



**Introduction – Navy Region Center, Singapore**

Navy Region Center, Singapore (NRCS) is located on the island nation of the Republic of Singapore (ROS) at the southern tip of the Malaysian Peninsula, one degree north of the Equator. The mission of NRCS is to provide Fleet liaison between the host nation and naval, joint, or coalition military units conducting business in Singapore. NRCS provides facilities management in one of the most dynamic theaters and directly supports Pacific Command (PACOM) regional engagement and security plans. Including regional assignments, NRCS supports a total of 180 military members, 473 civilians, and 442 family members in an area covering 110 acres.

NRCS operates mainly in Sembawang and has regional responsibilities in Paya Lebar Air Base and Changi Naval Base. NRCS provides shore-side and administrative support to 18 military tenants:

- Commander, Logistics Group, Western Pacific (CLWP)
- Military Sealift Command Far East (MSCFE),
- Naval Supply (NAVSUP), Fleet Logistics Center Site Singapore
- Navy Criminal Investigative Service, Greater Southeast Asia Field Office
- Naval Meteorology & Oceanographic Command, Far East Regional Office
- MSC Ship Support Unit, Singapore
- Defense Contract Management Agency
- U. S. Coast Guard, Far East Detachment
- 497<sup>th</sup> Combat Training Squadron
- Naval Medical Research Center Asia (NMRC)
- Naval Computer and Telecommunications Station Far East Detachment, Singapore
- Defense Logistics Agency - Energy
- Special Operations Command Logistics Support Facility
- Air Mobility Squadron Detachment 2
- Public Health Command District WESPAC
- Surface Deployment and Distribution Command
- Navy Federal Credit Union
- Commander, Destroyer Squadron Seven

**Background – Environmental Quality**

**Program**

Supporting all facets of operations ranging from permits and compliance to cradle-to-grave management of hazardous materials, NRCS Environmental Quality Program is committed to being a model steward in the environmental arena, providing cost-effective, world-class, customer-focused installation and facility support to operating forces in the Pacific Area of Responsibility (AOR). Through program leadership, optimization, and proactive planning efforts, the program ensures mission

accomplishment and protection of natural assets and human health through implementation of the environmental management systems in everyday operations, waste management, and safe drinking water. Successful execution of these often competing tasks requires dedicated work and innovative solutions by the environmental team and by everyone at NRCS and the tenant commands.





With the implementation of the Environmental Management System (EMS), NRCS has identified three major initiatives; *water*, *energy*, and *solid waste reduction*. The command environmental motto at NRCS is that environmental compliance is everyone’s responsibility. All tenants and commands are committed to:

- (1) Implement pollution prevention and environmental management practices
- (2) Ensure adherence to applicable policies
- (3) Emphasize reduction, reuse, and recycling
- (4) Continually review, measure, evaluate and improve
- (5) Provide outreach and partnership when possible
- (6) Minimize the impact to mission readiness

The NRCS Environmental Quality Team consists of:

- **Public Works Officer**, LCDR Cort Stringham, Civil Engineer Corps  
 Primary Duties: Head of Public Works Department Singapore and Facilities Engineering Acquisition. Oversees contracts ensuring compliance with all safety and environmental requirements.
- **Environmental Engineer**, W. Chantry Davis (Team Lead), NRCS (DoD Civil Service)  
 Primary Duties: Ensure environmental compliance of all environmental programs per Overseas Environmental Baseline Guidance Document (OEBGD) and current Executive Orders (EO), Environmental Management System, Shipboard Generated Industrial Waste (SGIW) Program, Radon, Other Accrued Environmental Liability, and Contracting Officer Representative.

- **Environmental Specialist**, Teo Kok Sing, NRCS (DoD Host Nation Civil Service)  
 Primary Duties: Shipboard Generated Industrial Waste Program, Environmental Management System Implementation, Data Management, Training, Drinking Water Sampling, Quality Assurance Evaluator



The team is responsible for planning and implementing a comprehensive environmental program and Environmental Management System. The team also provides training support to all personnel and compliance oversight to work centers and contractors in the region on all environmental matters.

