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John C. Stennis Space Center
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John C. Stennis Space Center Environmental Management System Procedures and Guidelines

Document History Log

Rev.	Change Date	Originator/Phone	Description
Basic	03/22/01	RA02/R. Magee, Ext. 7384	Initial Release
A	07/19/02	RA02/J. Gordon, Ext. 8-1416	General writing, grammatical and format corrections throughout. Added SSC/NASA organizations and offices, ODIN and SS contracts to applicable support contractors participating in the EMS. Removed from references: SSLP-1440-0001, SSLP 8730-0004, SSLP-1280-0004, modified SSLP document numbers to remove the SLP number. Added to references: SPLN-8500-0001, SSC Environmental Functional Review Checklist. Updated doc number for the Integrated Contingency Plan. In section 1.2 added responsibilities to the SSC Environmental Officer (added c, d, e, f). In section 1.3 removed responsibilities from SSC EMS core team (e and f). In section 2.2, (i) was rewritten, and (j) was added. In section 2.3 responsibility for documenting EMPP objectives and targets was changed from the core team to the EO. Paragraph was removed which had said that objectives and targets could be established only to maintain compliance and record rationale for objectives and targets. In section 2.6, responsibility was changed for updating and reviewing operational controls to the Environmental Officer. Also corrected documentation reference. Section 2.10, Corrective/ Preventive Action and Improvement completely rewritten. Sections 2.13, 2.14, 2.15 and 2.16 were extensively revised. Sections 2.15.1, 2.15.2, 2.15.3 and 3.0 were deleted. Sections 4.0 and 5.0 were changed to Appendices H and I respectively. In Appendix B, the column containing the identification number was removed. In Appendix G, divided general Lead Auditor term into Team Lead Auditor and EMS Lead Auditor, and requirements and responsibilities were added and revised. Info. falling under Other Criteria was also heavily revised.

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PREFACE

P.1 PURPOSE

The purpose of this document is to provide specific procedures for implementing and maintaining an Environmental Management System (EMS) for the John C. Stennis Space Center (SSC) in accordance with the ANSI/ISO 14001-1996, *Environmental Management Systems – Specification with Guidance for Use* and NPD 8500.1, *NASA Environmental Management*.

P.2 APPLICABILITY

This procedure covers all activities, products and services that fall under the control of NASA/SSC management that can be expected to have an influence on, including but not limited to, the following: construction of facilities; facility maintenance and operations; procurement; research and development; testing; assembly; equipment maintenance; programs; mission deployment; and waste disposal. The SSC support contractors participating in the EMS are as follows:

- Test and Technical Services Contract (TTSC).
- Facility Operating Services Contract (FOSC).
- Hardware Assurance Testing Contract (HATC).
- Outsourcing Desktop Initiative for NASA (ODIN) Contract.
- Security Services (SS) Contract.

This EMS excludes programmatic activity by other government agencies located at SSC.

P.3 AUTHORITY

NPD 8500.1, NASA Environmental Management.

P.4 REFERENCES

Referenced documents are assumed to be the latest revision unless otherwise specified.

a. ANSI/ISO 14001-1996, Environmental Management Systems – Specification with Guidance for Use.

b. NPD 8500.1, NASA Environmental Management.

c. NPG 1441.1, NASA Records Retention Schedules.

d. SPG 1040.1, NASA SSC Emergency Plan.

e. SPG 1400.1, Document Preparation, Numbering, and Management Guidelines and Standards.

f. SPG 8500.1, Environmental Management Procedures and Guidelines.

g. SCWI-8500-0020-ENV, Environmental Integrated Contingency Plan.

h. SPLN-8500-0001, Annual EMS Audit Plan.

i. SSLP-1410-0001, Document and Data Control.

j. SSLP-1440-0001, SSC Records Management Program and Control of Quality Records.

k. SSLP-3410-0001, *Training*.

l. SSLP-8720-0001, Control of Inspection, Measuring, and Test Equipment.

m. NASA's SSC Environmental Functional Review Checklist.

n. LMSO LSO 094003-510, *Quality Program Plan*.

P.5 CANCELLATION

SPG 8500.1 Basic

Signature on file

William W. Parsons
Director

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Chapter 1. Responsibilities

The responsibilities for the implementation and maintenance of the EMS are addressed below.

1.1 SSC Center Director

The SSC Center Director appoints the SSC Environmental Officer (EO) as the EMS Installation Representative to oversee the implementation and maintenance of the EMS. The Center Director is also responsible for appointing the EMS Core Team.

1.2 SSC Environmental Officer

The SSC Environmental Officer (EO) serves as the EMS Installation Representative to oversee the implementation and maintenance of the EMS and the activities of the EMS Core Team. Specifically, the EO is responsible for:

a. Identifying the need for and documenting procedures (Operational Controls) that limit adverse impacts associated with high-priority impacts and which are needed to manage NASA's environmental policy or compliance activities;

b. Reporting on a quarterly basis to Senior Management on the EMS;

c. Overseeing the communications with external interested parties;

d. Tracking the investigation and correction (as needed) for all reported hazards/emergencies;

e. Managing the EMS Corrective Action Request (CAR) system;

f. Overseeing the SSC internal EMS audit program;

g. Providing NASA HQs support, where necessary, during functional assessments; and

h. Ensuring that SPG 8500.1, Environmental Management System Procedures and Guidelines is kept current in accordance with SSLP-1410-0001, Document and Data Control.

