
  - Joint Services Pollution Prevention & Hazardous Waste Management Conference
- Coordinate with QRP Manager to ensure solid waste employees receive proper and relevant training, which may be in the form of formal training courses, correspondence courses, hands-on applications, or attendance at seminars and conferences. Example actions provided below:
  - Identify positions that require solid waste management training/refreshers.
  - Document position-specific training events/opportunities and attendance.
  - Develop solid waste training for new environmental/solid waste employees and personnel installation-wide, to be given during new employee orientations.
- Serve as installation liaison between county and State solid waste regulators.
- Act as the installation point of contact for all issues (e.g., questions and complaints) regarding solid waste management and recycling.
- Advise and monitor solid-waste generating facilities on permitting, reporting, and recordkeeping matters.
- Advise and monitor activities of solid waste management personnel (e.g., contractors and/or base personnel) to ensure compliance with solid waste and recycling regulations.
- Oversee all aspects of ISWM (e.g., source reduction, recycling, and affirmative procurement).
- Determine the most cost-effective and feasible waste management options (e.g., storage, collection, disposal, tipping fees, routine operations, etc.).
- Coordinate with major command on solid waste and recycling issues (e.g., reporting and recordkeeping).
- Submit Environmental Reporting Requirements (EPRs) to acquire funding for the ISWM Program.
- Release ISWM guidelines (e.g., relating to pollution prevention, recycling, and source reduction strategies) to base residents, civilian employees, and active duty installation personnel.
- Notify the installation Environmental Department of any unauthorized wastes found in recycling bins and/or dumpsters (e.g., regulated medical wastes, oil, unused paints, and, ordnance).
- Work with the QRP Manager to identify new recyclable materials markets, and discuss end use technologies (e.g., composting and incineration).
- Coordinate installation-wide education and awareness initiatives (e.g., newspaper articles, letters, flyers, etc.).
- Manage ISWM Program employees.
- Oversee development of the ISWMP and its subsequent revisions.

2.7.7 Housing Division

2.7.7.1 Non-Privatized

- Encourage all housing residents to participate in recycling (e.g., provide new residents with recycling instructions, and mail periodic recycling reminders).
- Provide recycling bins for housing residents.

2.7.7.2 Public Private Venture

- Encourage the contractor to provide curbside recycling and increase diversion rates.
- Review existing contracts for effectiveness of solid waste and recycling collection, when appropriate modify contract.

2.7.8 Comptroller (Regional)

- Ensure that proceeds recycling proceeds are first used to cover the cost of recycling activities.
- Ensure all projects considered for local funding with recycling proceeds are not included in a normal construction program, and are consistent with DODI 4715.4.
- Ensure the balance of funds received from the sale of recyclable materials does not exceed $2 million at the end of the fiscal year as stated in 10 U.S.C. 2577. Funds in excess of $2 million must be returned to the Treasury.
- Maintain financial accounting records and all supporting documents for major claimant audits and inspections.
- Accept reimbursements from DRMO and from commercial recyclers for the direct sales of recyclable materials. Ensure the funds are credited to the recycling suspense account.
- Maintain dedicated clearing account for recycling proceeds designated **F3875 established by OSD Comptroller. The OSD Comptroller and DFAS are establishing this new "recycling" account as part of a larger effort to separate "exempt" and "non-exempt" funds previously managed in the F3875 account. Recycling funds are "exempt," meaning that they may be retained for longer than the DFAS standard 60-days.

2.7.9 Safety Department

- Inspect areas used to store recyclables to ensure they comply with pertinent safety requirements.

2.7.10 Morale, Welfare & Recreation (MWR)

- Provide a list of projects to potentially be funded with recycling revenues to the QRP Committee for approval.
- Provide Human Resources Office (HRO) services for Non-appropriated Fund (NAF) personnel.

2.7.11 QRP Manager

The QRP Manager's primary responsibilities include managing the QRP and overseeing the QRP budget. Additional duties include[11]:

- Coordinate with ISW Manager on solid waste and recycling issues.
- Select a trained individual (other than the QRP Manager) to conduct local sales and award contracts.
- Assist ISW Manager in record keeping and reporting activities.
- Assist Installation/Regional Commanding Officer in selecting members of Qualified Recycling Committee.
- Review recycling projects funded with sales proceeds.
- Develop and submit potential recycling projects.
- Maintain program and audit records available for audits and inspections.
- Ensure proper training of facility personnel.
- Oversee daily operation of the recycling facility and all recycling operations.
- Monitor program participation, and implement new measures when involvement is low.
- Manage contracts in support of the QRP.
- Determine the type and quantity of materials at the installation suitable for recycling. Identify locations where such materials can be picked up, and notify program coordinators.
- Maintain a list of recycling points of contact for the installation, and coordinate QRP activities and changes through them.
- Develop and update (as needed) a pickup plan for recyclable materials.
- Maintain records pertaining to the direct sale of recyclables.
- Operate scrap metal yard for QRP eligible scrap, and coordinate the direct sale (except precious metals).

2.7.12 Qualified Recycling Committee

- Established by the Installation/Regional Commanding Officer to discuss use of any excess QRP funds.

2.7.13 Defense Reutilization and Marketing Office (DRMO)[12]

The sale of Government procured material is handled through DRMO. Some DRMO roles are listed below:

- Maintain records on the types and amounts of recyclables sold. Provide records to ISWP Manager.

[11] Also refer to UG-2039-ENV: DoN Qualified Recycling Program (QRP) Guide, July 2000**,** Chapter 2, "Establishing a Qualified Recycling Program (QRP)," for additional QRP Managers' roles and responsibilities that have not been included in this guide.

[12] Refer to UG-2039-ENV: DoN Qualified Recycling Program (QRP) Guide, July 2000**,** Chapter 3 "Selling Your Recyclable Materials," for additional information on DRMO.

- Transfer funds to QRP suspense account (at least on a quarterly basis).
- Develop service and sales contracts for recyclable and donatible materials.
- If requested from an activity's recycling manager, "provide a recovered materials market analysis, including estimated return from sale and length of market availability prior to any source separation effort."[13]

2.7.14 Naval Exchange (NEX) and Defense Exchange Commissary Agency (DECA)

- If operating recycling programs independently of the QRP, maintain records on the types and amounts of recyclables sold. Provide records to ISWP Manager.

[13]Per OPNAVINST 5090.1C, Paragraph 16-5.5 a(2)

CHAPTER 3: COLLECTING INSTALLATION SOLID WASTE INFORMATION

3.1 Introduction

Characterization of collected solid waste – a fundamental step for any solid waste program – identifies each element of the waste stream, isolates primary generation sources, and measures quantities. The data derived from solid waste characterizations not only facilitates more meaningful ISWM planning, but enables programs to determine their overall effectiveness and recycling targets.

In order to effectively collect the installation solid waste information needed for the ISWMP, a thorough understanding of current solid waste collection, transportation, disposal, and recycling procedures must first take place. Table 3-1 lists the various service groups interrelated in solid waste management operations, and should serve as a guide when collecting information.

As installations with existing solid waste programs already know, success pivots on the interdependence of each supporting organization and unambiguous communications.

Table 3.1 – Solid Waste and Recycling Information Sources

Waste Stream Information	Source
Refuse	Public works, contracting officer, base maintenance, refuse contractor, landfill operator, incinerator operator (FEAD for construction waste and remodeling waste)
Landscaping waste	Public works, contracting officer, base maintenance, golf course manager, landscaping contractor, and compost facility on or off the installation
Commissary/Exchange Waste	Commissary officer, exchange manager, DRMO
Construction & demolition debris	Public works, base maintenance, construction battalions, roads and grounds maintenance, paving contractor
Lead-acid batteries, used oil, and antifreeze	Public works, base maintenance, contract office, DRMO, installation hazardous waste handlers
Housing	Public works, contracting officer, base maintenance, and family housing officer
Recycling	QRP, DRMO, MWR, public works, base maintenance, material recovery facility (MRF), refuse contractor, commissaries, and the exchange, civilian employee associations, other public or private organizations that collect recycled materials, FEAD for C&D recycling
Compost	Grounds maintenance contractor, landscaping contractor, contracts officer, public works, base maintenance, private or municipal compost facility
NWCF recycled materials	DRMO (DRMO sells industrial scrap generated from NWCF Activities)
Hobby shops	MWR (e.g., auto hobby shop, wood shop)

3.2 Waste Characterization Generation Sources

The ISWMP should include characterization information for the types of solid waste provided in Table 3.2[14]:

Table 3.2 Solid Waste Characterization Information

Sources	Source Examples	Example Waste[15]	ISWMP Information
Residential Waste	Single- and multi-family on-base homes, BOQ/BEQs, Other installation lodging areas	Newspapers, clothing, disposable tableware, food packaging, cans and bottles, food scraps, yard trimmings, glass, plastics	- Indicate the number if households or buildings serviced. - Estimate amounts of waste disposed and recycled (tons). Residential waste may be the most easily characterized and measured. In most cases, recyclables have already been segregated from other wasted for separate collection.
Commercial Waste	Office buildings, Exchange, Commissary, Supply/Warehouses, Food Service Operations	Corrugated boxes, food wastes, office papers, disposable tableware, yard trimmings	- List major generators. - Estimate amounts (tons) of waste disposed/recycled.
Institutional Waste	Schools, Hospital, Pharmacy, Dental	Office papers, medical waste (regulated and non regulated), restroom trash can wastes	- Record major generators. - Estimate amounts (tons) of waste disposed/recycled.
Industrial (Non-Hazardous) Waste	Motor Pools, Paint Shops, Service Stations, Craft Shops, Auto Hobby Shops, Machine Shops, Carpenter Shops	Scrap metals, non-hazardous solvents, greases, oils, corrugated boxes, wood waste, office papers	- Identify major generators. - Estimate amounts of waste disposed (tons) and each material recycled. - Provide special handling/ disposal requirements.

[14] Keep in mind that the material flow methodology used in this section does not lend itself to quantification of wastes according to their source. For example, corrugated boxes may be unpacked and discarded from numerous sources, like residences, commercial establishments, and institutions.

[15] Users should refer to Appendix A, "Solid Waste Types" for additional information.

Table 3.2 (continued) Solid Waste Characterization Information

Sources	Source Examples	Example Waste	ISWMP Information
Construction & Demolition (C&D)	Construction, Demolition, Deconstruction, and Renovation Projects	Lumber, steel, pipes, wires, concrete, brick, plaster, metal, roofing materials, asphalt	- Indicate the number and type of C&D projects. - By reviewing contracts and/or contractors records, determine waste generated/recycled (tons).
Yard Waste	Golf courses, Grounds keeping activities	Grass, shrubs, weeds, trimmings from trees and shrubbery	- Estimate quantity (tons) of yard wastes generated. A good source of information would be the installation's composting program if applicable.
"Other" Industrial and Select Waste	Commercial and Industrial activities	Latex paint, water treatment/wastewater sludge, antifreeze, asbestos, batteries	- Indicate the types and quantities of non-hazardous waste generated (that cannot be disposed of as general refuse).
Waste-to-Energy	All sources mentioned above	All types of non-hazardous, combustible waste	- Estimate quantity (tons) of refuse incinerated/converted to energy.

3.3 Types of Waste Characterization Surveys

Waste characterization studies can range from one-day curbside weighing programs to extensive two-week waste sorting studies. If there have been no major changes to the installation, previous waste characterizations can be used to save money and time. Table 3.2 presents some of the more common waste characterization methods. While the selected method will vary from installation-to-installation, general waste characterization goals for the ISWM Program should include:

- Determining waste composition and the success of existing recycling programs.
- Establishing procedures to collect and analyze waste generation/management data on a continual and systematic basis.
- Developing and administering surveys to augment field collected data and measure public response to programs.
- Performing field studies to determine the amounts/percentages of targeted materials (e.g., organics) available in a waste stream for a recycling or composting program.

Table 3.3 – Waste Characterization Methods

Method	Description
Field Surveys: (These surveys provide the most reliable characterization data.)	
Basic Survey	The simplest field survey type that focuses on classifying larger categories as percentages (both by weight and volume) of the total solid waste stream. A good example of a basic survey is EPA's Municipal Solid Waste in the United States: 2006 Facts and Figures (**http://www.epa.gov/epaoswer/non-hw/muncpl/pubs/msw06.pdf**). This report, which contains characterization information for national municipal solid waste, may be used to approximate similar types of solid waste located at Navy installations.
General Survey	This is an intermediate survey that suffices for solid waste reductions of up to 25 percent. A general survey – often recommended before a facility begins implementing source reduction, reuse, and recycling programs – does not provide an accurate portrayal of all solid waste stream constituents. The steps for a general survey include: - Determining survey areas and categories - Sampling the waste stream - Projecting results for the entire installation The accuracy of results depends on the number of categories sampled. A general guideline for selecting categories to be surveyed involves "doubling up" the desired reduction amount, and then selecting one or more categories that add up to, or exceed, this amount.
Detailed Survey	These surveys identify constituent materials by volume, weight percentage, material type, and source of generation such as: residential, commercial, industrial, and governmental. Detailed surveys are statistically representative and include seasonal variations.
Systematic Waste Surveys	Conducted over a period of time, systematic waste surveys consider: seasonal and climatic variations, changes in mission and/or population, and the progress of source reduction and recycling efforts.
Alternate Methods: (These less formal methods are typically derived, for example, from existing generic surveys and other available records.)	
Comparing Activity Data	Surveys performed at one activity might apply to a similar activity.
Using Contractor and/or Municipal Records	As long as contractors and/or municipalities perform the collection and disposal of solid waste at an installation, their records should contain relevant waste characterization information. Example resources include solid waste/disposal contracts, waste hauler records, disposal facility records, turn-in documents, and interviews with key personnel.
Using Institutional Records	Any type of waste characterization preformed at private institutions, such as private shipyards, might also be applicable.
Weighing Refuse Collection Vehicles	One method of measuring overall solid waste generation amounts (excluding recyclables) involves weighing collection vehicles as they enter and leave the installation.

Table 3.3 (continued) – Waste Characterization Methods

Method	Description
Converting Container Volumes to Weights	While this may be one of the easiest methods, drawbacks include the inability to accurately estimate container fullness and the fact that different waste types have different volume/waste ratios. These factors, if not taken into consideration, reduce the accuracy of using this conversion process to obtain the data.
NAVFAC MO-213: Solid Waste Management, May 1990	Appendix G of NAVFAC MO-213 provides estimation techniques for solid waste survey plans. It consists of solid waste quantity emission factors, generation rate models, and composition by weight percentages at military facilities.

3.4 Waste Characterization Data Collection

Following the waste characterization, analyze how the installation manages its waste. For example, list all waste streams (e.g., separated refuse, mixed refuse/recyclables, segregated wood, commingled scrap metal, and unsorted glass). For each waste stream, indicate the collection point, the collection/processing personnel, and any on-site processing, if necessary. In addition, provide the collection frequency (e.g., once per week). Refer to Table 3.4 for an example data collection template. Historical data can also be relied on to develop the waste characterization.

This information will assist with the solid waste analysis, discussed in Chapter 4.

Table 3.4 – Waste Summary (Example Collection Template)

Name: _____ **Project Title:** _____ **POC/Phone:** _____

Number: _____ **Delivery Order:** _____ **Project Location:** _____

Activity*: _____ **Date of Project:** Start: _____ End: _____

Types of Wastes	Landfill		Incinerated		**Recycled			***Composted		
	Tons	Cost	Tons	Cost	Tons	Cost	Revenue	Tons	Cost	Revenue
Metals										
Glass										
Paper & Paperboard										
Plastic										
Wood										
Food										
Yard/Green Waste										
Other (non-food)										
Ethylene Glycol Antifreeze										
Lead-Acid Batteries										
Used Motor Oil										
Construction& Demolition Debris										
General Refuse										

**Recycling Facility used:_____

***Composting Facility used:_____

CHAPTER 4: ANALYZING SOLID WASTE INFORMATION

4.1 Introduction

As mentioned in section 3.1, an analysis of solid waste characterization data provides the ISW Manager with critical information regarding the success of current solid waste management programs and initiatives as well as specific areas necessitating improvement. The ISW Manager must evaluate this information then select cost-effective, environmentally acceptable initiatives geared toward facilitating the development of an ISWM Program as well as ensuring its continued success. DoD policy is to review the status of waste generation from all sources at least annually. In practice, ISW Managers should continuously monitor waste generation, evaluate market conditions and analyze opportunities to improve cost-effectiveness and reduce environmental impacts.

4.2 Items Required for Analysis

Isolating the most cost-effective, environmentally acceptable initiatives requires a thorough knowledge of the ISWM hierarchy – source reduction, reuse, recycling, composting, energy recovery (waste-to-energy), and landfilling.[16] The ISW Manager should also focus desired initiatives on ISWM Program objectives (both short- and long-term), which may have endured from the existing solid waste management program or been determined during preliminary ISWMP development (refer to Table 2-1, section 6.3, and Exhibit 7.1 for additional information).

Examples of additional items required to conduct a comprehensive analysis are provided below:

Examples of Items Required for Analysis	Reason(s) Needed
Installation-specific solid waste and recycling information sources (refer to Tables 3.1 and 3.4 for additional information)	Enables a thorough understanding of the installation's current solid waste collection, transportation, disposal, and recycling procedures
Quantities and characteristics of each waste type	Facilitates identification of waste types requiring further minimization
Appropriate disposal methods based on least cost (factoring in disposal avoidance and compliance with Federal, State, and local requirements)	Determines disposal options for waste types that cannot be reused, recycled, or composted
Knowledge of the latest technologies involving solid waste management, recycling, and waste minimization technologies	Assists program development
Opportunities to partner with the private sector	Expands program options and strengthens ties with local community

[16] Users should refer to Chapter 2 and Chapter 7 for additional information and specific examples regarding the ISWM hierarchy.

4.3 Recycling-Related Economic Variables

The economic factors surrounding solid waste minimization (specifically recycling) play a vital part when selecting ISWM initiatives and activities.[17] Whenever possible, focus attention on the most economically viable method available to achieve program goals.

Example economic factors pertaining to recycling include:

Factors	Discussion
Material quality	The quality of a material is generally determined by its homogeneity (how easily it can be segregated). In other words, recyclables – glass, paper, plastic or aluminum – must meet industry specifications in order to produce new, quality products and avoid disposal in landfills or waste-to-energy plants.
Marketability	The ultimate success of recycling depends on stable, reliable markets for these materials. Without markets to purchase the collected and separated recyclables, recycling does not happen. These materials often must be disposed of in landfills or waste-to-energy plants.
Regional market prices/trends	When a viable market for recycled material exists, the price paid, or the fee charged, for the material is generally at a level that will cover the costs to collect, process, and ship the material.

Remember that recycling markets and prices are not consistent across the country, and may fluctuate according to various factors including seasonality. The installation QRP should maintain a local market and price listing for all currently recycled items (and any materials being considered for recycling). ISW Managers may also obtain current market and pricing information from the following sources:

U.S. EPA Materials & Waste Exchanges	http://www.epa.gov/jtr/comm/exchange.htm
Waste News	http://www.wastenews.com/headlines.html
New York Mercantile Exchange	http://www.nymex.com/index.aspx
Global Recycling Network	http://grn.com/stocks.htm
Plastics Recycling Online	http://www.plasticstechnology.com/pricing/recyc.html

[17] The focus of this section and the next is recycling. A cost analysis should be conducted for all other waste minimization options considered for ISWM Program implementation.

4.4 Economic Analysis Methodology

Once economic variables have been appraised, determine the economic feasibility and benefits of recycling different items. For instance, some materials might make money, others might be a break even, and perhaps a few will cost money to recycle. To determine if the benefits match the effort, evaluate the lifecycle cost accounting for recyclables. Once the ISWMP has been established, the ISW Manager should perform periodic economic and waste market analyses. Recycling of a material is economically feasible if:

Added Costs < [Avoided Costs + Revenue]

Added Costs Includes the increased time, effort (and possibly equipment) associated with removing a recyclable material from the waste stream and subsequently preparing it for sale. When initial investment costs are required upfront (e.g. equipment, facilities) calculate the payback period and determine whether it is acceptable, given projected market conditions.

Avoided Costs Determines the estimated weight or volume of each recyclable diverted from the waste disposal stream by the QRP. Calculates avoided costs associated with tipping fees, surcharges, labor, prorated maintenance, hauling fees, permit fees, and generator "taxes" (which are saved by recycling that quantity of material versus disposal cost). Depending on the material, avoided generator "taxes" may or may not be a significant factor.

Examples of avoided costs include reductions in tipping fees and savings on labor and fuel costs if collection frequency can be reduced. The total avoided cost savings can be calculated on a monthly or annual basis.

Revenue Estimates annual sales revenue using market prices and trends.

Table 4.1 contains an example economic analysis worksheet. Using this worksheet as a guide, Table 4.2 illustrates a sample economic analysis, using CDs as the targeted recyclable material. The procedure for evaluating other materials would be similar.[18]

[18] For more information on ways to perform economic analyses, refer to NAVFAC P-442: Economic Analysis Handbook, August 1993**.** This handbook contains guidelines and formats for preparing economic analyses for projects, such as resource recovery/source separation.

Users should also refer to Memorandum from the Deputy Under Secretary of Defense (Installations and Environment), dated 01 February 2008– Subject: DoD Integrated (Non-Hazardous) Solid Waste Management Policy for an example ISWM economic benefit calculation.

Table 4.1 – Example Economic Analysis Worksheet

Installation _____ Preparer _____
Location _____ Date _____
Target Recyclable Material _____ Tons-lb-gal/yr _____

ESTIMATED ADDED COSTS [19]

1. Source separation and material preparation.
   a. Equipment (amortize over life of equipment) $_____/yr
   b. Labor
      (1) Procurement (amortize over life of equipment) _____/yr
      (2) Operations (labor costs for the specific recyclable) _____/yr
      (3) Maintenance _____/yr
   c. Other (materials, supplies) _____/yr

   Subtotal $_____/yr

2. Collection and storage
   a. Equipment and facilities (amortize over life of equipment or facility) _____/yr
   b. Labor
      (1) Procurement (amortize over life of equipment or facility) _____/yr
      (2) Operations (labor costs for the specific recyclable) _____/yr
      (3) Maintenance _____/yr
   c. Other (materials, supplies) _____/yr

   Subtotal $_____/yr

3. Program administration
   a. Instructions and operating procedures _____/yr
   b. Fiscal management _____/yr
   c. Publicity _____/yr

   Subtotal $_____ /yr

TOTAL ADDED COSTS $_____/yr

ESTIMATED AVOIDED COSTS AND REVENUE

1. Savings resulting from reduced volume of waste going to disposal facilities $_____/yr

2. Sales revenue (tons-lb-gal/yr) x ($/ton-lb-gal) $_____/yr

TOTAL AVOIDED COSTS + REVENUE $_____/yr

ESTIMATED RETURN: (Total Avoided Costs + Revenue) - (Total Added Cost) = $_____/yr

[19] Equipment and facilities are often used to perform a variety of tasks and to process multiple different recyclables. Therefore to determining the amortized costs for a specific recyclable, estimate the percentage of time dedicated to the subject recyclable material and apply this factor to determine annual costs. For example, one day per week is 1/5 or 20%. If appropriate, this multiplier could also be used to allocate maintenance costs and supplies to the particular recyclable.

Table 4.2 – Sample Economic Analysis

Installation _____**Sample**_____ Preparer ____**John Smith**_____
Location _____**Navy Installation, Anytown USA**_____ Date _____**Today** _____
Target Recyclable Material _____**Used CDs**_____ Tons-lb-gal/yr ____**200 net tons/yr** ___

ESTIMATED ADDED COSTS

1. Source separation and material preparation	
a. Equipment (amortize over life of equipment)	no new equipment needed
b. Labor	
(1) Procurement (amortize over life of equipment)	n/a
(2) Operations:	
(0.2 man yr/yr) ($25,000/man yr) (1.12 overhead)	$5,600/yr
(3) Maintenance	n/a
c. Other (materials, supplies)	n/a
Subtotal	**$5,600/yr**
2. Collection and storage	
a. Equipment and facilities (onetime cost amortize over life of equipment or facility):	
(1) Flatbed truck	
($25,000 equipment cost)(20% usage or 1 day/wk)/20 yr (life of equipment)	$250/yr
(2) Front-end loader	
($30,000 equipment cost) (20% usage)/20 yr (life of equipment)	$300/yr
(3) Warehouse (amount of storage space used)	
(1,300 ft^2) ($25.10/ ft^2 facility per square foot) /20 yr	$1631.5/yr
b. Labor:	
(1) Procurement (onetime cost amortize over life of equipment or facility):	
(0.2 man yr) ($25,000/man yr)(1.12 overhead)/20 yr	$280/yr
(2) Operations (annual cost):	
(0.2 man yr/yr) ($25,000/man yr)(1.12 overhead)	$5,600/yr
(3) Maintenance (annual cost):	
(0.1 man yr/yr) ($25,000/man yr) (1.12 overhead)	$2,800/yr
c. Other annual costs (pallets, bins, shelves, fuel):	$2,000/yr
Subtotal	**$12,861.50/yr**
3. Program administration	
a. Instructions and operating procedures:	
(0.1 man yr) ($25,000/man yr) (1.12 overhead)	$2,800/yr
b. Fiscal management:	
(0.05 man yr) ($25,000/man yr) (1.12 overhead)	$1,400/yr
c. Publicity:	
(0.05 man yr) ($25,000/man yr) (1.12 overhead)	$1,400/yr
Subtotal	**$5,600/yr**
TOTAL ADDED COSTS	**$24,061.50/yr**

Table 4.2 (Continued) – Sample Economic Analysis

ESTIMATED AVOIDED COSTS AND REVENUE[20]

1.	Tipping fee savings: ($10/ton) (200 tons/yr)	$ 2,000/yr
2.	Sales revenue: (200 tons/yr) x ($180/ton)	$36,000/yr
	TOTAL AVOIDED COSTS + REVENUE	**$38,000/yr**

ESTIMATED RETURN

Estimated Return = $38,000/yr - $24,061.50/yr = $13,938.50/yr*

RECOMMEND RECYCLING

Yes ✓

No

*For additional information, such as allocating proceeds after expenses have been paid, refer to Chapter 4, "QRP Finances," of the QRP Guide (UG-2039-ENV: DoN Qualified Recycling Program (QRP) Guide, July 2000).

4.5 Recordkeeping/Reporting Systems

Installations need to keep records of relevant ISWM data to facilitate ongoing evaluation of program effectiveness. Over time ISWM data will provide a valuable record of trends in waste generation, cost and revenue that will facilitate informed decisions by the ISW Manager. Examples of relevant records include:[21]

- Materials recycled (and quantities by weight)
- Diversion rate (includes quantity (tons) of all non-hazardous solid waste that has been landfilled, incinerated, recycled, and composted but excludes construction and demolition debris)
- Annual costs and revenues needed to manage non-hazardous solid waste (includes landfill cost, incineration costs, recycling cost, composting cost, recycling revenue, composting revenue, disposal-tipping fee)
- Proceeds from the sale of recyclable materials
- QRP records (e.g., records of DRMO sales; records of direct sales; records on operating and overhead costs)[22]
- Construction & Demolition debris disposition (refer to Table 4.3 and Table 4.4 on the next page as examples of recordkeeping forms)

[20] Other avoided costs should be included as applicable (e.g., surcharges, hauling charges, permit fees).