Through the team, the Environmental Management System (EMS) is integrated into all processes by using established procedures to identify significant environmental aspects. The team fosters an atmosphere that capitalizes on effective teamwork to promote and advance program objectives. The team strongly emphasizes efficient compliance with all shore-side environmental programs, and exceeds requirements where possible with the OEBGD. Program areas include water resources management, solid and hazardous waste management, spill prevention, lead and asbestos management, and discharge monitoring for both U.S. and host nation requirements. Other focus areas under the team’s responsibilities include conducting natural and cultural resources reviews, overseeing pest management services, providing training to NRCS and tenant commands, overseeing Pollution

Environmental Program Focus Areas
EMS
Radon
Air Quality
Storm Water Mgmt
Solid Waste
Drinking Water
HAZMAT
Hazardous Waste
Asbestos
Wastewater
POL
Medical Waste
Pesticides
Lead Based Paint
SPCC
UST/AST



Prevention (P2) program initiatives, performing environmental quality assessments, and implementing applicable EO and Navy policies. All department heads, program managers participate as EMS cross-functional team members.

***Orientation to Mission***

Working closely with NRCS and its 23 regional tenants, the environmental quality program ensures EMS concepts and P2 tools are communicated and integrated down to the lowest level to support military readiness and all civil work. This has been accomplished through extensive newcomer and annual refresher training on EMS and environmental awareness. Inspection standards and compliance evaluations have been strictly enforced and corrective actions were tracked. Operation risk management principles were applied to all work processes to further evaluate potential impacts, reduce liability, and achieve cost savings, where possible. All the processes (host as well as tenants) were documented in Standard Operating Procedures (SOP) under EMS guidance together with their operational controls to ensure sustainability.

Annual self-assessments are performed and monitored to ensure corrective actions are continuously implemented. Annual evaluations provided information and feedback in a closed loop system to the team to allow budget adjustment and best resource allocation. Root cause analysis is used to direct overall program strategic efforts and to ensure long-term sustainability of the environmental program with EMS implementation.

In previous years, NRCS Environmental, in consultation with NAVFAC Pacific, implemented EMS starting with the gap analysis, established criteria, set goals and milestones, devised operational controls,

implemented an internal assessment plan. Since that time, Environmental has continued to refine the system, re-ranked all aspects and completed transitioning all environmental data to EMSWeb. This new system not only allows centralized storage of all records, it enhances transparency and minimizes findings/ corrective actions tracking and recordkeeping efforts to the extent that the team can take on training to support increased missions. EMSWeb allows data organization and metrics be graphically presented to stakeholders, top management leadership, cross-functional team members (N1, N3, N4, N5, N7, N8, and N9) and tenants to gather their review and input.

All renovations and new projects were reviewed by the team based on EMS and environmental requirements including how to effectively manage significant environmental aspects to achieve environmental objectives and long-term mission sustainment. All contractors were trained prior to the start of their projects to provide supporting data and means to achieve EMS goals.

**EMS Conformity**  
*During the 2015 External Quality Assessment (EQA), no EMS findings, major or minor, were determined.*

**Summary of Accomplishments**

The team firmly believes that the best innovative solutions involve prevention by using the environmental/waste management hierarchy: First, prevent pollution at the source; then reuse, and recycle. Pollution that cannot be prevented or reused is treated in an environmentally safe manner. In order to achieve environmental objectives and long-term mission sustainability, NRCS environmental personnel reviewed all work processes together with tenants to promote





ownership, environmental awareness, and offer alternate mitigating solutions, where possible.

The main objectives of the Environmental Quality Program at NRCS are to integrate all U.S. and Host Nation regulatory requirements and compliance through:

- Promoting P2 as an essential part of supporting mission readiness and achieving U.S. and local pollution reduction goals
- Ensuring safe drinking water for all employees and residents through strict compliance with the Overseas Drinking Water program
- Reducing environmental liabilities and protecting public health and the environment by eliminating or minimizing the volume and toxicity of hazardous substances used aboard the installation
- Actively implementing and evaluating innovative methods and technologies to prevent resource depletion and adverse impacts to achieve DoD Measures of Merit (MOM),
- Actively integrating Environmental Management System (EMS) principles into all work processes on a continual basis

Of the many outstanding accomplishments by the Environmental Quality Program over the past two years, solid waste and water minimization initiatives undertaken have strengthened our efforts in solid waste reduction, the Qualified Recycling Program (QRP), and reducing water consumption. In FY15, NRCS was able to achieve an impressive 44% reduction in solid waste disposal while simultaneously experiencing a 22% increase in population. Likewise, since FY13, NRCS was also able to achieve a 22% in water consumption. On an island with very limited disposal area and natural

water resources, these reduction efforts provide the command sustainable cost-savings and ensure mission readiness beyond this reporting period.

