Minnesota State Zoological Board. Zoo-Related Organizations Files.

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Version 3
August 20, 2018

Safety/
Securitv

MZG CPR First Aid Training

Last Name	First Name	Date
Bonnabeau	Mary	3/7/00
Silvester	Dave	3/7/00
Kulenkamp	Donna	3/7/00
Emmer	Laura	3/7/00
Roberts	Dave	3/7/00
Wold	Brent	3/7/00
Goralski	Gina	3/7/00
Evans	Oran	3/7/00
Spickelmier	Grant	3/7/00
Peterson	Josh	3/7/00
Weisenburger	Ken	3/7/00
Livingston	Kam	3/15/00
Spencer	Heather	3/15/00
Trudeau	Cori	3/15/00
Leffel	Dawn	3/15/00
Sewich	Vicki	3/15/00
Klein	Dan	3/15/00
Holler	Kari	3/15/00
Kothari	Kalu	3/15/00
Anderson	Kathy	3/15/00
Keiker	Denise	3/21/00
Krob	Tiffany	3/21/00
Nagurski	Brian	3/21/00
Gronfor	Becka	3/21/00
Lucio	Russ	3/21/00
Geiszler	Brad	3/21/00
Sampson	John	3/21/00
Conant	Beth	3/22/00
Hill	Tim	3/22/00
McElmury	Bill	3/22/00
Pohlen	Doug	3/22/00
Lott	John	3/22/00
Stender	Doug	3/22/00
Peterson	Rick	3/22/00
Rathbun	Dan	3/22/00
Devons	Dawn	3/29/00
Maguire	Allan	3/29/00
Moreno-Lien	Mary	3/29/00
Ruschmeyer	Shannon	3/29/00
Christenson	Steve	3/29/00
Taylor	Ross	3/29/00
Peterson	Dan	3/29/00
Reick	Donna	3/29/00
Henne	Ken	3/29/00
Heinz	Randy	3/29/00
Andres	Rick	3/29/00

MZG CPR First Aid Training

Theiding	Matt	3/29/00
Beard	Trent	3/30/00
Fallon	Jackie	3/30/00
Allstot	Shirley	3/30/00
Hubred	Ben	3/30/00
DeCorsey	Pam	3/30/00
Nelson	Mark	3/30/00
Bilmeyer	Brian	3/30/00
Beisinger	Jim	4/3/00
Holloway	Tom	4/3/00
LaBelle	Perry	4/3/00
Arndt	Deb	4/3/00
Rasmussen	Jim	4/3/00
Prom	Jenny	4/3/00
Willis	Kevin	4/11/00
Vorwerk	Larry	4/11/00
Holzer	Jerry	4/11/00
Maguire	Allan	4/11/00
Cruz	Dave	4/11/00
Montalbano	Rebecca	4/12/00
Kleber	Karen	4/12/00
Taylor	Carol	4/12/00
Smith	Pascal	4/12/00
Snyder	Sharon	5/10/00
Petrini	Kris	5/10/00
Kamps	Kay	5/10/00
Bjork	Cindy	5/10/00
Swengel	Fred	5/10/00
Olson	Jason	5/10/00
Popp	Karen	5/10/00
Holzer	Kathy	5/10/00
Eide	Arnie	5/10/00
Jackson	Michael	5/10/00
Foster	Sharon	5/11/00
Heimann	Eunice	5/11/00
Natko	Pat	5/11/00
Treangen	Dean	5/11/00
Price	Shannon	5/11/00
Johnson	Kirk	5/11/00
Weisman	Melissa	5/11/00

STATE OF MINNESOTA
RISK MANAGERMENT FUND
PROPERTY CASUALTY INSURANCE PROGRAM
DECLARATION OF COVERAGE

POLICY NUMBER: S169PR266-01
NAME INSURED: Minnesota Zoological Board
ADDRESS: 13000 Zoo Blvd CITY Apple Valley STATE MN ZIP 55124
POLICY TERM 07/01/2000 At 12:00 A.M. Central Time to Expire
07/01/2001 At 12:01 Central Time
TOTAL POLICY PREMIUM $14,121.00

This Declaration of Coverage page (s) *summarizes* the protection afforded by the Risk Management Fund for those coverages that are indicated by being "X"ed. The complete coverage documents are attached to this Declaration of Coverage.

☒ PROPERTY/BUILDERS' RISK INSURANCE
Real & Personal Property $54,702,012.00
(See Schedule for Policy Locations and Limits)
Deductible $100,000.00
Premium $11,971.00

☒ BOILER AND MACHINERY
Limit of Liability Included
Deductible $25,000.00
Premium $1,430.00

☐ INLAND MARINE – Coverage terms are provided in the Manuscript Property Policy
Coverage
Limit of Liability Various
Deductible Various
Premium $0.00

☒ CRIME COVERAGE - PRIMARY
Money and Securities and Employee Dishonesty
Policy Limit $25,000.00
Deductible $1,000.00
Premium $547.00

☐ COMMERCIAL GENERAL LIABILITY
Policy Limits $300,000.00 Bodily Injury and Property Damage per Person
$1,000,000.00 Bodily Injury and Property Damage per Occurrence-Subject to Provisions of M.S. 3.732 and M.S. 3.736
Additional Coverages ("X" indicates coverage provided)
☐ Public Officials' Liability
☐ Police Professional Liability
☐ Broadcaster's Liability
Premium $0.00

☒ GARAGE KEEPERS LIABILITY INSURANCE
Policy Limit $22,500.00
Deductible $500.00 Per Auto $5,000.00 Max Per Loss
Premium $173.00

Marilyn Williamson
Authorized Representative

SUMMARY OF COVERAGES PROVIDED BY THE RISK MANAGEMENT FUND PACKAGE POLICY FOR THE POLICY TERM JULY 1, 2000-2001

The following summary of coverages is provided for information only. For specific policy coverage limits, terms, conditions, and exclusions please refer to the Risk Management Division, Attn. Phillip Blue, Underwriting Manager.

I. PROPERTY COVERAGE

A. Perils insured against:
The policy insures against "All Risk" of direct physical loss and/or damage including the perils of earth movement (except in California) and/or flood, except as excluded.

B. Perils excluded
1. Infidelity or dishonest acts of the Agency or its employees
2. Ordinary wear, tear, or gradual deterioration, rusting, corrosion, change in temperature, unless such damage is directly caused by a peril not otherwise excluded
3. Settling, cracking, shrinkage, bulging or expansion or pavements, foundations, walls
4. Nuclear reaction or other radioactive contamination
5. Hostile or warlike action in time of peace or war
6. Loss or shortage of property while taking inventory, mysterious disappearance or any unexplained loss
7. Loss caused by fault, defect, error or omission in design, plan or specification, or faulty or defective workmanship or materials, or programming errors or incorrectly instructing electronic or computer equipment
8. Pollution: *unless* the release, discharge, dispersal, seepage, migration or escape is caused by fire, lightning, explosions, windstorm, hail, leakage from fire protection equipment, smoke, vehicles and aircraft, riot civil commotion, vandalism, earth movement, flood, falling objects, or the weight of snow, ice or sleet.
9. Loss caused by earthquake in California

C. Property and Interests Insured:
1. Real and Personal Property
2. Newly acquired locations subject to 90 days reporting
3. Legal liability for property in your care, custody, control or for which you may be legally liability
4. Property such as Rental Value of premises, Leasehold Interest in leased premises, Valuable Papers and Records, Accounts Receivable.
5. Business Interruption/Loss of Income, Extra Expense
6. Transportation
7. Garagekeeper's Legal Liability

D. Property and Interests Excluded:
1. Land, land value, soil, water, growing crops, standing timber
2. Watercraft, aircraft, motor vehicles except if specifically endorsed to the policy.

II. Boiler and Machinery

A. The policy pays for direct damage to Covered property caused by an Accident to an Object at your location(s).
B. An Accident is a sudden and accidental breakdown of an object, or part of an object, that causes physical damage requiring its repair or replacement. An accident does not include depletion, deterioration, corrosion, erosion, or wear and tear, the breakdown of any structure or foundation, or the functioning of any safety or protective device.
C. An Object includes boilers, fired / unfired vessels, refrigerating, air conditioning, mechanical, electrical equipment.

Duties in the event of occurrence, offense, claim or suits – Notice of Loss: The Covered Agency shall report any su notice as soon as practical upon its becoming known to it, to the Risk Management Fund Claims Department c/o the Department of Administration, 50 Sherburne Avenue, Room 309, St. Paul, MN 55155-1401

SUMMARY OF COVERAGES PROVIDED BY THE RISK MANAGEMENT FUND PACKAGE POLICY FOR THE POLICY TERM JULY 1, 2000-2001

III CRIME COVERAGE

A. Coverages provided:
   1. Public Employee Dishonest, including "Chairperson and Members of Specified Committees As Employees" endorsement
   2. Theft, Disappearance, Destruction or money, securities, check and other property
   3. Robbery and Safe Burglary

IV LIABILITY COVERAGES

A. Commercial General Liability Coverage for legal liabilities to pay damages to third parties for bodily injury, property damage, personal injury and advertising injury resulting from:
   1. Losses within the Minnesota Tort Claims Act for limits of $300,000 each person, $1,000,000 each occurrence
   2. Extra-jurisdictional losses for limits of $1,000,000

B. Police Professional Liability Coverage for legal obligations to pay damages because of any wrongful act, bodily injury, property damage, personal injury resulting from the performance of law enforcement activities. This coverage applies only to MNSCU and the State Fair.

C. Public Officials Liability Coverage for legal obligations to pay damages because of wrongful acts in the performance of prescribed duties. Coverage is excluded for the following :
   1. Gaining any profit, advantage or remuneration to which the agency is not entitled
   2. Brought about or contributed to by fraud, dishonesty or criminal act
   3. Arising out of the intentional violation of any federal, state or local statute, ordinance, rule or regulation committed by or with knowledge and consent
   4. Arising out of strikes, riots or civil commotion
   5. Arising out of any refusal to employ, termination or employment, coercion, demotion, evaluation, reassignment, discipline, defamation, harassment, humiliation, discrimination or other employment-related practices, policies, act or omissions nor consequential damages such as punitive damages, back wages, overtime or similar claims, as a result thereof
   6. Arising out of obligations under ERISA or the administration of any employee benefit plan or self-insurance fund
   7. For claims seeking other than compensatory or monetary damages
   8. Arising out of the actual or threatened abuse or molestation by anyone of any person while in the care, custody or control of a covered agency

D. Broadcaster's Liability Coverage for legal obligations to pay damages for claims arising out :
   1. Broadcasting, Incidental Publishing and Advertising Liability
   2. Personal Injury Liability
   3. Errors or Omission including any error or omission, misstatement, misleading statement or misinterpretation committed in the utterance or dissemination of matter by or with the permission of the covered agency in broadcasting, telecasting or cablecasting over scheduled stations or cable television systems, and related incidental publishing or advertising. This coverage applies only to authorized stations operated by MNSCU.

ies in the event of occurrence, offense, claim or suits – Notice of Loss: The Covered Agency shall report any such notice as soon as practical upon its becoming known to it, to the Risk Management Fund Claims Department c/o the Department of Administration, 50 Sherburne Avenue, Room 309, St. Paul, MN 55155-1401

PACKAGE POLICY DOCUMEMTS

ISSUED BY THE

RISK MANAGEMENT FUND

STATE OF MININESOTA

FOR THE TERM

JULY 1, 2000 TO JULY 1, 2001

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I. CONDITIONS COMMON TO ALL COVERAGES

A. BANKRUPTCY

Bankruptcy or insolvency of the ***Covered Agency*** will not relieve us of our obligations.

B. CONCEALMENT, MISREPRESENTATION OR FRAUD

This Coverage Form is void in any case of fraud by you at any time as it relates to this Coverage Form. it is also void if you or any other "insured", at any time, intentionally conceal or misrepresent a material fact concerning:

1. These Coverage Forms;
2. The covered exposures
3. Your interest in the covered exposures or
4. A claim under these Coverage Forms.