[21] Refer to the Memorandum from the Deputy Under Secretary of Defense (Installations and Environment), dated 01 February 2008, Subject: DoD Integrated (Non-Hazardous) Solid Waste Management Policy.

[22] For more additional information on QRP recordkeeping refer to Chapter 5 of the QRP Guide (UG-2039-ENV: DoN Qualified Recycling Program (QRP) Guide, July 2000).

Numerous tools and applications, such as Table 4.3, may be used to facilitate solid waste recordkeeping. While some Navy installations developed their own tracking tools (e.g., the Business Utilities System used in CNRNW), others utilize applications like MS Excel or MS Access. Whichever mechanism is selected, the application should help track important information such as operating costs, cost avoidance, diversion rates, benefit to cost ratios, and equipment costs.

One commonly used application within DoD is a web-based program called Solid Waste Annual Reporting (SWAR), which maintains and reports solid waste and recycling data.[23]

Navy installations generating one or more tons of solid waste per day have an annual reporting requirement per OPNAVINST 5090.1C. The reporting requirement determines the Department of the Navy's progress in meeting the DoD solid waste diversion goals.

[23] For a free copy of this software, contact DESCIM via the DENIX website https://www.denix.osd.mil/portal/page/portal/denix

Table 4.3 –C&D Recordkeeping Form

Installation Name	
Installation UIC	
Contractor	
Contract Number	
Start Date	
Project Description	

DATE	Ticket #	Type of Material	ACM [1] (YF, YN, N)	ACM TYPE/ Source	Bulk load (m3 or yd3)	WT (lbs)	WT (TON)	Recycled or Disposed	COST	REVENUE	Final Disposition Location

1. For the ACM (Asbestos Containing Materials) column, enter Yes, friable=YF; Yes, non-friable=YN; or No=N.

CHAPTER 5: ISWM PROGRAM AWARENESS

5.1 Promoting ISWM Program Awareness

To ensure program success, all facets of integrated solid waste management require continuous education and/or advertising. All individuals in the ISWM resource structure maintain program promoting responsibilities; and, in coordination with the ISW Manager may undertake promotional activities.

Rather than repeatedly addressing ISWM Program awareness throughout the ISWMP, all activities should be contained in one section for easier reference. The organization of this section is discussed in more detail below.

5.1.1 Promotional Tools & Implementation Structure

One of the ISW Manager's roles is to coordinate installation-wide education and awareness initiatives. Not all of the installation's promotional activities will be initiated and/or completed by the ISW Manager; however, keeping track of them is important as it enhances program knowledge and implementation.

As such, the ISW Manger may wish to consider arranging initiatives by each program area – source reduction, affirmative procurement, recycling, and composting. Examples include:

- Base instructions
- Letters
- Flyers
- Posters
- Fact sheets
- Public meetings
- Television advertisements
- Local outreach activities (e.g., public schools, meetings, community events)
- Conducting tours of installation recycling centers
- Movie Theater trailers
- Magazine and newspaper articles
- Electronic communication (e.g., intranet, internet, email)
- Workshops
- Training courses for new employees, residents, and active duty members.

In addition to identifying promotional tools, maintain anticipated dates of planned activity/completion; and, identify the departments and/or individuals responsible for completing each promotional tool/activity as well as any other offices that will assist. These facts will facilitate the ISW Manager's planning efforts, as well as establish accountability.

To effectively manage all of this information, the ISW Manager should consider an arrangement similar to Table 5.1 found on the following page. Revise the matrix as new promotional ideas are generated and/or completed, and consider including additional project information (e.g., costs, lessons learned, and notable results).

The matrix will serve as a valuable reference tool for ISWM promotional activities, and can easily be shared with the major claimant, other installations, and/or the local government. It may even be disseminated to departments within the ISWM resource structure for revision and/or further discussions

Table 5.1 – Examples of Current/Planned Promotional Tools and Activities for an Installation ISWM Program

Promotion Tools/Activities	Brief Description	Date Planned	Date Completed	Departments/Individuals Primarily Responsible for Promotion Activities[24]	Those Providing Additional Assistance (if applicable)
Entire Program[25]					
ISWMP Instruction	The instruction will inform installation department heads (including tenant commands) of the ISWM Program.	ASAP		ISW Manager, Installation Commander	
Incorporate Solid Waste Information into the "Plan of the Day"	This installation-wide daily memo will be used for important announcements pertaining to the ISWM Program (e.g., elimination of a waste stream, attainment of waste reduction goals, etc.).	As needed	• 10/11/07: provided recycling center's location/contact information • 11/26/07: provided dates for on-base recycling center tours	ISW Manager, QRP Manager, Environmental, Public Affairs Office	
Set Up Permanent Environmental Bulletin Boards	Place boards in the central area of every building on the installation. They will contain interesting tidbits and statistics about the ISWM (and Environmental) Programs, like source reduction, recycling, and composting.		Boards added January 2007, and are updated monthly.	ISW Manager/staff, Environmental, QRP Manager	
ISWM Posters	Create posters with themes for participation and involvement, highlighting the benefits of source reduction, segregation, and recycling of solid waste.	February 2009		ISW Manager, QRP Manager, Environmental	Public Affairs

[24] To facilitate the ISW Manager's coordination efforts, recommend listing individuals and their contact information.

[25] Category included because some promotional activities may span across all program areas.

Table 5.1 (continued) – Examples of Current/Planned Promotional Tools and Activities for an Installation ISWM Program

Promotion Tools/Activities	Brief Description	Date Planned	Date Completed	Departments/Individuals Primarily Responsible for Promotion Activities	Those Providing Additional Assistance (if applicable)
Entire Program (Continued)					
Semi-Annual & New Orientation Classes on ISWM	Develop and conduct general military and civilian refresher training classes on ISWM, every six months. Also develop a training course for new active duty and civilian employees to be held during orientation. Both courses will discuss: what items can be recycled; where items can be recycled on base; how/where to procure recycled products; and, provide source reduction tips.		Both courses developed. New orientation course given as needed. Next semi-annual refresher scheduled for 12/1/08.	MWR, Environmental	ISW Manager
ISWM Electronic Communication (separate from electronic "Plan of the Day")	Utilize email whenever possible to provide installation-wide notices regarding solid waste collection and recycling practices. This method also decreases waste paper generation.	As needed	• 12/02/08: Email sent re: annual Christmas tree roundup • Earth Day 2008: Email sent stressing environmental awareness, and advertising various activities (e.g., tree planting ceremonies, fairs, etc.) • 12/5/08: Email sent re: recycling policy letter signed by Installation CO	ISW Manager, QRP Manager, Environmental	

Table 5.1 (continued) – Examples of Current/Planned Promotional Tools and Activities for an Installation ISWM Program

Promotion Tools/Activities	Brief Description	Date Planned	Date Completed	Departments/Individuals Primarily Responsible for Promotion Activities	Those Providing Additional Assistance (if applicable)
Source Reduction					
Attend Local Pollution Prevention Fair	Provides an opportunity to discuss/showcase the installation's ISWM Program.	January 2009		ISW Manager, 2 staff	
Source Reduction Brochure	Develop a brochure for housing residents containing consumer source reduction measures.		5/27/08	Environmental, PW	Housing, ISW Manager
C&D Working Group	Establish a C&D Working Group to collect and report C&D waste data, and develop a waste tracking report.	January 2009		Environmental, QRP Manager	
Affirmative Procurement					
Affirmative Procurement Intranet	Using the installation's website, create an affirmative procurement page explaining how to procure recycled products (e.g., via Government Services Administration), and why closing the loop is important. The site will also contain affirmative procurement news/notices, and EPA designated-item guidelines.	November 2008		ISM Manager/staff, Environmental, Information Resources Management Department	

Table 5.1 (continued) – Examples of Current/Planned Promotional Tools and Activities for an Installation ISWM Program

Promotion Tools/Activities	Brief Description	Date Planned	Date Completed	Departments/Individuals Primarily Responsible for Promotion Activities	Those Providing Additional Assistance (if applicable)
Recycling					
Recycling Pamphlets	Develop/revise recycling pamphlets and distribute to all installation employees and family housing residents. Family housing residents should be provided the information in their welcome packet. Installation employees should be given the pamphlets during new employee orientation training. Both pamphlets should also be made available via the ISWM page on the installation's intranet.		3/3/07	Recycling Coordinators, Environmental, QRP Manager	
Recycling Posters	The map – to be posted in all installation offices – will show where recyclables can be collected for recycling (e.g., clearly marked color coded recycling bins, listing of recycling locations, appropriate recycling telephone numbers, etc.)	February 2009		QRP Manager, Environmental	
Recycling Integrated Product Team	Establish a team to do the following: identify additional recyclable materials and markets; increase recycling participation; and, research new recyclable products for installation use.		2/28/07	QRP Manager, Environmental	ISM Manager/staff

Table 5.1 (continued) – Examples of Current/Planned Promotional Tools and Activities for an Installation ISWM Program

Promotion Tools/Activities	Brief Description	Date Planned	Date Completed	Departments/Individuals Primarily Responsible for Promotion Activities	Those Providing Additional Assistance (if applicable)
Composting					
"How To" Compost Magnets	Develop magnets for all base organizations and military family housing residents.	12/15/08		Recycling Coordinators, Environmental	Housing
Free Compost Mulch	Advertise free compost mulch to housing residents as it becomes available via email, intranet, environmental bulletin boards, and "Plan of the Day."	Will do as needed		Recycling Coordinators, Environmental	Public Affairs, Information Resources Management Department

CHAPTER 6: ADDITIONAL ISWM IMPLEMENTATION COMPONENTS: POSSIBLE IMPEDING FACTORS, CONTINGENCY PLANNING & ACTION ITEMS

6.1 Possible Factors Impacting ISWM Decision-Making

If not carefully accounted and planned for, some factors may impede the success of an ISWM Program. As such, the ISW Manager must list the installation-specific elements that have affected, or could affect ISWM planning and decision-making. Example factors include:

- **Disposal Capacities:** Summarize the operating potential for the installation landfill, and determine whether the local and/or regional landfills could accept installation-generated solid waste. Also, point out operating probabilities for other disposal facilities, such as incinerators and waste-to-energy plants, and the likelihood of their accepting/restricting installation-generated waste.
- **Future Facility Projections:** Include projections (installation, cooperative, and/or regional) for new solid waste management, recycling, and/or composting facilities.
- **Installation Mission and Operational Tempo:** An installation's mission and operational tempo determine the types and amounts of solid waste and recyclables generated. Consider any mission changes and/or increases and decreases in operational tempo when developing the ISWMP.
- **Population Projections:** Population changes are directly proportional to the amount of solid waste and recyclables generated. Include projected size alterations, and discuss plans to manage decreased or increased solid waste (including storage, collection, recycling, and disposal).
- **Recyclables Markets:** The volatility of certain markets impacts a recyclable's placement in the installation recycling program. Discuss any major market changes and/or trends.
- **Regulations:** Some State and local solid waste requirements are more stringent than Federal regulations, particularly when an installation is located in an environmentally sensitive area. Identify and list all applicable, stringent requirements.
- **Solid Waste Management Costs:** One role of the ISW Manager involves determining cost-effective and feasible waste management options. Some factors to be considered are:
  - off-installation disposal costs (collection, transport, tipping fees);
  - long-term costs associated with the installation ISWM Program (routine operations, maintenance, equipment, reporting and recordkeeping, future liabilities); and,
  - cost avoidance (reduced costs of solid waste collection and disposal associated with starting or expanding the ISWM Program).

Based on these factors, more specific examples for the ISW Manager to consider while developing the ISWMP are provided below.

Table 6.1 – Example Factors that can Impede an Installation's ISWM Decision-Making

Factor	Issue	Planned Action(s)[26]
Installation Population Projections	Due to the loss of several tenant commands, installation population is projected to decrease by 10%.	Planning will be necessary to manage decreased amounts of solid waste. Specifically need to revisit collection and transportation contracts. Also approximate levels of available solid waste/recycling storage space.
Diminishing Disposal Capacities	The installation's existing sanitary landfill is expected to reach full capacity in three years.	Ensure continued success and growth of ISWM Program. Continue investigating other solid waste disposal options on and off the installation.
Reduced Recyclable Volume	Installation housing transferred to PPV	Encourage the PPV contractor to recycle. Plan for reduced volume from housing. Look for opportunities to capture recyclable in public areas not served by the PPV contractor.
Recyclables Market	The market value for certain recyclable commodities (e.g. green glass, magazines) declines so that recycling these commodities is not economically feasible.	Continuously, review market trends for these recyclable commodities, and the others accepted by the installation's recycling program. If the decline is part of a seasonal or other short term trend, consider continuing to recycle the commodities, if longer term analysis indicates it is economically feasible to do so. Otherwise remove the items (temporary or permanent) as appropriate. Look for alternative means of diversion.
Increases in Solid Waste Management Costs	Tipping fees at the local sanitary landfill have significantly increased due to compliance with stricter regulations.	Ensure continued success and growth of ISWM Program. Continue investigating more cost effective waste disposal options.
Stricter Regulatory Requirements	The installation is subject to stricter local regulations regarding incineration and solid waste disposal in public landfills.	Ensure continued compliance with applicable regulations. Use awareness programs discussed in Chapter 5 to keep installation personnel informed of wastes that can not be landfilled and incinerated.

[26] It is recommended that any planned actions also be referenced in the "ISWM Action Items" Section of the ISWMP where additional information can be discerned, such as the primary organization/individual completing the action and a timetable for task completion.

6.2 Contingency Planning

The ISW Manager should have a sound contingency plan in place that ensures alternate disposal mechanisms in the event of natural disaster, equipment malfunctions, facility closures, or other unforeseen circumstances. Even though each contingency situation will vary – and the purpose of the ISWMP is not to account for all types of emergency situations – having a comprehensive list of contacts will greatly assist the ISW Manager. As such, add the following types of contingency planning information in the ISWMP:

- All local landfills, disposal/transfer facilities, and commercial waste haulers within range of the installation, and current points of contact. To ensure backup options exist with regional or local disposal facilities, establish ***prior*** arrangements and/or agreements.
- Federal (EPA), State, and local solid waste management office and contacts.
- Military installation contacts, particularly those within a reasonable distance of the installation operating onsite landfills.
- Ensure ISWM personnel (to include waste disposal contractor personnel/vehicles) are included on the essential personnel list
- During contingency events, all those involved with ISWM at the installation should be informed of alternate disposal mechanisms even if they do not have direct planning/implementation involvement.
- BSO, Regional, and FEC contacts. When contingency operations are required, keep the chain of command informed.

6.3 ISWM Action Items

The ISW Manager is responsible for managing a large, multifaceted program. Keeping track of installation-wide ISWM Program initiatives requires action item identification and planning. As such, include in the ISWMP a list of actions which will be taken to achieve ISWM Program goals and objectives. Identify the primary department/organization responsible for completing each task, and include a projected completion date. The following are ***example*** action items:

Table 6.2 – Example (Installation-Based) ISWM Action Items[27]

Action Items	Responsible Department(s) / Individual(s)	Anticipated Completion Date
Develop a Dumpster Location Plan (DLP) that establishes compliance with current requirements, and supports new solid waste solicitations.	Recycling Coordinators, Environmental, PW, ISW Manager	January 2009
Compost all green waste at the installation.	Recycling Coordinators, PW, ISW Manager	November 2008

[27] The ISWMP should either reference the user to any additionally planned actions, and/or include them in the action item listing.

Table 6.2 (continued) – Example (Installation-Based) ISWM Action Items[28]

Action Items	Responsible Department(s) / Individual(s)	Anticipated Completion Date
Develop a low-technology compost operation for the management of yard wastes. Account for waste diversion.	Recycling Coordinators, PW, ISW Manager	October 2008
Review affirmative procurement program and make recommendations.	ISW Manager	December 2008
Review and evaluate ISWM Program awareness initiatives.	ISW Manager, QRP Manager, Environmental, PW	February 2008
Evaluate available data on solid waste reduction and recycling.	ISW Manager, QRP Manager	Monthly
Evaluate methods used for informing base personnel of any ongoing recycling operations, incentives, and participation programs.	ISW Manager, QRP Manager, Recycling Coordinators	January 2004
Perform periodic economic and waste market analyses.	ISW Manager, QRP Manager	Monthly
Project future solid waste conditions and plan accordingly for appropriate collection and disposal, if necessary.	ISW Manager, QRP Manager	Monthly
Review and reevaluate the ISWMP periodically and/or under certain conditions (e.g., regulatory changes, alterations in the kinds or quantities of waste generated).	ISW Manager	As needed

[28] The ISWMP should either reference the user to any additionally planned actions and/or include them in the action item listing.

CHAPTER 7: ISWMP TEMPLATE

Throughout the Guide, individual concepts relating to ISWM have been discussed and various examples provided. The chapter, which ties all the individual pieces together, mirrors the organization of an actual ISWMP. Each section provides suggested ISWMP topics, references, recommended formats, and/or examples.[29] Descriptions of past disposal practices will typically not be needed unless they warrant consideration in assessing current or future practices. Generally, ISWMP contents should focus on current and future solid waste practices, programs, and plans.

The ISWMP format has been designed to facilitate the SWMP-ISWMP transition, as most of the below elements may already exist in an installation's SWMP. The ISWMP can be developed when the SWMP update is due, and subsequently updated on the same 3-year schedule.[30]

The ISWMP Guide provides users with the information necessary to develop a comprehensive, efficient ISWMP. An ISWMP will vary greatly from installation-to-installation. Depending on the types of waste generated, some plans may require more detail than others. For example, a Naval Shipyard generates hundreds of tons of solid waste annually; however, a Naval Communications Station generates much less. Given their disparities in solid waste generation, ISWM planning for these installations will significantly vary.

7.1 Recommended ISWMP Outline

Implementing Base Instruction

1) Introduction
   a. Installation Background Information
   b. ISWMP Action Items
   c. Factors Affecting ISWM Decision-Making
2) Regulatory Framework
3) ISWM Resource Structure
4) Installation ISWM Program
   a. Solid Waste Characterization
   b. Source Reduction Program
   c. Recycling Program
   d. Composting
   e. Solid Waste Collection/Disposal Facilities
5) Recordkeeping & Reporting
6) ISWM Program Promotion
7) Appendices (Solid Waste Definitions & Contingency Planning)

[29] Some elements of the plan (e.g., introduction, background, etc.) were not discussed elsewhere in the ISWMP Guide, and presented for the first time in this chapter. However, other more *technical* ideas (e.g., regulations, action items, promotion activities, etc.) were more thoroughly addressed in previous chapters. Users have been referenced to these chapters for more detailed discussions and examples.

[30] If contractor support will be used to develop an ISWMP, refer to Appendix E for a sample statement of work.

7.1.1 ISWM Program Implementing Base Instruction

Implement the ISWM Program with an activity wide instruction, signed by the Installation/Regional Commanding Officer. This endorsement mandates installation/region-wide ISWM compliance. The base instruction should precede the ISWMP introduction, and be the first thing users read. Appendix G leads users through ISWM Program implementing instruction preparations. A sample instruction is also provided.

7.1.2 Introduction

The ISWMP begins with a brief section explaining the purpose of the plan and by what authority it was developed. Make the purpose explicit and include, at the very least, elements like those stated below in Exhibit 7.1:

Exhibit 7.1 – Example ISWMP Introduction

Section 1: Introduction

The Naval Station Coastal City (NSCC) Integrated Solid Waste Management Plan (ISWMP), developed by Coastal City Solid Waste Consultants, Inc., updates the installation's October 2005 Solid Waste Management Plan (SWMP). OPNAVINST 5090.1C, Chapter 16 sets forth the requirement to develop installation ISWMPs.

Under the ISWM Program, NSCC recycled 25.43% of the non-hazardous solid waste without construction and demolition (C&D) waste generated in 2007. This percentage of diverted material is approximately 5.4% higher than the diversion rate in 2006. However, NSCC has not yet met the DoD SW without C&D diversion goal of 40%.

NSCC recycled 47.3% of C&D waste generated in 2007. This percentage of diverted material is approximately 15.6% higher than the diversion rate in 2006. The diversion rate is expected to continue to increase as C&D recycling requirements are included as part of contract requirement. However, NSCC has not yet met the DoD C&D diversion goal of 50%.

This ISWMP will integrate the various non-hazardous solid waste management programs currently in place at NSCC, and help the installation further maximize its material diversion.

The specific purpose of this ISWMP is to accomplish the following:

- Define and document the installation's current ISWM Program;
- Establish goals for improving solid waste management through ISWM
- Identify specific actions required to achieve the plan goals
- Promote compliance with applicable Federal, State, local, and DoD solid waste management regulations and policies.

7.1.2.1 Installation Background Information - Provide the following background information about the installation:

- **Location:** Provide State, city, county, and municipality. Consider adding a location map that illustrates both the installation's various geographic areas, and solid waste management facilities/projects.
- **Mission:** State the current and future mission(s) of the installation.
- **Population:** Include current population numbers for the military, civilian work force, and installation housing residents.
- **Areas Generating Solid Waste:** List all commercial operations/services and commands on the installation that generate solid waste. Also mention the general nature of their generated solid waste. For reference purposes, a complete listing of installation commands may be included as an appendix.

Keep the ISWMP background information concise and relevant. Avoid a lengthy description of the installation's environmental setting. If appropriate, the ISWMP may include references to documents containing such information.

This information is not meant to replace or supersede that contained in the Solid Waste Characterization Section of the ISWMP; it only serves as background information.

Exhibit 7.2 – Example ISWMP Background Information

Section 1.1: Installation Background Information
NSCC location parameters are as follows: • City: Coastal City • County: Seaboard County • Municipality: New Freedom Township It is the mission of NSCC to provide research, development, and in-service support for amphibious warfare, diving, and other Naval missions taking place in the coastal region. The overall population of NSCC totals 1,000 and can be broken down as follows: 300 civilian workers, 565 active duty members, and 135 housing residents. There are several support operations and commands that generate non-hazardous solid waste, such as:

Exhibit 7.2 (continued) – Example ISWMP Background Information

Section 1.1: Installation Background Information

- **Commercial Support Operations:** Most of these operations generate a similar waste stream, which includes cardboard and mixed trash.
  - NEX Gas Station – Building 54
  - Self Help Centers – Building T13
  - HAZMIN Center – Building 4533
  - Commissary – Building 1250
  - Auto Hobby Shop – Building 1625

- **Food Service Locations:** The solid waste generated by these locations primarily include: food waste, cardboard, bottles and cans, and mixed trash.
  - Officers Club – Building, 21
  - Galley – Building T95
  - Recreation Center – Building 1770

- **Medical Services:** These medical facilities generate medical waste, office waste, and mixed trash.
  - Dental Center – Building 75
  - Outpatient Services – Building 76

- **PW:** Related operations generate various types of solid waste (e.g., cardboard, office waste, construction and demolition, and wood waste).
  - Paint Shop – Building B38
  - Housing Maintenance – Building A11
  - Electrical Maintenance – Building A12
  - Utilities – Building A17

- **Family Housing Areas:** Base residents generate several solid waste types, including glass, plastic, newspaper, cardboard, batteries, wood and food waste, and rubber.
  - Bachelor Officers Quarters – Hospital Point
  - Bachelor Enlisted Quarters – Ford Island
  - Public Quarters – Building H15
  - Sewells Point – Powhatan/Dillingham

More information on waste characterization can be found in Section 4 of this ISWMP.

7.1.2.2 ISWMP Action Items - In this section, list specific actions which will be taken to achieve ISWM Program goals and objectives. Refer to Section 6.3 for additional discussion on ISWMP Action Items and more extensive examples.

When updating the installation ISWMP, mention Action Item status and perhaps any lessons learned if applicable.

Exhibit 7.3 – Example ISWM Action Items[31]

Section 1.2: ISWM Action Items		
Action Items	**Responsible Department(s)/Individual(s)**	**Anticipated Completion Date**
Compost all green wastes at NSCC.	PW, Environmental	12/03
Project future solid NSCC waste conditions and plan accordingly for appropriate collection and disposal, if necessary.	ISW Manager, QRP Manager	Monthly
Review NSCC affirmative procurement program to maximize environmentally preferable purchasing.	ISW Manager, Environmental	1/04
Evaluate recycling trends for recyclables included in the NSCC QRP.	QRP Manager	Monthly

7.1.2.3 Factors Affecting ISWM Decision-Making - Briefly list any major, installation-specific factors (e.g., regulatory, economic, and/or operational) that may affect ISWM planning and decision-making. These factors, which were discussed in Section 6.1, provide a general representation of the installation's solid waste condition and restraints.

Refer to Section 6.1 for additional information and examples (beyond those provided in Exhibit 7.4).

[31] It is recommended that the ISWMP either reference the user to any additionally planned actions (such as those discussed in sections 6.2.1 and 7.1), and/or include them in the action item listing.

Exhibit 7.4 – Example ISWM Planning Factors

Section 1.3: ISWM Planning Factors for NSCC		
Factor	**Issue**	**Planned Action(s)**[32]
Installation Population Projections	Due to mission changes, the NSCC population is projected to increase by 2% in FY09.	Planning will be necessary to manage increased amounts of solid waste. Specifically need to revisit collection and transportation contracts.
Recyclables Market	The lacking market for certain types of office paper and magazines resulted in temporary removal of these recyclable commodities from the NSCC QRP.	On a monthly basis, review market trends for these recyclable commodities, and the others accepted by the installation's recycling program.

7.1.3 Regulatory Framework

In this section, include all major governing Federal, State, local, and DoD solid waste management regulations. Appendix C, which contains a comprehensive assemblage of relevant Federal, State, and DoD laws/regulations/guidelines, will greatly assist section completion. ***Users should carefully review Appendix C and select those items pertaining to solid waste management activities at their installation –*** the section need not be lengthy**.** After all, this section identifies the regulatory framework driving/supporting the installation's ISWM Program (ISWMP users should refer to respective regulations for more detailed information). Exhibit 7.5 presents an example organizational structure for the ISWM regulatory framework section.

Exhibit 7.5 – Example ISWMP Regulatory Framework

Section 2: NSCC ISWMP Regulatory Framework	
Federal	**Summary**
DoD & DoN	**Summary**
State & Local	**Summary**

[32] It is recommended that any planned actions also be referenced in the "ISWM Action Items" Section of the ISWMP where additional information can be discerned, such as the primary organization/individual completing the action and a timetable for task completion.

7.1.4 ISWM Resource Structure

List the responsibilities, authority, and accountability of all personnel involved in the ISWM Program. Develop an organizational chart showing the ISWMP chain of command. This information will outline employees' tasking, and provide a basis for determining performance elements, job descriptions, and can be used as justification when requesting manpower. Refer to Section 6.1 to review an example resource structure and organizational chart that may be modified accordingly and added to the ISWMP as Section 3.

7.1.5 Installation ISWMP

The ISWMP begins with a solid waste characterization and provides information on the installation's source reduction, recycling, and composting programs. The ISWMP also addresses solid waste collection and disposal, as well as recordkeeping and reporting activities. Lastly, the ISWMP concludes with program promotion activities.

7.1.5.1 Waste Characterization - As discussed in Chapter 3, the ISWMP should include non-hazardous waste characterization information for the following waste categories: residential, commercial and institutional, industrial, construction/demolition (C&D), yard, and other select wastes. Characterization may be accomplished, for example, through in-house recordkeeping or contractor surveys.