1.3 SSC EMS Core Team

The SSC EMS Core Team, established by the Center Director, assists the EO in managing the EMS. Specifically, the EMS Core Team is responsible for:

a. Identifying high-priority environmental impacts;

b. Establishing environmental objectives and targets for SSC high-priority impacts that are consistent with the NASA environmental policy;

c. Assisting Environmental Management Program Plan (EMPP) Managers to establish performance indicators for environmental objectives and targets; and

d. Reviewing and updating operational controls associated with high-priority environmental impacts on an as needed basis.

1.4 Environmental Management Program Plan (EMPP) Manager

An Environmental Management Program Plan (EMPP) Manager is responsible for:

a. Establishing performance baselines for environmental objectives and targets with the assistance of appropriate SSC environmental program personnel;

b. Tracking, monitoring, and measurement of the key characteristics of operations associated with the environmental objectives and targets of a specific EMPP, and reporting this information to the EO on a biannual basis; and

c. Reviewing and maintaining the EMPP to ensure it remains current and in conformance with the requirements of SSLP-1410-0001, *Document and Data Control.*

1.5 Senior Management

Senior Management (referred to as Top Management in ANSI/ISO 14001-1996, *Environmental Management Systems-Specification with Guidance for Use*) participates in this program by (1) providing commitment to its implementation and (2) conducting reviews to ensure effectiveness. Reviews are planned on a quarterly basis but must be performed at least once a year in conjunction with a SSC Safety Management Council meeting attended by the SSC Center Director, senior managers, and representatives of the SSC support contractors (FOSC, TTSC, HATC, ODIN, and SS). Through the EMS review process, Senior Management assesses and ensures the continuing suitability, adequacy, and effectiveness of the EMS and addresses the possible need for changes.

Chapter 2. Procedures

This SPG covers the essential elements of the SSC EMS to meet the requirements of ANSI/ISO 14001-1996, *Environmental Management Systems – Specification with Guidance for Use*. The EMS elements that are not addressed through this SPG are done so through existing SSC procedures or documentation. Specific SSC EMS elements are as follows:

- Environmental Policy (2.1).
- High-priority Environmental Impact Identification (2.2).
- Environmental Objectives and Targets (2.3).
- Environmental Management Program Plans (2.4).
- Legal and Other Requirements (2.5).
- Operational Controls (2.6).
- Calibration, Monitoring and Measuring Equipment (2.7).
- EMS Document Control (2.8).
- EMS Records (2.9).
- EMS Corrective/Preventive Action and Improvement (2.10).
- Training (2.11).
- Emergency Preparedness (2.12).
- Tracking Environmental Performance (2.13).
- Compliance Assessments (2.14).
- Internal EMS Audits (2.15).
- Internal Communications (2.16).
- External Communications (2.17).
- Management Review of the EMS (2.18).

2.1 Environmental Policy

It is the policy of SSC to conduct its mission, services, and activities in a manner that (a) maintains environmental stewardship of assets and (b) fully discharges its environmental responsibilities. SSC has implemented this policy through an EMS based on three foundation principles:

1. **Regulatory Compliance** with all applicable Federal, state, and local environmental laws and regulations and other requirements;

2. **Pollution Prevention** to cost-effectively avoid the creation of pollution; and

3. **Continual Improvement** of the EMS as a framework for environmental protection.

This policy serves as the framework for setting and reviewing environmental objectives and targets.

The SSC EMS is focused on significant environmental parameters including but not limited to:

Conservation

We will strive to diminish our consumption of natural resources through cost-effective use of recycled and reused materials, affirmative procurement, and conservation of energy and water.

Restoration

We will strive to protect and restore the natural and cultural resources located on SSC property including habitats, wetlands, and other sensitive ecological resources in accordance with applicable regulations and local ordinances.

Emissions, Effluents, and Waste

We will work to diminish our emissions effluents, and waste throughout the lifecycle of our projects and operations by employing cost-effective operational controls, by selecting appropriate materials and by implementing corrective and preventive actions for legal issues whenever necessary.

Technology Transfer

We will promote the development and transfer of environmentally related technology that may have broad applicability for environmental protection and restoration throughout society.

We will communicate this policy to all employees, make it available to the public, and maintain procedures to receive and respond to inquiries from external interested parties. We will also alert potentially affected individuals and authorities of any environmental incidents in a timely and effective manner.

Senior Management at SSC believes that how we care for the environment today affects both current and future generations. We accept responsibility for doing our best to maintain awareness and to minimize adverse environmental impacts from our operations.

2.2 High-Priority Environmental Impact Identification

Using the Risk Matrix format in Appendix A, the SSC EMS Core Team documents the information to generate SSC's high-priority environmental impacts. To identify high-priority environmental impacts for the EMS, the following steps are taken to complete the Risk Matrix.