C. DUTIES IN THE EVENT OF OCCURRENCE, OFFENSE, CLAIM OR SUITS, NOTICE OF LOSS

If any loss and/or damage occurs under this policy the ***Covered Agency*** shall report same as soon as practical upon its becoming known to Agency, to the Risk Management Fund Claims Department

1. We have no duty to provide coverage under this policy unless there has been full compliance with the following duties:
2. In the event of "loss", you must give us or our authorized representative prompt notice of the "loss". Include:
   a. How, when and where the "loss" occurred;
   b. To the extent possible, the names and addresses of any injured persons and witnesses.
   c. Additionally, you must assume no obligation, make no payment or incur no expense without our consent, except at your own cost.

D. ASSISTANCE AND COOPERATION OF THE *COVERED AGENCY*:

The ***Covered Agency*** shall reasonably cooperate with the Insurer and upon the Insurer's request, shall attend hearings and trials and shall assist in effecting settlements, securing and giving evidence, obtaining the attendance of witnesses, and in the conduct of suits.

E. TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

If any person or organization to or for whom we make payment under this Coverage Form has rights to recover damages from another, those rights are transferred to us. That person or organization must do everything necessary to secure our rights and must do nothing after "loss" to impair them.

F. LIBERALIZATION

If we revise this Coverage Form to provide more coverage without additional premium charge, your policy will automatically provide the additional coverage as of the day the revision is effective in your state.

G. NO BENEFIT TO BAILEE

We will not recognize any assignment or grant any coverage for the benefit of any person or organization holding, storing or transporting property for a fee regardless of any other provision of this Coverage Form

H. OTHER INSURANCE

If other valid and collectible insurance is available to the ***Covered Agency*** for a loss we cover under any Coverage part, our obligations are limited as follows:

1. **Primary Coverage**

This coverage is primary except when **2.** below applies. If this coverage is primary, our obligations are not affected unless any of the other coverage is also primary. Then we will share with all that other coverage by the method described in **3.** below.

2. Excess Coverage

a. This coverage is excess over any of the other coverage, whether primary, excess, contingent or on any other basis:

i. That is Fire, Extended Coverage, Builders Risk Installation Risk or similar coverage for "your work".

ii. That is Fire Insurance for premises rented to you; or

iii. If the loss arises out of the maintenance or use of aircraft, "autos", or watercraft to the extent not subject to specific exclusions within the individual coverage parts

iv. If coverage applies to an "additional insured"

v. If any Named Insured is given Additional Insured status under any other policy for any coverage also provided in this coverage document.

b. When this coverage is excess, we will have no duty to defend any claim or "suit" that any other insurer has a duty to defend. If no other insurer defends, we will undertake to do so, but we will be entitled to your rights against all those other insurers. When this coverage is excess over other coverage, we will pay only our share of the amount of the loss, if any, that exceeds the sum of:

(1) The total amount that all such other coverage would pay for the loss in the absence of this coverage; and

(2) The total of all Deductible and Self-Insured amounts under all that other coverage.

c. We will share the remaining loss, if any, with any other coverage that is not described in this Excess Coverage provision.

3. **Method of Sharing**

a. If all of the other coverage permits contribution by equal shares, we will follow this method also. Under this approach each party contributes equal amounts until it has paid its applicable limit of coverage or none of the loss remains, whichever comes first.

b. If any of the other coverage does not permit contribution by equal shares, we will contribute by limits. Under this method each party's share is based on the ratio of its applicable limit of coverage to the total applicable limits of coverage of all insurers.

I. SEPARATION OF COVERED AGENCIES

1. Except with respect to the Limits of Coverage and any rights or duties specifically assigned in the Coverage Part to the *Covered Agency*, this insurance applies:

2. As if each Named ***Covered Agency*** were the only Named Agency; and

3. Separately to each ***Covered Agency*** against whom claim is made or "suit" is brought;

J. SUBROGATION:

1. Any release from liability entered into by the ***Covered Agency*** prior to loss hereunder shall not affect this policy or the right of the ***Covered Agency*** to recover hereunder. The right of subrogation against the ***Covered Agency*** or Subsidiary or Affiliated Corporations or Companies or any other Corporations or Companies associated with the ***Covered Agency*** through ownership or management is waived.

2. In the event of any payment under this policy, this Insurer shall be subrogated to the extent of such payment to all the ***Covered Agency***'s rights of recovery therefore. The ***Covered Agency*** shall execute all papers required and shall do anything that may be necessary to secure such right. After payment of loss the Insurer will act in concert with all other interest concerned, i.e., the ***Covered Agency*** and any other Insurer(s) participating in the payment of any loss as primary or excess Insurer(s), in the exercise of such rights of recovery. If any amount is recovered as a result of such proceedings, the net amount recovered shall be divided between the interests concerned in the proportion of their respective interests. Necessary expenses shall be divided between the interests concerned in proportion of their respective recoveries. Should there be no recovery, the expense of proceedings shall be borne proportionally by the interests instituting the proceedings.

L. CANCELLATION:

1. The ***Covered Agency*** may cancel this policy by returning the original copy of this policy to the Insurer or its authorized representatives or by advising the Insurer or its authorized representatives in writing of the date it is to be canceled. The Insurer may cancel this policy by mailing written notice to the ***Covered Agency*** stating when, not less than ninety (90) days thereafter, except for non-payment of premium, ten (10) days notice required, such cancellation shall be effective. The mailing of notice shall be sufficient proof of notice and

the effective date and hour of cancellation stated in a notice shall become the end of the policy period. Delivery of such written notice either by the ***Covered Agency*** or the Insurer shall be equivalent to mailing.

2. If the ***Covered Agency*** cancels, earned premium shall be computed in accordance with the customary short rate table and procedure. If the Insurer cancels, earned premium shall be computed pro rata. Premium adjustment may be made at the time cancellation is effected. If not then made, premium adjustment shall be made as soon as practical after the cancellation becomes effective.

M. TITLES OF PARAGRAPHS:

The several titles of the various paragraphs of this form (and of endorsements and supplemental contracts, if any, now or hereafter attached to this policy) are inserted solely for convenience of reference and shall not be deemed in any way to limit or affect the provisions to which they relate.

VOLUNTEERS INSURANCE SERVICE

VOLUNTEER ACCIDENT INSURANCE
CERTIFICATE OF INSURANCE

Insurer: Insurance Company of North America
1601 Chestnut Street
Philadelphia, PA 19192

A Stock Insurance Company, herein Called The Company

Agent: The CIMA Companies, Inc.
216 South Peyton Street
Alexandria, VA 22314

Toll Free: 1-800-468-4200

Association Member: Risk Management Division
Minnesota Zoo
309 Admin, 50 Sherburne Ave
St Paul, MN 55155

Master Policy No.: SPS900303

This certificate is not a contract of insurance. It contains only the principal provisions relating to the coverage and payment of loss under the policy described herein. This certificate replaces any and all certificates previously issued to the Insured with respects to the policy described herein.

Effective Date of Coverage: 07/01/2000
Policyholder: Volunteers Insurance Service Association (VIS)

THE COMPANY HEREBY CERTIFIES that the registered volunteers of the Association Member named above are insureds under the policy against loss resulting directly and independently of all other causes from accidental bodily injuries caused by an accident occurring while the policy is in force as to the Insured, provided such injuries arise out of or in the course of the hazards described.

The amount of insurance applicable per Insured with respect to the Indemnities described below is:

PRINCIPAL SUM	*CAPITAL SUM*	*MEDICAL INDEMNITY*
$2,500.00	$2,500.00	$25,000.00

INSURING AGREEMENT

Persons Insured: All registered volunteers of the Association Member.

Description of Hazards: This policy covers injuries arising out of or in the course of the following: while on volunteer assignment for the Association Member within the United States of America, its territories, possessions, Canada, or anywhere in the world; with respect to traveling, while on assignment or any traveling directly to and from the assignment or any incidental travel while on the assignment sponsored by the Association Member.

Authorized Signature:
Harry F. Custis

TL-004672

(Key Code: MNSTPA12 ~ 277491 ~ SCG ~ 08/25/2000)

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MINNESOTA ZOOLOGICAL GARDEN

SAFETY MANUAL

1990

MZG SAFETY COMMITTEE POLICY

The purpose of the Safety Committee is to assist the MZG in identifying, maintaining and promoting a safe and healthy envionment for all of its employees and to assure compliance with all federal, state and MZG safety regulations and policies.

The local Safety Committee shall be established in accordance with each bargaining unit agreement. The Committee will be composed of appointing authority representatives selected by the General Director and employee representatives selected by their respective bargaining unit. Representatives will serve a two (2) year term, but may be appointed to additional terms after a one year abscence.

The Committee will establish a schedule of alternating expiration dates so that the Committee will retain its continuity.

The Committee's authority and responsibility lies with the MZG supervisors/managers and applicable bargaining unit contracts.

The local Safety Committee shall meet monthly. Meetings will be called by the chairperson of the Committee.

Sub Committees may be formed to act upon specific concerns or locations.

The function of the Safety Committee will be to review reports of property damage and personal injury accidents and alleged hazardous working conditions, to provide support for a strong safety program, and to review and recommend safety policies to the General Director and Division Directors. The Committee shall acknowledge in writing, receipt of reports of alleged hazardous working conditions within thirty (30) calendar days of their submission. A copy of the Committee's recommendations shall be provided to the General Director and to the individual who files the report with the Committee. In addition, the Safety Committee will provide the filing party with a copy of the General Director's response and/or proposed actions within thirty (30) calendar days of the original receipt of reports to the Director, of alleged hazardous working conditions.

Records, minutes and attendance of safety committee meetings and inspections must be kept and available for inspection by any zoo employee.

The MZG Safety Committee chairperson will be kept informed of all activities performed by the local safety committee.

A local bargaining unit representative and/or safety committee member shall be entitled to participate in any work site safety inspection conducted by the Safety Committee or by state or federal OSHA inspectors without loss of pay. Notice of such inspections shall be promptly given to the Local Bargaining Unit President and to the Chairperson of the safety committee. A management designee will be entitled to participate in any work site safety inspection conducted by the state, federal OSHA inspectors.

Committee Member Functions:

Chairperson

1. Schedule meeting time and place.
2. Notification of meetings to all participants.
3. Arrange program agenda.
4. Conducts meeting.
5. Arrange for guest speakers, films, and special material or equipment relevant to a safety concern.
6. Keeps management personnel informed of activity and concerns.
7. Prepares and distributes minutes.
8. Assures that all records (Workers Compensation, OSHA etc) are maintained and kept for the required time.
9. Plans and prepares budget.

Members' Functions

1. Reports unsafe conditions or practices.
2. Reviews injuries/illness within their representative area.
3. Contributes ideas and suggestions for improvement.
4. Acknowledges, follows up and communicates back, the status of those concerns related to their respective disciplines and bargaining unit.
5. Encourages and exemplifies safe work procedures to those they represent.
6. Acquaints themselves with applicabnle regulations and policies.
7. Reports all concerns to the appropriate supervisor.
8. Assure that employees they represent use (appropriate) personal protective equipment and clothing.

Suggested Meeting Format:

1. Meets monthly.
2. Reviews minutes of previous meeting.
3. Sets and evaluates performance of goals and objectives.
4. Provides time for introduction of new ocncerns.
5. Inspects facilities, equipment or areas as elected.
6. Reviews accident reports for cause analysis.
7. Periodically reviews injury/illness statistics for performance evaluaiton and makes recommendations.
8. Reviews reports of unsafe conditions, environment or practices.
9. Makes recommendations to General Director and Division Directors.

SUPERVISORY PERSONNEL, RESPONSIBILITIES

1. It shall be the duty of every supervisory employee to direct employees under their jurisdiction in the safe method of their daily work projects. The supervisor shall be knowledgeable about such safety rules and regulations that apply to the work area.

2. The supervisor shall be responsible for job safety instruction of new employees. If training is delegated to other experienced employees, the responsibility for correct safety instruction remains with the supervisor.