Chapter 3 also discussed the multiple ways to estimate waste generation rates. Specify in the ISWMP the method(s) used to measure and record the amounts of solid waste generated. Also mention any future conditions that may influence solid waste generation (e.g., anticipated population and/or generation fluxes). Following characterizations, analyze how waste is managed at the installation (refer to Table 3.3 for additional information and an example collection template).

Users may adopt the below waste characterization structure for their ISWMP. Just be aware that it has been provided as an example, and not all waste types have been added.

Exhibit 7.6 – Example Solid Waste Characterization[33]

Section 4.1: NSCC Waste Characterization

In preparation of ISWMP development, NSCC performed an installation-wide, non-hazardous solid waste characterization study. The information learned from this study facilitates ISWM Program planning efforts. The solid waste characterization was broken down into the following individual waste types: residential, commercial and institutional, industrial, construction and demolition, yard, and other select wastes. Total solid waste generation (and diversion) values were obtained from the sum of these individual waste types.

1.) Residential Waste: As stated in Section 1.1, the overall population of NSCC totals 1,000 and can be broken down as follows: 300 civilian workers, 565 active duty members, and 135 housing residents.[34] Information obtained via a generator survey.

Residential Solid Waste (SW) Characterization		
Wastes Identified	**Amount Generated (tons)**	**Amount Recycled (tons)**
Glass		
Newspaper		
Cardboard		
Plastic		
TOTAL		

2.) Commercial and Institutional Waste: For a complete listing of commercial and institutional waste generators, refer to Section 1.1. Waste characterized and estimated by conducting a generator survey and reviewing waste hauler records and landfill logs.

Commercial and Institutional Solid Waste (SW) Characterization		
Wastes Identified	**Amount Generated (tons)**	**Amount Recycled (tons)**
Paper		
Packing materials		
Cardboard		
Scrap Metals		
Plastic		
Wood		
TOTAL		

[33] Users should refer to Appendix A for more information on solid waste types.

[34] For the purposes of this example, the generation of full time residents (e.g., family housing residents and military personnel living on-base) and non-residents (e.g., civilian and military personnel living off-base in private housing) were not differentiated. However, when preparing the ISWMP separate population types as appropriate.

Exhibit 7.6 (continued) – Example Solid Waste Characterization

Section 4.1: NSCC Waste Characterization (continued)

3.) Industrial (Non-hazardous) Waste: Even though these wastes can be generated by commercial and institutional facilities, they are more specifically discarded from industrial operations and manufacturing processes. However, most of these wastes were characterized and measured in conjunction with the commercial and institutional waste generator survey because it covered industrial facilities (e.g., craft and paint shops, maintenance shops, and auto craft shops).

Industrial (Non-Hazardous) Solid Waste (SW) Characterization		
Wastes Identified	**Amount Generated (tons)**	**Amount Recycled (tons)**
Paper		
Cardboard		
Scrap Metal		
Plastic		
Non-hazardous solvents		
TOTAL		

4.) C&D Waste: Since most of NSCC's construction and demolition projects are performed by contractors, the most efficient way to gather information involved reviewing contracts and contractor records.

C&D Solid Waste (SW) Characterization		
Wastes Identified	**Amount Generated (tons)**	**Amount Recycled (tons)**
Concrete		
Wood		
Brick		
Asphalt		
TOTAL		

5.) Yard Waste: Information on segregated yard waste was acquired from the NSCC compost facility.

Yard Waste Characterization		
Yard Waste	**Amount Generated (tons)**	**Amount Composted (tons)**

Exhibit 7.6 (continued) – Example Solid Waste Characterization

Section 4.1 (continued): NSCC Waste Characterization

6.) Other Select Waste: Similar to industrial, other select wastes are also generated by commercial and commercial and industrial activities. Information was obtained by reviewing records and speaking with the NSCC Hazardous Waste Program Manager.

Other Industrial and Select Waste Characterization		
Wastes Identified	**Amount Generated (tons)**	**Amount Recycled (tons) (if applicable)**
Antifreeze		
Waste oil		
Batteries		
Water treatment/wastewater treatment sludges		
TOTAL		

7.) Total Solid Waste Generation. NSCC total solid waste generation (and diversion) values are listed below.

NSCC Total Solid Waste (SW) Generation		
Waste Type	**Total Generated (tons)**	**Total Recycled (tons)**
Residential		
Commercial and Institutional		
Industrial (Non-Hazardous)		
C&D		
Yard		
Other Select Wastes		
TOTAL		

[Include template describing how installation solid waste is managed. Refer to Table 3.3.]

7.1.5.2 Source Reduction Program - Record all source reduction practices/programs at the installation as well as plans for further waste reduction. Source reduction – the top priority in the ISWM hierarchy – may include elimination, reuse, substitution, green procurement, pollution prevention, innovative buying policies, and management practices that minimize waste generation. Any source reduction actions can also be included in the Action Item section of the ISWMP. Ensure appropriate referencing.

Chapter 2 contains additional discussion pertaining to source reduction. Users should also review below Exhibit 7.7 for assistance in drafting this section of the ISWMP.

Exhibit 7.7 – Example Source Reduction Program

Section 4.2: NSCC Source Reduction Program

The NSCC source reduction program consists of purchasing programs, affirmative procurement, pollution prevention, reuse, and management practices.

- **Green Procurement Program (GPP):** Green Procurement is defined, by DoD policy, as the "purchase of products and services in accordance with 'green' procurement preference program." Environmentally Preferable All installations, including tenant commands, involved in purchasing, like government credit card holders, are made aware of and expected to follow GPP practices. Affirmative procurement (using EPA's list of designated products) remains an integral part of the NSCC purchasing program, as does purchasing materials that produce less waste and materials that are easy to recycle.
- **Pollution Prevention (P2):** For additional information on this installation program, refer to the NSCC P2 Plan. Common P2 activities employed at the installation involve material substitution, process changes, and use of P2 equipment.
- **Management Practices:** NSCC uses (and encourages) several kinds of office-based source reduction practices that can be used daily, such as:
  - Using double-sided copying
  - Reusing envelopes
  - Encouraging email and other electronic communication in lieu of printing documents
  - Returning toner cartridges for remanufacturing
  - Purchasing products with minimal packaging
- **Planned Program Enhancements:**
  - NSCC is currently evaluating methods to further reduce the two largest components of it commercial recyclable waste stream, waste paper and cardboard.
  - Innovative training is being developed to encourage reuse (e.g., packaging materials, transferring usable items to other activities, etc.) and new management practices.

7.1.5.3 Recycling Program - Chapter 2 discusses the installation recycling program, specifically which topics can be included in the ISWMP, like: recycled materials; program structure; solid waste contracts; and, segregation, storage, and collection procedures. Users should consider adding other supplementary information, such as: diversion rates; procedures for researching markets and locating vendors; reward programs; potential for additional recycling, and/or other program data/innovations.

Exhibit 7.8 provides users with practical information and examples.

Exhibit 7.8 – Example Recycling Program

Section 4.3: NSCC Recycling Program

NSCC operates a QRP, which was developed and implemented by the Environmental Division in 1995. The QRP functions according to all requirements set forth by UG-2039-ENV, DoN *Qualified Recycling Program (QRP) Guide*, July 2000**.** Major NSCC recycling commodities and collection procedures are listed below:

General/Sorting Information:

- The NSCC Recycling Center, located in Building 1022 across from the scrap metal yard, directly accepts a variety of materials (e.g., scrap metals, batteries (lead acid and alkaline), compact discs, and wood).

Commodity-Specific Information:

- **Scrap Metals:** All scrap metals (e.g., motor parts, white goods, metal doors, etc.) are turned into the scrap metal yard located across from the Recycling Center. Customers receive weight slips from the scale house. Scrap metal will be collected and transported to DRMO by PW on an as needed basis.
- **Lead Acid Batteries:** Turned-in lead acid batteries are properly stored.
- **Compact Discs:** Turned-in compact discs are typically damaged so further use is prohibitive.
- **Woods:** Wood can be placed in one of several designated dumpsters located outside Building 1022. All standard pallets will be reused by Supply unless damaged.
- **Aluminum Cans:** Aluminum cans are either recycled through the Recycling Center (by commands electing to participate in the voluntary program) or recycled by the solid waste contractor as part of the mixed recyclables collection. Participating commands accumulate the cans at their facilities and transport them to the Recycling Center. The cans must be empted, rinsed, and bagged prior to collection.
- **Corrugated Cardboard:** This material is placed into contractor-owned dumpsters. Contractors empty the dumpsters and process contents off site for sale.
- **Used Oil/Filters:** Used oil is turned into the MWR Auto Hobby Shop located in Building T456. The Auto Hobby Shop also collects, drains, and crushes used oil filters. Both the used oil and crushed oil filter cans are removed and recycled via contractor support.
- **Yard Waste:** All yard waste is collected in designated roll-offs and recycled by contractors.
- **Paper:** A mixed paper bin, used to collect all types of mixed paper, is located at every workstation throughout NSCC. These bins are empted by custodial contractors and placed into recycling containers labeled "mixed paper" outside each building.

Exhibit 7.8 (Continued) – Example Recycling Program

Section 4.3 (Continued): NSCC Recycling Program

- **Tires:** Used tires are collected and hauled to PW for recycling. Weight tickets are supplied to the ISW Manager, and counted in the diversion rate.
- **Tone Cartridges:** All toner cartridges are purchased and recycled through contract.

Additional Program Information:

- **Housing Recycling:** NSCC provides family housing residents with bins for the collection of mixed recyclables, such as: cardboard, plastics, newspapers, tin cans, aluminum foil/cans. Once per week, curbside placed bins are picked up by a contracted solid waste transporter. The contractor issues monthly weight slips to NSCC. The housing diversion rate for 2007 was 27.4%.
- **Commercial Recycling:** NSCC contracts out trash collection, disposal, and recycling services. As a result, its dependency on using base personnel to perform recycling duties has significantly reduced. Recycling personnel are only used to collect scrap metal and aluminum cans. Disposal of all remaining recyclable materials is the responsibility of the solid waste contractor.
- **Contractor Recycling:** Construction contractors performing work on NSCC are required to properly dispose of all construction debris only after recyclable materials – metal, masonry, cardboard, and wood, glass, to name a few – are segregated. In 2007, NSCC contractors generated 1,342 tons of recyclable materials.

Planned Program Enhancements:

- Generator survey data revealed that office paper and plastic were the highest un-recovered recyclable materials. As such, NSCC is working to improve recycling of these commodities via training, source reduction efforts, and development of recycling pamphlets.
- Assess reasons why certain recyclable materials were not recycled.
- Continue identifying recycling opportunities.
- Maintain more efficient records of expenses that have been paid for with QRP proceeds (e.g., MWR, pollution prevention, appropriated fund costs).

7.1.5.4 Composting Program - As discussed in Chapter 2, the ISWMP should describe current and future composting activities. Example topics include: end uses for the composted products; quantity of yard waste diverted from disposal; personnel involved; and, program structure.

Exhibit 7.9 – Example Composting Program

Section 4.3: NSCC Composting Program

The ISW Manager oversees the NSCC installation composting program. A majority of the program's daily operations are preformed via contractor support. Contractor responsibilities include:

- Keeping records on the quantity and weight of material composted; and, providing such data to the ISW Manager.
- Facilitating decay by turning composting windrows (at least once per week) and monitoring compost temperature (at least twice daily). The contractor also recommends to the ISW Manager whether or not sewage sludge (that does not originate from any industrial wastewater source or any source which may be contaminated with hazardous wastes) should be added to help maintain necessary composting temperatures.
- Picking up and delivering compostable materials, such as wood and yard clippings, to the NSCC composting facility.

The ISW Manager determines how to use the various waste types. For example, NSCC uses some of the compost as a soil amendment. Leaves, twigs, and any other appropriate wood products (e.g., pallets, old chunks of plywood, etc.) are typically shredded and used throughout NSCC as mulch.

7.1.5.5 Solid Waste Collection/Disposal - After planning for the most advantageous, installation-based source reduction, recycling, and composting options possible, the ISWMP must also address the final ISW elements, collection and disposal. Chapter 2 highlights the primary disposal options, which include: installation landfills, municipal/county/regional landfills, C&D debris landfills, incinerators, and waste-to-energy plants.

Users should describe the solid waste collection structure (providing specific roles and responsibilities when possible) as well as each disposal option as applicable to their installation, being sure to mention general information like location, types of waste accepted/excluded, and quantities (tons) of waste disposed. In addition, identify on-site equipment and facilities. For each piece of equipment, specify the following: its primary use (e.g., disposal, recycling, or both); the fund used for its purchase; and, the fund used for maintenance costs.

Exhibit 7.10 – Example Solid Waste Collection/Disposal

Section 4.4: NSCC Collection/Disposal Facilities

NSCC Collection Procedures: The waste hauling contractor collects and disposes of refuse. The waste hauler issues monthly reports to the ISW Manager, which include tons of solid waste hauled, final destination of wastes hauled (refer to the below "Solid Waste Disposal Facility" section for more information), and tipping fees.

The waste hauling contractor and ISW Manager determine the location of all refuse dumpsters, the collection route, and schedule. This information has been published in a NSCC "Solid Waste Collection Plan." The contractor maintains the dumpsters, keeping them clean and changing out damaged or otherwise unsatisfactory dumpsters on a regular basis. Dumpsters are clearly marked to instruct personnel that ***no materials which can be recycled, reused, or composted/mulched should be deposited along with refuse (e.g., no wood, metals, organic matter, etc.).***

In addition, the contractor takes into consideration the possible limitations on existing landfill space. The municipal solid waste landfill (located 30 miles from NSCC) only accepts a certain tonnage of refuse per day. As such, to ensure acceptance of NSCC refuse at the landfill the NSCC waste hauling contractor plans an early route. The contractor also plans for alternate landfill sites if the primary one no longer accepts refuse.

NSCC Solid Waste Disposal Facilities:

NSCC uses the following disposal facilities for all collected refuse that cannot be reused, recycled, and/or composted.

- **Municipal Landfill:** NSCC does not operate an installation landfill. However, NSCC utilizes the local Subtitle D municipal solid waste landfill approximately 30 miles away. This landfill accepts all types of municipal solid waste (e.g., plastics, wood, textiles, metal, and some types of household hazardous waste).
- **C&D Landfill:** The installation also has an agreement with the regional C&D Landfill, located 55 miles away. The landfill accepts materials like, bricks, blocks, plaster, plasterboard, shingles, roofing materials, hardened/cured asphalt, non-asbestos containing floor coverings, glass, hardened concrete, lumber, insulation material, floor, and wall tiles. Some items that may not be disposed of in the regional C&D Landfill include, paint, paint cans, caulking materials, including empty caulking tubes, hazardous materials, and friable asbestos.
- **Waste-to-Energy Plants:** NSCC does not generate enough waste to make construction of a waste-to-energy plant an economically viable option.

Exhibit 7.10 (Continued) – Example Solid Waste Collection/Disposal

Section 4.4 (Continued): NSCC Collection/Disposal Facilities

On-site Equipment[35]:

Equipment	Primary Use	Ownership	Purchase Fund	Maintenance Fund
Containers	Collection	NSCC	QRP Proceeds	O&MN
Dumpsters	Collection	NSCC	QRP Proceeds	O&MN
Compactor	Processing	NSCC	PPEP	O&MN
Shredder	Processing	Contractor	n/a	n/a
Front-end Loaders	Handling	NSCC	PPEP	O&MN
Pickup Truck	Handling	Contractor	n/a	n/a

7.1.6 Recordkeeping & Reporting

Recordkeeping and reporting, discussed more extensively in Chapter 4, allows installations to track their waste streams, specifically solid waste disposed and materials recycled. This data, which originates from a variety of sources (e.g., weight slips, contractor billings, the number/size of truckloads delivered), assists installations with compliance determinations, program planning, and cost evaluations, just to name a few. See Exhibit 7.11 on the next page for an example of a C&D Debris recordkeeping form.

As such, the ISWMP must include a description of the solid waste data management system (e.g., Solid Waste Annual Reporting (SWAR) System, Excel spreadsheet, Access database, etc.), employed by the installation to track and report solid waste and recycling data. Include the following information:

- Type of information the system can track (e.g., diversion calculations, disposal costs, historical information, cost avoidance, etc.)
- System features (e.g., metric and foreign currency conversions, volume-to-weight conversions, etc.)
- Listing of solid waste sources used to populate the data management system (e.g., weight slips, contractor billings, etc.).

7.1.7 ISWM Program Promotion

Section 7.2.2 discusses ISWM Program promotion and provides *several* education/ awareness- based examples – refer to this section for guidance as well as a recommended format. Remember that a properly implemented program will inform base personnel on how to participate in ISWM.

[35] Source: Tab C – Facility Survey Template Coordinate Version

7.1.8 Appendices

Users may elect to include appendices, such as definitions and contingency plans. Refer to Appendix H for a compilation of definitions most commonly used in solid waste management. Users may adopt this listing and modify accordingly.

Section 6.2 contains assistance in developing contingency plans for ISWM. Contingency planning safeguards against the failure of existing solid waste management/disposal options.

Exhibit 7.11 – Example C&D Debris Recordkeeping

Activity	NSCC
Installation UIC	N12345
Contractor	C&D Recyclers, Inc.
Contract Number	1001001
Date	01/01/2005
Project Description	Demolition of Bldg. 100

DATE	Ticket #	Type of Material	ACM 1 (YF, YN, N)	ACM TYPE/ Source	Bulk load (m3 or yd3)	WT (lbs)	WT (TON)	Recycled or Disposed	COST	REVENUE	Final Disposition Location
1/1/05	001	Concrete	N			200,500	100.25	Recycled	$ 1002.50	$5,012.50	C&D Recyclers, Inc.
1/1/05	002	Wood	N			1,500	0.75	Recycled	$ 500	$37.50	C&D Recyclers, Inc.
1/1/05	003	Brick	N			130,000	65.00	Recycled	$ 650	$3,250.00	C&D Recyclers, Inc.

1. For the ACM (Asbestos Containing Materials) column, enter Yes, friable=YF; Yes, non-friable=YN; or No=N.

APPENDIX A:
ISWM PROGRAM SUCCESS STORIES

A.1 **Success Description:** A REUSE Center was established as a separate but supplemental intake center to the Recycling Center. The REUSE Center was set up for staging items no longer needed by the original owner. Anyone looking for items to use at their work site is encouraged to come to the REUSE Center to look over and choose items for reuse. The REUSE Center procedures were coordinated among the base Property Disposal/Material Management offices, the Receiving Warehouse personnel, and Facilities Management Environmental/Recycling personnel. The goal of the REUSE Center is to minimize waste going to the landfill and reduce unnecessary disposal costs. Additionally, the REUSE Center allows for a central location where personnel can acquire no-cost furniture for redistribution among offices. Items are for redistribution among government offices/organizations only.

Economic Benefits**:** Diverting 144 tons of furniture from the landfill saved $9,444 in disposal costs. Reusing the furniture also contributed to landfill avoidance. Additionally, the need to purchase new furniture, for government organizations, was significantly reduced due to reuse of furniture in lieu of purchasing new items. Estimated savings, based on purchase prices of various items assures a minimum savings of well over $100,000.

A.2 **Success Description:** Installation initiated a program whereby certain medical devices were sent out for reprocessing rather than for medical waste disposal. The goal of this program was to reduce the amount of medical waste sent for disposal, as well as reduce waste disposal costs. In addition savings were realized through a reduction in the number of waste containers needing to be purchased. This program also encompassed a buy back facet that allowed the installation to purchased medical devices at a reduced rate. Estimated waste eliminated is 2.24 tons.

Economic Benefits: Through reprocessing of medical devices, the installation is able to purchase back medical devices at an estimated savings calculated using a 55% discount. Estimated yearly savings from the program is approximately $185,198.

A.3 **Success Description:** Installation started recycling all sizes of batteries through the Big Green Box program. A cost analysis was completed using the average cost/pound to dispose of all sizes of batteries as hazardous (universal) waste vs. recycling them. Battery recycle bins were placed in areas that accumulated a significant amount of batteries. Collection of batteries by recycling personnel was accomplished along with their collection of other recyclable materials on a weekly basis. Batteries are ultimately sent out for complete recycling of the whole battery.

Economic Benefits: Program recycled 1.08 tons (2160 lbs.) of batteries. Although $2,835.00 in expenses were incurred for purchase of the Big Green Box (which includes the shipping fee for returning the full box of batteries for recycling), $5,443.20 in expenses were eliminated in hazardous waste disposal costs for a net savings of $2,608.20.

A.4 **Success Description:** X-ray apron covers, after continued use, can become ripped or torn and the lead lining can become broken or cracked. Recycling of lead aprons and waste lead from Radiology Department has allowed installation to minimize costs associated with disposal of what previously was considered as hazardous waste.

Economic Benefits: Landfill avoidance and Solid Waste and Hazardous Waste Disposal cost reduction. Recycling 0.9 tons (over 1800 lbs) of lead x-ray aprons and waste lead waste reduced hazardous waste disposal costs by $968.00. Over $400.00 was also received in recycling revenue.

A.5 **Success Description:** Obtained authority to directly sell recyclable material as an alternative to DRMO. With direct sales authority, the QRP has more control over contracts with local vendors. This means the QRP can now use contracts to expand both the scope and reach of the QRP which means recyclable materials previously cost prohibitive through DRMO contracts (i.e. lead-acid batteries, vehicles, some white goods, commercial-grade refrigeration equipment, textiles, and so on) can now begin to be pulled out of the solid waste stream and put back into the local economy through base recycling efforts.

Economic Benefits: Direct Sales authority allows the QRP to continue selling its recyclable material for profit. This recovers roughly $450,000 per year in annual revenues for the QRP.

A.6 **Success Description:** 3,330 gallons of cooking oil were recycled through a local contractor who processes cooking oil for use as a diesel substitute on their company's vehicles. This activity promotes and assists in developing more "green" fuel alternatives & lessens dependence on fossil fuel.

Economic Benefits: Program is provided at no cost to Government. Savings obtained is reduced disposal costs.

A.7 **Success Description:** 8-CY cardboard recycling bins were placed at various locations to help facilitate the recycling of cardboard. This effort has diverted 67.7 tons of waste from being landfilled. A local solid waste company collects the bins at a cost of $400.

Economic Benefits: Utilizing a recycle vendor to pickup the solid waste has resulted in a cost avoidance of $831.25.

A.8 **Success Description:** Solid Waste Management Systems were installed at several dining facilities. These waste disposer systems process food, paper, plastic and Styrofoam. They also pulverize solid waste thereby reducing the total volume and diverting solid waste from landfills. Reduces volume of solid waste from by 88% thereby diverting up to 57% of the solid waste from landfills. These are closed loop designs that reuse water thus reducing water consumption and wastewater discharge by 95%.

Economic Benefits: Cost savings are achieved by reduction in labor, water consumption and potential hazards to food safety.

A-9 **Success Description:** The installation donated or recycled 35.94 tons of electronic equipment during the Federal Electronics Challenge.

Economic Benefits: This resulted in saving over $5,700 in disposal costs. The Recycling program donated or recycled over 80 tons of electronics over the course of a year.

A.10 **Success Description:** Shop towels and absorbent pads are used in large quantities by nearly all aircraft maintenance sections and aircraft support units. In an effort to reduce the amount of hazardous waste generated, the installation began the use of an absorbent pad wringer and reconditioned rags/absorbent pads. The installation was generating over 20 tons per year of hazardous waste from oily rags and absorbent pads from maintenance operations and spill response. The pad wringer removes excess fluids from absorbent pads, thereby enabling the pads to be reused. When rags and pads can no longer be reused they are sent to closed-loop laundering vendor. The project reduced this waste by over 50% for the entire installation.

Economic Benefits: Reduced the waste stream from approximately 19.5 tons and $38,027 in disposal costs to less than 8.5 tons and $16,568.

A.11 **Success Description:** The installation removed a 20,000 gallon #2 oil tank and a 190,000 gallon #6 oil tank from service. Instead of removing and disposing the tanks through regular channels, the tanks were removed a local scrap metal company at no cost to the government. The estimated weight of the steel recycled from this effort was 62,000 pounds or 3.1 tons.

Economic Benefits: The estimated $45,000 cost for removing and disposing the tanks via contract was avoided.

A.12 **Success Description:** Installed one High Density Self-Contained Compactor (20 cu.yr.).

Economic Benefits: Cost saving is about $23,585.22 due to the 1 to 4 ratio for pick up services.

A.13 **Success Description:** Aerosol Can Puncturers were installed at the installation. When aerosol cans are punctured, they are completely drained of all contents changing aerosol cans from a solid hazardous waste to a fully recyclable state. Every 100 cans punctured increases recycled scrap metal by 25 pounds and reduces solid waste by 10 cu.ft.

Economic Benefits: Reduced disposal costs.

A.14 **Success Description:** Industrial can openers were installed throughout the installation. Can openers allow for the removal of the tops of cans and drainage of residual oil prior to placing cans in metal recycling containers. Prior to their use, partially drained hydraulic fluid cans were placed in metal recycling bins causing oil spills and non point source storm water runoff.

Economic Benefits: Reduced disposal costs and work hours spent in oil spill cleanup.

A.15 **Success Description:** A fluorescent bulb crusher was issued to Self Help department. Spent fluorescent light bulbs are crushed in a lamp disposer fitted with a filter cartridge and a polyurethane sleeve designed specifically to trap mercury vapors. Prior to use of this equipment, the command disposed of their bulbs whole which required packaging the bulbs such that they would not break during transport and disposal as a hazardous waste. Allows bulb to be handled as a "universal waste" instead of a "hazardous waste."

Economic Benefits: Reduces costs associated with the handling, storage and disposal of used fluorescent bulbs by about 75%.

A.16 **Success Description:** The installation began a demonstration project for in-house pallet recycling. Under the project, all pallets are being chipped on site and then used for beautification, erosion control, and replacement for plants. Chips not used are being removed from the base by a contractor for $1 a year.

Economic Benefits: The cost for pallet removal was $0.50 a pallet. This installation generates between 2500-3000 pallets a month at a cost of $15,000 to 18,000 a year.

A.17 **Success Description:** The installation began a used oil recycling program. Used oil was previously disposed of as hazardous waste. Over 65 tons of used oil has been diverted from the hazardous waste disposal stream.

Economic Benefits: Since the inception of this contract, a disposal cost avoidance of over $105K has been achieved when comparing the recycling cost of $0.80 per kilogram to the disposal cost of $2.4 per kilogram.

A.18 **Success Description:** Vegetable oil is collected from at various locations on the installation and is re-processed as B-100 bio fuel to be used in MWR vehicles. Over the past 6 months, 1,850 gallons have been collected (app 14,800 pounds).

Economic Benefits: Saving cost of vegetable oil disposal at $100 per load and will receive B-100 fuel that will save the equivalent cost of diesel.

A.19 **Success Description:** A coolant recycling unit was installed for use in mobile equipment used for aircraft operations aboard ships, such as plane to wing vehicles, startup rigs, etc. The mobile equipment uses liquid cooled engines which require an ethylene glycol based coolant. The recycled coolant can be used in the equipment greatly reducing the need to purchase new coolant and reducing the amount sent for disposal.