1. All activities, products, and services associated with the inputs, processes, and outputs under the control of NASA/SSC are identified. Although completed by the SSC EMS

Core Team, this step may require input from managers, supervisors, and employees because of their knowledge of the SSC operations and functions. (Column 1 of the Risk Matrix)

2. Columns 2 and 3 of the Risk Matrix are left blank until steps 11 and l2 below.

3. Using the activities, products, or services identified in Column 1, all environmental aspects are identified in Column 4 of the Risk Matrix. Consideration is given to both normal and abnormal situations.

4. For each of the aspects listed in Column 4, any real and/or potential environmental impacts are identified in Column 5 of the Risk Matrix.

5. To ease the evaluation of impacts, similar impacts that arise from several distinct activities, products or services are grouped together. The EMS Core Team then assigns each of these grouped impacts an acronym, which is placed in Column 6 of the Risk Matrix. The acronyms and the associated grouped impacts are listed in Appendix B.

6. All individual impacts and grouped impacts are classified into one or more of the following six consequence categories in Column 7 of the Risk Matrix: (1) Natural and Cultural Resources Impacts, (2) Cost to NASA, (3) Mission Impacts, (4) Reputation and Stakeholder Relationships, (5) Health and Safety, and (6) Environmental Legal and Regulatory Implications.

7. The environmental aspects are reviewed to determine applicable legal and other requirements.

8. The individual and grouped impacts are assigned a numerical “severity” ranking using the table in Appendix C. This value is placed in Column 8 of the Risk Matrix. This ranking is based on the worst-case scenario of an environmental impact not being properly managed; however, for beneficial impacts, the consequence can be the consequence avoided.

9. The individual and grouped impacts are assigned a numerical “frequency” ranking using the table in Appendix D. This value is placed in Column 9 of the Risk Matrix. Negative impact ranking is based on the frequency of the worst-case scenario occurring with consideration given to historical records and operational controls. Positive impact ranking is based on the frequency of the optimal situation occurring.

10. Overall risk ranking is determined by assigning a “risk” of high, medium, low, or very low to each impact based on frequency and severity factors. The Risk Ranking Matrix used for this determination is in Appendix E. The overall risk rank is placed in Column 10 of the Risk Matrix.

11. In Column 11 of the Risk Matrix, activities, products and services are selected as having high priority impacts requiring specific objectives and targets, if the "risk" assigned to the activity is "High" or if the consequence category is "Legal and Regulatory."

12. With all the information identified above on the Risk Matrix, the EMS Core Team classifies the environmental aspects listed in Column 4 into NASA defined aspects as found in Appendix F. This information is now placed in Column 3 of the risk matrix.

13. The NASA defined aspects in Column 3 are then categorized into one of the four focus areas described below.

    (1) Prevention: Fostering a holistic approach to pollution prevention to instill an environmental ethic that avoids future compliance and restoration problems.

    (2) Compliance: Ensuring that NASA's current and future operations meet all Federal, state, and local environmental regulations.

    (3) Restoration: Addressing all contaminated sites as rapidly as possible to protect human health and the environment. Actively seeking public involvement in the decision-making process.

    (4) Conservation: Exercising responsible stewardship for all resources within NASA controls.

The environmental aspects and impacts identified through this procedure are entered into an electronic database maintained by the EO.

On an annual basis, the EO and the EMS Core Team initiates a repeat of these steps to capture any new environmental aspects that may arise from changes in mission, activities, products, processes, or services.

2.3 Environmental Objectives and Targets

The EMS Core Team with the guidance of the EO establishes organizational environmental objectives and targets that are technically feasible and economically reasonable for each high-priority environmental impact, taking into account:

a. Compliance with all legal and other requirements;

b. The prevention of pollution;

c. Continual improvement in environmental management responsibilities;

d. The views of interested parties;

e. Technological options; and

f. Financial or other operational or business requirements.

The EO documents in an EMPP the objectives and targets for the associated high-priority impact(s) and communicates the information to all affected parties. Any updates or changes to objectives and targets resulting from the annual management review and internal EMS audits are incorporated into the EMPP and communicated by the EO to all affected parties. (See Section 2.16). Section 2.1 *Environmental Policy* serves as the framework for setting and reviewing environmental objectives and targets.

2.4 Environmental Management Program Plan (EMPP)

An EMPP specifies the basic requirements for designating responsibilities and establishing means and timeframes for achieving objectives and targets. The EMPPs shall address the following information:

a. Structure and responsibility;

b. Training, awareness, and competence;

c. Records;

d. Legal and other requirements;

e. Operational Controls;

f. Performance indicators to meet objectives and targets;

g. Documents; and

h. Resources and timeframes.

2.5 Legal and Other Requirements

FOSC Environmental Services has been contractually tasked to review Federal and state regulations through the appropriate Web sites and subscription e-mail service to ensure SSC's activities, products, and services are in compliance as well as to identify any new reporting requirements for any and all processes that are performed at the facility. The FOSC reports

relevant updates to the EO who in turn communicates this information formally to those individuals who are primarily responsible for compliance activities in the affected area.

NASA Environmental Management tracks and reviews any other requirements applicable to SSC operations and activities (e.g., NASA Headquarters directives and Executive Orders). The EO communicates this information to those individuals who are primarily responsible for meeting the requirements in the affected area.