3. The supervisor shall be constantly alert for unsafe practices and unsafe conditions. Any unsafe condition, within the supervisor's authorized limits, is to be corrected. Suitable temporary precautions must be taken to protect employees until all corrections are made.

4. The supervisor together with the Safety Officer must, as soon as possible after the incident, investigate all injury producing accidents and property damage incidents.

5. The supervisor is responsible for maintaining a high standard of good housekeeping in the area of their supervision. This includes training of subordinates, enforcing compliance and acting promptly to correct unsatisfactory conditions.

6. The supervisor has the responsibility to enforce the use of personal protective equipment and to set the example for their workers.

7. When a new employee is assigned to your crew, go over specific hazards and safety rules for the assigned job.
Also cover:

a. Location of first aid station.
b. Location of emergency information and phone numbers
c. Location of bulletin board
d. Reporting of accidents or injuries
e. Reporting of unsafe conditions
f. Use of personal protective equipment
g. Right to Know Law.

RESPONSIBILITIES OF EACH EMPLOYEE

1. Each employee is responsible for their own safety, the safety of those they work with and the housekeeping in the work area, and equipment assigned.

2. As a condition of employment, employees shall observe all departmental policies, rules, and instructions relating to the safe performance of all their assignments.

3. Employees shall comply with OSHA Standards and all rules, regulations and orders issued pursuant to Laws 1973, Chapter 732, which are applicable to their own actions and conduct (MN 182.654).

4. No employee is permitted to alter, displace, damage, destroy or carry off any safety device or safeguard provided for use in any place of employment; nor shall any employee interfere in any way with the use of any method or process adopted for the protection of employees.

5. Each employee shall report immediately any personal injury or motor vehicle accident to an immediate supervisor regardless of fault or severity.

6. Employees who operate a motor vehicle shall have a valid appropriate drivers license in their possession.

ALCOHOL OR MOOD-ALTERING DRUGS AND CHEMICALS:

1. MZG employees shall not use any alcoholic beverage or other mood-altering drugs/chemicals during normal working hours. A doctor's prescription used as presribed is excluded from this policy.

2. MZG employees shall not report to work unable to perform their duties as a result of consuming alcohol and/or mood-altering drugs/chemicals.

3. Alcohol or non-prescribed mood-altering drugs/chemicals shall not be permitted on Zoo site.

4. Any employee that is under a doctor's care and is on a prescribed medicine that may affect his or her ability to safely operate a motor vehicle or other working equipment and machinery must notify his or her supervisor that they are using a prescription. MZG wants to keep all employees healthy and productive. We also want to be sensitive to employees' problems. As evidence of this, we have a commitment to the Employee Assistance Program.

5. No employee will operate any equipment, or drive a motor vehicle while under the influence of alcohol or drugs.

PERSONAL INJURY

1. It shall be the responsibility of each employee to notify his or her supervisor immediately of any injury. Any supervisor becoming aware of an injury shall consider that as being notified. The supervisor should make such field notes as necessary to prepare a complete report.

2. Every injury or illness that may be considered as work-related shall be reported on a First Report of Injury form.

3. The First Report of Injury shall be filled out within 48 hours after the injury. The completed report shall be forwarded to the Safety Officer within 2 days of the date the supervisor was notified.

4. Each time the employee visits a doctor due to a suspected work-related injury/illness, a Physician's Report must be otained from the doctor and forwarded to the supervisor and Safety Officer.

5. If an employee loses an excess of one working day or will be returning to work with restrictions, medical documentation such as the Physician's Report or a Medical Status Report supplying the medical information is required immediately.

6. When the employee states that any injury or illness causing lost time is work-related, the date of injury and reason shall be noted on his/her timesheet, in the Comments section.

7. Bills for medical services related to the claimed injry shall be submitted to the Safety Officer.

These bills shall include the information required by MS #5221.0700; employee's name, date of injury, employer's name, service descriptions and codes, and dates of service for all injuries.

8. Failure to assist the Department by supplying the required documentation may lead to a delay or denial of workers' compensation benefits.

9. The Department may request an employee to undergo a physical assessment to determine whether the employee can continue to perform the job task. The employee is obligated to assist in this.

WORKERS COMPENSATION

1. The purpose of the Workers Compensation Law is to provide protection against medical costs and wage loss due to a work-related injury or illness. "Compensability" is decided by the Department of Employee Relations (D.O.E.R.), Worker Compensation Division, under Minnesota Statute 176. Benefits are related to the employee's income. Wage benefits are two-thirds of the weekly gross salary to the maximum amount allowed by law.

2. Benefits payable for Workers Compensation Claims are paid according to tables included in Minnesota Statute 176. In case of an employee's death due to a work-related accident or injury benefits are payable to survivors of the employee.

3. Injuries or illnesses ruled not to have been in the course or scope of employment are covered by the employee's group insurance program within the limits prescribed by the particular program.

4. In some cases the employer may supplement the compensation benefit by allowing the use of accumulated leave, but in no case shall the total compensation an employee receives exceed more than their gross weekly wage.

5. Injuries or work-related illnesses must be reported on a MZG First Report of Injury form. Any medical treatment documentation must be supplied on a Physician's Report form, or other equivalent document. Failure to notify your supervisor immediately may result in delayed or denied Workers Compensaton benefits. (See Point 6 on Personal Injury Section).

BACK INJURIES

MZG is involved in a variety of back injury reduction efforts. Included in these efforts is training in proper lifting techniques. Each employee will be trained in these techniques and expected to follow them. It will be the supervisor's responsibility to make sure the employees are trained and to assign the proper equipment and employees to complete the lifting project safely.

It is recognized that a large percentage of back injuries occur away from the work site. MZG is making special efforts to address the total issue.

General Rules for Safe Lifting

1. Do not lift anything that you know is beyond your normal capacity.

2. When lifting:

   a. get good footing;
   b. bend the knees
   c. keep back straight;
   d. get firm grip;
   e. test the load
   f. keep load close to body;
   g. lift gradually by straightening legs.

3. As most injuries are not caused by improper lifting, extra caution is advised when

* walking on slippery or uneven ground;
* repeatedly twisting;
* bending to pick up any object;
* remainng in fixed position for extended periods of time.

MOTOR VEHCLE ACCIDENT REPORTING

1. Every accident which involves an employee engaged in the operation of any state-owned motor vehicle, or while engaged in official business with any hired or privately owned vehicle, or which involves such equipment assigned to any employee, shall be reported on a form supplied by MZG, regardless of what property was damaged, who was injured or where or how it occurred. This form must be completed in detail and signed by the employee and the supervisor and promptly forwarded to the Safety Officer.

2. The employee should make such field notes as necessary to prepare a complete report.

3. In event the employee involved cannot complete or submit the required reports, they should be completed and submitted by the employee's immediate supervisor as soon as possible and in such detail as possible.

4. Should the employee be injured as a result of any on-the-job motor vehicle accident, it will be necessary to also complete the First report of Injury on a form supplied by MZG along with the Motor Vehicle Accident Report.

SAFETY TRAINING

1. The training of workers is an important but often overlooked part of the supervisor's job. Therefore the safety training program should begin with, and emphasize supervisory training as the key to success in accident prevention. It should be an on-going, continuous endeavor.

2. On-the-Job Training is probably the basic method of reaching new employees or older employees on new or different jobs or for teaching how to perform a specific operation or to train a new technique; particularly in small groups or for individuals following our hiring practices. O-J-T is in two phases: Introductory training with oral briefings and demonstrations; and performance of new work under the careful supervision of the instructor who may be a supervisor or an older, experienced worker. All safety rules should be incorporated in this training since the original instrucion leaves a much more lasting impression than will subsequent training.

3. Weekly Safety Meetings--such as "tail-gate" talks--are an excellent way of continuing the safety emphasis. Pertinent, seasonal hazards can be discussed; changing equipment or procedures should be brought out prior to actual work.

4. Safety Seminars - are presented by agencies allied with the department such as the the National Safety Council and the Minnesota Safety Council. Personnel should be designated to attend and to bring back to their groups the information and material gained at such sessions.

PROTECTIVE CLOTHING AND EQUIPMENT

Personal protection equipment is provided to enable work to be carried on where the hazard involved cannot be eliminated. The ideal solution, and always the first thing to be considered, is to remove the hazard. Since this is not always possible, especially where the condition is of an emergency or temporary nature, the use of personal protective equipment is the only practical solution. The selection of the proper personal protective equipment for the needs of the job is very important. As a guide in making this selection, the following information is provided. All protective equipment will comply with A.N.S.I. and other existing standards.

EYE PROTECTION

1. Eye protection will be provided by MZG and will be used whenever employees are doing work where flying objects or substances are likely to be hazardous; or when there is a possibility of receiving an injury.

2. Proper eye protection must be worn while working under equipment, when striking metal, feeding a crusher, using an emery or grinding wheel, while breaking rock, concrete or any substance that is likely to break or shatter, or while working around others so engaged.

3. Proper protective eye gear will be used when employees are exposed to dry cement, excessive dust, splashing concrete, drilling, grinding, shaping or reaming, wire brushing, picking frozen ground, gunite and sand blasting operations, mudjacking and similar occupations.

4. Proper protective eye gear will be worn when employees are engaged in laboratory inspections, shop operations, or any occupation where there is a possibility of splashing materials causing injury to the eyes.

5. Eye protection will be worn while using chain saws and in brush clearing operations.

6. Any person that is in violation of this safety rule will be subjected to disciplinary action.

HEAD PROTECTION

1. Employees working in areas where there is a danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, are required to wear a hard hat. This would be any area where personnel are working with equipment or having exposure to vehicle traffic on or adjacent to a roadway. (MN OSHA Regulation)

2. Hard hats for the protection of MZG employees shall meet the specifications contained in the American National Standards Institute Z89.1 as well as other recognized safety standards.

3. MZG employees will follow all hard hat policies of construction contractors when working, inspecting, or otherwise within the contractor's hard hat area.

4. A hard hat is not required to be worn when inside a closed type cab, or when the operator of a vehicle has the proper R.O.P.S. protection as long as there is not other danger of falling or flying objects.

5. Supervisory personnel are responsible to see that all their people comply with this rule.

6. Any person that is in violation of this safety rule will be subjected to disciplinary action.

RESPIRATORS

Engineering or administrative controls should be used to control employee exposure to potentially hazardous airborne substances or conditions. If adequate engineering or administrative controls are not feasible, employees are required to wear suitable respiratory protection, including respirators, hoods, and dust masks, safely and correctly. The type of respiratory protection worn must be appropriate for the employee and the contaminant involved. If respiratory protection is required for a given operation, all employees performing that operation and any others exposed to that hazard must properly wear the specified respirator(s).

The following requirements apply to all employees assigned to tasks requiring respirator use:

* Users must be trained on proper use of the respirator (and its limitations).

* Users must be medically certified as able to wear a respirator.

* Users must be able to demonstrate that the respirators assigned to them fit properly, as demonstrated by passing a fit test.

* Users must be shown how to perform field checks of respirator fit, and should perform the field checks every time the respirator is put on.

* Users must be trained on proper care procedures for the respirator (including inspection, cleaning, and storage), and should use those procedures in caring for their respirators.

Employees who may be exposed to hazardous concentrations of airborne substances will be required to wear respiratory protection unless other means for controlling the substance are available and used.

Respiratory protection includes all personal protective equipment designed to filter out contaminants or provide uncontaminated air to the user. Dust masks, single-use disposable respirators, cartridge respirators, supplied air respirators, and self-contained breathing apparatus are included.

Before using respiratory protection, employees must:

a. be trained in proper use and limitations
b. be certified as medically fit to wear a respirator
c. be fit-tested, to ensure that the respirator fits adequately.

When employees use respirators, the respirator must be:

a. Chosen for the specific hazard
b. Inspected for damage or defects before and after each use
c. Cleaned after each use
d. Stored in clean, uncontaminated locations

Any person that is in violation of this safety rule will be subjected to disciplinary action.