Economic Benefits: In one year, 1100 pounds of ethylene glycol was recycled. Disposal cost savings of $0.148/lb X 1100lbs = $162.80 were achieved. In-addition, the purchase of new ethylene glycol was not required for a cost saving of $0.64/lb X 1100lb = $704.00. Recycling ethylene glycol has created an overall cost savings of $ 866.80.

APPENDIX B:
SOLID WASTE TYPES

This Appendix will provide the ISW Manager supplemental guidance on the various solid waste types, by serving as a solid waste category reference and providing specific examples to facilitate waste classification. It is important to mention that not *all* the items listed in this reference Appendix can be sold by Qualified Recycling Programs (QRPs).

As such, the ISW Manager should always refer to UG-2039-ENV, *DoN Qualified Recycling Program (QRP) Guide*, July 2000**,** Chapter 3, "Selling Your Recyclable Materials," if questions surrounding the sale of specific recyclable materials arise.

B.1 Broad Solid Waste Categories

From a regulatory perspective, the term "solid waste" encompasses both hazardous waste and non-hazardous waste. The ISWMP Guide is primarily concerned with non-hazardous, municipal solid waste and "other" industrial and select wastes, which may be subject to a variety of regulations:

- **Municipal Solid Waste:** Solid waste generated by community activities and/or the operation of residential or commercial establishments. It excludes, for example, industrial waste, agricultural waste, sewage sludge, and medical wastes. (For additional information on municipal solid waste, refer to the following U.S. Environmental Protection Agency (EPA) website: http://www.epa.gov/osw/nonhaz/municipal/index.htm.)

- **"Other" Industrial and Select Wastes:** Industrial and select wastes that are not categorized as municipal solid waste. These "other" wastes may be regulated as hazardous waste, universal waste, medical waste, or non-hazardous solid waste as appropriate. They are usually recyclable (except for medical waste) depending on applicable regulatory requirements. (For additional information visit the following U.S. EPA website: http://www.epa.gov/epaoswer/non-hw/muncpl/battery.htm.)

B.2 Municipal Solid Waste (MSW)

Numerous types of non-hazardous solid waste enter the MSW stream via consumer driven products and services. Those MSW items that the ISW Manager will encounter in DoN installation solid waste streams include, paper and paperboard, plastics, glass, metals, rubber, yard wastes, organics, textiles, and wood. Each category is characterized in more detail below. While antifreeze, batteries, and oil are MSW generated-materials, they also fall under the "other" non-hazardous waste classification (as such, refer to Section D.3 for additional information).

B.2.1 Paper & Paperboard

According to the EPA, thousands of products are literally made of paper and paperboard (also known as cardboard). As such, paper and paperboard collectively comprise the largest MSW component.

Some of the more widely encountered, recyclable products are discussed in more detail below.

Product Type	Description
Corrugated Paperboard	Corrugated paperboard is a composite paperboard made by sandwiching fluted "corrugating medium" in between layers of linerboard. • The inside, fluted "medium" layer in the middle is made almost exclusively from post consumer recovered fiber from old corrugated containers (OCC), old newspapers (ONP), used office paper, and mixed papers. • Linerboard, made primarily from both virgin and recovered fiber from OCC, comprises the inner and outer walls of a box. Corrugated boxes are highly recyclable, and have long, strong fibers that enable multiple recycling. Examples of recycled products include: cardboard boxes, linerboard, cereal boxes, and building products.
Magazines	Magazines may be printed on either coated or uncoated paper, and recycled only a limited number of times. Examples of recycled products include: tissue products, paper towels, magazines, newsprint. All paper inserts inside magazines are typically recyclable; however, plastic wrap and non-paper inserts, such as perfume samples or compact disks, are not. Most recyclers will accept catalogs with magazines if they have the same glossy finish.
Mixed Office Papers	A mixture (un-segregated by color or quality) of at least two of the following paper wastes: pastel-colored paper and envelopes, colored business forms, carbonless copy paper (NCR), manila folders, accounting ledgers, and bleached envelopes.
Newsprint	"Standard News" is most commonly used to print newspapers. The advertising materials and coupons inserted into major Sunday newspapers are made from "Specialty News" (also known as "Groundwood Specialties"). The bales of newspapers collected for manufacturing recycled content products are typically divided into the following old newspaper (OPN) categories:

	• **ONP #9: Over-Issue News (Pre-consumer Grade) –** Unused and undistributed newspapers. Does not contain prohibitives (materials that render the recovered paper unusable for the intended product, or that damage equipment), or outthrows (types of paper unsuitable for making the intended product). • **ONP# 8: Special News Deinking Quality –** Sorted and fresh with no magazine paper or prohibitives. Contains less than 0.0025 outthrows. • **ONP #7: News Deinking Quality –** Sorted and fresh. May contain magazine paper. No prohibitives permitted, and contains less than .0025 outthrows. • **ONP #6: News (Post Consumer Grade) –** Usually generated by newsdrives and curbside collection programs. Contains less than 1% prohibitives and 5% outthrows. Newsprint can be recycled approximately six to eight times before the paper fibers become too short to use again. Examples of recycled products include: newsprint, insulation, building products, and cat litter.
Paperboard	Paperboard, which is pressed layers of paper or paper pulp, may be converted into packaging for things such as: crackers and cookies, cereals, juice, frozen foods, laundry detergent, cosmetics, and personal hygiene products. Recycled paperboard is made from a combination of 100 percent recovered fiber, which may include newspaper, magazines, corrugated boxboard, paperboard folding cartons, and telephone books.
White Office Papers	This type of paper includes: white copy paper and writing paper, laser print copy paper, laser print computer paper, and pre-printed forms on computer paper. Shredded white office papers are also recyclable. Prior to recycling, white office paper should be separated from mixed office paper. Separated white paper is more valuable commodity than mixed paper.

For additional information on paper product types and/or recycling, refer to any one of the following links:

- American Forest & Paper Association: **http://www.afandpa.org/**
- U.S. EPA Comprehensive Procurement Guidelines: **http://www.epa.gov/epaoswer/non-hw/procure/index.htm**
- U.S. EPA – Paper and Paperboard Products: **http://www.epa.gov/epaoswer/non-hw/muncpl/paper.htm**
- Waste News: **http://www.wastenews.com/headlines.html**

B.2.2 Plastics

The table below illustrates the nationally recognized Plastic Container Code System, generally used by most manufacturers. The table also provides examples of products most likely discovered in the MSW stream.

Plastic Container Code System		Product Examples	
Codes[1]	**Resin Type**	**Original**	**Recycled**
	Polyethylene Terephthalate (PET)[2]	Bottles for soft drinks and household products, peanut butter containers	Bottles, carpet fibers, containers
	High Density Polyethylene (HDPE)[2]	Milk jugs, toys, household products, heavy-duty trash bags	Plastic lumber, containers, pipes
	Vinyl/Polyvinyl Chloride (PVC)	Credit cards, food wrap, cooking oil bottles	Sewer pipes, office accessories, traffic cones
	Low Density Polyethylene (LDPE)	Grocery bags, food industry wrap, dry cleaning bags	Containers, house/office supplies, pipes, construction materials, fiber, playground equipment
	Polypropylene (PP)	Straws, syringes, dairy tubs, small appliances, carpet backing	Auto battery cases, furniture, video cassette containers
	Polystyrene (PS)	Plastic containers used in yogurt cups and tubs, plastic silverware, C/D cases	When combined with other plastics, PS can be formed into plastic lumber
	Other (Comprised of any resin type not covered in Codes 1-6)	Sometimes appears in microwaveable serving ware and food containers	Benches, picnic tables, roadside posts

[1]The plastic code is located on the bottom of most plastic products.
[2]PET and HDPE are the most commonly recycled plastics.

For additional information on plastic product types and/or recycling, refer to any one of the following links:

- Allplasticbottles.org: **http://www.allplasticbottles.org/**
- American Chemistry: **http://www.americanchemistry.com/plastics/**
- Association of Post Consumer Plastic Recyclers: **http://plasticsrecycling.org/**
- American Beverage Association: **http://www.ameribev.org/index.aspx**
- U.S. EPA Comprehensive Procurement Guidelines: **http://www.epa.gov/epaoswer/non-hw/procure/index.htm**
- U.S. EPA – Plastics: **http://www.epa.gov/epaoswer/non-hw/muncpl/plastic.htm**
- Waste News: **http://www.wastenews.com/headlines.html**

B.2.3 Glass

The most recycled types of glass are amber, flint (clear), and green. Products made from these glass varieties include beer and soft drink bottles, wine and liquor bottles, and bottles and jars for food, cosmetics, and other products. Glass is also found in consumer electronics, furniture, and appliances. Some examples of non-recyclable glass are crystal, ceramics, and ovenware.

Most recovered (recycled) glass containers and bottles are used to make things like new glass containers, fiberglass insulation, and glasphalt for highway construction. For additional information on glass product types and/or recycling, refer to any one of the following links:

- Glass Packaging Institute: **http://www.gpi.org/index.cfm**
- Recycle America Alliance – Container Recycling Group: **http://www.craglass.com/**
- Recycler's World: **http://www.recycle.net/Glass/index.html**
- U.S. EPA Comprehensive Procurement Guidelines: **http://www.epa.gov/epaoswer/non-hw/procure/index.htm**
- U.S. EPA – Glass: **http://www.epa.gov/epaoswer/non-hw/muncpl/glass.htm**
- Waste News: **http://www.wastenews.com/headlines.html**

B.2.4 Metals

The below table presents the various metal types which are not only found most prevalently in MSW, but also recycled.

Metal Type	Product Examples	
	Original	**Recycled**
Aluminum	Cans and packaging (e.g., beer, soft drink, and food)	Lawn furniture, tubing, window frames, storm doors, beverage cans
Ferrous Metals (Iron and Steel)	Found in appliances, furniture, tires, containers, packaging, cars	Food cans, some beverage containers, aerosol and paint cans, automobile and appliance parts
Non-Ferrous Metals (Aluminum, Copper, Brass, Lead, Tin, Magnesium, Zinc)	Found in tubing, fixtures, pipes, rods, packaging, appliances, consumer electronics, lead-acid batteries, range brass*	Recovered metals are also used in tubing, fixtures, pipes, rods, packaging, appliances, consumer electronics, lead-acid batteries
White Goods (also known as "Major Appliances")	Discarded major appliances of any color, often enamel-coated. Examples include: washing machines, clothes dryers, hot water heaters, stoves, and refrigerators. White Goods do not include electronics, such as televisions and stereos.	Appliances contain many high value materials that can be recycled such as steel, aluminum, and copper.
*For more information on selling expended brass and mixed metals (certified as safe or inert) through the QRP and/or DRMO, refer to UG-2039-ENV, *DoN Qualified Recycling Program (QRP) Guide*, July 2000**,** Chapter 3 "Selling Your Recyclable Materials."		

For additional information on metal product types and/or recycling, refer to any one of the following links:

- Institute of Scrap Recycling Industries, Inc. (ISRI): **http://www.isri.org**
- Steel Recycling Institute: **http://www.recycle-steel.org/**
- U.S. EPA – Aluminum: **http://www.epa.gov/epaoswer/non-hw/muncpl/alum.htm**
- U.S. EPA – Steel: **http://www.epa.gov/epaoswer/non-hw/muncpl/steel.htm**
- Waste News: **http://www.wastenews.com/headlines.html**

B.2.5 Tires & Rubber

The predominant source of rubber in MSW originates from automobile and truck tires. Recovered tires are used to produce crumb rubber for new products, recycled in rubberized asphalt concrete, used in civil engineering applications, or combusted as fuel.

For additional information on tire and rubber product types and/or recycling, refer to any one of the following links:

- Tire Industry Association: **http://www.tireindustry.org/recycling.asp**
- Global Recycling Network: **http://grn.com/a/1300.html**
- U.S. EPA Comprehensive Procurement Guidelines: **http://www.epa.gov/epaoswer/non-hw/procure/index.htm**
- U.S. EPA – Tires: **http://www.epa.gov/garbage/tires/**
- Waste News: **http://www.wastenews.com/headlines.html**

B.2.6 Yard Waste & Other Organics

Any waste – including (but not limited to) yard clippings, leaves, tree trimmings, prunings, brush, plant stalks, garden wastes, and weeds – derived from maintaining or altering of residential, commercial, or institutional landscaping. In addition to yard waste, other organic materials (e.g., food scraps, vegetative wastes, agricultural crop residues, manure, and throwaway/reusable baby diapers) also enter the MSW stream. The good news is that most of these materials are compostable.

Additional information on yard waste recycling (e.g., items collected, packaging requirements, and restrictions), and composting may be obtained from many local city and county websites. The following websites also contain supplemental information as well:

- Guide to Municipal Yard Waste Composting: **http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Compost/Mun1.htm**
- U.S. EPA – Yard Trimmings/Food Scraps: **http://www.epa.gov/organicmaterials/yd-resrc.htm**

B.2.7 Textiles

Most textiles found in MSW include discarded clothing, made of leather, fleece, flannel, corduroy, cotton, nylon, denim, wool, and linen. However, other sources such as furniture, carpets, footwear, and other nondurable goods like sheets and towels have been identified.

Most recovered household textiles end up at charitable organizations that sell or donate the items. The remainder goes to either a textile recovery facility or landfill.

Additional information on textiles and recycling may be obtained from:

- Council for Textile Recycling: **http://www.textilerecycle.org/**
- U.S. EPA – Textiles: **http://www.epa.gov/epaoswer/non-hw/muncpl/textile.htm**

B.2.8 Wood

Wood sources in the MSW stream include furniture and wood packaging (crates, pallets). Other wood waste consists of wood pieces, or particles generated from manufacturing or producing wood products, or harvesting, processing, and storing raw wood materials.

Recovered wood and wood discards may be chipped for uses such as mulch or bedding material. For additional information on wood recycling, refer to the following sites:

- American Forest & Paper Association: **http://www.afandpa.org/Template.cfm?section=Wood_Products**
- Recycle Net: **http://www.recycle.net/price/wood.html**

B.3 "Other" Industrial and Select Wastes

"Other" industrial and select wastes may be regulated as hazardous waste, universal waste, biological waste, or non-hazardous solid waste as appropriate. Many are recyclable depending on applicable regulatory requirements. They are considered, "other" because of their chemical constituents and/or manner of generation, but are sometimes found in the MSW stream. Some of these wastes are discussed in more detail below. It is critical that the ISW Manager understand the regulatory requirements associated with these wastes to ensure compliance with applicable Federal, State and local laws.

Waste Type	Description
Antifreeze	Antifreeze is a substance typically added to water in the cooling system of an internal-combustion engine so its temperature can be lowered below the freezing point of pure water (32 degrees F) without freezing. Ethylene glycol is the most commonly used automotive cooling-system antifreeze. Other types include methanol, ethanol, isopropyl alcohol, and propylene glycol. Antifreeze recycling equipment is currently being used at many Navy installations. It is usually a hazardous waste for disposal purposes.

Waste Type	Description
Batteries	Rechargeable and lead-acid batteries may be regulated as hazardous or universal waste. Several states currently have regulations in place requiring battery recycling. The most common battery types discarded as recyclable wastes are as follows: • **Alkaline and Zinc-Carbon Batteries (9-volt, D, C, AA, AAA) –** The everyday household batteries used in flashlights, toys, appliances, remote controls, and radios just to name a few. Several companies now recycle these batteries. • **Rechargeable Batteries –** NiCad, lithium-ion, and other batteries found in items like cell phones, electronics, watches, clocks, and hearing aids. • **Lead-Acid Automobile Batteries –** Approximately 90 percent of all lead-acid batteries are recycled, and contain 60 to 80 percent recovered lead and plastic. Most retailers that sell lead-acid batteries also collects used batteries for recycling (as required by most State laws). • **Non-Automotive Lead-Based Batteries –** Includes gel cells and sealed lead-acid batteries which typically power industrial equipment, emergency lighting, and alarm systems. The same recycling process applies as with automotive batteries.
Construction & Demolition (C&D) Waste	C&D debris consists of the waste and rubble generated during construction, repair, renovation, and demolition projects on houses, commercial buildings, pavements, and other structures. The following materials may be found in C&D waste: treated and untreated wood scrap; concrete, asphalt, bricks, blocks, and other masonry; plaster and wallboard; roofing materials; ferrous and nonferrous metal; dirt; carpets and padding; glass (window and door); non-asbestos building insulation; plastic scrap; and, corrugated cardboard and miscellaneous paper.
Dry Sewage Sludge	Residual solids and semi-solids from a sewage treatment plant which has been digested and dewatered. Does not require liquid handling equipment.
Used Oil	Used oil may be a hazardous waste depending on the type and amount of contamination from use. It is subject to Federal and/or State regulations for used oil management. Used oil includes engine lubrication oil, hydraulic fluids, and gear oils used in cars, bikes, lawnmowers, and other equipment. Used oil can often be recycled. If properly drained, used oil filters may be disposed of as non-hazardous waste depending on State/local regulations.

Waste Type	Description
Medical Waste	Several Federal Agencies regulate varying aspects of medical waste; however, the U.S. EPA developed regulations to govern emissions from Hospital/Medical/Infectious Waste Incinerators. The U.S. EPA also regulates medical waste treatment technologies under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Medical waste is generally defined as any solid waste generated during the diagnosis, treatment, or immunization of human beings and/or animals, including *but not limited to*: • Bandaged (soiled or blood-soaked) • Discarded surgical gloves and surgical instruments (after surgery) • Syringes (used to give shots or draw blood) • Cultures, stocks, swabs (used to innoculate cultures) • Removed body organs (tonsils, appendices, limbs, etc.)

For additional information on these solid wastes, refer to the following sites:

- Battery Act: **http://www.epa.gov/osw/hazard/recycling/battery.pdf**
- Rechargeable Battery Recycling Corporation: **http://www.rbrc.org/**
- Universal Waste Rule (May 1995): **http://www.epa.gov/EPA-WASTE/1995/May/Day-11/pr-223.html**
- U.S. EPA – Antifreeze: **http://www.epa.gov/epawaste/conserve/materials/antifree.htm**
- U.S. EPA – Batteries: **http://www.epa.gov/osw/partnerships/stewardship/products/batteries.htm**
- U.S. EPA Comprehensive Procurement Guidelines: **http://www.epa.gov/epaoswer/non-hw/procure/index.htm**
- U.S. EPA – Construction & Demolition Waste: **http://www.epa.gov/epaoswer/non-hw/debris-new/index.htm**
- U.S. EPA – Medical Waste: **http://www.epa.gov/osw/nonhaz/industrial/medical/mwfaqs.htm**
- U.S. EPA – Used Oil: **http://www.epa.gov/EPA-WASTE/1998/May/Day-06/f11376.htm**

APPENDIX C:
REFERENCES

An installation must be in compliance with applicable Federal, State, local, and military regulations when developing their integrated solid waste management program. As such, keeping abreast of pertinent regulations and incorporating such information into the installation's ISWMP is a fundamental tasking. This appendix provides the ISW Manager with valuable, references/websites from various entities – DoD, Federal Agencies, and States.

To guide the ISW Manager through the regulatory review process, this appendix contains a comprehensive listing of information associated with solid waste management that could be included in the ISWMP, such as: Federal statutes, regulations, and Executive Orders; State and local requirements; and, military directives, instructions, and guidance. The ISW Manager should be aware that regulatory requirements, such as those derived from the Resource Conservation and Recovery Act and other similar statutes, apply to United States installations, and those located in the Commonwealth of Puerto Rico, Guam, American Samoa, U.S. Virgin Islands, and the Commonwealth of the Northern Marianas Islands.

Military installations must abide by the more stringent of applicable regulations, which in most cases are State or local. During instances of regulatory conflicts or contradictions, the latest relevant regulation, directive, or instruction, for example, should typically be followed.

The ISW Manager should also be aware that the documents listed in this chapter may be superseded at any time by the issuance of new editions, and/or periodic amendments. It is recommended that subsequent adjustments to the ISWMP be made.

C.1 Federal Legislation

For additional information on any of the below laws, visit The Legal Information Institute (http://www4.law.cornell.edu/uscode/) or the U.S. Environmental Protection Agency (EPA) (http://www.epa.gov/epahome/lawregs.htm).

C.1.1 Primary Legislation Impacting Solid Waste Management:

Solid Waste Disposal Act (SWDA) of 1965 (Public Law 89-272)
The first piece of legislation that specifically recognized the role of solid waste in environmental degradation. SWDA requires that Federal Government facilities comply with all Federal, State, interstate, and local requirements concerning solid waste disposal and management. Such requirements include permitting, licensing, and reporting. SWDA also encourages recycling, energy recovery, and the procurement of recovered materials.

Resource Conservation and Recovery Act (RCRA) of 1976 (Public Law 94-580)
RCRA amended the SWDA of 1965 and serves as the fundamental legislation granting EPA authority for all matters involving management of hazardous and non-hazardous solid wastes. Under Subtitle D, RCRA establishes Federal standards for management of non-hazardous solid waste landfills. It also encourages waste minimization practices, such as source

reduction, Affirmative Procurement, recycling, and conversion of waste to energy. The Act was codified in Title 40, Code of Federal Regulations (CFR), Parts 240-281. Pertinent sections are listed below:

- **Part 240:** Guidelines for the Thermal Processing of Solid Wastes
- **Part 243:** Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
- **Part 246:** Source Separation for Materials Recovery Guidelines
- **Part 247:** Comprehensive Procurement Guideline for Products Containing Recovered Materials
- **Part 255:** Identification of Regions and Agencies for Solid Waste Management
- **Part 256:** Guidelines for Development and Implementation of State Solid Waste Management Plans
- **Part 257:** Criteria for Classification of Solid Waste Disposal Facilities and Practices
- **Part 258:** Criteria for Municipal Solid Waste Landfills
- **Part 261:** Identification and Listing of Hazardous Waste
- **Part 268:** Land Disposal Restrictions

To obtain additional information on solid waste regulations, refer to the U.S. EPA and/or the Electronic Code of Federal Regulations database available from the Government Printing Office (http://www.gpoaccess.gov/index.html).

C.1.2 Additional Legislation Impacting Solid Waste Management (listed in chronological order):

Federal Facility Compliance Act (FFCA) of 1992 (Public Law 102-386)
This law, which amends the SWDA, significantly expands the enforcement authority of Federal and State regulators with respect to solid and hazardous waste management. FFCA requires Federal facilities to pay nondiscriminatory charges assessed in connection with a Federal, State, or local solid or hazardous waste regulatory program.

Clean Air Act (CAA) of 1990 (amended) (Public Law 101-549)
This Act sets emission standards for hazardous air pollutants. The 1990 amendments emphasize pollution control and prevention. CAA includes performance standards for solid waste combustion units, and addresses emissions at municipal solid waste landfills and odors at composting facilities.

Pollution Prevention Act (PPA) of 1990 (Public Law 101-508)
This Act establishes a national policy to prevent or reduce waste via a pollution prevention hierarchy: source reduction, reuse, and recycling. From this pollution prevention hierarchy, the concept of integrated solid waste management arose.

10 U.S. Code 2577, "Disposal of Recyclable Materials," 1982
This regulation contains the provisions that form the basis of Qualified Recycling Programs (QRP). It also includes requirements for the distribution of proceeds generated from the sale of recyclables.

Clean Water Act (CWA) of 1987 (Public Law 95-217)
CWA is the major legislation concerning improvement of the Nation's water sources. It affects waste disposal facilities generating ash, quench water, landfill leachate, and surface water discharges. Surface water dischargers require National Pollutant Discharge Elimination System (NPDES) permits.

Military Construction Codification Act of 1982 (Public Law 97-214)
This Act amends 10 U.S.C. 2577 to allow the use of recycling proceeds for morale, welfare, and recreation (MWR) activities.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 (Public Law 96-510)
CERCLA responds directly to uncontrolled hazardous waste disposal sites (active or closed). Municipal landfills can be examples of such sites. CERCLA mandates that if hazardous waste is known to be disposed of in the landfill, the owner will be responsible for cleaning up contaminated areas.

Military Construction Authorization Act of 1975 (Public Law 93-552)
This Act allows installations to retain net proceeds from the sale of Qualified Recycling Program (QRP) recyclables. Installations can use the proceeds for certain purposes (e.g., paying for energy conservation/pollution prevention projects).

Federal Property and Administrative Services Act of 1949 (Public Law 152)
This Act regulates the distribution of proceeds from the sale of recyclable materials on Federal facilities.

Energy Security Act (Public Law 96-294)
One facet of this Act involves municipal waste-to-energy facilities and the securing of loans to speed their implementation.

C.2 Executive Orders (EOs)

For additional information on Executive Orders, visit National Archives and Records Administration (http://www.archives.gov/federal_register/presidential_documents/website_guide.html)

Executive Order (EO) 13423: Strengthening Federal Environmental, Energy, and Transporation Management, January 26, 2007.
Requires Federal agencies to set goals to improve environmental, transporation, and energy-related activities in support of their missions (**http://edocket.access.gpo.gov/2007/pdf/07-374.pdf**) These goals address:

- Improving energy efficiency and reducing greenhouse gas emissions;
- Ensuring that at least half of the renewable energy consumed is from new renewable energy sources;
- Reducing water consumption intensity;
- Purchasing bio-based, environmentally preferable, energy-efficient and water conserving and recovered material content products;
- Ensuring a reduction in the quantity of toxic and hazardous chemicals and materials acquired, used or disposed;
- Ensuring that new construction and major renovations comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding* (2006);
- Minimizing the use of petroleum based fuel in their fleets; and
- Acquiring EPEAT-registered products whenever possible, enabling Energy Star® features on agency computers and monitors, implementing policies to extend the useful life of electronic equipment, and using environmentally sound practices with respect to the disposal of electronic equipment that has reached the end of its useful life.

EO13423 revoked EOs 13101, 13123, 13134, 13148, and 13149. EO 13423 only provides National goals. EO 13423 Implementation Instructions, March 2007, includes the requirements from the revoked orders (http://www.ofee.gov/eo/eo13423_instructions.pdf).

C.3 State Requirements

Federal legislation creates national solid waste policy. But, the States possess actual implementation authority. States also have the right to issue more stringent solid waste requirements, and the power to enforce them. Therefore, since States can adopt a more restrictive solid waste management policy – and it is military procedure to comply with the most stringent of applicable regulations – the ISW Manager must keep abreast of State legislative and regulatory activity. Always include any new and/or amended information in the ISWMP.

C.3.1 State Solid Waste Legislation

There are numerous ways for the ISW Manager to obtain the State Solid Waste Legislation needed for the ISWMP; but, perhaps the easiest is to visit the State legislative website. Alternatively, the ISW Manager may also elect to use a website such as *The Legal Information Institute* (http://www.law.cornell.edu/states/listing.html), which provides links to State legislature pages for all 50 States, and also enables access to statues, pending bills, and regulations (in some instances).

Whatever the mechanism(s) used to obtain State Solid Waste Legislation, researching such information for first time users may be challenging, as solid waste legislation does not always appear under environmentally-named titles. As such, it may be helpful to locate regulations first, as they reference the governing State Solid Waste Statue (title, chapter, and date of enactment).

C.3.2 State Solid Waste Regulations

Under RCRA Subtitle D, the State and local governments are the primary planning, permitting, regulating, implementing, and enforcement agencies for management and disposal of household and industrial or commercial non-hazardous solid wastes. As such, State regulations possess authority to define requirements for recycling, reporting/recordkeeping, storage containers, waste collection, and transportation. Even though requirements will vary between States, general permitting procedures and requirements remain quite similar. State regulations may be found by contacting the State environmental department.