Any construction, development, or modifications resulting in new environmental aspects will be assessed for legal and other requirements in accordance with the Preliminary Environmental Survey (form SSC-696M) and will be submitted to NASA Environmental Management. This information will be used in the annual review of environmental aspects.

Legal and other requirements are included in the EMPPs and communicated to the appropriate personnel.

2.6 Operational Controls

Through the EO, each high-priority environmental impact is reviewed with the assistance of the SSC support contractors to ascertain whether operational controls (technological, operational or procedural) are needed. If such controls are needed, they are identified under their respective EMPPs. Procedural operational controls are listed by title in the EMPP and are located electronically in the SSC Technical Documentation System. Through the SSC support contractors, the EO ensures that operational controls are specified and implemented for those high-priority environmental impacts that require operational controls.

Documented (written) procedures, if they do not already exist, are created to ensure that operational controls are carried out under specified conditions and include:

a. The operating criteria for controls;

b. Maintenance plans for controls; and

c. Actions to be taken when the controls are interrupted or otherwise compromised.

These procedures will be reviewed and updated appropriately by the Core Team. Procedures are prepared and kept current per SPG 1400.1, *Document Preparation, Numbering, and Management Guidelines and Standards* and SSLP-1410-0001, *Document and Data Control*. Information pertaining to operating criteria, maintenance performed, and any actions taken in the event of interrupted controls are recorded and the resulting records stored and retained.

2.7 Calibration, Monitoring and Measuring Equipment

The EMPP manager ensures that equipment used for sample analysis or performance monitoring in the designated EMPP is calibrated in accordance with one of the following:

a. Inspection, Measurement and Test Equipment (IM&TE) are calibrated in accordance with SSLP-8720-0001, *Control of Inspection, Measuring, and Test Equipment* (IM&TE);

b. Analytical Measurement and Test Equipment (AM&TE) is calibrated using certified reference materials or consensus standards supported by a test procedure. (For each analysis or performance monitoring process, the analytical laboratory documents traceability to the certified reference material or consensus standard.) AM&TE will not be included in the SSC metrology management system).

2.8 EMS Document Control

All EMS documents are created, revised, and cancelled according to SPG 1400.1, *Document Preparation, Numbering, and Management Guidelines.*

2.9 EMS Records

EMS records are managed in accordance with relevant Federal and state regulations, NPG 1400.1, *NASA Records Retention Schedules*, and SSLP-1440-0001, *SSC Records Management Program and Control of Quality Records.*

ODIN and HATC manage their records in accordance with their contract requirements.

Logs are controlled in accordance with specific work instructions or the appropriate regulatory requirement.

2.10 EMS Corrective/Preventive Action and Improvement

Corrective action is used to effectively handle non-compliances and non-conformances by properly addressing and identifying the root cause of the discrepancy. The primary objective of preventive action is to minimize impending, emerging, or potential problems or issues that may increase program or management risk. While corrective action starts with a known fault that must be fixed, preventive action resolves a potential problem or concern that must be eliminated to avoid or prevent a fault.

2.10.1 Corrective Action

Non-compliances and non-conformances are recorded by a Corrective Action Request (CAR). CAR's are received and tracked by the environmental corrective action database. A CAR is

initiated when one or more of the following occurrences is discovered, usually through an internal audit.

a. There is a recurring problem.

b. The risk of not taking corrective action has extreme consequences;

c. The problem is significant in terms of resources, schedule, or safety.

d. It is evident that a process is broken or could be measurably improved.

e. Issues cannot be resolved by normal dialogue.

f. Trend indicators (metrics) suggest need for corrective action.

g. Management and/or engineering judgment must be used to complete an action.

EMS auditors issue and track CAR's using the corrective action database. Auditees provide input to the corrective action database on the cause of the non-conformity, a corrective action response and an estimated date of completion. If the auditor is satisfied with the auditee's response, he or she will mark the CAR as satisfactory; if the response is unsatisfactory, the auditor may ask for additional information.

The auditor follows up the corrective action to ensure that it is implemented and effective. The audit manager will close the CAR when notified that it is effective.

2.10.2 Preventive Action

The SSC preventive action process involves evaluating processes and operations to provide information on potential problems or issues that may increase program or management risk. Potential problems are found through analysis of the following sources of information:

a. CAR's and audit observations;

b. Inspection and test records;

c. Customer complaints;

d. Regulatory procedures;

e. Subcontractor nonconformance (Receiving inspection records); and,

f. Government Industry Data Exchange Program.

Potential problems are then identified and recorded. Any relevant information concerning significant preventive actions is presented to management. A preventive CAR may be generated in the Base Environmental Management System (BEMS) and tracked in the same manner as a regular CAR.

2.11 Training

Training requirements to provide the needed competencies to execute the requirements of the EMS are determined, conducted and recorded in accordance with SSLP-3410-0001, *Training*. Employee competency is ensured by the following EMS training requirements specific to the NASA Environmental Management Program and the supervisors of participating companies.