HEARING PROTECTION

It is MZG's position that it will attempt to engineer out all excessive noise, whenever possible.

1. If an employee must work in an area where there is undue noise levels or durations of exposure to those specified in OSHA Standard 1926.52 Table D-2 (Permissible Noise Exposures) will wear appropriate noise abatement protection.

2. The hearing protection may be either the muff type or ear plugs, in compliance with OSHA Standards.

Approved hearing protection will be worn if the noise levels exceed 85 dBA.

Any person that is in violation of this safety rule will be subjected to disciplinary action.

Permissible Noise Exposures:

Duration per day, hour:	Sound Level, dBA
8	85
6	90
4	92
3	95
2	97
1-1/2	100
1	102

Exposure to impulsive or impact noise should not exceed 140 dBA peak sound pressure level.

HAND PROTECTION

Gloves are required for all classes of work where there is repeated or prolonged contact with irritating chemicals; where there are possibilities of hand injuries, such as all types of construction work, handling rough objects; and where there is a possibility of burns from hot liquids, etc. Use the type glove suitable for protection on the specific job. Wearing gloves does not necessarily prevent accidents but does minimize the injury.

FOOT PROTECTION

1. The wearing of safety shoes in certain locaions or job duties is mandatory. It is strongly recommended that employees wear them in all other work locations. Tennis shoes, thong sandals or similar type foot wear shall not be worn in any work shop.

2. Employees shall wear appropriate foot wear to provide a reasonable degree of protection against injury.

PERSONAL CLOTHING

1. It is the employees responsibility to report for work with the appropriate clothing to provide a reasonable degree of comfort and protection against the natural elements.

2. Employees working around or operating machinery must be aware of moving parts and not wear any type of clothing that would become caught in moving parts endangering the employees' life or limb. Wear clothing suitable for the job assignments.

3. Long-sleeve shirts should be worn when burning, welding, grinding or for any other work where sparks or chips of hot metal are present.

SAFETY VESTS

1. An approved garment will be worn by all employees as an outer garment while working, or required to be in, any roadway or parking lot. The garment shall be of high visibility and will be reflectorized if worn at night.

2. The garment as defined will be a safety vest, shirt (not to include under garmet styles), jacket, coveralls, or winter and foul weather gear as approved by MZG.

3. Any employee who is performing the duties of a flag person shall wear an approved safety vest.

Any person that is in violation of this safety rule will be subjected to disciplinary action.

SAFETY BELTS, LIFELINES, LANYARDS

1. Safety belts, lanyards, and lifelines shall meet the requirements specified in section 1926.104 of the Occupational Safety and Health Standards.

2. Safety belts, lanyards, and lifelines shall be used only for employee safeguarding. Any safety belt, lanyard, or lifeline actually subjected to impact loading shall be immediately removed from service.

3. Safety belts, harnesses, lanyards, droplines, and lifelines shall be inspected before use each day to determine that they are in safe working condition. Defective apparel or equipment shall be immediately replaced.

4. Safety belts, harnesses, lanyards, drop lines and lifelines, independently attached or attended, shall be used when performing such work where the use of guardrails, scaffolds, catch platforms, temporary floors, and safety nets are impractical:

a. When the fall distance equals or exceeds 10 feet above adjacent ground, water, or working surface.

b. Work activity on hazardous slopes, structural steel, or poles; erection or dismantling of safety nets; tying reinforcing bars; and work from suspended scaffolds, platforms, or other unguarded elevations.

c. Work around hoppers, bins, silow, tanks, manholes, or other confined spaces.

d. When engaged in built-up roofing work with a ground to eave height in excess of 16 feet without a catch platform or built-up edge along the roof to prevent a fall. (Reference CFR 1926.451[u] and 500[g] for specific requirements for employees engaged in roofing work).

5. Lifelines and drop lines used in areas where the line may be subject to cutting or abrasion shall be a minimum of 7/8-inch manila rope with wire core. For all other lifeline applications, a minimum of 3/4-inch manila or equivalent, with a minimum breaking strength of 5,400 pounds per person shall be used.

6. A safety belt shall have two lanyards when necessary to ensure that a person is tied-off with at least one lanyard at all times.

7. Lifelines and drop lines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 pounds per person. Lifelines shall be strung as tightly as possible to minimize deflection.

8. Safety belt lanyard shall be a minimum of 1/2-inch nylon or equivalent, with a maximum length to provide for a fall of no greater than 6 feet. The rope shall have a nominal breaking strength of 5,400 pounds.

Any person that is in violation of this safety rule will be subjected to disciplinary action.

SAFETY NETS

1. Safety nets shall be provided when work-places are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

2. Where safety net protection is required, operations shall not be undertaken until the net is in place and has been tested.

3. Nets shall extend 8 feet beyond the edge of the work surface where employees are exposed and shall be installed as close under the work surface as practical but in no case more than 25 feet below such work surface. Nets shall be hung with sufficient clearance to prevent user's contact with the surfaces of structures below. Such clearances shall be determined by impact load testing.

4. The mesh size of nets shall not exceed 6 inches by 6 inches. All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers, and shall bear a label of proof test. Edge ropes shall provide a minimum breaking strength of 5,000 pounds.

5. Forged steel safety hooks or shackle shall be used to fasten the net to its supports.

6. Connections between net panels shall develop the full strength of the net.

SLING INSPECTION

All slings, including end fastenings and attachments shall be inspected for damage or defects before being used. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.

FIRST-AID INFORMATION

MZG has trained many of its employees in emergency first aid. Below are some prescribed first-aid steps for accident emergency situations. A severely injured person may go into shock and treatment must be started immediately. Treat injuries in the order of their importance--restore breathing, maintain pulse, stop bleeding, and treat for shock.

INJURY CONDITION	SIGNS	TREATMENT
Stoppage of breathing	Breathing stopped entirely	Apply artificial respiration at ONCE
Lack of pulse	No pulse	Apply CPR, if trained Get medical help
Bleeding	Blood flowing or spurting	Apply direct pressure over the wound. If the bleeding continues, apply pressure at the nearest pressure point while continuing direct pressure. Secure the dressing in place with a bandage.
Shock	Pale Skin, pulse rapid or weak, body clammy and cold	Keep the victim lying down with feet raised. Maintain normal body heat. Do not give fluids if unconscious.
Electric Shock	Unconsciousness, burns may be present, body may be stiff. No breathing.	Remove the person from contact by moving the wire with a rope or dry board. Apply artificial respiration and/or CPR if needed.
Poisoning	Nausea, cramps, burn or stain on mouth	If victim is conscious, dilute the poison by giving water or milk. DO NOT induce vomiting if poison is strong acid, alkalis or petroleum products. If victim is unconscious, maintain breathing and get immediate medical help. If possible, save container for identification.

Heart Attack	Pain and/or pressure in chest area.	Assist the victim to a comfortable position Keep him/her calm and comfortable.
	Sweating, nausea, shortness of breath, feeling of weakness.	Loosen binding clothes Apply artificial respiration if needed. Seek medical asst.
Burns	1st degree-- skin reddened	Immerse the affected area in cold water. Apply a dry dressing if necessary.
	2nd degree-- skin blistered	Immerse the burned part in cold water for approximately five minutes. Cover the burn with a sterile dressing or a clean sheet. Do not apply burn ointment. Consult a physician.
	3rd degree-- destruction of tissue	Cover the burned area with a sterile dressing or clean sheet. Don't attempt any kind of treatment yourself. Do not apply burn ointment. Treat the victim for shock if necessary. Consult a physician and move the victim to a hospital, preferably by ambulance.
Sunstroke	Headache, red face, skin hot and dry, no sweating, high temperature.	Lay down with head elevated, cool the body, give no stimulants.
Heat Exhaustion	Pale face, profuse sweating, weak pulse, possible fainting	Lay down with feet elevated, in a cool place, and give salt with fluids if conscious. Consult a physician.

A physician will be consulted for any serious injury or illness.

POISON IVY (Plant Information)

1. The toxic irritant in the poison-ivy group is a compound called urushiol.

a. One can be poisoned merely by close proximity especially when soot from a burning plant falls upon the skin.

b. A person may withstand exposure at one time and develop severe poisoning upon exposure the next time.

c. The hazard is greatest in the spring and summer when the sap is so abundant.

2. Symptoms:

a. Onset is from a few hours to several days or more after exposure.

b. The skin becomes red, a few small blisters appear, and usually there is itching.

c. The involved area may increase greatly in size, with marked swelling and numerous large blisters.

3. First Aid:

a. As soon after exposure as possible, wash the part with soap and water.

b. Sponge area with rubbing alcohol.

c. Following cleansing, calamine lotion may be applied.

d. If discomfort is not relieved, apply a wet compress, using Burow's (aluminum acetate) solution diluted one part to about twenty-five (25) parts of water, for 20-minute periods. The solution is cooling and usually gives relief: Consult a physician.

LYME DISEASE

Lyme disease is a bacterial infection transmitted by the bite of a deer tick. This tick is very small and is orange-brown in color with a black spot near its head. Check yourself frequently for ticks. If embedded tick is found, remove at once with tweezers by grasping the tick's head as close to the skin as possible and pull straight out. Wash area thoroughly and apply antiseptic. Contact physician if you suspect Lyme disease or its symptoms. Symptoms may include fever, chills, headache, stiffness in joints, weakness and fatigue. A ring-shaped rash may occur within 4-20 days.

CARBON MONOXIDE ASPHYXIATION

Vehicle Exhaust

Vehicle exhaust contains toxic and irritating substances, including carbon monoxide. To reduce exposure to vehicle exhaust, these procedures are recommended:

a. Keep the amount of time trucks and cars are operated indoors to a minimum. If possible, use compressed air to charge truck air brakes.

b. Be sure ventilation systems for vehicle exhaust are turned on before trucks or cars are driven inside.

c. Whenever a vehicle must be operated inside to repair it use local exhaust systems.

Construction and maintenance workers may be exposed to harmful concentrations of Carbon Monoxide gas. Mechanics are most likely to be exposed to this hazard.

Common sources of Carbon Monoxide gas are:

1. Internal combustion engines
2. Exhausts
3. Fires

Carbon Monoxide gas is not easily detected because it is odorless, colorless, tasteless, and non-irritating. It gives no warning of its presence and a victim may suddenly collapse without previous symptoms. Employees should be instructed in artificial respiration methods.

Preventative Measures

1. Working areas should be kept well supplied with fresh air. Wherever possible, exhaust ventilation should be provided to remove carbon monoxide gas at the point of origin.

2. Do not permit persons with anemia or any chronic disease to work in the exposed area.

3. Do not permit a person who has been ill due to acute poisoning to return to work without a doctor's permission.

LEAD POISONING

In construction and maintenance operations, exposure to lead may occur in plumbing, soldering, painting, sandblasting of paint, and welding painted metal. The poison can be taken into the system by breathing in lead fumes or dust or by swallowing tiny particles of lead.

Preventive Measures

a. Do not eat, drink, or use tobacco products on the job. Go a distance away, wash hands and face with soap and water, and clean fingernails before eating or using tobacco products.

b. Do not store food or tobacco products in a room containing lead products or where lead exposure may occur.

c. Use appropriate protective equipment (ventilation or respirators). If you use a respirator, see the section on respiratory protection in this handbook.

d. Wash well after working with lead products or if lead exposure may have occurred. Avoid bringing lead home by changing clothes before you leave work.

Spray Painting

Although painters are the ones principally affected by spray painting, others in the vicinity of sprayers or those entering rooms that have not been adequately ventilated after painting are exposed to the same health hazards. Spraying may also produce a fire hazard.

Preventative Measures

a. Do not permit smoking or open flame near the spraying operation.

b. Read the material safety data sheet for the paint; know what precautions are needed. If a respirator is needed, check with your safety officer to make sure the right one is used.

c. Some paints contain harmful pigments such as lead. If you are using a paint with hazardous pigments, wash well after you are done spray painting and before you eat or use tobacco products.

d. Store food and tobacco products away from the spray paint area.

e. If painting is done indoors, be sure ventilation is adequate.