C.4 Local Government Requirements

While States reserve functions necessary to ensure effective solid waste programs, they assign to local governments (cities, counties, municipalities) principal solid waste handling responsibilities, and encourage them to promote the increased use of product separation, source reduction, and recycling. As such, keeping within the bounds of broad State guidelines, local authorities may institute their own rules for the collection and disposal of solid waste.

Obtain local requirements by contacting the source – local city, county, and/or municipal government agencies.

C.5 DoD/DoN Policy Directives, Instructions, Guidance & Memorandums

The ISW Manager must keep abreast of any new DoD and DoN policy documents that are made available after publication of this guide. Items have been arranged in chronological order.

DUSD(I&E) Memorandum: DoD Integrated (Non-Hazardous) Solid Waste Management Policy, 01 February 2008
This memorandum establishes DoD solid waste diversion goals to be achieved by 2010. It states: "The diversion goal for non-hazardous solid waste without construction and demolition (C&D) waste is 40% by 2010. The goal for C&D waste is 50% diversion by 2010."

Additionally, the memorandum requires all DoD Component installations to implement integrated solid waste management to and achieve the goals set forth in EO 13423.

DUSD(ES) Memorandum: Qualified Recycling Program (QRP) Guidance, April 2003
This memorandum supplements DoD Instruction (DODI) 4715.4, paragraph 6.2.3.3, and provides guidance on Qualified Recycling Programs (QRP). Guidance was developed in response to recommendations in the Office of the Inspector General Evaluation Report 97-087, "Direct Sales of Recyclable Material."

The memorandum gives direction on conducting and reconciling sales and financial records, using net proceeds from the sale of recyclables, handling costs associated with recycling

programs, and considering outsourcing opportunities. DoD Components must incorporate this guidance into their respective QRP guides. (Refer to Appendix D, "Recycling Policy Guidance Memorandum" to review document.)

OPNAVINST 5090.1C, Environmental and Natural Resource Program Manual (Chapter 16), October 2007
Chapter 16 of OPNAVINST 5090.1C is entitled "Solid Waste Management and Resource Recovery Ashore," and is applicable to all Navy installations worldwide that generate one or more tons of solid waste per day. These installations must follow the solid waste reporting, solid waste management planning, recycling requirements, and affirmative procurement requirements outlined in this chapter.
(**doni.daps.dla.mil/Directives/05000%20General%20Management%20Security%20and%20Safety%20Services/05-00%20General%20Admin%20and%20Management%20Support/5090.1C%20Chapters.pdf**)

DoD 4715.5-G, *Overseas Environmental Baseline Guidance Document (OEBGD)*, March 2000.
This publication, issued under the authority of DoD Instruction (DODI) 4715.5, "Management of Environmental Compliance at Overseas Installations," April 22, 1996, provides management practices, criteria, and standards for environmental compliance at DoD installations overseas. This document replaces the October 1992 version of the "Overseas Environmental Baseline Guidance Document." (**www.dtic.mil/whs/directives/corres/pdf/471505g.pdf**)

UG-2039-ENV, *DoN Qualified Recycling Program (QRP) Guide*, July 2000
This document outlines QRP development and operational procedures for Navy shore activities. (**www.ofee.gov/wpr/NavyQRPjul2000.pdf**)

DUSD(ES) Memorandum: Preference for EPA Guideline Items, March 1999
This memorandum revised DoD's affirmative procurement program to include the twelve guideline items designated by the Environmental Protection Agency on November 13, 1997.

DUSD(ES) Memorandum: Recycling of Firing-Range Scrap Consisting of Expended Brass and Mixed Metals Gleaned from Firing-Range Clearance Through Qualified Recycling Programs, May 1998
This memorandum makes certain all QRPs and direct sales programs (at DoD Components) follow procedures contained in DoD Instruction (DODI) 4715.4, "Pollution Prevention," June 18, 1996. It also addresses the proper disposition/recycling of firing-range scrap (e.g., ammunition, explosives, and dangerous articles), and outlines required training for personnel processing expended brass and mixed metals gleaned from firing range clearance.

MCO P5090.2A, *Environmental Compliance and Protection Manual*, July 1998, Chapter 17
Chapter 17 of this manual, entitled "Solid Waste Management & Resource Recovery," establishes Marine Corps policy and responsibilities for complying with statutory/procedural requirements relating to solid waste disposal, waste minimization, recycling, and resource recovery. (**http://www.usmc.mil/news/publications/Documents/MCO%20P5090.2A.pdf**)

Combined Services Interim Guidance for Direct Sales of Recyclables, February 1997
This guidance provides detailed information on establishing and operating a Qualified Recycling Program (QRP), direct sales, partnerships, regionalization, and joint-service operability. (**http://www.asafm.army.mil/rabp/sofd/dsr/dsr.asp**)

DUSD(ES) Memorandum: DoD Use of Recycled Copier Paper, April 1997
This memorandum, issued as a direct result of E.O. 12873, "Federal Acquisition, Recycling, and Waste Prevention," and RCRA, establishes a policy reducing the use of all paper products, and maximizes the use of recycled content paper and paper products.

DoD Instruction (DODI) 4160.21-M*, Defense Reutilization and Marketing Manual*, August 1997
This manual, which is applicable worldwide to all elements of DoD, their subordinate commands, installations and activities, outlines the policies and procedures for the reutilization and marketing of excess, surplus, and foreign excess personal property. The manual also addresses range residue, and explains the proper disposal of ammunition, explosives, and dangerous articles (AEDA), firing range expended small arms cartridge cases, and inert metals. (**http://www.dtic.mil/whs/directives/corres/html/416021m.htm**)

DoD Instruction (DODI) 4715.6, *Environmental Compliance*, April 1996
This instruction implements policy, assigns responsibility, and prescribes procedures as established under DoD Directive 4715.1, "Environmental Security," dated February 24, 1996. The purpose of the Instruction is to facilitate compliance with applicable Executive Orders, Federal, State, inter-state, regional, and local statutory/ regulatory environmental requirements. This document replaces DoD Instruction (DODI) 4120.14, "Environmental Pollution Prevention Control & Abatement," August 30, 1977. (**http://www.dtic.mil/whs/directives/corres/pdf/471506p.pdf**)

DoD Instruction (DODI) 4715.4, *Pollution Prevention*, June 1996
This instruction outlines requirements that all DoD Components must follow, such as: requiring installation QRPs; obligating contractors to participate in recycling programs; authorizing the direct sales of recyclables; implementing pollution prevention programs; and, developing an accounting and control system for recycling programs.
(**http://www.aschq.army.mil/gc/files/i47154p.pdf**)

NAVFAC P-442, *Economic Analysis Handbook*, August 1993
This handbook contains guidelines and formats for preparing economic analyses for projects, such as resource recovery/source separation.
(**http://www.wbdg.org/ccb/NAVFAC/PPUBB/p442.pdf**).

NAVFAC MO-213, *Solid Waste Management*, May 1990
This manual is a solid waste planning guide for DoD personnel responsible for non-hazardous waste disposal. The manual includes discussions on maintenance and operations of solid waste collection, storage disposal, recycling, and energy recovery systems.
(**http://www.wbdg.org/ccb/NAVFAC/OPER/mo213.pdf**)

DoD Instruction (DODI) 7310.1, *Disposition of Proceeds from DoD Sales of Surplus Personal Property*, July 1989 (32 CFR 172)
This instruction specifies procedures for handling bids, payments, and disposition of proceeds from the following: sales of personal property governed by DoD 4160.21-M, "Defense Reutilization and Marketing Manual;" surplus government-owned property in the possession of contractors; and, recyclable material as defined in 10 U.S.C. 2577. (To view the instruction visit (**http://www.dtic.mil/whs/directives/corres/pdf/731001p.pdf**)

SECNAV Instruction 4860.44F, *Commercial Activities*, September 1989
Under this instruction, Navy activities shall not compete with a locally available commercial recycling industry offering a total solid waste resource recovery system. Every effort shall be made by the Navy to use the established, available commercial recycling industry.
(**http://competitivesourcing.navy.mil/reference_documents/regulations/SECNAVINST+4860_44F.pdf**)

UFC 3-240-14N, *Solid Waste Disposal*, January 2004
This Unified Facilities Criteria (UFC) document supersedes **NAVFAC Design Manual 5.10**, dated September 1989. However, the design manual is included in an appendix. The manual assists qualified engineers in developing solid waste management systems that are efficient, economical, and consistent with sound environmental engineering principals.
(**http://www.wbdg.org/ccb/DOD/UFC/ufc_3_240_14n.pdf**)

MCO 4860.3, *Commercial Activities Program*, January 1992
This Marine Corps order provides guidance for performing solid waste collection, storage, and disposal during commercial and industrial-type activities.
(**http://www.usmc.mil/news/publications/Documents/MCO%204860.3D%20W%20CH%201.pdf**)

C.6 Additional Guidance Documents & Statutes (Listed in alphabetical order):

Army Regulation (AR) 420-49, *Facilities Engineering Utility Services*, September 2005, Chapter 3 – Solid Waste Management
Requires Army installations to develop and implement an ISWMP. Also requires installations to document current solid waste management practices and evaluate needs based on mission, size, and economics. (http://www.usma.edu/dhpw/rci/documents/11.22%20AR%20420_49.pdf**)**

Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*, December 2007
Designed to assist installations with the AR 420-49 requirement of developing an ISWMP.
http://www.usapa.army.mil/pdffiles/r200_1.pdf

California Electronics Waste Recycling Act of 2003, September 2003
The Nation's first statewide electronics recycling law that requires California retailers to collect an electronic waste recycling fee on cathode ray tube monitors, flat panel screens, and television sets bigger than four inches in size. The fee ranges from $6 to $10, and depends on the size of the unit. http://www.ciwmb.ca.gov/Electronics/Act2003/

EO 13101: Greening the Government: Through Waste Prevention, Recycling, and Federal Acquisition
Revoked by EO 13423, but many of the requirements are still applicable. Requires Federal agencies to incorporate waste prevention and recycling into daily operations and to increase the use of EPA-designated items by instituting procurement preferences for these products. The White House Task Force on Greening the Government Through Waste Prevention and Recycling has prepared "A Guide to Implementing Executive Order 13101. The document promotes the use of recycled products and environmentally preferable products/services and is available at: http://www.ofee.gov/eo/greening.pdf

EPA Municipal Solid Waste in the United States – 2006 Facts and Figures, November 2007
This report describes paper and other commodities in terms of the national municipal solid waste stream. It also discusses trends based on data collected between 1960 and 2006.
http://www.epa.gov/epaoswer/non-hw/muncpl/pubs/msw06.pdf

PWTB 200-1-15: Automated Template for Integrated Solid Waste Management Plans, U.S. Army Corps of Engineers
Appendix A is a graphical presentation explaining how the downloadable template can assist in the preparation of an ISWMP. Appendix B contains the actual template database file. Both appendices, are located on a single zip file named, "Solid Waste Management Plans (SWP2000.ZIP file)," and may be downloaded from
http://wbdg.org/ccb/browse_cat.php?o=31&c=215

NAVMED P5010: Manual of Naval Preventive Medicine
Navy installations must be in compliance with the sanitation standards (e.g., pest control/management, safe drinking water, habitability, etc.) prescribed in this manual.
http://www.nepmu5.med.navy.mil/html/preventive_medicine_manuals.html

NAVMEDCOMINST 6280.1: Management of Infectious Waste, January 1994
This guidance provides infectious waste management instruction for Navy medical treatment facilities. **http://www.operationalmedicine.org/ed2/Instructions/Navy/6280-1a.pdf**

C.7 Websites (Listed in alphabetical order):

These websites have been provided as additional information sources. DoN does not sponsor them, and cannot ensure the quality of the information provided therein.

Defense Environmental Network Information Exchange (DENIX)
Allows timely access to environmental, legislative, compliance restoration, cleanup, and DoD guidance information. For access to some portions of the site, a password is required.
https://www.denix.osd.mil/

Defense Reutilization and Marketing Service (DRMS)
Displays property available for reutilization, transfer and donation. http://www.drms.dla.mil/

Navy Environmental Quality Fact Sheets – Solid Waste Management
This series of Navy Environmental Quality Fact sheets encourages activities to use pollution prevention technologies and methods, and promote sustained environmental compliance at the lowest life-cycle cost. **http://www.p2sustainabilitylibrary.mil/topics/solidwaste.html**

Office of the Federal Environmental Executive (OFEE)
OFEE promotes sustainable environmental stewardship throughout the Federal government. Their website contains news and publications on a variety of topics, such as: waste prevention and recycling, green purchasing, environmental management systems, and sustainability. http://www.ofee.gov/

U.S. EPA Comprehensive Procurement Guidelines (CPG)
Offers the latest information on CPGs and EPA's Recovered Materials Advisory Notices (RMANs). Provides recommended recycled-content levels for CPG items.
http://www.epa.gov/cpg/

U.S. EPA Environmentally Preferable Purchasing
Contains guidance on "green" product/service purchasing. http://www.epa.gov/opptintr/epp/

U.S. EPA Office of Solid Waste
Provides information on a variety of solid waste topics, such as recycling, pollution prevention, and waste programs. http://www.epa.gov/osw/

U.S. EPA Solid Waste Regulations & Standards
Lists solid waste laws, regulations, and policies. http://www.epa.gov/epaoswer/osw/laws-reg.htm

APPENDIX D:
RECYCLING POLICY GUIDANCE MEMORANDUM
(DATED April 24, 2003)

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE ARMY
(ENVIRONMENT, SAFETY, AND OCCUPATIONAL HEALTH)
DEPUTY ASSISTANT SECRETARY OF THE NAVY
(ENVIRONMENT)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(ENVIRONMENT, SAFETY, AND OCCUPATIONAL HEALTH)
DIRECTOR, ENVIRONMENT AND SAFETY,
DEFENSE LOGISTICS AGENCY

SUBJECT: Qualified Recycling Program Guidance

This memorandum supplements Department of Defense Instruction (DoDI) 4715.4, paragraph 6.2.3.3 with guidance on Qualified Recycling Programs (QRP). The attached guidance was developed in response to recommendations in the Office of the Inspector General Evaluation Report 97-087, "Direct Sales of Recyclable Material." DoD Components must incorporate the attached guidance in their respective Component-specific QRP guides.

If you need additional information, please speak with my staff point of contact, Mr. John Coho, 604-1630 or e-mail **John.Coho@OSD.mil**.

John Paul Woodley, Jr.
Assistant Deputy Under Secretary of Defense
(Environment)

Attachment:
Qualified Recycling Program Guidance

cc:
OUSD(AT&L)/ARA
Technical Director, Audit Follow-up, OIG
DUSD(L&MR)

Guidance on Criteria, Justification, Approvals and Procedures for Conducting Sales; Reconciling Sales; and Financial Records (Supplements DODI 4715.4, paragraph 6.2.3.3.7.1.)

10 U.S.C. 2577 requires recyclable sales to be conducted in accordance with section 203 of the Federal Property and Administrative Services Act (FPASA) of 1949 (40 U.S.C. 484), which is implemented by the Federal Property Management Regulations (FPMR) (41 CFR 101-45.3). Pertinent sections of the act and regulations current as of the date of this memorandum are provided at Appendix A. Readers should access the Government Printing Office Website (in the case of the FPASA) or the GSA Website (in the case of the FPMR) in order to view the latest versions of these documents. In addition to complying with the statutory and regulatory requirements in Appendix A, the installation QRP manager shall maintain sales, financial and operational records and periodically reconcile them. The QRP manager is responsible for maintaining the following records to support effective program management and audit requirements:

1. Sales records of qualified scrap by direct sales and sales through DRMO. Records of DRMO sales shall contain item description, sale price, payment date, and weight of scrap sold. Direct sales records shall contain item description, sale price, sale date, payment date, weight of scrap sold, list of bidders and winning bidder.

2. Expense records for operating and overhead costs. QRP records on operating costs shall include purchase of equipment, maintenance, program operation and expansion, labor costs, training, publicity, and overhead for processing recyclable materials.

3. Records of incomes and expenditures. This data shall be used to calculate the annual QRP profit or loss using the following equation: Income – Expenses = Profit or Loss

4. Records of cost avoidance. Cost avoidance shall be estimated by determining the weight or volume of the material diverted from the waste stream, and calculating the labor, prorated hauling costs, maintenance costs, landfill tipping fee and any other disposal charges that would have been incurred in the absence of waste prevention/recycling.

5. Retain records of profit distributions to MWR, Environmental, health or safety projects.

Guidance on Appropriate Use of Net Proceeds from the Sale of Recyclables (Supplements DODI 4715.4, paragraph 6.2.3.3.7)

The proceeds collected by a QRP must first cover program costs, including equipment purchased with Operations and Maintenance (O&M) funds. Up to 50 percent of the remaining proceeds may be used for pollution abatement, pollution prevention, composting, alternative fueled vehicle infrastructure support and vehicle conversion, energy conservation, or occupational safety and health projects, with first consideration given to projects included in the installation's pollution prevention plans. Any remaining proceeds may be transferred to the non-appropriated Morale, Welfare, and Recreation account or retained in the installation QRP suspense account (F3875) for use in the following year. 10 U.S.C. 2577 limits the amounts that can be held in the

QRP account at the end of any fiscal year resulting from the program to $2 million. Amounts in excess of $2 million are to be transferred to Miscellaneous Receipts of the Treasury.

Allocation of funds: The QRP committee decides how to allocate net proceeds. If the committee cannot reach a decision, then the installation commanding officer (or regional commander) or the appointed representative shall make the final decision. The installation commanding officer (or regional commander) or the appointed representative also has the authority to override the decision of the committee, if he or she so chooses. The Comptroller's Office shall ensure that projects considered for local funding with recycling proceeds are not included in a normal military construction program.

Sale of surplus material: All personal property purchased by the Federal government with appropriated funds is considered government property, even when discarded. This surplus property must be disposed of properly. Proceeds resulting from the sale of surplus material purchased with appropriated funds must be distributed in accordance with DoD 7000.14-R, DoD Financial Management Regulation, Volume 11A, Chapter 5, which contains instructions for recyclable sales conducted under 10 U.S.C. 2577 by both Defense Reutilization and Marketing Offices and installation Qualified Recycling Programs.

Training: QRP proceeds may be used for courses, conferences, training, and equipment for recycling personnel. In addition, computer equipment and software may be a useful management tool to facilitate the QRP's adherence to the new DoD MOM, Solid Waste Annual Reports (SWARs), and auditing requirements for the QRP. The proceeds from the QRP may be used to purchase or upgrade computer equipment directly supporting the QRP.

Equipment purchase and construction: Equipment for the QRP may be procured with QRP proceeds or appropriations normally available for equipment acquisition. Equipment purchased with other than O&M appropriated funds may not be reimbursed from QRP proceeds. QRP proceeds must pay for the construction of holding bins, sorting platforms, or other recycling facility improvements, equipment maintenance and repair costs, and leased equipment.

Guidance on Treatment of Costs Associated with Recycling Programs (Supplements DODI 4715.4, paragraph 6.2.3.3.7.2)

Labor: There are a number of ways to obtain labor for recycling operations. Potential personnel sources include military, civilian, and contracted manpower; Federal, State, county and military prisoners; physically and mentally challenged workers; and volunteers.

- The cost of the QRP Manager must be paid in full by the QRP.
- The QRP is not required to pay for Active Duty Military labor.
- Non-appropriated fund (NAF) and appropriated fund civilian employees can also work for the QRP but must be paid in full by the QRP.
- The QRP may fund contracts for civilian labor.
- Other labor sources such as prisoners and challenged workers must be paid by the QRP

Initial Costs. Start-up costs for QRP programs are budgeted and funded through the normal appropriated fund budgeting process. Start-up costs may be reimbursed to the O&M account from QRP proceeds.

Solid Waste Management Equipment Costs. Installation operation and maintenance (O&M) funding shall be used for the following equipment: collection containers for recyclables (e.g., bins, totes, dumpsters), any equipment necessary to collect and transport all solid waste on the base including recyclables, and composting equipment.

Recycling Equipment Costs. QRP proceeds shall be used for QRP equipment maintenance and repair costs, leased equipment costs, and equipment used exclusively by the QRP (e.g., blue bins, balers, and forklifts). Acquisition of new or replacement equipment related only to recycling of solid and other waste, and the construction of holding bins, sorting platforms or other recycling facility improvements must be reimbursed from QRP proceeds.

Redistributed Equipment. Recycling equipment may be accepted from DRMO through redistribution. Equipment obtained from DRMO is not reimbursable by the QRP.

Financial Donations. Financial donations from organizations, clubs, private groups or individuals must be reported in the installation Disbursing Officer's Trust Fund Receipt Account. Donations must be accepted under applicable gift acceptance authorities -- either section 2601 or 2608 of title 10 -- and in accordance with the FMR or Service regulations implementing section 2601.

Transportation Costs: Refuse collection, transportation, and disposal on or off the installation will be funded by installation O&M. As part of that responsibility, the installation is also responsible for collecting segregated and non-segregated recyclable materials from installation and housing areas and transporting them to a central location either on or off the installation. The installation receives O&M funding to collect refuse and scrap, regardless of whether its destination is a landfill or a recycling facility. However, if the cost of transportation to the recycling facility exceeds the cost of solid waste disposal, then QRP proceeds shall reimburse the difference to the O&M account.

Cost Avoidance: Cost avoidance is the cost of off-site waste handling, hauling and disposal that would have been incurred by the generating activity or installation in the absence of waste prevention and/or recycling. Cost avoidance shall be estimated by determining the weight or volume of the material diverted from the waste stream, and calculating the labor, prorated hauling costs, maintenance costs, landfill tipping fee and any other disposal charges that would have been incurred in the absence of waste prevention/recycling. QRPs shall not be reimbursed directly for cost avoidance, but cost avoidance shall be incorporated in calculations to determine the cost-effectiveness of QRPs.

Data Reporting: Installations shall report data on sales revenues, reimbursable costs, and the additional costs associated with adopting direct sale programs through their chains of command to headquarters staff on an annual basis utilizing a web-based reporting system.

Periodic Monitoring: Each Military Service and Defense Agency must meet the requirements set fourth in DoD Instruction 4715.4, Pollution Prevention.

QRPs shall conduct internal self-audits annually and have one external audit every three years. Audits will review files related to the Qualified Recycling Program (QRP) with emphasis on financial records and the costs and profits of the recycling sales program, as well as the cost avoidance resulting from recycling/waste prevention. Results of these audits must be briefed to the Installation Commander where QRPs are operated.

Only through strict adherence with this guidance will DoD retain the privilege provided in 10 U.S.C.2577 regarding the retention of sales proceeds. Commanders and QRP managers must operate QRPs in accordance with the law and under the direction of this policy.

Guidance on Outsourcing Opportunities (Supplements DODI 4715.4, paragraph 6.2.3.3.7)

Whenever a Military Service or Defense Agency considers establishing or modifying a QRP to include direct sales authority, an economic analysis must be conducted. Economic Analysis examines financial costs, benefits (including cost avoidance), and risks of various alternatives. The purpose of an economic analysis is to determine the most cost effective alternative. For example, it may be more cost effective to contract out (outsourcing) or transfer operations rather than fund an installation QRP.

The QRP Business Plan must document objective consideration of QRP outsourcing alternatives. If outsourcing is elected, contractors shall follow Federal and state environmental laws, DoD regulations, Military Service specific regulations (for tenant activities), Executive Orders, and keep adequate records for review by the government QRP Manager and auditors.

For more information on QRP operations go to DENIX at **https://www.denix.osd.mil/**.

Appendix A. Statutory and Regulatory Requirements for Criteria, Justification, Approvals and Procedures for Conducting Sales; Reconciling Sales; and Financial Records.

From the U.S. Code Online via GPO Access at, wais.access.gpo.gov.

Laws in effect as of January 23, 2000
Document affected by Public Law 106-398 Section 1[2814]
CITE: 40USC484

TITLE 40--PUBLIC BUILDINGS, PROPERTY, AND WORKS
CHAPTER 10--MANAGEMENT AND DISPOSAL OF GOVERNMENT PROPERTY
SUBCHAPTER II--PROPERTY MANAGEMENT

Sec. 484. Disposal of surplus property

(a) Supervision and direction

Except as otherwise provided in this section, the Administrator shall have supervision and direction over the disposition of surplus property. Such property shall be disposed of to such extent, at such time, in such areas, by such agencies, at such terms and conditions, and in such manner, as may be prescribed in or pursuant to this Act.

(b) Care and handling

The care and handling of surplus property, pending its disposition, and the disposal of surplus property, may be performed by the General Services Administration or, when so determined by the Administrator, by the executive agency in possession thereof or by any other executive agency consenting thereto.

(c) Method of disposition

Any executive agency designated or authorized by the Administrator to dispose of surplus property may do so by sale, exchange, lease, permit, or transfer, for cash, credit, or other property, with or without warranty, and upon such other terms and conditions as the Administrator deems proper, and it may execute such documents for the transfer of title or other interest in property and take such other action as it deems necessary or proper to dispose of such property under the provisions of this subchapter.

(d) Validity of deed, bill of sale, lease, etc.

A deed, bill of sale, lease, or other instrument executed by or on behalf of any executive agency purporting to transfer title or any other interest in surplus property under this subchapter shall be conclusive evidence of compliance with the provisions of this subchapter insofar as concerns title or other interest of any bona fide grantee or transferee for value and without notice of lack of such compliance.

(e) Bids for disposal; advertising; procedure; disposal by negotiation; explanatory statement

(1) All disposals or contracts for disposal of surplus property (other than by abandonment, destruction, donation, or through contract brokers) made or authorized by the Administrator [of General Services] shall be made after publicly advertising for bids, under regulations prescribed by the Administrator, except as provided in paragraphs (3) and (5) of this subsection.

(2) Whenever public advertising for bids is required under paragraph (1) of this subsection--

(A) the advertisement for bids shall be made at such time previous to the disposal or contract, through such methods, and on such terms and conditions as shall permit that full and free competition which is consistent with the value and nature of the property involved;

(B) all bids shall be publicly disclosed at the time and place stated in the advertisement;

(C) award shall be made with reasonable promptness by notice to the responsible bidder whose bid, conforming to the invitation for bids, will be most advantageous to the Government, price and other factors considered: Provided, That all bids may be rejected when it is in the public interest to do so.

(3) Disposals and contracts for disposal may be negotiated, under regulations prescribed by the Administrator, without regard to paragraphs (1) and (2) of this subsection but subject to obtaining such competition as is feasible under the circumstances, if--

(A) necessary in the public interest during the period of a national emergency declared by the President or the Congress, with respect to a particular lot or lots of personal property or, for a period not exceeding three months, with respect to a specifically described category or categories of personal property as determined by the Administrator;

(B) the public health, safety, or national security will thereby be promoted by a particular disposal of personal property;

(C) public exigency will not admit of the delay incident to advertising certain personal property;

(D) the personal property involved is of a nature and quantity which, if disposed of under paragraphs (1) and (2) of this subsection, would cause such an impact on an industry or industries as adversely to affect the national economy, and the estimated fair market value of such property and other satisfactory terms of disposal can be obtained by negotiation;

(E) the estimated fair market value of the property involved does not exceed $15,000;

(F) bid prices after advertising therefore are not reasonable (either as to all or some part of the property) or have not been independently arrived at in open competition;

(G) with respect to real property only, the character or condition of the property or unusual circumstances make it impractical to advertise publicly for competitive bids and the fair market value of the property and other satisfactory terms of disposal can be obtained by negotiation;

(H) the disposal will be to States, Territories, possessions, political subdivisions thereof, or tax-supported agencies therein, and the estimated fair market value of the property and other satisfactory terms of disposal are obtained by negotiation; or

(I) otherwise authorized by this Act or other law.