2.11.1 NASA Environmental Management and Contractor Environmental Staff

NASA and contractor environmental staff members:

a. Conduct awareness training for all employees as part of the initiation of the EMS to make them aware of:

(1) The importance of conformance with the environmental policy and procedures and with the requirements of the environmental management system;

(2) Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system;

(3) The potential consequences of departure from a specified operating procedure;

b. Provide new employees with environmental awareness training as part of the new employee orientation process.

c. Conducts refresher environmental awareness training for all employees on a periodic basis as determined by top management, to reinforce the above stated elements.

2.11.2 Supervisors

Supervisors define specific training for those positions performing work directly affecting the environment and perform evaluations to determine the competency of personnel performing tasks that can cause high-priority environmental impacts. The determination of competency is specified in each management program that is implemented to achieve objectives and targets relative to high-priority environmental aspects. Competence training focuses on:

a. The high-priority environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance;

b. The roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system, including emergency preparedness and response requirements; and

c. The potential consequences of departure from specified operating procedures.

When competence training is required, the supervisor ensures the employees receive competence training *before* beginning the assigned function. This training shall be recorded in accordance with Section 2.9.

2.12 Emergency Preparedness

Emergency procedures at SSC are governed by SPG 1040.1, *NASA SSC Emergency Plan,* and SCWI-8500-0020-ENV, SSC Environmental Integrated Contingency Plan.

2.13 Tracking Environmental Performance

As part of establishing EMPPs for high-priority environmental impacts, the EMS Core Team assists the EMPP Manager in determining performance indicators to indicate progress toward meeting EMPP objectives. Units of measure and types of measurement found in environmental regulations for a particular high-priority environmental impact can be used in establishing these indicators and in determining their baselines.

EMPP Managers shall record progress toward meeting objectives and targets using graphs, charts, or reports submitted to the EO annually.

The EO establishes data requirements for submittal of records that track, monitor and measure key environmental parameters associated with SSC operations.

2.14 Compliance Assessments

SSC Environmental Management conducts a comprehensive assessment on all NASA and NASA contractor operations to prevent noncompliance with regulations by any SSC activities. Environmental Management notifies senior management and NASA Headquarters if any issues regarding noncompliance are discovered during assessments and initiates corrective action and orders cease and desist on any non-compliant activities.

The compliance assessments are scheduled in conjunction with internal EMS audits as described in section 2.15. They are based on NASA's Environmental Functional Review checklists provided by NASA Headquarters. Problems identified during assessments will be assigned a

preventive action or a corrective action depending on the severity of the assessment observations as described in section 2.10.

NASA and its contractors are scored on environmental compliance issues specific for each process. The score is based on the percentage of criteria in compliance versus the total number of compliance criteria identified for each process.

2.15 Internal EMS Audits

Internal EMS audits are conducted in conjunction with compliance assessments for NASA and NASA contractor operations as described in section 2.14. NASA and NASA contractor managers are also audited annually to ensure awareness and conformance to EMS standards.

2.16 Internal Communications

Topics for internal communications on environmental-related matters include:

a. Environmental policy;

b. Objectives and targets of the EMS;

c. Employee roles and responsibilities;

d. Performance tracking; and

e. Emergency situations

Mechanisms that are used for various types of internal communication include, but are not limited to:

a. Environmental website;

b. Newsletters and emails;

c. Staff and “all-hands” meetings;

d. Bulletin boards;

e. Posters; and

f. Flyers.

All SSC personnel shall communicate any environmental concerns or other information directly to their manager or the organization's environmental lead who will respond appropriately. Employees can also communicate directly with the EO. All employees are responsible for reporting environmental hazards or emergencies (including spills and fires) immediately upon discovery in accordance with the SPG 1040.1, *NASA SSC Emergency Plan* and SCWI-8500-0020-ENV, *SSC Environmental Integrated Contingency Plan*. All reported environmental emergencies are recorded, investigated, and corrected (as needed) in accordance with SCWI-8500-0020-ENV*, SSC Environmental Integrated Contingency Plan.*

2.17 External Communications

2.17.1 General

SSC communicates its high-priority impacts in accordance with established law. Inquiries and other communications from interested parties concerning the EMS or environmental performance may be received via mail or email by a number of representatives, including the SSC Director, operations/facilities manager, the Office of Public Affairs, or the EO. These inquiries and communications are forwarded to the EO, who responds appropriately. In the absence of the EO, communications with external parties are delegated up from the EO to the next level of management.

The EO maintains records of all such communications (both incoming and outgoing) in accordance with SSLP-1440-0001, *Records Management Program and Control of Quality Records*.

The views of interested parties that are submitted directly or are forwarded to the EO by correspondence (email or letter) are filed and shall be considered in setting objectives and targets.

2.17.2 Communication with Suppliers and Contractors

NASA Environmental Management is responsible for communicating EMS-related information to its contractors and suppliers, specifically as follows:

NASA Environmental Management, through the procurement offices of NASA and NASA contractors, will inform SSC suppliers or contractors of its EMS and SSC's desire that they conduct their business in an environmentally sound manner.

Through FOSC, NASA Environmental Management will communicate to SSC suppliers or contractors, who supply goods or services associated with high-priority impacts, the applicable procedures and requirements to mitigate, minimize, or otherwise control environmental impacts.