CHEMICAL USE

The use of chemicals or potentially hazardous substances is needed to keep MZG equipment and facilities in working order. Even the most hazardous substances can be used safely, if they are used correctly. Employees are expected to be sure they know and use whatever precautions are advised to prevent overexposure to hazardous substances. The precautions may include the use of personal protective equipment such as gloves and respirators, ventilation, or specific handling procedures.

MZG will occasionally monitor employee exposure to potentially hazardous substances. This may be done to determine usual exposure levels or because a problem is being investigated. Employees are expected to cooperate with the industrial hygienist or safety officer doing the monitoring.

If an employee believes he or she has health problems because of a substance at work, the employee's supervisor and safety officer should be notified as soon as possible. Employees are reminded that being able to smell a chemical does not necessarily mean that the employee is overexposed: Some chemicals can be smelled at safe air concentrations, while others may not be able to be smelled until they are at hazardous levels.

Hazardous Waste

Substances which are flammable, corrosive, reactive, or toxic require special handling for disposal. These include many paints and paint thinners, solvent from extraction booths, and many types of parts-washing liquid. The safety office must be consulted for procedures to use for disposal of any waste produced by MZG facilities.

The following procedure should be followed if abondoned containers of chemicals or unknown wastes are found on MZG property:

1. Inspect the container for leaks or spills. Do not open the container or touch, sniff, or taste the material. You do not know how hazardous the substance is.

2. Try to identify the container's owner. Look for labels or markings on the container.

3. Notify your supervisor and safety officer, so that the Minnesota Pollution Control Agency (MPCA) can be informed. The MPCA is responsible for testing the material.

4. Do not move the container until you have checked with your safety officer and know what precautions you need to take.

ASBESTOS

Buildings constructed before the mid-1970's may contain asbestos in pipe and heating systems, floor tiles, wall board, spray-on insulation, or ceiling tile. The asbestos is not a hazard unless the material is disturbed and becomes airborne. Breathing large amounts or small amounts over a long period of time can cause cancer or lung disease.

Any employee who discovers damage to insulation or other material which may contain asbestos should immediately report it to the Physical Plant Director, supervisor or the safety officer. MZG employees shall not repair or remove asbestos unless they have received training on the proper handling and safe-guards needed. If repair or removal of more than 160 square feet or 260 linear feet of asbestos-containing material is required, a contractor licensed by the Minnesota Department of Health must do the work.

CONFINED SPACE ENTRY

All confined space entry by MZG personnel shall be done in accordance with Minnesota Rules 5205.1000 - 5205.1040. Any MZG employee entering confined space must be adequately protected against dangerous air contamination, oxygen deficiency or enrichment, engulfment, and accidents. Specific requirements include, but are not limited to:

1. Before entry into any confined space, all MZG employees will receive training on proper procedures and precautions to use in confined spaces.

2. Written Permits are required for all entries into confined spaces.

3. Atmospheric testing of the confined space for oxygen levels, combustible gas levels, and other appropriate agents is required prior to entry into all confined spaces.

4. Continuous monitoring of the confined space for oxygen levels, combustible gas levels, and other appropriate agents is required while an MZG employee is confined space.

5. Monitoring equipment shall be properly maintained and calibrated.

6. Where practical and feasible, mechanical ventilation shall operate continuously while employees are in the confined space.

7. Where practical and feasible, fall protection shall be worn when working in confined spaces where a slip or fall could occur.

8. Smoking is not permitted in confined spaces.

LEGAL REFERENCES;

Minnesota Rules 5205.1000 - 5205.1040, 5207.0300: Confined spaces 29 CFR 1910.134: OSHA General Industry Standard for Respiratory Protection

Any person that is in violation of this safety rule will be subjected to disciplinary action.

WEATHER HAZARDS

1. SUNBURN

Sunburn is common during the summer. If you follow a few simple precautions, time lost to sunburn can be reduced.

a. Keep fully clothed while working
b. Wear a safety hard hat
c. Wear lightweight, loose fitting clothes.

2. HEAT CRAMPS

Cramping of muscles is usually in the legs, arms and abdomen; usually associated with strenuous activity in a warm environment where large amounts of sweat are lost.

First Aid:
a. Direct pressure on the cramping muscle
b. Gentle steady streching
c. Drink water to help balance sodium

3. HEAT EXHAUSTION

Shock due to overload on circulatory system. Symptoms are sweating, weakness, dizziness headaches, pale tissue color, moist and clammy skin; also rapid, shallow breathing.

First Aid:
a. Have employee rest
b. Elevate the legs
c. Water may be given if employee is conscious

4. HEAT STROKE

Overheating of the body to a dangerous level. Symptoms are tissue color flushed to red, disoriented and confused, pulse rapid, skin usually hot and dry.

First Aid:
a. Cool employee immediately with water and a fan
b. Continue to cool employee and bring to medical facility

5. FROSTNIP

Cooling of tissues, cheeks, chin, fingers, toes, ears. Symptoms are pale, white, grayish, glassy patches.

First Aid:
a. Use steady, firm pressure on the cooled area with a warm body part. Example: Put fingers in armpit.

6. FROSTBITE

Freezing of body tissues most commonly affects hands and feet. Symptoms: Tissues are pale, cold, solid; feel wood-like.

First Aid:
a. Protect frozen area from further damage. Do not thaw.
b. If feet are frozen, once they begin to thaw, do not walk on them.
c. Seek medical aid for rewarming frozen areas.

7. HYPOTHERMIA

Lower than normal body temperature. Symptoms are shivering, weakness, loss of coordination, breathing and heart beat slow or absent.

First Aid:
a. Shelter employee from wind and water to prevent further heat loss.
b. Replace wet clothing with dry and cover head.
c. Prevent further heat loss and seek additional medical aid for rewarming.

VEHICLE AND EQUIPMENT OPERATIONS

General

1. MZG equipment will be operated in compliance with the law and the directive of the Department. Equipment will not be driven, road tested, or towed at speeds in excess of the established speed limits, nor at speeds greater than is reasonable and prudent under the conditions existing.

2. Employees have no special privilege in traffic except when specifically authorized in the line of duty.

3. Employees operating vehicles or equipment will be familiar with the contents of the Minnesota Drivers Manual, and pertinent traffic laws.

4. Equipment will be maintained in compliance with the law and the directives of the Department. Operators will report all unsafe or defective equipment in writing on unit service repair forms.

5. Operators will keep all vehicles and equipment clean and in good operating condition. They will check exhaust and manifold connections, brakes, lights, flags, flares, fire extinguishers, and first-aid kits before leaving the parking area.

6. Appropriate color flats or warning devices will be displayed on the extreme ends of a load which project four feet or more behind the rear of any vehicle.

7. No operator will start, stop, slowdown, turn, or back any vehicle without using the proper signals and making certain that the movement can be accomplished safely.

8. No equipment will stop or park on the traveled portion of the roadway when it is practical to stop or park off the roadway, unless required to do so in the line of duty.

9. Operators will not park equipment without first setting the brakes. Blocks will be placed under the wheels as an additional precaution. Any vehicle being loaded or unloaded at a dock with a forklift or mechanical handling equipment will have the rear wheels blocked.

10. When parking nonmotorized equipment (trailers, air compressors, tar kettles, etc.) that do not have brakes, the wheels should be blocked to prevent any movement.

11. Equipment operators will reduce vehicle speed during periods of poor visibility caused by fog, smoke, rain, or snow and will turn on the headlamps of their vehicles as an added precaution.

12. Lights and windows will be frequently cleaned during snow and ice removal operations. Rotating beacons or flashing strobe lights will be used by working vehicles.

13. Equipment which is customarily towed, will not be towed unless safety chains are used in addition to the regular tow bar or connector. The safety chains will be permanently attached to all towed equipment and will be of sufficient strength to control the towed equipment in the event of tow bar failure. Chains, hooks, and attachments will be kept in good repair and will be constantly inspected for weakened areas.

14. Unauthorized persons will not ride in or operate Department equipment.

15. Persons are not permitted to ride on the hood, running board, or fender of any vehicle. No one is permitted to get on or off a vehicle while it is in motion.

16. Persons are not permitted to ride on a trailer, nor permitted to ride on any portion of a motor grader, tractor, front end loader, motorized mower, or similar equipment, except as the operator.

17. Persons riding in an open back of a truck must have adequate protection to prevent the employee from falling out.

18. A radiator cap will not be removed from an overheated radiator or one pressurized until the motor has been cooled.

19. Vehicle doors will be kept closed while the unit is in motion and will not be left open while the vehicle is stopped or parked.

20. No one will open the door of a motor vehicle on the side available to moving traffic unless and until it is reasonable safe to do so and it can be done without interfering with the movement of other traffic.

21. Flags and other warning devices placed upon Department equipment will be in accordance with this Manual and other Department directives.

22. There will be a safety prop or block used underneath dump truck boxes for the protection of employees inspecting or repairing underneath. The prop or block will be of sufficient strength to support the weight of the box.

23. Approved safety seat belts will be installed in all trucks and passenger cars owned or used by the Department. Belts will be permanently attached to the frame of the unit and all employees driving or riding as passengers will have their seat belts fastened whenever the vehicle is in motion.

24. Backing—Whenever possible, avoid backing as it is a hazardous operation. You are solely responsible for the movement of your vehicle, therefore:

a. Before backing, get out of the cab and satisfy yourself that the space to the rear is clear of obstacles, vehicles of persons. "Don't back blindly." Use your rear view mirrors. Get help of a competent person, but always remember you are solely responsible.

b. If you leave the vehicle and return, do not assume the way is clear--check again!

c. When backing into a space, watch out for the driver who may try to occupy the same space from the rear of your vehicle.

d. Establish a set of signals with your guide or helper so that you will know what the guide wants you to do.

25. An employee will not start the motor on self-propelled equipment unless he is seated in the driver's seat and is certain that the gears are in neutral or park.

26. Equipment or tools carried on vehicles will be placed securely in compartments or otherwise fastened.

VEHICLE SAFETY BELTS

1. All MZG employees operating a State vehicle shall wear both the lap and shoulder belt safety devices at all times.

2. MZG vehicles must have the proper safety belt devices in accordance with Federal, State and manufacturers regulations.

3. Vehicles that have defective or otherwise inoperative safety belt devices will be written up according top policy and promptly repaired.

4. Any piece of equipment that is provided with roll over protection (R.O.P.S.) as defined by OSHA, will have seat belts in good order and the operator of that equipment will have the seat belt fastened when the vehicle is in motion or working.

5. Each employee has the responsibility for their own personal safety by buckling up before starting up.

LOADERS AND DOZERS

1. Lower all attachments (blade or bucket) to the ground before dismounting for the machine.

2. Don't get under the machine unless the engine is turned off and the parking brake set.

3. Make all adjustments (grease and repairs) with the engine off and hydraulic systems not under pressure, except where instructions indicate otherwise.

4. Make sure all pressure and temperature gauges are operating and are "in the green before beginning work.

5. Don't allow chains, ropes or tools to lie on the floorboards when operating the machine.

6. Don't allow the floorboards or mounting steps to become slippery with grease or oil.

7. Watch directions at all times. Always face or look in the direction that the machine is traveling.

8. Don't travel with a loader bucket raised more than 3 feet off the ground except when approaching the hauling unit or dump point.

9. Don't make sudden brake stops with a raised bucket.

10. Don't drive close to bank edges where there is soft footing or danger of collapse.

11. Don't travel sideways on a slope with the bucket raised.

12. Don't load at the base of a high bank where there is the possibility of the bank collapsing onto the equipment.

NOTES:

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MOWING

Mowing equipment can be extremely dangerous to operate if the simple rules of safety are ignored. Some important safety rules applying to all types of mowing equipment are:

1. Do not operate a mower while other employees or pedestrians are within the range of objects that might be propelled by a high speed blade. Direct discharge toward the ditch and backslope, rather than towards a roadway or walkway.

