

This document is a public copy of an actual EMS which has been implemented on a swine farm in North Carolina. The name of the farm, its owners, and its location have been left blank out of respect for the privacy of the owners. All other components shown are the ones actually in use on this farm.

Environmental Management System (EMS) Manual

Prepared By:

Approved By:

Signature: _____ **Date:** _____

Signature: _____ **Date:** _____

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INTRODUCTION _____ is a 7,104 head wean to feeder (nursery) swine farm located at _____. The farm consists of eight nursery barns, a properly designed waste management system, and cropland sufficient to meet all existing nutrient management and North Carolina permit requirements. _____ is owned by _____.

In order to improve management of environmental issues related to this operation and site, Pork Partners has implemented an Environmental Management System (hereafter referred to as EMS). This EMS manual presents the environmental policy, structure of the management system, EMS procedures, and related documents.

The EMS is modeled, in large part, after the requirements set forth by the ISO-14001 Standard and after the EMS currently in use by Murphy-Brown LLC, a major swine integrator with whom _____ has a business relationship. Although this EMS manual and the _____ EMS itself is modeled after the ISO 14001 Standard, it is not intended for actual ISO 14001 certification and does not address every requirement of the 14001 Standard.

DEFINITIONS

Environmental aspect – elements of the farm’s activities that can interact with the environment

Environmental impact – any change to the environment, whether adverse or beneficial to a farm’s activities

Integrator – the owner/supplier of animals which are grown on a contractual basis by a producer

External interested parties – individual or group concerned with or affected by the environmental performance of the farm (neighbors, media, environmental organizations, etc.)

Significant Environmental Aspect - an environmental aspect that has or can have a significant environmental impact.

EMS Non-conformance- failure to follow farm Standard Operating Procedures, complete scheduled checklists, review environmental aspects in timeframe specified

Other requirements-requirements to which the organization subscribes but which are not legal or regulatory requirements

SCOPE OF THE EMS

The EMS includes all components of _____ swine production operation including land and nutrient management systems.

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SECTION 1 - ENVIRONMENTAL POLICY

_____ has defined its environmental policy as follows.

ENVIRONMENTAL POLICY

_____ is committed to being a leader in environmentally responsible swine production practices and to strive continually to produce high quality livestock in an efficient and environmentally sustainable manner. We will continually analyze our operations and practices to ensure ongoing improvement in light of technological advancements and best management practices. Compliance with the principles of this Policy is the responsibility of every employee and is a condition of their employment.

_____ is committed to:

- Compliance with all applicable rules and regulations
- Continual improvement in environmental management
- Pollution prevention

_____ makes this Policy available and accessible to all its employees and to the public upon request.

Date _____

Date _____

SECTION 2 - Environmental Aspects

_____ has identified all known environmental aspects and related impacts of its activities and products, over which we have control and can have an influence, in order to determine which can have a significant impact on the environment.

- The list of environmental aspects and related impacts (see **Table 1** below) will be reviewed at least annually by the EMS team in order to identify the significant aspects. Review will also take place within one month of implementing new activities or modifying existing activities. Additions or changes to aspects and impacts will then be ranked to determine significance.
- The EMS team will use the following aspect procedure and related documents to carry out the identification and significance ranking of aspects and associated impacts.

Table 1

**Environmental Management System
Aspects/Impacts Table**

Effective 09-08-03

Activity/Aspect		Concerns/ External Interested Parties	Legal/Reg. Compliance	Severity & Consequences	Relative /Perceived Risk	Significance Rating
	Weighting factor/relative significance	10%	35%	35%	20%	100%
1. Feeding/Nurturing Animals	Potential Environmental Impact*					
spoiled spilled feed	FA, SW, WS, NR, AR	3	3	0	0	14
dust emissions	AR, LC, EH	3	3	3	3	30
medications (use, transport, storage)	EH, LC	6	3	3	3	33
fresh water usage (excessive)	SA, NR, GW	3	6	9	3	62
fresh water source (well water quality/location)	GW, LC, EH	3	3	6	3	41
equipment failure (well pump)	WS, AR, FA	0	0	6	6	33
disposal of sharps	EH, WS	6	0	3	6	29
disposal of medications and containers	EH, WS, SW	3	6	3	3	41
noise from animals	EH, LC	3	3	0	6	26
contamination of feed	EH,LC,AR, FA	3	6	6	3	51
2. Housing the Animals						
odor emission from building	AR,LC	9	9	6	6	74
influence on/of groundwater (seepage)	GW, LC, NR	9	9	9	6	84
mortality removal	AR, WS, LC	3	9	6	6	68
bio-security	FA, NR	0	0	6	6	33
air borne pathogens	EH, LC	6	0	6	3	33
facility structure	WS, SW, LE, GW	6	9	6	9	77
propane storage tank leaks	AR, FL	3	3	6	3	41