2.18 Management Review of the EMS

The EO prepares the necessary input to be considered in the quarterly reviews with senior management. Items to be included in the information presented are as follows:

a. EMS audit results;

b. Monitoring and measurement of environmental indicators;

c. Status of achievement of objectives and targets in the EMS;

d. Regulatory compliance status;

e. Correction and prevention of non-conformances in the EMS; and

f. Any other relevant EMS information.

Upon review of the information provided by the EO, senior management makes a determination on the continuing effectiveness of the EMS and on its ability to achieve the established environmental objectives and targets. They also consider whether the system continues to be adequate, effective, and suitable for its intended purpose.

Having made these determinations, direction is provided on any necessary changes to the EMS to ensure its continual improvement. The proceedings and all decisions taken in reference to the EMS are recorded and retained in accordance with SSLP-1440-0001, *Records Management Program and Control of Quality and Environmental Records.*

Appendix A - Risk Matrix Format

Building
Organization

Point of Contact
Phone

Manager
Phone

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

Activity, Product, and Service	Focus Area	NASA Prescribed Aspect	Aspect	Impact	Group Impact	Environmental Consequence Category	Severity	Frequency	Overall Risk Ranking	Objectives and Targets

Appendix B - Grouped Impacts Acronym List

Acronym	Description
AE/DAQ/O	Air Emissions/Degradation of Air Quality/Ozone depleting substance
AE/DAQ/ Asbestos	Air Emissions/Degradation of Air Quality/Asbestos
AE/DAQ/CN	Air Emissions/Degradation of Air Quality/Carbon Monoxide, Nitrogen Oxides, Sulfur Dioxide
AE/DAQ/CO	Air Emissions/Degradation of Air Quality/Carbon Dioxide
AE/DAQ/HAPS	Air Emissions/Degradation of Air Quality/Hazardous Air Pollutants
AE/DAQ/PM	Air Emissions/Degradation of Air Quality/Particulate Matter
AE/DAQ/SM	Air Emissions/Degradation of Air Quality/Smoke
AE/DAQ/V	Air Emissions/Degradation of Air Quality/Volatile Organic Compound
AP/CNR	Affirmative Procurement/Conservation of Natural Resources
AW/RLS	Asbestos Waste/Reduction in Landfill Space
BFS/SWC	Bulk Fuel Storage/Soil and Water Contamination
BT/SWC	Batteries (wet cell batteries)/Soil and Water Contamination
CRD/DCR	Cultural Resource Disturbance/Destruction of Cultural Resources
EMF/HS	Electromagnetic Force Emissions/Health & Safety
EO/SWC	Erosion Control/Soil and Water Contamination
EP/HS	Explosion potential/Health and Safety (human)
EUC/RNR	Energy Usage (Chemical)/Reduction in Natural Resources
EUE/RNR	Energy Usage (Electricity)/Reduction in Natural Resources
EUGD/RNR	Energy Usage (Petroleum – gasoline, diesel)/Reduction in Natural Resources
F/SWC	Fueling/Soil and Water Contamination
HU/SWC	Herbicide Usage/soil and Water Contamination
NRU/RNR	Natural Resource Use/Reduction in Natural Resources
NRUHE/RNR	Natural Resource Use (Helium)/Reduction in Natural Resources
NRUN/RNR	Natural Resource Use (Nitrogen)/Reduction in Natural Resources
NRUOX/RNR	Natural Resource Use (Oxidizers)/Reduction in Natural Resources
POL/SWC	Petroleum, Oil and Lubricants (POL) Storage/Soil and Water Contamination
PWU/DG	Portable Water Usage/Depletion of Groundwater
RAD/HS	Radiation Emissions/Health and Safety
RB	Batteries (recycling)

APPENDIX B CONTINUED

Acronym	Description
RC	Cardboard/Corrugated (recycling)
RCFC	ChlorofluoroCarbon (recycling)
RIC	Ink/toner Cartridges (recycling)
RM	Metals (recycling)
RP	Paper (recycling)
RS	Silver (recycling)
RTI	Tires (recycling)
HWA/SWC	Hazardous Waste Accumulation/Soil and Water Contamination
SF/DWC	System Failure/Drinking Water Contamination
SW/RLS	Solid waste generation/reduction in landfill space
UNP/CNR	Use of native plants/conservation of natural resources
UOS/CNR	Used oil storage/conservation of natural resources
UOS/SWC	Used oil storage/soil and water contamination
WD/DW	Wetlands disturbance/wetlands destruction
WW/SWC	Wastewater/soil and water contamination
CS/SWC	Chemical storage/soil and water contamination
CUH/REM	Clean-up hazardous waste/remediation
EUNG/RNR	Energy usage (natural gas)/reduction in natural resources
SFU/RNR	Surface water usage/reduction in natural resources
SC/SWC	Spill containment/soil and water contamination

Appendix C - Environmental Consequences Categories Table

Natural and Cultural Resources Impacts (NCR)
1. Taking of protected wildlife or destruction of cultural resource
2. Impact on protected habitat or sensitive environment
3. Minimal impact on protected natural or cultural resource
4. No impact in natural or cultural resources