(5)(A) Negotiated sales of personal property at fixed prices may be made by the Administrator either directly or through the use of disposal contractors without regard to the limitations set forth in paragraphs (1) and (2) of this subsection: Provided, That such sales shall be publicized to the extent consistent with the value and nature of the property involved, that the prices established shall reflect the estimated fair market value thereof, and that such sales shall be limited to those categories of personal property as to which the Administrator determines that such method of disposal will best serve the interests of the Government.

(B) Under regulations and restrictions to be prescribed by the Administrator, property to be sold pursuant to this paragraph may be offered to organizations specified in paragraph (3)(H) of this subsection that have expressed an interest in the property to permit such an organization a prior opportunity to purchase at the prices fixed for such property.

(6)(A) Except as otherwise provided by subparagraph (C) of this paragraph, an explanatory statement shall be prepared of the circumstances of each disposal by negotiation of--

(i) any personal property which has an estimated fair market value in excess of $15,000;

(ii) any real property that has an estimated fair market value in excess of $100,000, except that any real property disposed of by lease or exchange shall only be subject to clauses (iii) through (v) of this subparagraph;

(iii) any real property disposed of by lease for a term of 5 years or less, if the estimated fair annual rent is in excess of $100,000 for any of such years;

(iv) any real property disposed of by lease for a term of more than 5 years, if the total estimated rent over the term of the lease is in excess of $100,000; or

(v) any real property or real and related personal property disposed of by exchange, regardless of value, or any property any part of the consideration for which is real property.

(B) Each such statement shall be transmitted to the appropriate committees of the Congress in advance of such disposal, and a copy thereof shall be preserved in the files of the executive agency making such disposal.

(C) No such statement need be transmitted to any such committee with respect to any disposal of personal property made under paragraph (5) at a fixed price, or to property disposals authorized by any other provision of law to be made without advertising.

(D) The annual report of the Administrator under section 492 of this title shall contain or be accompanied by a listing and description of any negotiated disposals of surplus property having an estimated fair market value of more than $15,000, in the case of real property, or $5,000, in the case of any other property, other than disposals for which an explanatory statement has been transmitted under this paragraph.

(7) Section 5 of title 41 shall not apply to disposals or contracts for disposal made under this subsection.

FEDERAL PROPERTY MANAGEMENT REGULATIONS

Code of Federal Regulations
Title 41, Volume 2
Revised as of July 1, 2001

From the U.S. Government Printing Office via GPO Access

CITE: 41CFR101-45.304-1
TITLE 41--PUBLIC CONTRACTS AND PROPERTY MANAGEMENT
CHAPTER 101--FEDERAL PROPERTY MANAGEMENT REGULATIONS
PART 101-45--SALE, ABANDONMENT, OR DESTRUCTION OF PERSONAL PROPERTY

Subpart 101-45.3--Sale of Personal Property

Sec. 101-45.304-1 Competitive bid sales.

Except as provided in Sec. 101-45.304-2, property shall be sold by competitive bid sale after advertising, in accordance with this Sec. 101-45.304-1. Competitive bid sales include the following:

(a) Sealed bid sales. In sealed bid sales, bidders shall be required to submit, to the office designated for receipt and opening of bids, sealed written bids on authorized bid forms for public opening at a time and place designated.

(b) Spot bid sales. In spot bid sales, bidders shall be furnished with bid forms in advance of the bidding, a bid form to be used for each lot or unit to be separately sold. Requests for bids on items offered for sale shall be made by the official in charge. In requesting bids, the official in charge shall announce the item, its identification number, and a brief description of the item or lot. The right to reject all such bids for a lot or item shall be reserved in the terms of sale; and when the Invitation for Bids so specifies, lots or items for which all bids have been rejected may be reoffered at the same sale in order to secure an acceptable bid price. After examining all bids, award shall be made or bids rejected immediately following the offering of the item or lot. The bids at spot bid sales shall not be disclosed prior to the announcement of award for any item or lot. Where mailed written or drop bids are permitted, they shall not be disclosed to the public prior to the announcement of award. Bidders may be required to register in advance of the sale. Any special condition of sale shall be set out in the Invitation for Bids in order to assure that all bidders are afforded an opportunity to compete on the same terms and conditions.

(c) Auction sales. When the terms and conditions of sale have been published and distributed to participating buyers, any special or unusual conditions of sale shall be announced by the person conducting the auction, immediately prior to commencement of the sale. Offerings must reserve in the Government, the right to accept or reject any or all bids. Lots for which all offers have been rejected may be reoffered later at the same sale to secure acceptable bids, when the published terms and conditions so provide.

Code of Federal Regulations
Title 41, Volume 2
Revised as of July 1, 2001

From the U.S. Government Printing Office via GPO Access

CITE: 41CFR101-45.304-2
TITLE 41--PUBLIC CONTRACTS AND PROPERTY MANAGEMENT
CHAPTER 101--FEDERAL PROPERTY MANAGEMENT REGULATIONS
PART 101-45--SALE, ABANDONMENT, OR DESTRUCTION OF PERSONAL PROPERTY

Subpart 101-45.3--Sale of Personal Property

Sec. 101-45.304-2 Negotiated sales and negotiated sales at fixed prices.

(a) Circumstances permitting negotiated sales. While it is the policy to sell property after publicly advertising for bids, property also may be sold by negotiation, subject to obtaining such competition as is feasible under the circumstances, where:

(1) It is determined by the agency that the sale involves property:

(i) That has an estimated fair market value not in excess of $15,000;

(ii) Where public exigency will not admit of the delay incident to advertising;

(iii) Where bid prices after advertising therefore are not reasonable (either as to all or some part of the property), or bid prices have not been independently arrived at in open competition, and it is determined that re-advertising will serve no useful purpose: Provided, That all responsible bidders who responded to the previous advertising shall be afforded an opportunity to submit offers for the property; or

(iv) That the disposal will be to a State, territory, possession, political subdivision thereof, or tax-supported agency therein, and that the estimated fair market value of the property and other satisfactory terms of disposal are obtained by negotiation. (See Sec. 101-45.304-12.)

(2) Full and adequate justification therefore has been submitted to the head of the selling agency or his designee for prior approval, and he has determined:

(i) That the public health, safety, or national security will thereby be promoted; or

(ii) That it is necessary in the public interest during the period of a national emergency declared by the President or the Congress. The authority of this subdivision shall be used only with respect to a particular lot or lots of personal property identified by the Administrator of General Services or a specifically described category or categories of property determined by the Administrator of General Services during any period fixed by the Administrator of General Services, but not in excess of three months. Declaration of a national emergency alone is not

justification for use of this authority; there must be other reasons making use of negotiation necessary in the public interest.

(3) Full and adequate justification therefore has been submitted to the Administrator of General Services for his prior approval, and he has determined that the property involved is of a nature and quantity which, if disposed of by advertising would cause such an impact on an industry or industries as to adversely affect the national economy: Provided, That the estimated fair market value of such property and other satisfactory terms of disposal can be obtained by negotiation.

(4) Negotiation is otherwise authorized by the Act or other law.

(b) Negotiated sales at fixed prices.

(1) Property may be sold at fixed prices, either directly or through the use of disposal contractors, only with prior approval by the Administrator of General Services (or designee) of the property categories to be sold.

(2) In accordance with Sec. 101-45.304-12, prior to offering property to the public, it may be offered at fixed prices, through State agencies for surplus property, to State and local governments (States, territories, possessions, political subdivisions thereof, or tax-supported agencies therein) which have expressed an interest in the property.

(c) Explanatory statements. Subject to the exceptions stated in Sec. 101-45.304-2(c)(2), the selling agency shall prepare an explanatory statement as required by section 203(e)(6) of the Act of the circumstances of each proposed disposal by negotiation.

(1) Ten copies of each explanatory statement, mechanically reproduced, shall be submitted to the Administrator of General Services for review and transmittal by the Administrator to the appropriate committees of the Senate and House of Representatives and a copy thereof shall be preserved in the files of the selling agency. Such statements shall be submitted as early as practicable in advance of each proposal. Copies of the Administrator's transmittal letters to the committees will be furnished to the selling agency. In the absence of any action by a committee on the proposed negotiated disposal, the selling agency may consummate the sale on or after 35 days from the date of the Administrator's letters transmitting the explanatory statement to the committees.

(2) The explanatory statement need not be:

(i) Transmitted for a disposal of personal property at fixed prices when previously authorized pursuant to Sec. 101-45.304-2(b);

(ii) Transmitted for a disposal of personal property authorized to be made without advertising by any provision of law other than section 203(e) of the Act; or

(iii) Prepared for a disposal of personal property having a fair market value of $15,000 or less.

(3) An outline for the preparation of the explanatory statement is shown in Sec. 101-45.4806.

[30 FR 2930, Mar. 6, 1965, as amended at 31 FR 5001, Mar. 26, 1966; 34 FR 7329, May 6, 1969; 42 FR 40853, Aug. 12, 1977; 54 FR 38676, Sept. 20, 1989; 55 FR 17609, Apr. 26, 1990]"

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APPENDIX E:
SAMPLE ENVIRONMENTAL LANGUAGE FOR CONTRACTS

The purpose of this Appendix is to provide some bulleted samples of language, which may be used in all applicable contracts to incorporate source reduction, recycling, affirmative procurement, and pollution prevention activities. Also included is sample language for construction and demolition (C&D) contracts.

When drafting contracts, perhaps the best approach is to develop a generic set of environmental specifications (such as those contained in this Appendix) that can later be adapted for individual projects. As such, the ISW Manager may find it useful to consider this a living document, and expand it with additional examples when available.

Source Reduction & Recycling Samples:

- The contractor shall specify how packaging will be minimized and/or reused (e.g., reusing pallets; using recycled, returnable, and/or biodegradable packaging; etc.).
- The contractor will describe reuse and recycling programs for designated products used while under contract (e.g., plastic, glass, aluminum, newspaper, paper, used lead batteries, used oil and antifreeze, etc.).
- At the end of each quarter, and at project completion, the contractor will denote the weight or volume of each material used and whether it was reused, recycled, or landfilled.
- The contractor will use good quality (durable) and/or reusable tools equipment, and supplies.

Affirmative Procurement Samples:

- The contractor must demonstrate a preference for products that cause the least amount of environmental harm during manufacturing, use, and disposal (e.g., non-toxic, biodegradable solvents).
- All designated products shall be purchased with the highest recovered (recycled) material content level practical, and meet the U.S. EPA's requirements for recycled products. The only justifications allowed for not purchasing the designated products with recycled content are as follows:
  - Cost exceeds that of virgin material
  - Not Available
  - Performance does not meet the specifications required for the project.

Affirmative Procurement Samples (continued):

- When the contractor cannot purchase a designated product with recycled content, a justification form reporting the following must be submitted:
  - Prices of the recycled versus the non-recycled material
  - Companies contacted for availability
  - Reason(s) why purchase was prohibited.

Pollution Prevention Samples:

- When possible, the contractor will reduce air emissions by managing transportation (e.g., fleets that operate on alternative fuels), and conserve energy (e.g., through efficient lighting, energy-conserving equipment and machinery, using renewable energy sources, etc.).

- Contractors must use drip pans for any oil transfers and/or grease operations.

- When feasible, contractors should use locally produced materials. This will save on the energy used to transport the material from the manufacturing to building sites.

- Contractors should use materials that require less maintenance and are easily replaced/ repaired.

C&D Samples:

- The contractor shall prepare a construction waste management plan, which includes:
  - Waste audit (required for remodels and deconstruction)
  - Source reduction and recycling goals
  - How goals will be tracked and communicated to field personnel and subcontractors
  - Anticipated net cost savings and cost avoidance.

- All contractors are encouraged to minimize the waste generated during construction and demolition projects and maximize the amount of material that is reused and recycled.

- Contractors will identify an off-site recycling service and hauler for each designated debris item, as well as list the proposed quantities. Provide the recycling service and hauler's name, telephone number, address, and point of contact.

- Contractors will estimate each type of C&D debris that could be generated. Calculations will be based upon estimated weight of each material.

APPENDIX F:
ISWMP SAMPLE STATEMENT OF WORK

1.0 Scope

(Insert installation name) requires contractor support to develop an Integrated Solid Waste Management Plan (ISWMP). The primary purpose of the ISWMP is to build on existing (insert installation name) solid waste management programs – such as source reduction, recycling, and composting – by optimizing their design/operation through an *integrated* analysis of all comprehensive, cost-effective alternatives. As such, the ISWMP should aid (insert installation name) in maximizing its non-hazardous solid waste diversion.

The ISWMP shall incorporate current Federal, State, local, DoD, and DoN laws, regulations, and instructions, as well as innovative information about affirmative procurement, recycling, composting, waste diversion, waste reduction awareness, and other pertinent topics. Material used to create the ISWMP will be taken from the U.S. EPA, professional solid waste associations and societies, libraries, and other pertinent sources.

2.0 Applicable Documents (to be provided by the Government)

- Installation Solid Waste Management Plan (ISWMP) – The contractor shall use the (insert installation name) SWMP as the primary foundation for the ISWMP. The SWMP will provide valuable information on the existing solid waste management program elements as well as diversion and waste generation data.

- *Integrated Solid Waste Management Plan (ISWMP) Guide*, NAVFAC ESC UG-2084-ENV, April 2009.

- Chapter 16 of OPNAVINST 5090.1C

3.0 Tasks

3.1 Kickoff Meeting: The contractor shall participate in an initial meeting (or a conference call) to discuss the main project elements, such as tasks and milestones. The principle performers should attend this meeting (or conference call).

3.2 Develop Draft ISWMP Outline: The contractor shall develop a draft outline of the ISWMP. The draft outline will be the basis for the first ISWMP draft.

3.3 Develop ISWMP First Draft: The contractor shall prepare a paper and electronic copy of the draft ISWMP for review by (insert installation name).

3.4 Prepare ISWMP Second Draft: The contractor shall incorporate comments from (insert installation name) and prepare one electronic and 20 paper ISWMPs for distribution to (list names) for review.

3.5 Final Review of Comments: The contractor shall participate in a meeting to review comments and plan for the final version. Final decisions for all comments will be made by that time.

3.6 Develop Final ISWMP: After receiving final approval from the Technical Point of Contact, the contractor shall complete/finalize the ISWMP. Cover and government distribution pages will be supplied by (insert installation name).

4.0 Deliverables Schedule

Day	Milestone
0	Contract or Delivery Order Award
15	Kickoff Meeting
30	Develop ISWMP Outline
75	1st Draft Due
100	Provide Comments to Contractor
120	2nd Draft Due
150	Provide Comments to Contractor
180	Final Draft Due
200	Ok to Contractor to Produce Final ISWMP
220	Final ISWMP Distribution

4.1 Deliverable Distribution

Shall be as directed in this statement of work and/or by the Government points of contact (technical or COR).

4.2 Format & Distribution of Final Guide

- Complete Word version and of Acrobat PDF file ISWMP on CD (50 copies).
- Original Camera Ready Copy of ISWMP
- 50 paper copies of ISWMP
- Final Distribution of printed copies

5.0 Government Points of Contact

- **Technical Point of Contact:** (Insert name and contact information)

- **Contracting Officer's Representative (COR):** (Insert name and contact information)

6.0 Period of Performance

Date of award through (insert date).

APPENDIX G:
EXAMPLE INSTALLATION ISWMP IMPLEMENTATION INSTRUCTION

The ISWMP instruction should be similar to other base instructions issued and signed by the Installation Commanding Officer. This endorsement will mandate installation-wide plan compliance, which includes tenant solid waste generators as well. The base instruction should consist of the following items (a sample instruction is presented on the following page):

Subject	Write a brief (one line) description of the program's purpose. An example would be "Integrated Solid Waste Management Plan (ISWMP)."
Reference	Reference in this section: applicable Navy instructions (e.g., OPNAVINST 5090.1C); Federal, State, and local regulations; and other pertinent plans (e.g., Qualified Recycling Program).
Enclosure	Include the installation's ISWMP and any other desired attachments.
Purpose	Explain that the main purpose is to provide policy regarding integrated solid waste management.
Cancellation	Cancel any previous SWMP Instruction.
Effective Date	Include the effective new date for this instruction and recommend that it be reviewed and updated every 3 years or as changes occur.
Scope	State that the instruction applies to solid waste generated at the installation and tenant activities.
Background	Explain that the ISWMP is now a requirement mandated by Navy regulations and is to be in accordance with State and local solid waste management requirements.
Responsibilities	List roles and duties of those primarily involved in integrated solid waste management (e.g., Commanding Officer, ISW Manager, Environmental, PW, Comptroller, QRP Manager, etc). Mention that the ISW Manager will be given primary responsibility, accountability, and authority for ISWM Program Administration.

SAMPLE INSTALLATION INSTRUCTION
NAVSTACOASTALCCITYINST 5090.X

Subj: INTEGRATED SOLID WASTE MANAGEMENT PROGRAM

Ref: (a) Resource Conservation and Recovery Act (RCRA) of 1976 (Public Law 94-580)
(b) State Assembly Bill 939
(c) State Senate Bill 1223
(d) OPNAVINST 5090.1C, Environmental and Natural Resource Program Manual (Chapter 16), October 2007
(e) NAVSTA Costal City Instruction 5090.1, Qualified Recycling Program
(f) Solid Waste Management Study, Solid Waste Consultants

Encl: (1) INTEGRATED SOLID WASTE MANAGEMENT PLAN (ISWMP) FOR NAVAL STATION COASTAL CITY

1. Purpose. To establish policies and procedures for ISWM at Naval Station Costal City

2. Cancels. Previous Solid Waste Management Instruction ######

3. Effective Date. 30 days after instruction date

4. Scope. This instruction releases guidance for integrated solid waste management. Its provisions apply to all individuals at Naval Station Costal City San Diego who directly or indirectly have responsibility for generation, handling, and/or disposal of solid waste. This instruction mandates implementation of enclosure (1).

5. Background. DoD and Navy policy require shore facilities to optimize the design/operation of non-hazardous solid waste programs through an integrated analysis of all comprehensive, cost-effective alternatives. As such, shore facilities must now develop and implement an ISWMP.

6. Responsibilities.

For a complete listing of roles and responsibilities, refer to enclosure (1).

a. The Integrated Solid Waste Manager will be responsible for managing the Integrated Solid Waste Program. The responsibilities of the Integrated Solid Waste Manager are as follows:

- Review and monitor compliance with all relevant environmental regulations pertaining to solid waste management and recycling. Ensure compliance of tenant commands. Recommend policy changes as applicable.

- Anticipate future solid waste regulations and objectives for minimization, diversion, projected landfill closures, and economic feasibility.

- Serve as installation liaison between county and State solid waste regulators.

- Act as the installation point of contact for all issues (e.g., questions and complaints) regarding solid waste management and recycling.

- Advise and monitor activities of solid waste management personnel (e.g., contractors and/or base personnel) to ensure compliance with solid waste and recycling regulations.

- Oversee all aspects of ISWM (e.g., source reduction, recycling, and affirmative procurement).

- Determine the most cost-effective and feasible waste management options (e.g., storage, collection, disposal, tipping fees, routine operations, etc.).

- Coordinate with major command on solid waste and recycling issues (e.g., reporting and recordkeeping).

- Release ISWM guidelines (e.g., relating to pollution prevention, recycling, and source reduction strategies) to base residents, civilian employees, and active duty installation personnel.

- Work with the QRP Manager to identify new recyclable materials markets, and discuss end use technologies (e.g., composting and incineration).

- Coordinate installation-wide education and awareness initiatives (e.g., newspaper articles, letters, flyers, etc.).

- Oversee development of the ISWMP, and its subsequent revisions.

b. The Commanding Officer or the Executive Officer will:

- Ensure installation-wide compliance with applicable Federal and State laws, regulations, Executive Orders, Navy and Marine Corps instructions/policies, and local requirements pertaining to recycling and solid waste management.

- Ensure development of an ISWM program that minimizes initial input to the solid waste stream through source reduction; reduces waste stream volume via reuse and recycling (by working in concert with the installation QRP); and, disposes of solid waste through the effective combination of composting, incineration, or landfill treatment.

- Promote and support the expansion of the QRP (e.g., taking on newly identified recyclable commodities).

- Encourage ISWM partnership programs with other services, other DoD activities, Federal Agencies, municipalities, and community organizations.

- Ensure each department head designates a Recycling Coordinator from his/her department in writing to the installation environmental office.

c. Comptroller responsibilities include:

- Ensure that proceeds from the sale of recyclable materials are used to cover the cost of recycling before they are applied to any other project.

- Ensure all projects considered for local funding with recycling proceeds are not included in a normal construction program, and are consistent with the installation's pollution prevention and environmental objectives.

- Ensure the balance of funds received from the sale of recyclable materials does not exceed $2 million at the end of the fiscal year. Any funds in excess of this amount must be returned to the Treasury.

- Accept reimbursements from DRMO and from commercial recyclers for the direct sales of recyclable materials. Ensure the funds are credited to the recycling suspense account.

d. MWR will:

- Provide a list of projects to potentially be funded with recycling revenues to the QRP Committee for approval.

- Create and maintain holding accounts for installation departments and tenant commands.

- Provide Human Resources Office (HRO) services for Non-appropriated Fund (NAF) personnel.

e. The Environmental Department shall:

- Review current and future environmental regulations, instructions, legislative laws, and local requirements.

- Advise the ISW manager regarding new or changing requirements.

- Keep track of Notices of Violation (NOVs).

f. PW responsibilities include:

- Ensure that the collection of solid waste storage, collection, transportation, and disposal are conducted in accordance with Federal, State, local, Navy and Marine Corps regulations.

- Perform solid waste collection and transportation activities, such as: dumpster purchase, placement, and movement; route planning with full or partial pickup and disposal; transfer station operations; handling solid wastes resulting from maintenance and operations of vehicles and road construction (concrete, asphalt); handling of green wastes (housing areas, ballparks); and, all associated recordkeeping.

- Program and budget for resource requirements needed to effectively manage the IWSM program.

g. The QRP Manager will:

- Coordinate with ISW Manager on solid waste and recycling issues.

- Select a trained individual (other than the QRP Manager) to conduct local sales and award contracts.

- Assist ISW Manager in recordkeeping and reporting activities.

- Assist Installation Commanding Officer in the selecting members of Qualified Recycling Committee.

- Review recycling projects funded with sales proceeds.

- Develop and submit potential recycling projects.

- Maintain program and audit records available for audits and inspections.

- Oversee daily operation of the recycling facility and all recycling operations.

- Monitor program participation, and implement new measures when involvement is low.

- Manage contracts in support of the QRP.

- Determine the type and quantity of materials at the installation suitable for recycling. Identify locations where such materials can be picked up, and notify program coordinators.

Commanding Officer

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APPENDIX H:
DEFINITIONS

Activity	A unit, organization, or installation that performs a function or mission.
Agricultural Wastes	Solid wastes consisting of plant and animal origin, which result from the production and processing of farm and agricultural products, such as manures, orchard and vineyard prunings, and crop residues.
Aluminum Can/Container	Any food or beverage container that is composed of at least 94 percent aluminum.
Composting	The controlled process for managing the degradation of organic materials which is biologically broken down into a useful product such as mulch or a soil amendment
Container	A non-specific term for a receptacle capable of closure. Used for collection of recyclables.
Direct Sales	Competitively selling recyclable materials to a vendor by the managing activity's QRP without utilizing the Defense Reutilization and Marketing Office (DRMO). Direct sales authority is granted to the installation's QRP by the Claimant.
Discards	The municipal solid waste remaining after recovery for recycling and composting. These discards are usually combusted or disposed of in landfills, although some municipal solid waste is littered, stored, or disposed of on site, particularly in rural areas.
Disposal	The management of solid waste through landfilling, incineration, or transformation at permitted solid waste facilities.
Diversion (Solid Waste)	An activity to divert solid waste from landfill disposal or incineration, including reuse, donation, recycling, and composting/mulching. Diversion activities must be in compliance with all applicable DoD, DoD Component, Federal, State, and local requirements. Waste to energy recovery is not considered diversion.
Diversion Rate	The rate at which non-hazardous solid waste is diverted from a disposal facility. Disposal facilities include landfills (both solid waste and inert) and incinerators. Composting, mulching, recycling, and donation are generally accepted waste diversion methods. The diversion rate equals: $\frac{R}{R+L} * 100 = diversion\,rate\ (percent)$ R = amount (in tons) of non-hazardous solid waste (including recycled construction and demolition debris) that is composted, mulched, recycled, reused, donated, or otherwise diverted from a disposal facility. L = amount (in tons) of solid waste (including landfilled construction and demolition debris) transferred to a disposal facility.

DoD Component	Consists of the following: Army, Navy, Air Force, Marine Corps, Coast Guard (which operates as a Military Service in the Navy), Defense Agencies, and DoD Field Activities (which can include other integral DoD organizational entities established to perform a government function).
Energy Recovery	Steam or electrical energy produced from solid waste used as a fuel in a waste to energy plant. All incineration, including energy recover, is counted as disposal in diversion rate calculations.
Final Governing Standards (FGS)	Country-specific substantive provisions, which typically include technical limitations on effluent, discharges, or specific management practices, with which installations must comply. FGSs are derived from several sources including: the Overseas Environmental Baseline Guidance Document (OEBGD), host nation substantive pollution control laws of general applicability, relative treaties, and U.S. law with extraterritorial application.
Green Procurement	Purchasing products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. Green Procurement is also known as Affirmative Procurement or Environmentally Preferable Procurement.
Food Waste	All animal and vegetable solid wastes generated by food facilities resulting from the storage, preparation, cooking, and/or handling of food.
Integrated Solid Waste Management	A comprehensive approach to managing non-hazardous solid waste that encompasses waste prevention, recycling, composting, and disposal programs. Through ISWM, DoD Components seek to determine the most cost effective, energy-efficient, least-polluting ways to deal with the various segments of, and the items typically found in, and installation or facility solid waste stream.
Industrial Solid Waste	Solid waste may originate from manufacturing facilities, factories, refineries, and construction and demolition projects.
Installation	A Navy or Marine Corps base of operations composed of a number of Navy or Marine Corps activities, units and commands, located on the property of the host activity. Installations may also have several tenants that may or may not be located on site.
Installation Commander	Person responsible for DoD Component or an installation.
Old Newspaper	Newsprint that has been separated (or collected separately) from other types of solid waste. Old newspaper may be used as a raw material in the manufacture of a new paper product.