2. NEVER ATTEMPT TO UNCLOG OR ADJUST A RUNNING MACHINE.

3. Never wear loose clothing near power take-off or rotating equipment.

4. Mower blades should be shut off when crossing driveways, roadways, walkways and parking lots.

MOWING WITH TRACTORS

1. Do not permit anyone to ride on your tractor.

2. Always shut off the engine and set the parking brake when getting off a tractor.

3. Always drive the tractor at speeds compatible with safety, especially over rough ground, crossing ditches, slopes, or when turning.

4. When operating on steep grades, use care to maintain proper stability. Sickle bar mowers should be used with the sickle bar toward the upside of the slope.

5. If the tractor is stuck, back out to prevent upsetting; if logs are used, always put them under the rear wheels and back out.

6. Keep all power take-off shields in place.

7. When raising a sickle cutterbar, keep your hands and fingers away from sickle section and guards. Fingers can be severed by a falling sickle section even if the power take-off is disengaged.

8. Observe all motor vehicle laws.

9. Slow moving tractors crossing roads and tractors hidden from view, when mowing in an area of restricted sight distance, are potential accident situations.

MOWING WITH SMALL HAND ROTARY MOWERS

1. Clear debris before mowing.

2. Locate large rocks or similar objects.

3. Stay off wet slopes.

4. Disconnect the ignition wire when cleaning or replacing blades.

5. Shut off the engine when the mower is unattended or when refueling. Do not refuel while engine is hot.

6. Do not operate the motor at speeds in excess of the manufacturer's instructions.

7. Keep all guards and shields in place.

SPRAYING

1. Employees doing the actual operation or working with spray materials should have a thorough knowledge of the chemicals being used. Employees should attend scheduled training sessions.

2. Employees should read and study both the product label and material safety data sheet prior to spraying.

3. Splash goggles, rubber apron, rubber gloves, rubber boots, a long-sleeved shirt and long pants are recommended to be worn when filling the sprayer.

4. Rubber boots, rubber gloves, a long-sleeved shirt and long pants are recommended during spraying operations.

5. The hands and face should be washed before eating, and lunches should be kept in closed containers away from contamination.

6. When filling tanks, caution will be taken to prevent spills.

7. The operation and maintenance of the power sprayer equipment will be the responsibility of the sprayer operator.

8. Fuel will only be added to the sprayer engine by means of approved dispensing methods or containers.

9. Exhaust systems from the sprayer engine will be insulated and shielded from the gas tank area.

10. Surfaces on the spray tank and truck will be kept reasonably free from accumulation of spray material.

11. An adequate platform and railings will be provided for the protection of sprayer operators.

12. Nozzles, hoses and connections will be inspected daily for deterioration, and replaced as necessary.

13. At least 5 gallons of clean water will be carried by the crew when engaged in spraying operations.

14. All empty chemical containers will be triple rinsed and disposed of properly.

BITUMINOUS PAVEMENT PATCHING AND REPAIRING

Listed below are some general safety rules applicable to patching and repairing with bituminous materials.

1. When working with units that are being heated or that have engines operating in connection with bituminous patching, a dry-chemical, multi-purpose fire extinguisher will be available.

2. Smoking is prohibited near tank openings, vents, and refueling operations. Open flames and sparks will be kept far enough away from the material to eliminate the possibility of a fire.

3. Burners will not be left unattended while operating, in transit or in confined places. Kettles should not be used inside buildings.

4. Use a long-handled torch to ignite burners. Matches or lighters will not be used. Fuels will be allowed to ventilate before trying to relight a burner.

5. For best results when heating material, units should be positioned crosswind, if possible. Material should not be allowed to overheat beyond recommended temperature.

6. Units (kettles and distributors) will be checked at least once each month for leaks, particularly around the flues, so that leaking materials will not create fires. Material should never be heated in a leaking tank.

7. Tanks should be free of water before heating bituminous materials because it will bubble and cause overflow, thus starting a fire.

8. Hoses used to apply the material will be free of cracks and patches, and the hook-ups will be secure to prevent hot material from spraying onto workers, equipment, or passing vehicles.

9. Kettles should be filled with care to prevent splashes of hot material, and pieces must be eased-in rather than thrown or dropped. If a full barrel is added, lowering chains should be installed to permit a gentle lowering of a barrel.

10. Heating kettles should not be overfilled. Maintain a level of at least 5 to 6 inches below the top of a kettle.

11. Thermometers will be kept in good working condition, checked daily before starting kettles, and checked periodically during operations. Clean or repair if needed.

12. Open flames should not be permitted near the top of kettles and distributors.

13. Temperatures should be controlled by using thermocouples or thermometers. Overheating will produce a yellowish vapor in kettles over bitumens. Flames should be turned down or off when such vapor is evident.

14. When moving kettles and distributors, the hook-up to towing units will be secure, and safety chains should be attached to both the towed and towing unit. Slow, easy starts are a must for both truck-mounted and towed distributors or kettles.

15. In case of fire, all engines and pumps should be stopped and valves, lids, and vents closed.

16. When kettles and tanks are not being used or filled, cover all openings to prevent water from getting into a tank. A "foaming action" is an indication of water being present inside the tank.

17. Ladders will be available for employees to use when mounting tanks, and they will be kept clean. Nonskid surfaces are desirable. Platforms and work areas will be kept free of bituminous materials and debris.

18. When using spray bars and hand held spray units, employees will ensure that all personnel are away from material that may spray on them.

19. Field alterations of equipment that may change the operation of function, in a manner other than that prescribed by the manufacturer, should not be made unless the change has been approved by the manufacturer.

20. Turning shafts, spindles, gears, and devices will be guarded to prevent entanglement in the machinery.

21. Backing movements will be controlled with someone directing movements outside of the vehicle (refer to "MZG" backing safety rule).

TREE AND BUSH TRIMMING

1. Tree trimming operations present many common hazards such as cuts and bruises from limbs and machinery. The principal causes of injury are:

   a. Lack of safety eyewear.
   b. Falls from trees.
   c. Contact with energized wires.
   d. Falling trees and falling limbs.
   e. Improper climbing and working methods.
   f. High-speed moving parts on mower equipment such as chippers and chain saws.

2. Safety hard hats, face shields, safety glasses with side shields, or goggles will be worn to protect employees from being scratched or struck by twigs and branches or flying debris from a chipper.

3. For unusual jobs where it is necessary to get near or in between live conductors, the Utility Company will be asked to cover the wire with rubber protection, relocate it, or de-energize the circuit temporarily until the job is completed.

4. When using hydraulic lifting devices to trim trees, the boom and associated equipment will not be depended upon for insulation. Operators will be warned not to raise and project booms over live conductors.

SIGN ERECTION

1. When straightening bent or twisted sign posts, do not attempt to straighten the post by twisting the sign by hand.

2. Before excavating for signs or driving sign posts in areas where underground utilities are known to exist, always contact the local utility company.

3. Park the truck so that all operations may be conducted on the side away from traffic.

4. Driving heads will always be used when a U-iron sign post.

5. Safety goggles or glasses will be worn when operating drills, jack hammers, and when driving steel posts.

FENCE REPAIR

1. Wear leather gloves when handling fence, posts, tie wires, and brace wires.

2. When stretching and tying fences, employees should stand on the post side because, occasionally, the wire will break and the fence will roll back.

3. When fence is removed from property, refill the holes left by the removal of posts or post stubs.

4. Always watch your footing when walking in tall grass and on uneven ground. Holes, rocks, and other debris may cause a painful foot or leg injury.

SHOPS

Safety inspections:

1. Falls caused by slips or tripping over equipment are a major cause of injuiries in Department shops. Supervisors will inspect work areas regularly and insure that floors are free of oil and walkways are clear of tools or equipment.

2. The Supervisor should make daily inspections for fire and safety hazards.

3. The Supervisor will make sure that accumulations of combustible materials are removed to a safe place.

4. Supervisors should hold regular safety meetings to keep employees mindful of the hazards in shop areas.

Cleaning with Solvents

1. Flammable solvents should not be used for cleaning. However, flammable solvents with flash points above 100 degrees F may be used in small quantities for small parts, provided that adequate ventilation is supplied and sources of ignition are not present. Only F/M, U/L or similarly approved cans and washers should be used in these operations. Use gloves if extensive skin contact with the solvent is likely.

   Remember, flammable solvents are hazardous wastes and must be disposed of properly. Consult your safety officer for more information.

Asbestos and Brakes

Brake linings and clutch facings often contain asbestos. When these parts are worked on, the asbestos fibers can enter the air and be breathed in. The fibers are very light and very small, to small to be seen by the naked eye. Once they become airborne, they take a very long time to settle.

Prevention

Your greatest exposure to asbestos will usually be when you clean the brake drum or clutch housings.

DO NOT: blow off the residue with compressed air. That is a sure way to breath asbestos.

DO NOT: try to vacuum the residue with the standard shop vacuum. Asbestos is so light that most vacuums would blow the fibers around, rather than trapping them.

DO NOT: use a dry brush or rag to brush away the residue. You'll brush the asbestos right into the air.

DO NOT: flush the residue away with a garden hose. That will spread the fibers around the shop. When they dry, they can become airborne.

DO NOT: use a wet brush or rag to wipe up the residue. Wet asbestos is not likely to become airborne, but asbestos that was dislodged by the brush or rag will end up in the air, as will asbestos from the dried brush or rag.

DO follow this procedure, recommended by OSHA:

1. Get a spray can of cleaning solvent and an asbestos disposal bag from the stockroom.

2. Put on your disposable respirator. Make sure your respirator fits properly.

3. Gently spray the part you're working on with a mist of solvent. Spray from as far away as possible, so that you don't blow the asbestos away with the force of the spray. Spray until the area is soaked with solvent.

4. Wipe the area with a rag or paper towel that has been moistened with the solvent.

5. Gently respray as needed to keep the area wet.

6. As soon as you are done with the rag or paper towel, put it in a labeled bag for disposal.

7. Remove your respirator.

8. Clean your respirator; wash your face and hands.

Discourage others from being in the immediate area (a ten foot circle around the work area) while you're working on the brake or clutch.

Mechanical Automotive Hoists

1. Every mechanical vehicle hoist should have a brake that will automatically hold twice the rated load at whatever level it may be at when lifting ceases.

2. Hydraulic lifts will have safety devices that hold the load independently of the lifting means at the maximum "up" position.

3. Hoists will never be used for vehicles beyond their capacity or to lift one end of the vehicle only.

4. The condition of lifts should be checked monthly. Leaks will be repaired and oil levels maintained on hydraulic lifts.

5. Controls on lifts should require continuous pressure from the operator and they should be far enough away so that the operator will not be struck by the falling load if the lift fails.

6. Persons should not stand in front of vehicles being driven onto the lifts. No person will remain in a vehicle being lifted.

7. No bystanders will be allowed near equipment being lifted.

8. All lifts will have safety legs which will hold the load if the lift fails. Employees will always place these legs properly before working under raised equipment.

9. A removable railing or cover will be provided for grease pits to prevent employees from accidently falling into openings.

Mounting heavy duty tires and rims:

1. Safety cages will be provided and used for inflating high-pressure tires in shops.

2. All personnel that change tires will be trained and instructed in multi-piece wheel and rim assemblies, per OSHA regulations.

3. Special rolling fixtures and power tools should be used for mounting and dismounting heavy duty tires. Tires are heavy and manually handling them might result in a strain or hernia.

Jacks

1. Before jacks are used on vehicles, the jack and the vehicle will be firmly blocked against horizontal movement. All possibility of the jack slipping will be eliminated. The lifting head on the jack will be large enough to securely

hold the part of the vehicle against which the pressure is being exereted.

2. Special jacks and handling equipment are available from equipment manufacturers to handle massive drive shafts, transmissions, and other parts when mechanics work under trucks. Such heavy parts, including engines, clutches, and brake drums should always be handled with jacks, dollies, hoists, cranes, or forklift trucks.

3. At times, metal-to-metal contact between jacks and the parts handled might tend to slip, especially jacks and table hoists. Properly fitted wood blocks or suitable pieces of cloth should be used to separate metal from metal and increase the friction of contact.