### ***Program Management***

In FY14/15 NRCS:

- Completed external triennial environmental quality assessment (EQA) in FY12 with the least findings among all regions
- During the EQA, *no* EMS findings major or minor were determined
- Conducted energy audits of the command and tenants to optimize future reduction initiatives
- Streamlined all work processes based on cost and mission benefits and tracked findings using EMSWeb
- Completed seventh annual EMS review and integrated environmental quality assessment into new work centers to ensure sustainability
- Reviewed and updated all required project plans (over 30) and provided comments
- On-time submission of over 200 data calls to CNIC and other mission support requirements
- Conducted two on-site sales and coordinated 4 opportune lifts with Defense Logistics Agency. Diverted 2,000 items from local disposal.
- Instituted a Housing Energy Award program to monitor resident energy use and encourage reduction.



### ***Technical Merit***

The team's primary objective was to go above and beyond what had been done in the past or basic compliance and remain customer-focused at all times. The program preferentially targeted the reduction of waste and discharge, while improving overall mission and environmental safety and health performance. The NRCS Environmental



Program continually looked for optimization and cost-savings efforts while achieving full compliance with all applicable guidance and regulation. Additional innovative techniques and successes include:

- No notice of violation or citation from either U. S. or local regulatory agencies.
- Achieved environmental compliance and successful execution and enhancement of projects ensuring sustainability. Mitigation measures were used to minimize impacts to energy, water, and solid waste.
- Achieved energy reduction (Top EMS aspect) of 36% based on 2003 baseline. This is equivalent to a savings of \$70K/yr.
- Increased recycled waste from 50.69 tons in FY13 to 115.42 tons in FY15, a 128% increase.
- Reviewed 18 projects and 10 environmental plans in FY15 alone to ensure environmental compliance and minimal impacts on operations.
- One of the first programs to achieve compliance with Overseas Drinking Water Program and received Conditional Certificate-to-Operate. Fully compliant with all monitoring requirements and Consumer Confidence Report.
- First biomedical lab approved by Public Health Command in the Far East to conduct coliform sampling. Necessary due to remote location from and short holding times for analytes.
- Actively supported LCS operations and provided first rate spill response capability. Conducted combined planning and training exercises with both the British Defense Ship Support Unit and Singapore Maritime personnel each year.
- Actively partnered with community groups to plan and participate in services including beach and riverside cleanups, Singapore World Water Day, Earth Day, etc.

- Enforced Freon recovery of air handling and refrigerator units prior to disposal.
- Completed regular hazardous material storage and usage inspections and training for employees at all departments and 23 tenant commands.
- Completed corrective action and installed over 300 backflow preventor devices to correct deficiencies identified in the Sanitary Survey to protect our water supply.
- Completed all radon compliance testing with no exceedances at last testing.
- Additional 20 drinking water sampling locations were included to ensure the water quality in all areas of the installation meets U.S. standards.
- Performed the full range of drinking water testing (at least 289 samples per year) required by the OEBGD including coliform, inorganic chemicals, synthetic organics, total trihalomethanes, pesticides, lead and copper; and verified that our local water quality meets the Safe Drinking Water Standards as the U. S. protection standards for our Sailors and personnel.
- Annually reassessed our spill response capability through the Annual Allowance Requirements Review (A2R2) program and by partnering with the neighboring Port of Singapore Authority (PSA) and British Defense Ship Support Unit.
- Exceeded expectations in supporting training to U. S. military and tenants and certified all appropriate personnel to ensure technical competency. This included: Facility Response Team, Incident Command System and Tabletop Spill Response Exercise, EMS awareness, Hazardous Substance Incident Response and Management, and stormwater training using web modules.
- Trained over 650 station personnel during the annual EMS review and refresher.





- New efficient filter pumps installed at the Terror Club pool which provided operational savings of \$3,109 per year.
- Artificial turf was installed at the Terror Club field which negates mowing and irrigation, thus reducing fuel use, emissions, and water use.
- Direct digital controls installed for the chiller plant at building 7-4, resulting in better integration of hardware and software thus providing significant energy efficiencies.
- Metal halide exterior lights in the housing area replaced with LED fixtures to reduce energy use.