Organic Waste	Solid waste originating from living organisms, their metabolic waste products, and/or petroleum. The waste is biologically decomposable by microbial and fungal action into the constituent compounds of water, carbon dioxide, and other simpler organic compounds.
Other Select Waste (OSW)	Used motor oils, ethylene glycol based antifreeze, lead-acid batteries, and construction and demolition debris are the "Other Select Waste" categories for purposes of DoD metric reporting via EPRPortal SW module. If the Other Select Wastes are hazardous they must also be reported in the calendar year EPRPortal HW module.
Overseas Environmental Baseline Guidance Document (OEBGD)	A current compendium of criteria based on consideration of laws generally applicable to similarly-situated DoD installations within the U.S. that is designed to protect the environment at DoD installations outside U.S. territory.
QRP Manager	A Program Manager responsible for consolidating information from all recycling activities, and reporting on solid waste reduction and affirmative procurement activities.
QRP Recyclable Material	Scrap material whose sales proceeds can be deposited into the QRP **F3875 suspense account.
Qualified Recycling Program (QRP)	A recycling program that requires diversion of recyclable materials from the non-hazardous solid waste stream. QRP proceeds are distributed in accordance with 10 U.S.C. §2577.
Recovery	Materials removed from the waste stream for the purpose of recycling and/or composting. [NOTE: Recovery does not automatically equal recycling and composting. For example, if markets for recovered materials are not available, the materials that were separated from the waste stream for recycling may simple be stored or, in some cases, sent to a landfill or incinerator.]
Recyclable Material	Materials that would otherwise be discarded as waste or sold as scrap. These materials are capable of being reused following some kind of physical and/or chemical processing.
Recycling	A series of activities, including collection, separation and processing, by which products or other materials are recovered from the solid waste stream for use in the form of raw materials in the manufacture of new products other than fuel for producing heat or power by combustion.
Regional Commander	Person responsible for DoD Components within a specified regional area or an installation.
Residential Solid Waste	Solid waste originating from single-family or multiple family dwellings.

Reuse	The subsequent uses of a product after the initial/first use without any change in its identity.
Source Reduction	Effecting changes in the design, manufacturing, purchase, or use of materials or products (including packaging) to reduce the amount or toxicity before they are discarded.
Tenant	Co-located activities that are possibly supported by an installation, but function under separate supervisory and budgetary controls.
Waste Categories	The grouping together of solid wastes with similar properties into major solid waste classes, such as paper and paperboard, plastic, metals, textiles, rubber, glass, food waste. Each category may also have subcategories (e.g., corrugated paperboard, flint glass, ferrous metals, etc.). In most cases, the waste categories and subcategories are recyclable materials. Each of the subcategories may have a separate grade that will affect the price received.
Waste Characterization Study	A study that identifies the constituent materials that compose the solid waste generated. It should be statistically representative and should, ideally, represent seasonal variations. The constituent materials should be identified by volume (percentage in weight, or its volumetric equivalent), material type, and source of generation (which includes residential, commercial, industrial and other sources).

Appendix C1
EPA Conversion Table

Standard Volume-to-Weight Conversion Factors

APPENDIX B

Category	Recyclable Materials (u/c = uncompacted/ compacted & baled)	Volume	Estimated Weight (in pounds)
FOOD SCRAPS[A]	Food scraps, solid and liquid fats	55-gal drum	412
GLASS	Bottles[B]:		
	Whole bottles	1 yd^3	500-700
	Semicrushed	1 yd^3	1,000-1,800
	Crushed (mechanically)	1 yd^3	1,800-2,700
	Uncrushed to manually broken	55-gal drum	300
	Refillable Whole Bottles[C]:		
	Refillable beer bottles	1 case = 24 bottles	10-14
	Refillable soft drink bottles	1 case = 24 bottles	12-22
	8 oz glass container	1 case = 24 bottles	12
LEAD-ACID BATTERIES	Car[D]	1 battery	39.4 lb
	Truck[E]	1 battery	53.3 lb lead and plastic
	Motorcycle[E]	1 battery	9.5 lb lead and plastic
METALS	Aluminum Cans[F]:		
	Whole	1 yd^3	50-75
	Compacted (manually)	1 yd^3	250-430
	Uncompacted	1 full grocery bag 1 case = 24 cans	1.5 0.9
	Ferrous (tin coated steel cans)[G]:		
	Whole	1 yd^3	150
	Flattened	1 yd^3	850
	Whole	1 case = 6 cans	22
	Major Appliances[E]:		
	Air conditioners (room)	1 unit	64.2
	Dishwashers	1 unit	92
	Dryers (clothes)	1 unit	130

Category	Recyclable Materials (u/c = uncompacted/ compacted & baled)	Volume	Estimated Weight (in pounds)
METALS (cont'd)	Freezers	1 unit	193
	Microwave ovens	1 unit	50
	Ranges	1 unit	181.1
	Refrigerators	1 unit	267
	Washers (clothes)	1 unit	177
	Water heaters	1 unit	131
PAPER	Newspaper[F]:		
	Uncompacted	1 yd^3	360-505
	Compacted/baled	1 yd^3	720-1,000
	12 in. stack	—	35
	Old Corrugated Containers[F]:		
	Uncompacted	1 yd^3	50-150 (300)[H]
	Compacted	1 yd^3	300-500
	Baled	1 yd^3	700-1,100
	Computer Paper[F]:		
	Uncompacted (stacked)	1 yd^3	655
	Compacted/baled	1 yd^3	1,310
	1 case	2,800 sheets	42
	White Ledger[F]:		
	Stacked (u/c)	1 yd^3	375-465/755-925
	Crumpled (u/c)	1 yd^3	110-205/325
	Ream of 20# bond; 8-1/2 in. x 11 in.	1 ream = 500 sheets	5
	Ream of 20# bond; 8-1/2 in. x 14 in.	1 ream = 500 sheets	6.4
	White ledger pads	1 case = 72 pads	38
	Tab Cards[F]:		
	Uncompacted	1 yd^3	605
	Compacted/baled	1 yd^3	1,215-1,350
	Miscellaneous Paper:		
	Yellow legal pads[F]	1 case = 72 pads	38
	Colored message pads[F]	1 carton = 144 pads	22
	Telephone directories[I]	1 yd^3	250
	Mixed Ledger/Office Paper[F]:		
	Flat (u/c)	1 yd^3	380/755
	Crumpled (u/c)	1 yd^3	110-205/610

Category	Recyclable Materials (u/c = uncompacted/ compacted & baled)	Volume	Estimated Weight (in pounds)
PLASTIC[J]	PET (Soda Bottles):		
	Whole bottles (uncompacted)	1 yd^3	30-40
	Whole bottles (compacted)	1 yd^3	515
	Whole bottles (uncompacted)	gaylord	40-53
	Baled	30 in. x 62 in.	500-550
	Granulated	semiload	30,000
	Granulated	gaylord	700-750
	8 bottles (2 L size)	16 L	1
	HDPE (Dairy):		
	Whole (uncompacted)	1 yd^3	24
	Whole (compacted)	1 yd^3	270
	Baled	32 in. x 60 in.	400-500
	HDPE (Mixed):		
	Baled	32 in. x 60 in.	900
	Granulated	gaylord	800-1,000
	Granulated	semiload	42,000
	Other Plastic:		
	Uncompacted	1 yd^3	50
	Compacted/baled	1 yd^3	400-700
	Mixed PET and HDPE (Dairy):		
	Whole (uncompacted)	1 yd^3	32
	Film:		
	Baled	semiload	44,000
	Baled	30 in. x 42 in. x 48 in.	1,100
TEXTILES[I]	Mixed textiles	1 yd^3	175
TIRES	Car Tires:		
	Whole tire[E]	1 tire	21
	Crumb rubber[K]	1 tire	12
	Truck Tires:		
	Whole tire[E]	1 tire	70
	Crumb rubber[K]	1 tire	60
WOOD	Wood chips[L]	1 yd^3	625
	Pallets[F]	—	30-100 (40 avg.)

Category	Recyclable Materials (u/c = uncompacted/ compacted & baled)	Volume	Estimated Weight (in pounds)
YARD TRIMMINGS[F]	Grass Clippings:		
	Uncompacted	1 yd^3	350-450
	Compacted	1 yd^3	550-1,500
	Leaves:		
	Uncompacted	1 yd^3	200-250
	Compacted	1 yd^3	300-450
	Vacuumed	1 yd^3	350
FURNISHINGS[E]	Foam rubber mattress	1 mattress	55
MUNICIPAL SOLID WASTE[M]	Residential waste (uncompacted at curb)	1 yd^3	150-300
	Commercial-industrial waste (uncompacted)	1 yd^3	300-600
	MSW (compacted in truck)	1 yd^3	500-1,000
	MSW (landfill density)	1 yd^3	750-1,250

Conversion Table Sources:

[A] Information obtained from Washington State.

[B] Draft National Recycling Coalition Measurement Standards and Reporting Guidelines presented to NRC membership. October 31, 1989.

[C] Personal communication with a representative from Allwaste. November 6, 1995.

[D] Battery Council International. 1995. 1994 National Recycling Rate Study.

[E] U.S. EPA. 1995. Methodology for Characterization of Municipal Solid Waste in the United States: 1994 Update. EPA530-R-96-001. Washington, DC.

[F] U.S. EPA. 1993. Business Guide for Reducing Solid Waste. EPA530-K-92-004. Washington, DC.

[G] Personal communication with a representative from the Steel Recycling Institute. November 1, 1995.

[H] Information obtained from New Jersey and New York States.

[I] Information obtained from Massachusetts State.

[J] Personal communication with a representative from the American Plastics Council. November 2, 1995.

[K] Personal communication with a representative from the Scrap Tire Management Council. November 6, 1995.

[L] Information obtained from Northeast Forest Products, Martin Mulch Company, and the Solid Waste Association of North America.

[M] Solid Waste Association of North America, Manager of Landfill Operations Training and Certification Course. January 1989. Revised June 1991 and October 1994.

Appendix C2
NCBC Gulfport
Field Rough Estimate Diversion Rate

					Weight =	360	50	30	50	625	150	175	500				
Building	**Building Name**	**Dumpster ADMIN #**	**Dumpster Type (yd^3)[1]**	**Dumpster % Full[2]**	**Paper[2] = 360lb/cuyd**	**Aluminum[2] = 50 lb/cuyd**	**Plastic[2] = 30 lb/cuyd**	**Cardboard[2] = 50 lb/cuyd**	**Scrap Wood[2] (chips) = 625 lb/cuyd**	**Scrap Metal[2] = 150 lb/cuyd**	**Mixed Textiles[2] = 175 lb/cuyd**	**Glass[2] = 500 lb/cuyd**	**Number of times dumpster emptied/year[2,3]**	**Estimated Recyclable Weight Disposed/Yr (lbs)[4]**	**Estimated Recyclable Weight Disposed/Yr (tons)**	**Comments (Recyclable items observed in dumpster)[2]**
Industrial																
273	PW Facility	NA031	8	80%	0%	0%	15%	5%	0%	0%	0%	0%	52	2330	1.2	Cardboard boxes (CB), aluminum, plastic, and paper, CB recycling bin was 100% full, also had plastic and aluminum recycling bin
274	PW Shops	NA032A	4	25%	30%	0%	20%	40%	0%	0%	0%	0%	52	6968	3.5	Big CB box, plastics, paper, newspaper,
274	PW Shops	NA032B	8	20%	0%	20%	15%	0%	0%	0%	0%	0%	52	1206	0.6	Aluminum cans, wood scraps, chalkboard, plastics
465	Vehicle Maint	UNK(new)	8	20%	8%	8%	18%	30%	0%	0%	0%	0%	104	8486	4.2	New bldg, only had 3 trashbags, lots of CB,
331	Navy Lodge	NA055A	8	20%	0%	30%	5%	30%	0%	0%	0%	5%	104	9402	4.7	lots of drink cans and glass bottles
331	Navy Lodge	NA055	6	60%	0%	10%	10%	20%	0%	0%	0%	10%	104	25459	12.7	Lots of CB from snacks, cans, and plastic juice bottles
335	Child Center	NA056	6	50%	0%	5%	15%	70%	0%	0%	0%	0%	52	6552	3.3	Empty drink cans and bottles
328	Navy Lodge	NA053	8	80%	0%	10%	33%	33%	0%	0%	0%	10%	104	53914	27.0	Aluminum cans and glass bottles
241	NCR	NA025	8	30%	5%	0%	20%	60%	0%	5%	0%	0%	104	15350	7.7	Scrap metals, shredded paper, plastics, old shipping pallets (plastic)
	RV Park	NA086	8	80%	5%	0%	10%	10%	0%	0%	5%	0%	52	11565	5.8	Newspapers, CB, clothes, plastics
314	BEQ	NA044	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	260	0	0.0	Empty
314	BEQ	NA045	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	156	0	0.0	Empty
315	BEQ	NA046A	8	10%	10%	0%	0%	5%	0%	0%	10%	0%	156	6989	3.5	Clothes and shredded paper
315	BEQ	NA046B	8	50%	0%	5%	20%	30%	0%	5%	0%	0%	156	19344	9.7	Old whiteboard, lots of CB boxes, aluminum and plastic empty drinks, many of the trashbags were reused grocery bags
317	BEQ	NA048A	8	10%	0%	0%	20%	15%	0%	0%	0%	0%	156	1685	0.8	
317	BEQ	NA048B	8	35%	0%	10%	20%	20%	0%	0%	0%	0%	156	9173	4.6	
306	BEQ	NA041	8	80%	0%	5%	20%	20%	0%	0%	0%	10%	156	68390	34.2	Wooden Pallettes, ironing board
309	BEQ	NA042B	8	40%	0%	10%	20%	20%	0%	0%	0%	0%	156	10483	5.2	
367	Galley	NA062A	8	5%	0%	0%	50%	0%	0%	0%	0%	0%	364	2184	1.1	Breakfast cereal cups, empty yogurt cups
367	Galley	NA062B	8	5%	0%	60%	0%	15%	0%	0%	0%	0%	364	5460	2.7	6 lb tin cans (9), CB oatmeal canisters (6), 3-liter Juice containers (7) HDPE #2
367	Galley	NA062C	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	0	0.0	Empty
40	Cold Storage	NA008	6	25%	0%	5%	5%	50%	0%	5%	0%	0%	52	2847	1.4	
402	CED	NA067	6	100%	0%	5%	15%	15%	0%	5%	0%	0%	104	13728	6.9	Aluminum cans (5), paint waste paper, plastic, CB, scrap metal
402	CED	NA068A	6	80%	0%	5%	5%	40%	0%	10%	0%	0%	104	19469	9.7	Rubber Hose, scrap metal, air filters, CB, aluminum cans, plastic containers (PP #5)
402	CED	NA068B	6	60%	0%	0%	5%	5%	0%	10%	0%	0%	104	7114	3.6	Aerosol can, oil filter, plastics, rachet straps, 5-gallon buckets, rubber hosing, metals, absorbents
402	CED	NA066	4	40%	10%	0%	0%	0%	0%	0%	80%	0%	104	29286	14.6	Canvas jeep door, shredded paper, has a recycling bin for CB, staff interviewed didn't know about plastic recycling, staff stated that they use to have a can crusher and bin but it didn't get used
397	MWR Hobby Shop	NA065	4	10%	15%	0%	15%	10%	0%	0%	0%	0%	52	1321	0.7	Need a shredder and recycling bin - go through 1/2 ream of paper /week, plastic containers triple washed and disposed, recycle aluminum cans
452	Welcome Center	NA083	4	20%	50%	0%	10%	5%	0%	0%	0%	0%	104	15434	7.7	lots of paper, CB, food waste, 1 glass bottle, 1 aluminum
	Camp Keller Range	CA200	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	52	0	0.0	Training in progress and couldn't access bin. 75% of garbage at Bay 3 is paper from targets
	Camp Keller Range	1011124	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	52	0	0.0	Bay 2 and Bay 3 need CB and paper recycling bins, Bay 1 and Bay 3 need Aluminum and Plastic recycling bins
	Camp Keller Range	1011122	6	5%	0%	0%	10%	80%	0%	0%	0%	0%	52			Empty 9mm bullet boxes, empty drink bottles
	Camp Keller Range	1017122	6	20%	0%	0%	0%	0%	40%	0%	0%	0%	52	15600	7.8	Scrap wood from targets, rubber from targets gets thrown out
340	Gas Station	NA057	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	156	0	0.0	Has a CB recycling bin
365	NEX	NA060A	8	20%	10%	5%	0%	15%	0%	0%	0%	5%	156	17722	8.9	5 glass bottles, bubble wrap, plastic wrap, aluminum, CB Box, paper
365	NEX	NA060B	8	40%	5%	0%	10%	10%	0%	0%	0%	0%	156	12979	6.5	20% - reusable shipping material (bubble wrap, styrofoam, packing material)
365	NEX	NA060C	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	156	0	0.0	Empty Dumpster
203	NEX Warehouse	NA017	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	156	0	0.0	Empty Dumpster
203	NEX Warehouse	NA018	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	52	0	0.0	Empty Dumpster
72	NCTC SW Applied	NA010	8	5%	10%	5%	10%	0%	0%	0%	0%	0%	156	2590	1.3	3 Plastic shipping pallettes
72	NCTC BU Applied	NA011	8	5%	0%	5%	5%	0%	0%	0%	0%	0%	156	250	0.1	Plastic and aluminum drink cans
441	NCTC SW TNG FAC	NA080	4	5%	30%	0%	5%	5%	0%	0%	0%	0%	52	1165	0.6	Paper
441	NCTC SW TNG FAC	NA081A	4	80%	0%	10%	20%	50%	0%	0%	0%	0%	52	5990	3.0	Lots of drinks (Aluminum Cans and Plastic Bottles) from Trainees
441	NCTC SW TNG FAC	NA081B	4	30%	5%	5%	15%	65%	0%	5%	0%	0%	52	4056	2.0	
225	Main Supply	NA022A	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	52	0	0.0	Lots of CB in a roll-off trash dumpster with a CB recycling bin very near, 30 cuyd roll-off of concrete dumped twice per month
225	Main Supply	NA022B	8	40%	10%	0%	5%	15%	0%	0%	10%	0%	52	10400	5.2	Could benefit from PL/AL recycling for drink waste, 1 large bag of shredded paper in dumpster
274	PW Shops	NA033	6	30%	5%	5%	10%	0%	0%	0%	0%	5%	52	4540	2.3	Newspaper, 2 Aerosol Cans, Used by Bldg 273 (Contractors), 274, 276
203	NEX N Corner	NA019	8	40%	0%	0%	0%	80%	0%	0%	0%	0%	52	6656	3.3	
437	OELF	NA078A	8	5%	0%	0%	0%	0%	0%	0%	0%	0%	52	0	0.0	All waste, supply warehouse has 4 CB bins, lots of wooden pallettes that get reused
437	OELF	NA078B	8	40%	0%	0%	10%	5%	0%	0%	0%	10%	52	9235	4.6	Over 20 glass bottles, 2 plastic bottle, lots of plastic shipping wrapping
Average of Surveyed Dumpsters			**7**	**29%**	**4%**	**5%**	**9%**	**18%**	**1%**	**1%**	**2%**	**1%**	**108**	**9680**	**4.8**	

Weight Per Year for Dumpsters Surveyed	445,320.20	222.66
Total Dumpsters Surveyed	48	
Total Dumpsters Installation Wide[1]	120	
Weighted Average for Dumpsters Not Surveyed (Tons)	348.47	
Potential Additional Recycle Weight (Tons)	571.13	
Documented + Undocumented Current Recycled Weight (Tons)[5]	1115.71	
Total Potential Recyclables Weight (Tons)	1,686.85	
2012 Landfill Weight (Tons)	1995.65	
Potential Landfill Total (Tons)[6]	1,424.52	
2012 SolidWasteTotal (Diverted + Disposed) (tons)	2,973.43	0.47908179
Projected Additional Potential Diversion Rate (%)[7]	54.2	

Notes:

[1] Data provided by NCBC Gulfport.

[2] Data determined during Field Survey Site Visit.

[3] Dumpster pickups information provided by NCBC Gulfport.

[4] Weighted average calculations based on EPA's standard volume-to-weight conversion factors at (http://www.epa.gov/wastes/conserve/tools/recmeas/docs/guide_b.pdf.) included in Appendix C1.

[5] Includes current reported recyclables plus the additional recyclables identified during the site visit.

[6] Assume the additional amount recycled would be removed from the amount disposed.

[7] Estimate includes current reported recyclable data, the additional recyclable data gathered during the site visit, and the potential recyclable data observed in dumpsters.

2012 Current Solid Waste Data and Diversion Rates

Recyclables	LBS	TONS
Paper and Paperboard	360,000	180.0
Plastics	600	0.3
Metals (includes aluminum cans)	1,480,000	740.0
Glass	-	
Antifreeze	13,220	6.6
Other (non food)	15,380	7.7
Lead Acid Batteries	86,360	43.2
Used Motor Oil**	-	
RECYCLE TOTAL	**1,955,560**	**978**
MSW Landfill	1930.0	TONS
Waste to Energy	65.7	TONS
LANDFILL TOTAL	**1995.7**	**TONS**
*Current 2012 Diversion %	32.88	%

*Diversion Rate is same as FY2012 EDMWEB Data provided by Stanley Smith

** Used Motor Oil NOT waste-to-energy

2011 Current Solid Waste Data and Diversion Rates

Recyclables	LBS	TONS
Paper and Paperboard	216,000.0	108.0
Plastics	1,200.0	0.6
Metals (includes aluminum cans)	1,796,000.0	898.0
Glass	-	-
Antifreeze	8,560.0	4.3
Food	4,000.0	2.0
Lead Acid Batteries	101,620.0	50.8
Used Motor Oil**	-	
RECYCLE TOTAL	**2,127,380.0**	**1,063.7**
MSW Landfill	2,149.0	TONS
Waste to Energy	62.9	TONS
LANDFILL TOTAL	**2,211.9**	**TONS**
*Current 2011 Diversion %	32.47	%

*Diversion Rate is same as FY2011 EDMWEB Data provided by Stanley Smith.

** Used Motor Oil NOT waste-to-energy

2012 Diversion Rate Post Site Visit

Recyclables	LBS	TONS
Thrift Store	35,125	17.6
Navy Lodge	4,849	2.4
Commissary	222,456	111.2
Camp Keller Ammo Reuse (Currently only by ECS)	13,440	6.7
Recycle Amounts for DLA	Data Not Provided	
		0.0
		0.0
		0.0
RECYCLE TOTAL*	**2,231,429.8**	**1115.7**
LANDFILL TOTAL	1995.7	TONS
2012 Diversion % Post Site Visit	35.9	%

* Includes 2012 Recyclables

Thrift Store Interview *(Alyssa Thrift Store Manager) - 2.5 Round Garment Racks of clothes per week, 1 piece of furniture (desks typically) per week, 15 lbs. of books, misc. per week, and 2 cy of clothes to Goodwill per week.*
1) 95 to 120 lbs. weight restriction for Round Garment Rack (Weight Source References: amazon, squidoo)
2) 175 lbs of clothes per cubic yard (Weight Source Reference: Appendix C1 EPA Conversion Table for Recycling)
*Estimation: [(95 lbs * 2.5 (clothes)) + (100 lbs (furniture)) + (15 lbs (books & misc.)) + (175 lbs * 2 (Goodwill clothes)) at 50 weeks per year] = 35,125*

Thrift Store Reuse (lbs)	35125

Navy Lodge Interview *(Ms. Janice Baker) - Every 4 years 75% of 60 mattresses are resold to Installation staff + 100% of furniture in 30 rooms (night stands, kitchen table and chairs, headboard and desk) ~ 500 lbs/room. Every month 15 rags and 5 linen sets are donated to a local Charity ~ 40 lbs/month.*
1) 55 lbs per mattress (Weight Source Reference: Appendix C1 EPA Conversion Table for Recycling)
*Estimation: [(55 lbs * 45 (mattresses)) + (500 lbs * 30 rooms (furniture))] every 4 years + (40 lbs (linen monthly)*12) = 4,849 lbs/year*

Navy Lodge Reuse (lbs)	4849

Commissary Interview *(Mr. Walter Taylor) - Produce donated to Hancock Food Pantry, weekly pickup, total in January 2013 = 838 lbs; Cardboard recycled by Sumrall Recycling, 24-30 bales per month; Plastics recycled by Sumrall Recycling, 2 bales per month at an average of 450 lbs per bale.*
1) 1 bale of cardboard = 700 lbs (Weight Source Reference: Appendix C1 EPA Conversion Table for Recycling)
*Estimation: [838 lbs *12 (produce)) + (24 * 12 * 700 lbs (cardboard)) + (2*12*450 lbs (plastics)) = 222,420*

Commissary Recycling (lbs)	222456

Camp Keller Interviews *(ECS) - 140 ammo cans per pallet, estimated 8 pallets per month @ 1pound per ammo can shipped back to manufacturer(Crane Army ammunition Activity) for reuse.*
*Estimation: 140 cans/pallet * 1 lb/can * 8 pallets * 12 months*

Camp Keller ECS Ammo Can Reuse	13440

2010 Current Solid Waste Data and Diversion Rates

Recyclables	LBS	TONS
Paper and Paperboard	460,000	230.00
Plastics	1,440	0.72
Metals (includes aluminum cans)	506,000	253.00
Glass	660	0.33
Antifreeze	-	
Lead Acid Batteries	66,520	33.26
Used Motor Oil**	-	
RECYCLE TOTAL	**1,035,520**	**517.76**
MSW Landfill	2305.72	TONS
Waste to Energy	69.94	TONS
LANDFILL TOTAL	**2375.66**	**TONS**
*Current 2010 Diversion %	17.89	%

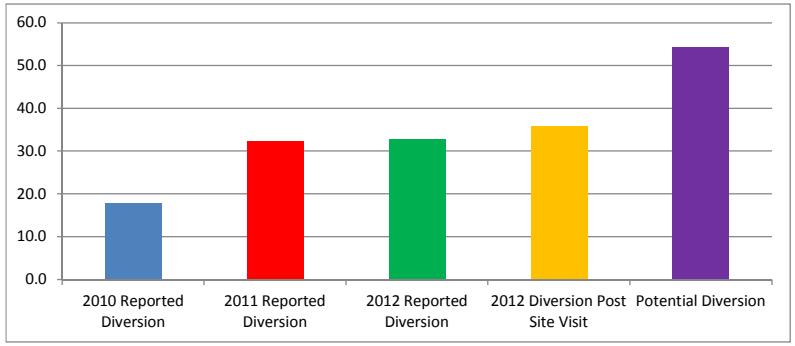
*Diversion Rate is same as FY2010 EDMWEB Data provided by Stanley Smith.