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recycle line cleaning	EH	0	0	3	9	29
dead animal containers	LC	6	6	3	6	50
equipment failure (ventilation, heating, etc.)	AR,LC,SW	0	0	6	6	33
chemical storage/labeling	EH	6	6	6	6	60
thermostats(mercury)	EH,SW	6	6	3	3	44
walkway/aisle cleaning	EH	3	3	3	3	30
methane buildup	AR,EH,LC	3	3	6	3	41
3. Miscellaneous						
septic system failure/sanitary waste	GW, SW, EH	3	6	3	6	47
electrical failure	AR, WS, LC	0	0	6	6	33
building fire	SW, WS, AR	3	0	6	3	30
disposal of light bulbs	WS	3	3	3	3	30
disposal of non-hazardous solid waste	LC,LD,NR,WS	3	3	3	9	42
emergency communications network	LC,EH,SW	0	0	6	6	33
aerosol cans	EH,WS,AR	3	3	3	3	30
set-backs not maintained or established	SW,SA,LC,FA	6	9	3	3	54
4. Transportation of Animals						
odor from transfer trucks (specifically live)	LC, SW, AR	9	0	3	9	38
mortality handling issues	LC, AR, WS	9	3	3	9	48
waste from transfer trucks	LC, SW, AR	9	3	3	6	42
sanitation management	EH,AR,FL,FA,SW	3	6	3	6	47
truck/pig cooling water	SW,GW	9	3	3	6	42
5. Nutrient Collection/Recycle System						
gaseous emissions (nutrient collection/recycle system)	AR, SW, LC, EH	9	9	3	9	69
odor emissions (nutrient collection/recycle system)	AR,LC	9	9	6	3	68
manure (recycle/handling system failure)	SW, LD, LC,GW	9	9	9	9	90
recycle/handling system cleaning / maintenance	FA,FL,NR,EH,SW	3	6	9	9	74
recycle system leaks	LC,SW,GW	6	9	9	9	87
struvite	EH	0	0	6	9	39
6. Nutrient Storage (lagoon)						
gaseous emissions (lagoon)	AR, LC, SW, NR	9	9	3	6	63
odor emissions (lagoon)	AR, LC	9	9	3	6	63
nutrients	GW, LD	6	0	0	9	24
structural integrity (structure maintenance, lagoon rupture, seepage))	SW,LC,LD,NR,FA,G W	9	9	9	6	84
lagoon liquid level mgmt (exceeded freeboard, overflow)	SW, LC, LD, NR	9	9	9	3	78
flooding into lagoon	SW,LC	6	3	6	3	44
adequacy of treatment volume (freeboard/sludge)	AR,WS,LC,LD	3	9	3	6	57
excessive debris in lagoon	LC,WS	3	6	3	9	53
soil erosion on lagoon dike (inside slope or outside of dike)	GW, LE	3	6	6	6	57
sludge accumulation	LC, LD, SW, GW, WS	3	9	6	9	74
sludge removal	LC,LD,SW,GW,WS	6	9	6	6	71