Cost to NASA (Cost)
1. Greater than $500,000
2. $250,000 to $500,000
3. $100,000 to $250,000
4. Less than $100,000

Mission Impacts (MI)
1. Delay in mission critical activity
2. No delay- but large cost to avoid delay
3. No delay- but minimal cost to avoid delay
4. No delay-no cost

Reputation and Stakeholder Relationship (R & S)
1. Increase in public inquiries/mandatory meeting attendance
2. Adverse effect on NASA reputation or stakeholder relations
3. Minimal effect on NASA reputation or stakeholder relations
4. No effect on NASA reputation or stakeholder relations

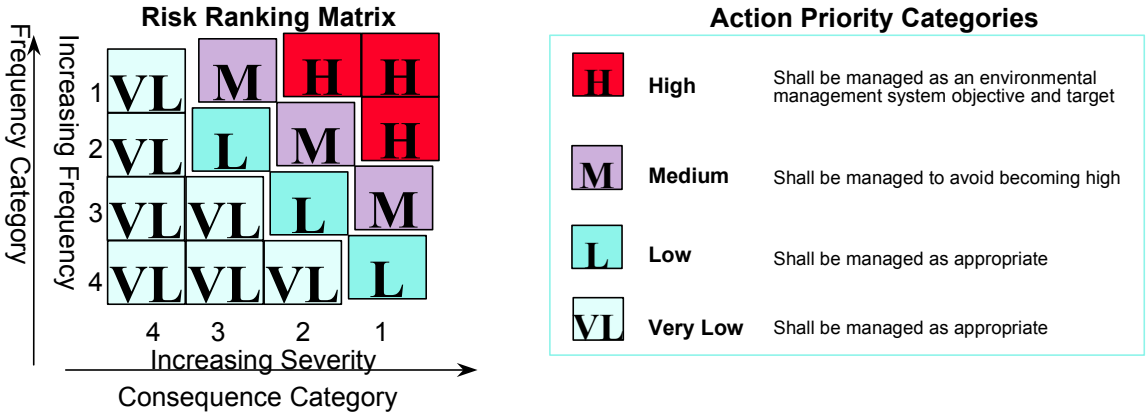
Health and Safety (H & S)
1. Death or disabling injury
2. Severe injury/lost time or human health impact
3. Minor injury or human health impact
4. No injury or other health effect

Legal and Regulatory Implications (L & R)
1. Any fine, consent agreement, or unilateral order, or non-compliance with Legal and Other Regulatory Requirements
2. NOV with no fine
3. Informal Notice
4. No Regulatory Action

Appendix D - Frequency Ranking Table

Category	Potential Frequency of Occurrence
1	Minimum of once a year
2	Minimum of once every 1-5 years
3	Minimum of once every 5-10 years
4	Minimum of once in 10+ years

Appendix E – Risk Ranking Matrix



Overall risk ranking is determined by assigning the risk of each impact based on the most severe action high-priority category.

Appendix F - NASA Defined Environmental Aspects

- Asbestos and Lead Paint Management.
- CERCLA Site Remediation.
- Clean Air Management.
- Clean Water Management.
- Closure (Non-CERCLA, Non-RCRA, Non-Storage Tank Activities).
- Emergency Planning and Response.
- Endangered Species.
- Energy Efficiency.
- Hazardous Materials Management.
- Hazardous Waste Management.
- Hazardous Waste Permitted TSD Facility.
- Historical, Archaeological, and Cultural Resources.
- Innovative Remediation Technologies.
- Materials Substitution/Reduction/Elimination.
- National Environmental Policy Act.
- Natural Resources Management.
- Noise and Vibration.
- PCB Management.
- Pesticide and Herbicide Management.
- Pollution Prevention Integration into NASA Systems.
- Process Changes.
- Radioactive Materials and Non-Ionizing Radiation.
- RCRA Site Remediation.
- Recycling.
- Safe Drinking Water.
- Solid Waste Generation Management.
- State and Local Ordinances and Regulations.
- Storage Tank Management.
- Storage Tank Site Remediation.
- Water Conservation.
- Wetlands and Floodplains.

Appendix G – Training and Experience Requirements for Auditors

G.1 Auditor

An auditor for the SSC EMS shall complete an internal auditor course before participating in an EMS audit. New auditors shall observe at least two days of audit activity with an experienced EMS auditor before auditing alone or serving as a team lead. Auditors shall be able to:

a. Understand and communicate the ISO philosophy;

b. Define terms such as audit, noncompliance, nonconformance, customer, and supplier;

c. Understand and interpret the meaning of the clauses of ANSI/ISO 14001-1996;

d. Write clear nonconformance statements; and

e. Evaluate root cause and corrective action responses for adequacy.

G.2 Team Lead Auditor

In addition to meeting the requirements above, a Team Lead Auditor shall be able to:

a. Prepare for and conduct pre-audit meetings;

b. Coordinate communications and audit activities of the team and the auditees;

c. Prepare a team audit report.

G.3 EMS Lead Auditor

The EMS Lead Auditor shall be capable of all the aforementioned and the following:

a. Prepare an audit plan/schedule and coordinate audit activities;

b. Participate in the opening and closing meetings as directed by the Audit Manager;

c. Prepare the audit Final Report for Audit Manager/Environmental Officer approval and distribution.