** Used Motor Oil NOT waste-to-energy

	FY2010	FY2011	FY2012
Military Residents	2,767	2,846	2,912
Military Non-Residents	2,972	3,000	2,996
Civilian Residents	0	0	0
Civlian Non-Residents	1,245	1,260	1,272
TOTAL	6,984	7,106	7,180

FY2010-2012 EDMWEB Data provided by Stanley Smith

Solid Waste Diversion Rates	
2010 Reported Diversion	17.9
2011 Reported Diversion	32.5
2012 Reported Diversion	32.9
2012 Diversion Post Site Visit	35.9
Potential Diversion	54.2

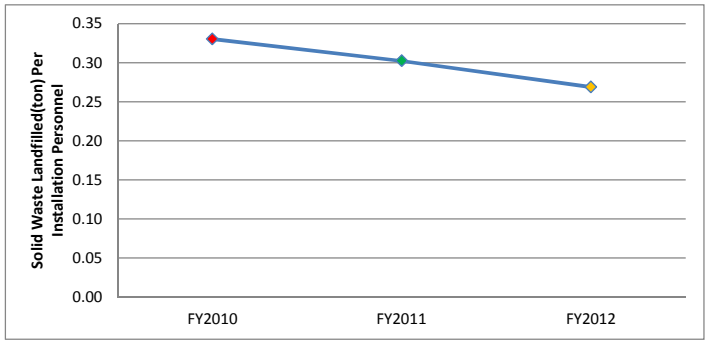


Year	Disposal (Tons)	Disposal Cost ($)	Recycled (Tons)
2012	1995.65	$675,000.00	977.78
2011	2211.89	$620,000.00	1,068.69
2010	2380.66	$635,281.00	517.31

	Solid Waste Landfilled (tons)	Solid Waste Landfilled ($)	$/Ton	Installation Population	$/Person	Solid Waste Landfilled/Person (tons)
FY2012	1930	675000	$349.74	7,180	$94.01	0.27
FY2011	2149	620000	$288.51	7,106	$87.25	0.30
FY2010	2305.72	635281	$275.52	6,984	$90.96	0.33

SW Landfilled tons and cost from EDMWEB Data provided by Stanley Smith

Year	Solid Waste Landfilled/ Person (ton)
FY2010	0.33
FY2011	0.30
FY2012	0.27



	Recycled (Tons)[b]	Total Avoided Costs ($)	Avoided Cost/Ton ($/Ton)	Installation Population	Recycle/ Person (Ton)
FY2012	977.78	$341,969.69	$349.74	7,180	0.14
FY2011	1,068.69	$308,323.78	$288.51	7,106	0.15
FY2010	517.31	$142,531.28	$275.52	6,984	0.07

Appendix D
Refuse Collection Worksheet

ADS - NCBC GULFPORT, MS REFUSE COLLECTION WORK SHEET WITH CMS DESIGNATIONS ***1st DRAFT***

ADVANCED DISPOSAL SERVICES COLLECTION & DISPOSAL WORKING MATRIX Version 3

ADMIN #	BLDG	ON SITE CONT	RFP FREQ	SIZE CONT	MON			TUES			WED			THURS			FRI			SAT			8 CY	6 CY	4 CY
NCBC - FEL MSW REQUIREMENTS BY DAY					8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	Weekly Pulls		
NA001	1, CBC/20th NCR HQ	1	3W	8 CY	1						1						1						3		
NA002	18 Warehouse	1	W	8 CY				1															1		
NA003	20 CONT HUM WH	1	W	4 CY						1															1
NA004	29/30 Thrift CTR	1	2W	8 CY				1									1						2		
NA005	31 Child DEV CTR	1	6W	8 CY	1			1			1			1			1			1			6		
NA006	33 COMM WEST (SEB)	1	2W	8 CY	1			1			1			1			1			2			7		
NA007	39 CTR/MLO	1	W	8 CY										1									1		
NA008	40 Cold Storage	1	W	6 CY								1												1	
NA009	60 Round House	1	W	8 CY				1															1		
NA010	72 NCTC SW Applied	1	3W	8 CY	1						1						1						3		
NA011	72 NCTC BU Applied	1	3W	8 CY	1						1						1						3		
NA012	109 DIS/REC TNG	1	W	8 CY				1															1		
NA013	114 RES CENTER	1	3W	8 CY	1						1						1						3		
NA014	118 PSD	1	W	8 CY				1															1		
NA015	121 20 NCR R-30	1	W	8 CY				1															1		
NA016	122 20th NCR TNG	1	W	8 CY				1									1						2		
NA017	203 NEX W-HOUSE WE	1	3W	8 CY	1						1						1						3		
NA018	203 NEX WH South End	1	W	4 CY							1														1
NA019	203 NEX N Corner	1	W	8 CY							1												1		
NA020	215 Army Warehouse	1	W	8 CY				1															1		
NA021	219 Warehouse	1	W	4 CY						1															1
NA022A	223/225 Main Supply	1	W	8 CY				1															1		
NA022B	223/225 Main Supply	1	W	8 CY				1															1		
NA023	228 Warehouse NW	1	W	8 CY										1									1		
NA024	241 20 NCR EQUIP East	1	2W	8 CY				1						1									2		
NA025	241 NCR West of BLDG	1	2W	6 CY					1						1									2	
NA026	243 Equip Maint Shop	1	W	8 CY										1									1		
NA027	260 20 NCR CCCT South	1	W	4 CY						1															1
NA028A	260 NCR CCCT North	1	W	4 CY						1															1
NA028B	260 NCR CCCT North	1	W	4 CY						1															1
NA031	273 PW Facility	1	W	8 CY				1															1		
NA032A	274 WH 200/PW Shops	1	W	4 CY						1															1
NA032B	274 WH 200/PW Shops	1	W	4 CY						1															1
NA033	274 PW Shops	1	W	8 CY				1															1		
NA034	275 REC Outside Gate	1	W	6 CY					1															1	
NA035	283 Grounds Contractor	1	W	8 CY				1															1		
NA036	294 McDonalds	1	5W	8 CY	1			1			1			1			1						5		
NA037	295 MED/DENTAL	1	3W	8 CY	1						1						1						3		
NA038	298 Janitorial DHS	1	W	6 CY								1												1	
NA039	303 BOQ	1	3W	4 CY			1						1						1						1
NA040	305 NCTC CI Applied	1	W	8 CY				1															1		
NA041	306 BEQ	1	3W	8 CY	1						1						1						3		
NA042A	309 BEQ West End	1	3W	8 CY	1						1						1						3		
NA042B	309 BEQ West End	1	3W	8 CY	1						1						1						3		
NA043	313 BEQ CPO	1	3W	8 CY	1						1						1						3		
NA044	314 BEQ West End	1	5W	8 CY	1		1				1						1			1			5		
NA045	314 BEQ East End	1	3W	8 CY	1						1						1						3		
NA046A	315 BEQ East End	1	3W	8 CY	1						1						1						3		
NA046B	315 BEQ East End	1	3W	8 CY	1						1						1						3		
NA047	317 BN BEQ South	1	3W	8 CY	1						1						1						3		
NA048A	317 BN BEQ North	1	3W	8 CY	1						1						1						3		
NA048B	317 BN BEQ North	1	3W	8 CY	1						1						1						3		
NA049	Warehouse North End	1	W	8 CY				1									1						2		
NA050A	321 Fire Station	1	W	8 CY				1															1		
NA050B	321 Fire Station	1	W	6 CY					1															1	
NA051	323 SERV MART N END	1	W	8 CY				1															1		
NA052	324 COMM CTR	1	2W	8 CY				1						1									2		
NA053	328 Navy Lodge	1	2W	8 CY				1						1									2		
NA054	329 INFO SYSTEMS	1	W	4 CY												1									1
NA055	331 Navy Lode	1	2W	6 CY					1						1									2	
NA056	335 Youth Center	1	W	6 CY					1															1	
NA057	340 Gas Station	1	3W	8 CY	1						1						1						3		
NA058A	342 NMCB 11	1	3W	8 CY	1						1						1						3		
NA058B	342 NMCB 11	1	3W	8 CY	1						1						1						3		
NA059	352 MWR	1	W	8 CY				1															1		
NA060	363 NCTC EO Applied	1	W	8 CY				1															1		
NA060A	365 NEX Store	1	3W	8 CY	1						1						1						3		
NA060B	365 NEX Store	1	3W	8 CY	1						1						1						3		
NA060C	365 NEX Store	1	3W	8 CY	1						1						1						3		
NA061	366 Chapel	1	W	8 CY				1															1		
NA062A	367 Colmer Galley	1	2W	8 CY	1			1			1			1			1			2			7		
NA062B	367 Colmer Galley	1	2W	8 CY	1			1			1			1			1			2			7		
NA062C	367 Colmer Galley	1	2W	8 CY	1			1			1			1			1			2			7		
NA063	385 NCTC TNG	1	W	8 CY				1															1		
NA064	386 NCTC Applied	1	W	8 CY				1															1		
NA065	397 MWR Auto Hob Shop	1	W	4 CY									1												1
NA066	402 CED	1	2W	4 CY			1												1						2
NA067	402 CED	1	2W	4 CY						1												1			
NA068A	402 CED	1	2W	4 CY			1												1				2		2
NA068B	402 CED	1	2W	4 CY			1												1						2
NA069	403 CED	1	2W	4 CY						1												1			2
NA070	410 CB Lake	1	2W	8 CY				1												1			2		
NA071	418 Golf Course	1	3W	8 CY	1						1						1						3		
NA072	428/429 MIYWU/CHB RES	1	W	8 CY													1						1		
NA073	432 Comm INSTR BLDG	1	2W	8 CY				1												1			2		
NA074	433 Tactical TNG FAC	1	2W	8 CY				1												1			2		
NA075	435 New Armory	1	2W	8 CY				1												1			2		
NA076	435 New Armory	1	2 W	4 CY				1												1					2
NA077A	437 OELF	1	W	8 CY				1															1		
NA078B	437 OELF	1	W	8 CY				1															1		
NA079	439 NCTC Recovery	1	W	4 CY						1															1
NA080	441 NCTC SW TNG FAC	1	W	4 CY						1															1
NA081A	442 NCTC SW TNG FAC	1	W	4 CY						1															1
NA081B	44 NCTC SW TNG FAC	1	W	4 CY						1															1
NA082A	445 GYM	1	W	8 CY				1															1		
NA082B	445 GYM	1	W	8 CY				1															1		
NA083	452 Welcome Center	1	2W	4 CY						1												1			2
NA084	460 NCTC Barracks	1	6W	8 CY	1			1			1			1			1			1			6		
NA085	461 NMOCN	1	W	8 CY				1															1		
NA086A	RV Park	1	W	8 CY																					
NA086B	RV Park	1	W	8 CY				1															1		
		101			31		5	43	5	14	33	2	2	18	2	4	35		1	16		3	171	9	29

ADS - NCBC GULFPORT, MS REFUSE COLLECTION WORK SHEET WITH CMS DESIGNATIONS ***1st DRAFT***

ADMIN #	BLDG	ON SITE CONT	RFP FREQ	SIZE CONT	MON			TUES			WED			THURS			FRI			SAT			8 CY	6 CY	4 CY
STENNIS SPACE CENTER - FEL MSW REQ					8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	Weekly Pulls		
SA100	2510 SBT-22	1	2W	8 CY				1		1							1						3		
SA101	2615 Seclusion	1	2W	8 CY				1		1							1						3		
SA102	9110 HRS HQ BLDG SE	1	2W	6 CY					1	1								1						3	
SA103	9110 HRS HQ BLDG SE	1	2W	8 CY				1		1							1						3		
SA104	2440 ROF Facility	1	W	8 CY													1						1		
SA105	2601 Supply	1	W	8 CY													1						1		
SA106	2601 Supply	1	W	6 CY													1							1	
SA107A	2602 WPNS DET	1	W	8 CY													1						1		
SA107B	2602 WPNS DET	1	W	8 CY													1						1		
SA108A	Boat Ramp SBT-22	1	W	8 CY													1						1		
SA108B	Boat Ramp SBT-22	1	W	8 CY													1						1		
SA109A	2606 NAVCIATTS	1	W	8 CY													1						1		
SA109B	2606 NAVCIATTS HQ	1	W	8 CY													1						1		
SA110A	2608 NAVCIATTS BKS	1	W	8 CY													1						1		
SA110B	2608 NAVCIATTS BKS	1	W	8 CY													1						1		
		15						3	1	4							14	1					19	4	
CAMP KELLER, MS - FEL MSW REQ					8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	8 CY	6 CY	4 CY	Weekly Pulls		
CA200	KAFB Rifle Range	1	W	8 CY	1												1						1		
CA201	ECS/CSF Woolmark RGE	1	W	8 CY													1						1		
		2			1												1						2		
LAKESIDE BARRACKS, PASCAGOULA, MS - FEL REQ																							Weekly Pulls		
LA300A	Lakeside Annex	1	3W	8 CY	1						1						1						3		
LA300B	Lakeside Annex	1	3W	8 CY	1						1						1						3		
		2			2						2						2						6		
				Container Size Pulls per	34	0	5	46	6	18	35	2	2	13	2	4	52	1	1	16	0	3	198	13	29
				Total Pulls Per Day	39			70			39			19			54			19			240		

ROLL OFFS NCBC		
NB001	72 - NCTC - NCBC	30 CY
NB002	217 - Cont Ware H NCBC	30 CY
NB003	225 North WH - NCBC	40 CY
NB004	225 North WH - NCBC	30 CY
NB005	225 S NCTC TNG - NCBC	30 CY
NB006	22 SE North WH - NCBC	30 CY
NB007	241 20th Equip	40 CY
NB008	260 CCCT TNG	30 CY
NB009	283 Grounds Contractor	30 CY
NB010	323 20th NCR SERV MART	20 CY
NB011	425 Landfill Trans Station	40 CY
NB012	435 Armory	30 CY
NB013	OELF	40 CY
NB014	442 NCTC	30 CY
NB015	Bachelor Quarters	30 CY

ROLL OFFS

RFP ESTIMATED ANNUAL ROLL OFF PULLS	
20 CY	8
30 CY	250
40 CY	100
	358

Advanced Disposal

Helping Your Community Beautiful

Appendix E
GPP Brochure

Contact Information

Stanley Smith
Environmental Protection Specialist
Naval Construction Battalion Center
Gulfport, MS
(228) 871-3228

Green Procurement

Executive Order (E.O.) 13514 Federal Leadership in Environmental, Energy, and Economic Performance (October 5, 2009) establishes goals and targets and requirements for Federal agencies. It builds on, but does not replace, E.O. 13423 Strengthening Federal Environmental, Energy, and Transportation Management (January 24, 2007). In addition, the Executive Orders reference or incorporate several statutory requirements for Federal agencies including sustainable acquisition.

Contracting Officers should ensure that Green Purchasing requirements are included in contract specifications/ statements of work when purchasing products, services, or construction. Service contracts can still be performance-based and include specific requirements to use Green products. Environmental and Contracting work together to provide GP education and training.

In short, Green Procurement is mandated by statute, Executive Order, DoD policy, and the FAR. More importantly, effective implementation of Green Procurement makes MCSF-BI good stewards of the environment and reduces life cycle costs to sustain our facilities.

EO 13514 Requirements

Ensure that 95% of new contract actions (task and delivery orders) are for products and services that meet the following "green" criteria, in cases where greener options meet the agency's performance requirements:

- Energy-efficient
- Water-efficient
- Biobased
- Environmentally preferable
- Non-ozone depleting
- Contain recycled content
- Non-toxic or less-toxic

All applicable statements of work and procurement requests shall explicitly state a requirement for items containing recovered materials and include a minimum recovered material content level (which meets or exceeds the EPA's CPG). Case-by-case procurements shall be used when making procurement award determinations where minimum content standards cannot be met. The idea here is to ensure that contracts awarded will provide items containing performance requirements to the maximum extent practicable. Contracting includes the GP FAR clauses, tracks, and reports the number of contracts including these GP clauses.

Dollar Thresholds:

- Greater than $100,000 proper clauses must be inserted into contract (vendor estimates and certifications).
- Greater than $2,500 justification must be provided in the contract file.
- Less than $2,500 no written determination is required but follow green purchasing requirements.

The information in this brochure is not intended to be all-inclusive and may change without notice.

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT

Frequently Asked Questions

What does Green Procurement mean?

Green Procurement (GP) is the purchase of environmentally responsible products and services in accordance with Federally mandated 'green' procurement preference programs. The new Green Procurement Program (GPP) policy and guidance broadens the requirements of the existing Affirmative Procurement (AP) Program.

What are the Federal Green Procurement preference programs?

Seven GPPs have been established by the Office of the Federal Environmental Executive (OFEE): Recovered Material, Energy- and Water-Efficient Products, Alternative Fuels and Fuel Efficiency, Biobased Products, Non-Ozone Depleting Substances, Priority Chemicals, and Environmentally Preferable Products. This brochure includes a table summarizing major program elements. More information can be found at **www.ofee.gov** and in the documents referenced below.

Where can I buy qualifying green products?

These items can be purchased locally from: (1) local small business vendors, remembering to buy green when possible; or (2) local chain stores, also remembering to buy green when possible.

Cardholders may also use traditional Federal supply sources such as the DOD EMALL, General Services Administration (GSA), and the Defense Logistics Agency (DLA) Document Automation & Production Service (DAPS).

Purchases made outside of DOD or other Federal sources may require additional tracking and reporting. If a purchase is greater than the micro-purchase threshold of $2,500 and does not meet the EPA guidelines standard, then written justification must be provided. See the documents listed below for more detailed information.

What are my duties as a cardholder?

1. Comply with the Federal mandates.
2. Keep records of training and compliance (for example, a purchase log). Note that cardholders are audited to ensure the purchase of green products.

Where can I get training?

Online courses are available from the Defense Acquisition University (DAU) website at **www.dau.mil** under **Continuous Learning**. The basic cardholder course is **CLG 001** and the refresher course is **CLG 004**. Check the DAU website for periodic updates to stay current on your training requirements.

Other sources for GPP awareness training, slide presentations, and workshops can be found in the documents below.

Much more detailed information, including specific legal and regulatory policy requirements, exceptions to the purchasing requirements, responsibilities for reporting and record keeping, training opportunities, and lists of acronyms and definitions can be found within the NCBC ISWMP, as well as at the various websites referenced throughout this brochure.

	RECOVERED MATERIAL	ENERGY- AND WATER-EFFICIENT PRODUCTS	ALTERNATIVE FUELS AND FUEL EFFICIENCY	BIOBASED PRODUCTS	NON-OZONE DEPLETING SUBSTANCES	PRIORITY CHEMICALS	ENVIRONMENTALLY PREFERABLE PRODUCTS
REGULATORY REFERENCE	• RCRA Section 6002 • EO 13423 • 40 CFR Part 247	• EPACT 2005 • EO 13423	• EPACT 2005 • EO 13423	• FSRIA Section 9002 • EPACT 2005 Section 943 • EO 13423	• 40 CFR Part 82	• EO 13148	• 40 CFR Part 247
MANDATE	Procuring agencies are required to purchase EPA-designated items with the highest recovered material content level practicable	Federal agencies are required to procure energy-efficient products qualified in the Energy Star® program or designated by the Federal Energy Management Program (FEMP)	Federal agencies must acquire Alternative Fueled Vehicles (AFVs), alternative fuels for those vehicles, and fuel-efficient petroleum-powered passenger cars and light trucks	Federal agencies are required to show preference toward biobased products	Procurement offices should select alternatives to ozone-depleting substances (ODSs) that are approved under the EPA Significant New Alternatives Program (SNAP)	EPA recommends that agencies use readily available, less harmful substitutes for listed chemicals which may pose significant risk to human health or the environment	Non-mandatory element of the GPP which encourages the purchase of environmentally preferable products (EPPs)—products or services having fewer adverse impacts on human health or the environment when compared with competing products or services that serve the same purpose
COMMODITIES AFFECTED	All EPA-designated item acquisitions, including office supplies; construction, renovation, and maintenance project materials; supplies used in custodial services, grounds maintenance, copier maintenance, and document printing; materials used in vehicle maintenance activities; traffic control devices; park and recreation products	EE requirements affect all purchases of computers, monitors, printers, scanners, fax machines, and copiers; appliances; and building construction, renovation, and maintenance projects Water-efficient requirements apply to building construction and renovation projects	Affects the acquisition of light-, medium- and heavy-duty motor vehicles (other than military tactical, law enforcement, and emergency vehicles), and the purchase of fuel used in AFVs	Biobased products are composed primarily of biological materials or renewable domestic agriculture materials, including, but not limited to: clothing, bedding, and linens; office products; printing products; transportation fleet maintenance products; construction products; and janitorial and landscaping products	SNAP covers refrigeration and air conditioning; foam insulation; cleaning solvents; fire suppressants; aerosol solvents and propellants; sterilants; and adhesives, coatings and inks	Cadmium, lead, PCBs, mercury, and naphthalene, plus 26 other priority chemicals found in the nation's products and wastes	Raw materials acquisition, production, manufacture, packaging, distribution, reuse, operation, maintenance, or disposal
COMMON PRODUCTS	• Copier and printer paper • Recycled toner cartridges • Plastic outdoor lumber • Re-refined lubricating oils and antifreeze • Compost from yard and food waste • Rebuilt automotive parts • Retread tires • Landscaping/playground products made from used tires	• Computer equipment (use EPEAT, a tool for evaluating and selecting computer equipment based on its environmental attributes) • Refrigerators/freezers • Air conditioning units • Fluorescent lamps • Low-flow shower heads • Low-flow toilets • Clothes washers	• AFVs – dedicated, flexible-fuel, or dual-fuel vehicles • Advanced Technology Vehicles (ATVs) – hybrid, electric vehicles • Alternative fuels: - Biodiesel (B20) - Electricity - Ethanol (E85 and E100) - Natural gas - Propane	• Hydraulic fluids, lubricants, greases, and oils • Insulating foams • Grease and adhesive removers • Hand cleaners • Carpets and carpet cleaners • Biodegradable containers and cutlery • Sorbents • Composite panels • Bedding, linens, and towels	Non-ODS replacements for: • Refrigeration and air conditioning • Cleaning solvents • Aerosols • Adhesives, coatings, and inks • Fire suppression and explosion protection • Sterilants • Foam blowing agents	N/A	Any environmentally friendly product or service not already covered by the other GPP elements
SYMBOL TO LOOK FOR	DOD: + ENAC GSA: CPG and	DOD: + ENAC GSA: and FEMP	DOD: + ENAC	DOD: + ENAC GSA:	DOD: + ENAC GSA: SNAP	N/A	
FOR MORE INFO	Check the CPG website for a list of EPA-designated items made with recovered material: **www.epa.gov/cpg**	**www.energystar.gov** **www.eere.energy.gov/femp** **www.epeat.net**	Visit the DOE's Alternative Fuels and Advanced Vehicles Data Center: **www.afdc.energy.gov/afdc**	Find products designated by USDA for preferred procurement at: **www.biopreferred.gov** and also **www.ofee.gov/gp**	See the EPA list of substitutes for ODSs at: **www.epa.gov/ozone/snap/lists**	**www.ofee.gov/gp/pchemical.asp**	**www.epa.gov/epp** **www.ofee.gov/gp/preferpurchasing.asp**

Appendix F
Recycling Factsheet

Recycling Factsheet

Naval Construction Battalion Center Gulfport Integrated Solid Waste Management Plan

Why?

★Benefits QRP and MWR
★Saves our natural resources – trees, fuels and metals.
★Protects our vital water supply.
★Helps control litter.
★Saves energy and resources to sustain life for future generations.
★Help the base reach 50% goal.
★Prevent GHG, pollutants, and land use space by not filling landfills with useable or harmful content.

How?

★Keep a old box/bin near your trash can to store your mixed recyclables, empty your bin in a marked container or bring to recycling center (Bldg 275).

★Buy products with post-consumer recycled content and natural products (NCBC does! – DoD Green Procurement Program).

★Don't throw anything away that can be reused or recycled – bring things to thrift store or Recycling Center or offer them to other base personnel.
★Reduce the amount of plastic you buy which uses chemicals to manufacture, use natural substitutes like wood, glass, and paper.
★Prepare to Reduce, Reuse, Recycle by cleaning/rinsing old plastic containers, don't place any non-recyclables into recycling bins, don't place recyclables in trash.

Reduce, Reuse, Reeducate: Contamination hurts recycling! When items are not properly sorted or non-recyclable trash is put in a recycling bin, it makes a lot of good recyclable materials go bad. When in doubt, leave it out.

What?

★Paper: magazines, newspaper, office paper, phonebooks, cardboard!!
Note: If you need boxes for moving, storage or any other reason, they are available at the recycling center.

★Plastic: soda and water bottles, medicine containers, laundry detergents containers, bleach bottles, milk jugs, shampoo bottles, and motor oil. Also, plastic bags can be recycled at the commissary or thrift store.

LOOK for these recycling tags!

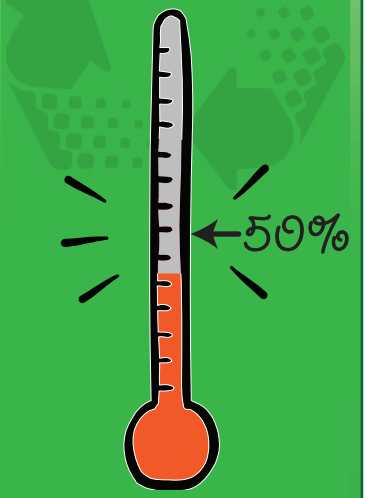
★Aluminum/Tin: all metal food, beverage, and pet food cans; aluminum foil products such as foil wrap, pie plates, and other food trays; tins from cookies, fruit cakes, popcorn, and similar items; non-hazardous aerosol cans and caps such as whipped topping, spray cooking oil, deodorant, hair spray, and shaving cream.

What Happens to Recycled Items?

Paper	Corrugated containers, tissue paper, cereal boxes, writing pad bases, cardboard, wallboard, newsprint
Aluminum	New aluminum cans
Plastic	Artificial lumber, drainage pipes, toys, stuffing for ski jackets and sleeping bags, flower pots, traffic barrier cones

All proceeds from QRP Recycling sales are used to support the costs of the program, Environmental activities, and MWR at CBC! Help support YOUR workplace and Morale/Welfare programs.

NCBC Gulfport diversion rate is now 35.9% of our EO 13514 goal of 50%.



For more information please visit: www.whitehouse.gov/administration/eop/ceq/sustainability

Call the recycling center if you're not sure if its recyclable (228) 871-4738/4739.

Appendix G
PAR Sample Solid Waste Collection Inspection Checklist

Solid Waste Collection Inspection

Date: Work Center:

Time: Inspector's Name:

Installation: Signature:

Inspection Items	Yes	No	Comments
1. Are collection personnel equipped with general emergency response equipment?			
a. Appropriate fire extinguisher			
b. Fully equipped spill kit			
c. Phone or radio			
d. Portable eyewash or mounted eyewash system to vehicle (29 CFR 1910, 5090.2A)			
2. Have applicable work personnel received appropriate level of training as it applies to solid waste collection? *(29 CFR 1910.1200)*			
3. Do applicable work personnel who drive solid waste collection vehicles aboard the installation have the appropriate license to drive said vehicle(s)? *(29 CFR 1910.1200)*			
4. Are all solid waste containers distributed and collected regularly across the installation?			
5. Are containers that collect solid waste emptied at least weekly? (40 CFR 243.203-1)			
6. Do all solid waste containers, with the exception of those in office spaces, have closed lids? *(40 CFR 243.200-1(a))*			
7. Are the solid waste containers free of the following items:			
a. Recyclable materials			
b. Hazardous waste			
c. Ammunition			
d. Lead-acid batteries			
e. Liquids			
f. Tires			
g. Metal items			
h. Pressurized containers			
i. Other prohibited items			
8. Are all solid wastes containers placed in areas that do not pose a fire, health, or safety hazard? (40 CFR 243.200-1)			
9. Are all solid waste containers in good condition? (40 CFR 243.200-1(a))			
10. Is the placement, size, and frequency of collection sufficient for this area and in compliance with the contract?			
11. What is the condition of the non-hazardous solid waste collection container (i.e., doors close, no holes, no rust, exterior surface painted in a uniform color, and cleanliness)			