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7. Nutrient Application						
hydraulic load (field runoff, ponding or ruts)	SW,LC,LE, NR	9	9	9	6	84
nutrient load (agronomic uptake exceeded)	LC,LD,SA, NR,GW,FL	6	9	9	3	75
buffers	LC	6	9	3	3	54
drainage control	LC	3	6	6	3	51
irrigation system integrity	SW, LD, LC	6	9	6	6	71
odor (application)	AR,LC	9	9	6	9	80
equipment maintenance	WS,EH	0	0	6	6	33
subsurface drain tiles	GW,LC	3	6	6	3	51
8. Crop Production/Land Management						
wettable acreage availability	SA, SW,GW	6	9	6	3	65
crop management (crop cover, utilized)	SW,LD,LE	6	9	6	9	77
application of pesticides	SW,LD,LC,FA,NR	6	9	6	3	65
grazing management	SW,GW,SA,NR,LE	3	6	6	6	57
soil erosion	SW,NR,FA,NR,SA	6	6	6	3	54
herbicides/pesticides/rodenticide containers	NR, EH, SA, WS, SW, GW	3	6	3	3	41
compaction	LD,SA,NR	0	3	6	6	44
9. Office building/storage area						
refrigerants (freon)	EH,AR	3	9	3	6	57
printer cartridges	WS	0	0	0	9	18
cleaning compounds	EH,AR	0	3	3	9	39
light bulbs	WS	0	3	6	9	50
recycleables	WS	6	3	3	6	39
mobile phones	WS,EH	3	3	3	3	30
rechargeable batteries	WS	3	3	3	3	30
misc. electrical	EH	0	0	0	0	0
misc. office supplies	WS	0	0	0	0	0
structural integrity	EH	0	0	0	0	0
generators	EH	0	0	0	0	0
biological storage	EH	0	9	3	3	48
storm water runoff	SW	0	3	3	3	27

*** Environmental Surroundings:**

AR-Air, FA-Fauna, FL-Flora, LC-Local Citizens, LD-Land Contamination, NR-Natural Resources,
EH-Employee Health
SA-Sustainable Agriculture, WS-Solid Waste, SW-Surface Water, GW-Groundwater,
LE-Land Erosion

Environmental Aspect and Impact Ranking Procedure

- 1) Identify the environmental aspects and impacts of its activities that it can control and over which it can be expected to have influence.

- 2) When identifying aspects and impacts the EMS team should consider environmental aspects related to air emissions, discharge of liquid waste, disposal of solid waste, land and water contamination, use of raw material and natural resources, as well as local and community issues. These issues should be considered for normal as well as abnormal operating conditions.

Table 2 – Significance Criteria

	Low (3)	Medium (6)	High (9)
Severity and consequences	Isolated or little impact to environment	Localized impact to the environment – geographically limited	Large scale impact on the environment - catastrophic
Concerns of External Interested Parties	Little interest/concern to public	Some interest/concern to public	Great interest/concern to public
Legal or Regulatory Requirement	Regulated but little or no possibility of potential NOD or other violation	Regulated/could result in potential NOD or other violation	Regulated/could result in NOV and/or fine
Relative or Perceived Risk	Small chance will occur	Possible but not likely to happen	Will probably happen

- 3) After identifying the aspects and associated impacts the EMS team should rank the associated aspects and impacts for severity and consequences, concerns of external interested parties, legal and regulatory requirements, and relative or perceived risk. **Table 2** is used to establish a ranking of significance.
- 4) The EMS team will use the ranking of the associated impacts along with knowledge of daily operations to determine the significance of the associated aspect. Any aspects ranked with a 9 in the severity or legal categories will be considered to be significant. Any aspect with a total score of 70 or higher will be considered significant.
- 5) If, at any time during the year, a process or activity is modified, added, or removed the EMS team must ensure that an aspect and impact analysis is completed, all aspect and impact lists updated appropriately, and if applicable, objectives and targets updated.

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SECTION 3 – Legal and Other Requirements

_____ is committed to compliance with legal and other requirements that are applicable to the environmental aspects of its activities.

- The **SECRETARY** will review federal state and local environmental regulations at least every 2 years and communicate relevant information to affected parties.
- The **OWNERS** are responsible for handling issues related to permitting, reporting, and auditing requirements.
- The **SECRETARY** will update Table 2 as needed.