G.4 Other Criteria

Auditors are not to have any direct responsibilities for the area being audited.

NOTE: At the discretion of the SSC EO and Audit Manager, prior auditing experience may be applied to meet EMS auditor training requirements. Environmental Management maintains records of training and experience.

Appendix H - Definitions

Analytical Measurement &Test Equipment (AM&TE): Equipment used by the SSC Science Laboratory Service to perform physical and /or chemical measurements.

Auditor: An individual qualified through training or experience to perform an EMS audit. (Appendix G)

Certified Reference Material (CRM): A reference material, one or more of whose chemical or physical values are certified by a technical procedure, accompanied by or traceable to a certificate or other documentation that is issued by a certifying body. The results from the certifying body shall be traceable to a national institute (e.g. NIST, DOE, etc.) or from data derived from inter-laboratory comparisons.

Competence: A body of skills (training, education, and experience) defined by the organization as appropriate for all personnel whose work may involve a high-priority environmental aspect.

Consensus Standard: An artifact or process used as a defacto standard when no recognized CRM is available. (e.g. Chemical Standard prepared through a gravimetric or volumetric process and supported by a method or procedure).

Document: A written procedure or guideline that requires regular review or maintenance.

Environmental Aspect: The elements of an organization's activities, products, or services that can interact with the environment.

Environmental Impact: Changes to the environment whether adverse or beneficial wholly or partially resulting from NASA's activities, products, or services.

Environmental Lead Auditor: An individual qualified through training or experience to organize and direct an environmental audit, report nonconformances, and evaluate corrective action.

Environmental Management Program Plan (EMPP): Document that specifies the basic requirements for designating responsibilities and establishing means and timeframes for achieving objectives and targets.

Environmental Management System (EMS): A mechanism by which NASA/SSC organizations can effectively manage and measure the impacts of their operations on the environment, and improve their overall environmental performance.

Focus Area: One of the four areas in which NASA categorizes its environmental programs: prevention, compliance, restoration, and conservation.

High-priority Environmental Impact: A NASA environmental impact which must have an objective and target set in an EMPP (if economically reasonable and technically feasible), as determined by an overall risk ranking or by default if regulated.

Internal EMS Audit: A systematic and independent examination to determine whether the EMS conforms to planned arrangements for environmental management, including the requirements of ANSI/ISO 14001-1996, *Environmental Management Systems – Specification with Guidance for Use*, and is properly implemented and maintained.

NASA Prescribed Aspect: Defined categories for NASA's interfaces with the environment (See Appendix F).

Noncompliance: Not complying with Federal or state regulations.

Nonconformance: Not conforming to Environmental Management System standards**.**

Objective: An overall goal, arising from the environmental policy, that NASA sets for itself to achieve and which is quantified where practicable.

Operational Controls: Documented procedures that limit adverse impacts to the environment and are needed in order to manage NASA's environmental policy and compliance activities.

Performance Indicator: Date or other tracking information that provides evidence of progress toward meeting environmental objectives and targets.

Pollution Prevention: Reducing the generation of wastes or contaminants at the source, and thereby reducing releases to the environment that could pose hazards to the environment or to public health.

Risk: A category that determines how an aspect shall be managed.

Structure: Clearly defined roles and authority for personnel, committees, or departments.

Target: A detailed performance requirement, quantified where practicable, applicable to NASA that arises from objectives and needs to be set and met in order to achieve those objectives.

Timeframe: Estimated dates for which objectives and targets are to be achieved**.**

Training: Any process by which individuals gain knowledge and skills that better enable them to perform their current or future duties. Training may include OJT such as a series of instructions or proficiency demonstrations leading to a certification, or general training such as a single training course.

Appendix I - Acronyms

Acronyms used in this SPG are defined as follows:

AM&TE	Analytical Measurement and Test Equipment
ANSI	American National Standards Institute
BEMS	Base Environmental Management System
CAR	Corrective Action Request
CERCLA	Comprehensive Environmental Resource Compensation & Liability Act
CFR	Code of Federal Regulations
CRM	Certified Reference Material
CWI	Common Work Instruction
DOE	Department of Energy
EMPP	Environmental Management Program Plan
EMS	Environmental Management System
EO	Environmental Officer
FOSC	Facility Operating Services Contract
HATC	Hardware Assurance Testing Contract
ICP	Environmental Integrated Contingency Plan
IM & TE	Inspection, Measuring and Test Equipment
ISO	International Organization of Standardization
LMSO	Lockheed Martin, Stennis Operations
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act

NIST	National Institute of Standards and Technology
NOV	Notice of Violation
NPD	NASA Policy Directive
NPG	NASA Procedures and Guidelines
PCB	Polychlorinated Biphenyl
RCRA	Resource Conservation and Recovery Act
SCWI	Stennis Common Work Instruction
SSLP	Stennis System Level Procedure
SPG	Stennis Procedures and Guidelines
SSC	Stennis Space Center
TTSC	Test and Technical Services Contract
TSD	Treatment, Storage, and Disposal