### ***Stakeholder Interaction***

NRCS is a remote location, with a small population (and lack of Status of Forces Agreement or Final Governing Standards). These attributes necessitate innovative solutions to unusual problems. In FY14 and FY15, the environmental team achieved much success. Some examples follow:

- Opened training opportunities to host nation personnel and allied militaries in hazmat, spill response, EMS, and incident planning to allow cross-organizational partnerships.
- Use of social media (Facebook), the local newspaper (Merlion), and bluescreen (closed circuit television) as means to broadcast information about environmental issues or events.
- Developed and distributed EMS and/or energy newsletters (quarterly), and Consumer Confidence Report (annual) to communities (public and in-house).
- Conducted joint spill exercises in FY15 with United Kingdom, Republic of Singapore Navy and PSA Sembawang staff.
- Worked with Singapore Civil Defence Force in annual flushing of water lines and in repairs to broken water lines.

- Established community outreach services and volunteer partnership programs with host nation government and environmental groups in special events such as Earth Day and World Water Day.

The team routinely met with local regulatory agencies and had developed great working relationships with Singapore authorities and other nations' regional offices, co-located in our area.



### ***Transferability***

A key facet of the NRCS success is to provide a sense of personal contribution and to ensure programs are well maintained and can be successfully transitioned through the changes of command and personnel.

Instructions/standard operating procedures and meticulous record keeping were used by the team to provide continuity throughout changing personnel and as the primary means of communication to ensure sustainability of the progress in pollution prevention and optimization. Environmental documents are well publicized and posted by the team in NRCS's share drive, CNIC Gateway and EMSWeb. Self-assessments and follow-up actions are fastidiously scheduled to ensure all facilities and processes are covered and reviewed at least once a year. From the unique challenges, the team disseminated lessons learned to local commands and regional safety so corrective actions can be simultaneously implemented to their programs. To further minimize adverse impacts of transient personnel, team members received cross-functional training and weekly meetings keep all parties abreast of upcoming requirements regardless of media or program. In FY14-15, all environmental data was continuously entered and updated into EMSWeb. Major claimants and commands can now view any program



progress and plan of actions and milestones on-line. Information is available to other DoD commands upon request.

***Project Impact/Outcomes***

The environmental strategy and program, as established, is expected to endure over time. This has been validated by the Triennial External Environmental Quality Audit recently completed in FY15. With the 22% increase of personnel in Singapore since FY13, environmental findings have decreased to some of the lowest in the Far East. Additionally, there has been significant progress in all three of our major aspects. Both solid waste and water consumption have decreased dramatically and with the implementation of energy

awareness and optimization initiatives, total energy usage has remained constant even with the increase in personnel and activity. Besides reaching our

*Excelling as a Force Multiplier*

targeted program goals and milestones, our efforts are continually recognized as one of the best installations with the least compliance findings. Currently, all planning records are kept up-to-date by the team and all host nation staff are trained and qualified to maintain the system as established. With the transfer of all pertinent documents, SOPs and records to EMSWeb, it is a certainty that the program will flourish with top management support.

***Other Notable Mission Accomplishments***

Over the past couple years, the Environmental Quality Program has demonstrated exceptional achievement in merging support to mission and having a

successful environmental protection program. Their dedication has strengthened NRCS’ relationship with tenant commands and the host nation. With this trust, approval from local regulators for our Shipboard Generated Industrial Waste (SGIW) Offload Program has continued without issue notwithstanding the increased offload activity.

In the past two years, the team supported over 134 USN and USNS ships and processed over 400,000 lbs of shipboard hazardous waste and biomedical waste for local disposal.



This program continues to greatly enhance the combat effectiveness of CTF-73 and CTF-74 by allowing ships and submarines to properly manage waste and remain excellent stewards of the environment.

Other noteworthy milestones include:

- Completed annual external audit of eight treatment and disposal facilities annually in coordination with the Defense Logistics Agency to ensure regulatory compliance with host nation and U.S. standards.
- Zero spills have occurred during the offload, transportation, or disposal of SGIW, due to diligent oversight efforts and compliance protocols.

The continued success of this program could allow other surveyed ports to offload shipboard generated wastes and would greatly enhance U. S. Navy Fleet capability in the future. Additionally, our noteworthy Fleet Support programs did not sacrifice shore compliance efforts resulting in increased internal or external audit findings.