Table 2 - Regulatory & Other Requirements*

Requirements	Resources
Certified Animal Waste Management Plan (NUP, Irrigation Design, BMP's, Emergency Action Plan)	NC Division of Water Quality(DWQ)
Certificate of Coverage	DWQ
Operator in Charge Designation Form	DWQ
Operators Certification	NC water pollution system operators certification program
Environmental Management System Guidance For Livestock Producers*	Murphy-Brown LLC/DPP
Integrator Contract*	Murphy-Brown LLC

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SECTION 4 – Objectives, Targets and Programs

_____ has established and maintains documented environmental objectives and targets.

- When establishing objectives and targets the **OWNERS** will; 1- review the significant aspects, 2- review the environmental policy and 3- identify ways to improve the operation.
- These objectives and targets describe; 1-the objective (improvement goal), 2-a target date for completion, 3- a timeline (if multiple steps are involved) for the objective to be accomplished, and 4- resources needed (people, money).
- The following information will be considered when objectives and targets are established and will be considered in reviewing and developing new objectives and targets: legal and other requirements, operational requirements, business requirements, and the views of interested parties.
- The EMS team will establish environmental objectives and targets at least annually.
- Objectives and targets will be measured and tracked and may be amended as a result of new or revised operations, activities, and/or regulations. Target completion dates may be reset if deemed necessary by the **OWNERS**.

SECTION 5 - Structure and Responsibility

_____ has defined, documented, and communicated the roles and responsibilities of personnel in order to facilitate effective environmental management. These roles and responsibilities are identified in Table 3.

Table 3 - Roles and Responsibilities

Role/Responsible Party	Responsibility
Owners (President, Secretary)	Assure adequate human resources, training, technological, and financial resources are available to implement and manage the EMS. Assure the EMS requirements are established, implemented, and maintained. Train all existing and new employees on environmental Policy, EMS procedures, documents, and their responsibilities under the EMS.
EMS Team (President, Secretary, Farm Manager)	Assist in the continual improvement of the EMS as defined in the EMS manual. Conduct annual internal EMS audit to ensure that the EMS has been properly implemented and maintained.
Secretary	Maintain records of training required under the EMS. Identifies where EMS documents are located. Communicates with external interested parties regarding environmental issues and recording any action taken as a result of these communications.

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SECTION 6 - Training, Awareness and Competence

The **OWNERS** have identified training needs of all employees in relation to its environmental management system. Table 4 (shown below) provides a listing of the training needs and those employees that require training in the listed areas.

- The **OWNERS** are responsible for training all existing and new employees on the environmental policy.
- The **OWNERS** will train affected employees within 60 days of the effective date of a procedure or major revision to procedures, the management program, policy or other EMS related document
- The **OWNERS** are responsible for making all existing and new employees whose work activities may create a significant impact upon the environment aware of:
 - The importance of conformance with the environmental policy, relevant procedures, and with the requirements of the Environmental Management System;
 - The significant environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance;
 - Their 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;
 - The potential consequences of departure from specified operating procedures.
- The **OWNERS** are responsible for evaluating the competence of personnel performing the tasks, which can cause a significant environmental impact on the environment, on the basis of appropriate education, training, and/or experience. Competence will be evaluated by observance of job performance.
- The **SECRETARY** will maintain training records. (See appendix labeled “Training Records”)

Table 4 – Training Requirements

Training Requirement	President	Secretary	Farm Manager
Environmental Policy	X	X	X
Significant Environmental Aspects	X	X	X
Emergency Action/Telephone Contact Plan	X	X	X
Waste Applicator Training	X	X	X
Equipment Calibration	X	X	X

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SECTION 7 - Communication

_____ has developed procedures for handling internal communications between the various levels and functions of the organization and external communications with outside interested parties. The **OWNERS** of have decided to not provide a list of significant aspects and impacts to outside interested parties.

Communication Procedures:

Internal Communication

- The **OWNERS** are responsible for communicating information about the EMS to affected employees. Information will be communicated by meetings with the EMS team, individual meetings, and by posting EMS information in the farm office.

External Communication

- The _____ policy statement is posted in the farm office and will be provided to the public upon request.
- The **SECRETARY** is responsible for communicating with external interested parties regarding environmental issues and recording any action taken as a result of the communications.