Batteries

1. The principal hazards when batteries are handled by shop employees are acid burns, electrical burns, and strains from lifting. There is also the possibility of hydrogen gases generated by the battery exploding if ignited, which bursts the battery and splashes the acid. For further information on the proper procedure to "jump" batteries, check with your supervisor.

2. Batteries should have all cells covered when they are lifted out. If necessary, help should be obtained to do the lifting. Hand carts should be provided for moving the batteries around the shop.

3. Eye washing facilities will be provided near the battery servicing area.

4. When batteries are installed and connected or when "jumpers" are connected across them for auxiliary starting, the ignition switch must be turned off.

Ladders, portable

1. Portable ladders in use shall be set level, tied, blocked, or otherwise secured to prevent their being displaced.

2. Ladders shall be inspected frequently and maintained in good condition. Defective ladders shall be immediately removed from service, tagged, repaired, or destroyed.

3. Portable metal ladders shall not be used for electrical work or near electrical conductors or equipment.

4. Portable ladders shall be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is about one-quarter the working length of the ladder.

5. Portable ladders in use shall extend a minimum of 36" above the landing and be secured from movement.

6. Job-made ladders shall meet the reuirements of CFR 1926.450(b).

7. Ladders shall not be placed on boxes, barrels, or unstable bases to obtain additional height. Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.

8. Ladders shall not be placed in front of doorways or passageways unless additional precautions are taken.

9. Do not leave any tools hanging from a ladder, that could drop on a person below.

10. Do not reach out too far in any direction, always keep one hand on the ladder.

11. Do not attempt to carry large tools, equipment, or materials up or down a ladder.

12. Always face the ladder and use both hands when climbing or descending.

Scaffolds

1. Scaffolds are required for any work that cannot be safely done from the ground by use of a ladder. FRONT END LOADER BUCKETS WILL NOT BE USED FOR PAINTING OR USED AS A SUBSTITUTE FOR SCAFFOLDING.

2. Only competent workers may erect scaffolds and they will be supervised by a Foreman who will ensure that the scaffolds are built according to safety specifications.

3. All scaffolds, ladders, equipment, and devices will be inspected at frequent and regular intervals while in use. Any scaffold found damaged or weakened will not be used until repairs have been made.

4. Scaffolds will be constructed and maintained in conformance with Section 1910.28 and 1910.29 of the Occupational Safety and Health Standards.

MOVING VEHICLES

1. There is a possibility of being run over in shops and yards, employees should keep clear of moving vehicles.

2. Supervisors should work out procedures for operations when vehicles are constantly moving that will absolutely prevent an employee from getting caught between vehicles.

3. NO VEHICLE SHOULD EVER BE BACKED IN A SHOP WITHOUT THE ASSISTANCE OF A GUIDE.

4. Mechanics will not work under vehicles while lying on "creepers" if there is any danger that another vehicle will pass over the area where their legs are sticking out. If necessary, adjacent vehicles should be locked and tagged, or adjacent spaces should be blocked with barricades.

5. Mechanics working on vehicles will make sure that engines are not started and vehicles are not moved while they are at work. They should always:

   a. Remove the key or lock-out starting switch.
   b. Place a warning tag on the starting control or steering wheel.
   c. Block wheels and all moving parts during maintenance.

6. Lock bars should be installed on articulated front-end loaders to hold front and rear units rigidly in line. Reserve pressure in the steering unit might otherwise allow the unit to turn.

7. When mechanics must work on running engines, they will be careful to avoid moving parts. Fan blades should be guarded and mechanics must never make an adjustment near the fan without first shutting off the engine.

Compressed Air Equipment

1. All shop employees should be familiar with the air compressor operating and maintenance instructions.

2. Rotating pulleys and belts on compressor and electric motors will be properly guarded.

3. On electric motor driven compressors, periodically check and replace any deteriorated flexible cords or plugs.

4. Air tanks will be protected by adequate safety-relief valves. These valves will be tested at regular intervals to be sure they are in good operating condition.

5. Beware of compressed air--it can be dangerous. Never use compressed air to blow dirt from your clothing or body.

YARDS

Housekeeping:

1. Materials will be stacked safely and in an orderly manner.

2. Equipment and vehicles should be parked in a manner so the backing maneuver is eliminated.

3. Driveways and footpaths will be maintained in a satisfactory condition and no material will be stored within these areas.

4. Loading platforms will be constructed and maintained for safety and convenience of handling heavy equipment or materials.

5. Storage areas will be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control will be exercised as necessary.

Ramp Area and Pump Island

1. "No Smoking" and "Shut Off Engine" signs will be posted and visible to employees fueling their vehicles.

2. Adequate lighting should be provided around the pump island for night work.

3. All electrical wiring in and around the pump and island will be explosion proof, U/L approved, enclosed type.

4. Emergency power cutoffs for fuel pumps will be clearly identified, easily accessible, and located away from the pumps (not more than 100 feet).

5. Fuel pumps should be mounted on either a concrete island or protected against collision damage by protective barriers.

LOADS

1. Do not attempt to transport loads which are above its rated capacity. Rated capacities shall be posted on the vehicle so as to be clearly visible to the operator. Don't lift unstable loads; they should be repiled or banded.

2. Forklifts will be operated within the speed limits specified by the Department. Safe speeds are to be determined by the type of load, aisle spaces, congested areas, obstructed vision, percent of grade, and driving surface conditions. Under all travel conditions the forklift shall be operated at a speed that will permit it to be brought to a stop in a safe manner.

3. Forklifts should travel with the forks about 6 inches above the floor. Never attempt to lift or lower loads while traveling. The tilt control should be used to bring the center of gravity of the load closer to the drive wheels, as this keeps the load from spilling.

4. When left unattended, loads shall be fully lowered, controls neutralized, power shut off, brakes set.

5. The driver shall be required to look in the direction of and keep a clear view of the path of travel. If the load being carried obstructs forward view and/or is on descending grades the driver shall be required to travel with the load trailing.

6. When positioning a load in an area which is not fully visible to the operator, the operator shall be assisted by another person who shall direct the placing of the load by using predetermined signals.

7. Dockboards or bridgplates shall be properly secured before they are driven over. Dockboards or bridgeplates shall be driven over carefully and slowly and their rated capacity never exceeded. When loading or unloading trucks and semi-trailers, heights will change, causing dockboards or bridgeplates to change grades and even come loose.

8. The brakes of trucks shall be set and wheels chocks placed under the rear wheels to prevent the truck or semi-trailer from rolling while they are entered to exited with powered industrial trucks

ZOO/OSHA REGULATIONS

1. The employer shall monitor environmental exposure of employees to carbon monoxide whenever internal combustion engine powered industrial trucks are operated indoors.

Sampling shall be done at least quarterly and represent exposures during a day of highest usage in the areas where employee carbon monoxide exposure is most likely.

2. The employer shall take tailpipe exhaust gas analysis to ensure that powered industrial truck engine exhaust gases do not contain more than on percent carbon monoxide for propane fueled trucks or two percent carbon monoxide for gasoline fueled trucks measured at idle and at three-fourths throttle during final engine tuning in a regular maintenace program.

REFERENCES

More information about powered industrial trucks can be found in Code of Federal Regulations Title 29 Section 1910.178 and Sections 1926.600 and 1926.602, Minnesota Department of Labor and industry Occupational Safety and health Rules Chapter 5205.0116 and .0760 and Chapter 5207.0900, National Safety Council Accident Prevention Manual for Industrial Operations Volume II Engineering and Technology 9th Edition Chapter on Powered Industrial Trucks.

TRANSFERRING LIQUIDS

1. Containers, nozzles, and related dispensing equipment should be identified as to use, be of an approved type, stored to avoid damage, and inspected regularly.

2. Pumps, containers, and other dispensing equipment should be kept clean and free of contaminants.

3. Tools to be used in storage and dispensing areas will be of the nonsparking type.

4. The transfer or mixing of flammable liquids will only be done in well-ventilated areas. Personnel engaged in the handling of flammable liquids must be made aware of the importance of insisting that no sources of ignition be brought within the designated areas. Damage or faulty dispensing equipment or containers will be replaced or repaired immediately.

REFUELING EQUIPMENT

When refueling, pay special attention to these procedures:

1. Shut off the ignition when refueling.

2. Avoid spillage by remaining at the nozzle until refueling has been completed. Never completely fill a container. Allow for expansion of the fuel.

3. Always position yourself so your head is well above the container being fueled.

4. use approved dispensing equipment: pumps, hoses, nozzles, etc.

5. Smoking is not permitted within fueling areas or where vapors could accumulate: pts, depressions, etc. All fueling areas should be provided with Type A.B.C. Dry Chemical Fire Extinguishers of sufficient size to handle the hazard.

6. If spillage should occur, an approved drying or absorbing agent should be used. Do not wash spillage into sewers, cesspools, or septic tanks. used absorbent should be disposed of properly as per MPCA regulations.

USE OF FLAMMABLE LIQUIDS AND GASES

Use only approved solvents for cleaning operations. Never use gasoline. Never use flammable liquids in the presence of welding, burning, or other operations involving open flames, sparks, or the generation of heat. Never use containers that do not positively identify the contents.

Whenever flammable substances are being used, adequate ventilation should be provided. Never apply heat to flammable liquids or solvents unless the manufacturer of the product specifically indicates to what degree it is safe to do so.

Dispose of wiping rags, etc. in approved containers. Containers of flammable liquids should be returned to proper stroage areas at the close of each day.

Many petroleum products are toxic in addition to being flammable. Avoid contact with the skin. Most flammable gases and liquids are asphyxiants.

MACHINERY GUARDING

GENERAL

Mechanical action or motion is hazardous, but in varying degrees. Rotating members, reciprocating arms, moving belts, meshing gears, cutting teeth, and parts in impact or shears are some examples of the types of action and motion requiring protection. They are not peculiar to any one machine but are basic to the mechanical devices used for productive purposes.

Any rotating object is dangerous. Even smooth, slowly-rotating shafts, belts, or pulleys can grip clothing or hair, and through mere skin contact force an arm or hand into a dangerous position. Accidents due to contact with relating objects are not frequent, but the severity of injury is always high.

Since safety standards cannot be drawn which will cover every conceivable hazardous mechanical exposure, and prefabricated guards/shields may not be available, it is often necessary for you to use your imagination and ingenuity to design and fabricate protective devices which will provide you and other employees with protection against various hazardous situations. They will be designed to eliminate the hazard, will create no hazard of their own, will be sturdy enough to withstand normal wear, and should not interfere with production. A few examples of guarding required on Department machines, tools, and equipment are:

1. Abrasive wheels on bench grinders: The safety guard will cover the spindle end, nut, flange projections, and will be mounted so as to maintain proper alignment with the wheel. The strength of the fastenings will exceed the strength of the guard. The exposed area of the grinding wheel and sides for the safety guards will not exceed more than one/fourth of the entire wheel. Work rests shall be kept adjusted close to the wheel with a maximum distance of one/eighth inch. Tongue guards shall be positioned and adjusted in the same manner.

2. Circular saws: They will be provided with a hood that covers the saw teeth at all times. The hood should adjust itself auomatically to the thickness of, and remain in contact with the material being cut. A spreader and antikickback
device will be provided and used. The exposed part of the saw and drive system underneath the table will be guarded.

3. Radial saws: In addition to a hood enclosing the blade, an adjustable stop should be provided to limit forward travel and the head should automatically return to the starting position. When used for ripping a spreader and an antikickback device will be provided.

4. Drill presses: The V-belt of all drill presses including the usual front and rear pulleys, will be guarded to protect the operator from contact or breakage.

5. Operators will use all safety devices, push sticks, handles, holders, etc. when hand placement would come within 12" of the machines working parts.