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SECTION 8 - Document Control

The SECRETARY is responsible for identifying where the original EMS documents are located. A list of controlled EMS documents, their location, and latest revision date is found in Table 5 below. The SECRETARY is responsible for approving all EMS documents, and ensure that current versions of documents are available. Obsolete documents are promptly removed from use. Any obsolete documents retained for historical reasons are marked “OBSOLETE” and removed from points of use. EMS documents are reviewed at least every 3 years by the SECRETARY.

Table 5 – Controlled EMS Documents

Document	Location	Latest Revision Date
Environmental Policy	Farm Office	7-1-03
EMS Manual	Farm Office	9-08-03
Nutrient Utilization Plan	Farm Office	1-28-03
Emergency Action Plan	Farm Office	External Document
Emergency Telephone Contact List	Farm Office	8-19-03
Farm Manager's Checklist	Farm Office	9-08-03
Quarterly Nutrient Mgmt. System Checklist	Farm Office	8-19-03
Significant Aspect Table	Farm Office	8-18-03
EMS Audit	Farm Office	8-19-03
Certified Animal Waste Management Plan (CAWMP)	Farm Office	1-28-03
Waste Applicator Training Manual	Farm Office	External Document
State Permit (Certificate of Coverage)	Farm Office	5-1-03

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SECTION 9 - Operational Control

_____ has identified operations and activities associated with the identified significant environmental aspects. Operational controls for the significant aspects are listed in Table 6 below. Notification of the EMS and emergency contacts for visitors, contractors, feed delivery personnel, and fuel delivery personnel is posted outside the farm office.

Table 6 – Operation Controls

A table linking each significant aspect with its respective operational control is listed below.

Activities	Significant Aspect	Controlled Work Practices	Operational Control*
Crop Production/Land Management	Crop Management	1. Adequate land 2. Proper crops 3. Harvesting	CAWMP, Nutrient Utilization Plan
Housing the Animals and Transportation of Animals	Farm Mortality Mgmt	1. Proper mortality disposal	CAWMP, BMP's – Mortality
Nutrient Application	Hydraulic Load	1. Application rate 2. Soil condition	Nutrient Utilization Plan, applicator training
Nutrient Storage (lagoon)	Influence on/of groundwater (seepage)	1. Land application	CAWMP (Nutrient Utilization Plan, Lagoon Design and Approval)
Nutrient Application Facilities and Equipment	Irrigation System Integrity	1. Land application 2. Pumps and equipment	CAWMP, Calibration Records
Nutrient Storage (lagoon)	Lagoon Liquid Level Mgmt	1. Lagoon marker 2. Visual checks	CAWMP(Certificate of Coverage and Lagoon Design and O & M Plan), EMS Farm Manager's Checklist, Quarterly Nutrient Management System Checklist
Nutrient Collection/Recycle System	Manure Handling System	1. Recycling 2. Pit recharge	EMS Farm Manager's Checklist
Nutrient Application	Nutrient Load	1. Land application 2. Crop selection and management	CAWMP (Nutrient Utilization Plan)
Housing the Animals and Nutrient Storage (lagoon)	Odor	1. Farm siting 2. Buffers 3. Waste application 4. Lagoon design 5. Housekeeping (cleaning)	CAWMP (BMP's – Odor, Lagoon Design)
Nutrient Storage (lagoon)	Sludge Accumulation	1. Lagoon management	CAWMP (BMP's– Odor, Lagoon Design),
Housing the Animals	Facility Structure	1. Visual checks	EMS Farm Manager's Daily Checklist
Nutrient Storage (lagoon)	Structural Integrity (design & maintenance.)	1. Lagoon O & M	CAWMP (O & M Plan), Quarterly Nutrient Management Checklist , NRCS Technical Guide
Feeding/Nurturing Animals	Water Usage	1. Watering animals 2. Washing houses	CAWMP (wash water)

*Note: Refer to "Document Control" for location and owner.

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SECTION 10 - Emergency Preparedness and Response

_____ has established and maintains procedures for and response to accidents emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them.

Emergency Preparedness and Response Procedure:

- _____ has an Emergency Action Plan and Emergency Telephone Contact List in the event of an environmental or other emergency. The plan and list are located in the farm office. The Emergency Action Plan identifies the potential for emergency situations and the corresponding response. The Emergency Action Plan also considers the prevention and mitigation of any environmental impacts associated with accidents or emergency situations. The Emergency Telephone Contact List contains the names and numbers of persons to be contacted in the event of an emergency and is reviewed, and updated if necessary, at least annually, by the **SECRETARY**.
- In the event of fire, or other emergency, staff shall remove themselves from danger, contact the owner, and contact appropriate fire/police/rescue personnel by dialing 911.

These plans shall be reviewed at least every three years or after the occurrence of an emergency.

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SECTION 11 - Monitoring and Measurement

_____ has established and maintains a system for measuring and monitoring its operations.

- The OWNERS will monitor the DWQ/DSW swine farm inspection reports at least once a year.
- The OWNERS will assure that the irrigation system is calibrated at least once a year and that records are kept.
- The SECRETARY will continually monitor compliance with relevant environmental legislation and regulations.
- A MURPHY-BROWN representative provides weekly monitoring of specific parameters and records results on the Nursery Serviceperson Report.
- The OWNERS will review the status of objective and targets at least twice annually.
- The OWNERS will monitor environmental performance daily.

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SECTION 12 - Non-Conformance and Corrective and Preventive Action

_____ has established and maintains a procedure to identify, investigate, and correct EMS non-conformances. This procedure is as follows:

- All EMPLOYEES are empowered to report, to the owner(s), any non-conformances relating to the EMS.
- The OWNERS will ensure corrective and preventative actions are taken to identify the root cause of the non-conformance, to correct the non-conformance(s), and to reduce the likelihood reoccurrence.
- The FARM MANAGER will record the non-conformance and corrective actions taken on Farm Manager's Checklist.
- If changes to written SOPs resulting from corrective actions are necessary, the OWNERS communicate revised procedures to employees within seven days.

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SECTION 13 - Records Management

_____ has established procedures to identification, maintenance and location of environmental records. These records are kept to demonstrate conformance to the EMS and applicable regulations. Environmental records are legible, identifiable, and traceable to the corresponding activity. Environmental records are stored in a way that they are retrievable and protected against damage, deterioration, or loss. The retention time for environmental records is 5 years unless otherwise specified by regulation or the OWNERS.

Table 7 - Record Keeping Requirements

Record	Location	Retention Time
DWQ inspection reports	Farm File	5 years
DSW inspection reports	Farm File	5 years
Murphy-Brown Nursery Serviceperson's weekly report	Farm Office bulletin board	1 year
Waste Analysis Reports	Farm Files	3 years
Soil Test Reports	Farm Files	3 years
IRR-1	Farm Files	5 years
IRR-2	Farm Files	5 years
EMS Internal Audit Report	Farm Files	3 years
Management Review Minutes	Farm files	3 years
Calibration Records	Farm Files	3 years
Employee Training Records	EMS Manual Appendix	3 years
Farm Manager's Daily Checklist	Farm Files	1 year
Quarterly Nutrient Management System Checklist	Farm Files	3 years
	Farm Files	3 years
External Communications Log	Farm Files	3 years

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SECTION 14 - Environmental Management System Audit

_____ audits its EMS at least once a year. The purpose of audits is to determine if the EMS has been properly implemented and maintained. The EMS Audit procedure is as follows:

Scope

- The audit will include all components of this EMS.

Frequency

- The Audit will occur Annually.

Methodology

- The audit team will review EMS documents prior to the audit.
- The audit will consist of the audit team reviewing the EMS, taking notes of any findings or corrections needed.
- Audit findings will be recorded and dated.

Responsibility

- The **OWNERS** will verify that all negative observations or non-conformances identified during the audit are effectively addressed.

SECTION 15 - Management Review

- The **OWNERS** review the performance of the EMS, at least annually, to ensure its continuing suitability, adequacy, and effectiveness. The results of the review are documented.
- The **OWNERS** address the possible need for changes to the policy, objectives, significant aspects, and other elements of the EMS based upon audit results, corrective and preventive actions, changing circumstances, the commitment to compliance, and continual improvement. Observations, conclusions, and recommendations are document.