MANDATORY PROTECTIVE EQUIPMENT

1. Hard hat with eye and face protection

2. Hearing protection

3. Lifeline if working in a bucket lift or above 10 feet

4. Safety shoes

5. Equip all saws with antikickback chain. (This reduces the kickback from 140 degrees to 22 degrees).

6. All saws shall be equipped with working chain brakes.

7. Cutting wedges to prevent binding.

RECOMMENDED PROTECTIVE EQUIPMENT

1. Chain saw gloves, with back of the left hand protection

2. Safety leg chaps or leggings

3. Chain saw cut resistant boots with steel toe.

4. Chain saw carrying case or box

5. Felling lever to assist in falling of larger trees.

CARE OF TOOLS

Tools will be kept in a safe working condition. Employees are responsible for the safe condition of tools and equipment. Sharp tools improve accuracy and are safer to use than dull tools. Use an oilstone or grindstone for tool sharpening. If an abrasive wheel must be used for this task, grind only a small amount at a time with the tool rest not more than one-eighth inch from the wheel. Hold the tool lightly against the wheel to prevent overheating. Dip frequently in water to keep cool. This retains metal hardness and the cutting edge. Eye protection will be used.

When not in use, tools will be stored in suitable containers, or hung on racks. Cutting edges will be protected and tools will not be placed where they might roll off benches or tables. Be sure that the storage area is moisutre free to prevent corrosion. Heavier tools will be placed where they will not be tripped over.

All damaged or worn tools will be promptly repaired. Temporary, makeshift repairs are prohibited. If tools cannot be repaired on the job, they will be red-tagged and sent to the appropriate shop or factory, not kept on the job.

POWER TOOLS

The use of portable power tools has greatly increased in recent years. The majority of power tool accidents are caused by improper handling and poor maintenance of equipment. These can be corrected by proper training of personnel. The following applies to all types of power tools.

1. Good housekeeping is essential to good workmanship. All tools will be neatly stored when not in use. Work areas will be maintained in an orderly fashion. Damaged equipment wil be replaced or repaired immediately. Tools will be cleaned, tested and inspected regularly.

2. Safety equipment, such as guards, will be left in place. Gloves, face shields and/or safety glasses will be worn when required. Only authorized personnel will be permitted to operate power tools.

3. Electric tools will be provided with grounding connections or insulated cases.

4. Cords will be checked frequently for breaks in the insulation and defective cords repaired or replaced. When more than a single extension cord is connected to a power source use twistlock connectors. The sequence of connection will be from the tool - to the extension cord - to the power source.

5. Electric tools will be disconnected when changing attachments, making minor adjustments, or repairing. When electric tools are used in wet areas, the operator may be exposed to a potential shock hazard. Ground fault connectors should be used whe these conditions exist.

TABLE OR BENCH SAWS

1. The operating table and surrounding area will be kept clean and clear of all debris. Blade guards, complete with splitter and nonkickback attachment, will be in place and will operate freely. Operators will wear eye protection. When ripping short stock, the use of a "pusher" stick is required.

2. The piece being cut will be firmly held against the back guide or fence. All materials will be cut in a single, steady pass. It is dangerous to stop the saw before the cut is completed. If this is done, the blade will be turning freely and at full speed before the cut is resumed. When cutting a warped board, be sure that it touches the table top at the line of the cut.

3. The saw will be turned off when not in use.

PORTABLE GRINDERS

Portable grinders will be equipped with hood guards. Wheels will be inspected regularly. Cracked abrasive wheels will be discarded as they may fly into pieces and cause an injury. Make sure of the r.p.m. rating of the wheel you are using. Eye protection will be worn when operating grinders.

BENCH GRINDERS

Bench grinders will be equipped with eye shields and will have wheel, spindle, and adjustable tongue guards. Wheels will be inspected regularly and cracked wheels will be discarded. Wheels of the proper r.p.m. rating will be used. Tool rests will be in place and properly adjusted. All abrasive wheels will be ringtested before mounting. Eye protection will be worn when operating.

CHAIN SAW AND BRUSH CUTTING

Chain saws are one, of the most dangerous tools and must be used with extreme caution. Operators shall be instructed on proper procedures and cutting techniques. All safety procedures shall be followed in compliance with MZG and OSHA standards. Personal protective gear will always be used.

Procedures

1. Inspect saw and chain before each days use and periodically during use.

2. Fuel saws in a safe area clear of ignition sources. "Never fuel saw while it's running."

3. When starting chain saw, make sure you have firm footing and are free of objects which will interfere with blade rotation which may result in kick back.

4. When operating a chain saw saw, make sure all other personnel are at a safe distance.

5. Never carry a running saw any significant distance.

6. Chain saws shall not be used for brushing or cutting trees or bushes less than 2 inches in diameter.

7. For jobs where it is necessary to work around live power soures or lines, the utility company shall be contacted and the power source de-energized prior to performing any cutting.

8. When using a hydraulic lifting device to perform tree trimming, the boom and associated equipment must not be depended upon for insulation. Operators must be aware of the hazards of raising booms over live power lines and take proper precautions.

NOTES:

ARC WELDING

Screens, shields, or other safeguards will be provided for the protection of the employee or combustible materials below or otherwise exposed to sparks or falling objects. When others must work nearby, they will be protected from the arc rays by isolating screens whenever possible or other adequate individual protection.

When welding or cutting lead, zinc, cadmium-coated, lead-bearing, or other toxic materials, provisions will be made for the removal of fumes, or the use of proper personal respiratory protection.

1. Welding equipment:

a. Only standard electric arc-welding equipment such as generators, motor-generator units, transformers, rectifiers, etc., conforming to the requirements of the Natonal Electrical Manufacturers' Association or the Underwriters' Laboratories, Inc., will be used.

b. Power circuits will be installed and maintained in accordance with the National Electrical Code. Check the voltage for which the machine is wired before connecting.

c. Frames of all electric welding machines operated from power circuits will be effectively grounded with No. 8 guage wire or heavier.

d. Electrode and ground cables will be supported so as not to create obstructions interfering with the safe passage of employees. The ground lead for the welding circuit will be mechanically strong and electrically adequate for the service required. An electrode holder of adequate rated current capacity, insulated against shock, shorting, or flashing when laid on grounded material will be used.

2. Protective clothing:

Protective clothing required for any welding operation will vary with the size, nature, and location of the work. Some suggested protective measures for welders and helpers are:

a. Flame-resistant gauntlet gloves should be worn.

b. Flame-resistant aprons of leather or other suitable material should be used as protection against radiated heat and sparks.

c. Clothing will be free of oil and grease.

d. Pockets and cuffs invite sparks. Collars and cuffs should be buttoned and cuffs turned up inside pants. Pockets should be eliminated from the front of vest, shirts, and aprons or have buttoned flaps. Low-cut shoes with unprotected tops are not recommended. Leather caps worn under helmets will prevent head burns during overhead welding. Ear protection is sometimes desirable for overhead welding and in confined places.

e. Approved welding helmets or other suitable material will be worn. The proper shade of welding lens should be worn and an adequate supply of cover lenses should be available. Employees assisting welders will also wear protective lenses to protect the eyes from flash burns, flying objects and other hazards that may appear.

CHIPPING AND CLEANING

1. When removing excess weld metal, faulty weldments, or slag, always chip away from the face. The chips flying from the cleaning hammer are dangerous, especially to the eyes, therefore safety goggles or a protective face shield will be used.

2. Gloves will be worn to protect the hands and wrist. Flying chips travel a considerable distance. To protect other personnel in the area, screening or shielding is required. Safety glasses and gloves will be worn when wire-brushing weld metal or when cleaning and brushing surfaces to be welded. Use caution to avoid metal slivers and sharp edges.

FIRE PREVENTION IN WELDING AND CUTTING

1. In welding and cutting operations, suitable fire extinguishing equipment will be maintained ready for instant use. Such equipment may consist of pails of water, buckets of sand, or portable extinguishers, depending upon the nature and quantity of the combustible material exposed. These extinguishing materials will be in addition to normal fire extinguishing equipment required under N.F.P.A. Regulations.

2. A welder's helper or fire watcher is required whenever cutting or welding is performed in locations where a fire might develop.

3. Precautions recommended:

a. Good housekeeping: Remove all loose, easily combustible materials such as wood shavings, wood scraps, sawdust, paper, rags, and especially oil and grease soaked materials. Remove all highly volatile materials such materials seek floor level areas and may travel many feet. Wood planking, scaffolds, wooden forms, and other combustible materials that cannot be removed will be shielded.

b. Floor drains will be isolated so as to prevent sparks from igniting materials often found there.

4. Explosion hazards:

a. Repairs requiring cutting, welding, or any hot work activity on container which have contained hydrocarbons i.e., flammable liquids, requires extreme caution.

b. Containers should be thoroughly steam cleaned.

c. If removal and handling for steam cleaning is impracticable, the container will be filled and maintained with an inert gas to displace the oxygen (02) completely.

d. An explosion meter is required to verify and constant monitoring will be done during the hot work activity.

NOTES:

GAS WELDING AND CUTTING

Use only U/L or F/M approved oxyacetylene welding and cutting equipment. Anti-flashback valves will be used on both hoses, torch end. Avoid oil contaminaion of gauge connections. Oxyacetylene welding and cutting equipment shall never be left unattended with the valves in the open position.

1. Storing cylinders:

a. Compressed gas cylinders will be kept away form excessive heat, and not be stored where they might be damaged or knocked over by passing or falling objects, and will be stored at least 20 feet away FROM highly combustible materials. Where a cylinder is designed to have a valve protection cap, caps will be in place except when the cylinder is connected for use.

b. Acetylene will be stored in a vertical, valve-end up, position and SHIELDED FROM THE DIRECT RAYS OF THE SUN, AND PROTECTED FROM ACCUMULATIONS OF ICE AND SNOW.

c. Oxygen cylinders in storage will be seperated from fuel gas cylinders or combustible materials, especially oil and grease, by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistant rating of at least 1/2 hour.

2. Using cylinders:

a. Cylinders will be placed in a rack, chained or otherwise positively secured against tipping over.

b. They will be used in the order received from the supplier.

c. When empty, the valve will be closed and the cylinder marked accordingly, remember to replace the cap.

d. Any cylinder or valve which is damaged will be returned to the vendor for repairs.

e. Keep cylinders from contact with electric wires and shield them from sparks or flame from welding and cutting.

f. Do not allow storing temporary or otherwise, tools, materials, or anything else on top of cylinders. While in use, the valve key wrench will be in place on the valve spindle.

g. Both acetylene and oxygen cylinder valves shall be opened 1/4 turn, providing quick shut off.

3. Handling cylinders:

a. Cylinders may be transported with the protective valve caps on, cylinder in vertical position and secured to the vehicle. Cylinders may also be transported with regulators on when positively secured in a vertical position and when vehicle operations will not result in damage to the equipment.

b. Never use valves or caps for lifting, for raising or lowering. Always use a suitable sling, boat, cradle, cart, or platform whenever they need to be moved.

c. Always handle carefully. Do not drop or jar. Do not lift with electromagnets. Avoid dragging and sliding.

d. Cyliners may be moved by tilting and rolling on the bottom edge.

e. Be sure cylinders are secured when using a hand truck.

ELECTRICAL

1. Electricity is dangerous. Only a trained person using the proper tools and personal protective equipment is permitted to work on installations.

2. Wires will not be routed over or under other power lines, telephone lines, or antennas. Weather-tight connections will always be used in exposed areas. No electrical work will be performed on a hot line except by qualified personnel.

3. Electrical equipment and circuits will be plainly labeled, especially when two or more voltages are used. Switches and outlets will be grounded. In any explosive atmosphere, they will be of the U/L approved enclosed type.

4. Motors will be installed so that both the current carrying parts and the mechanical components are guarded to prevent persons from coming into contact with them.

5. To prevent overloading, circuits will always be provided with fuses or other devices. These devices will be of such size that they will operate at a point lower than the carrying capacity of the circuit. Additional loads above the normal should be placed in use only after a qualified electrician has checked the circuit to determine if the circuit can carry the extra load.

6. Switchboards, fuse cut-out panels, motor control equipment, and other current carrying equipment will be grounded. Insulated gloves do not necessarily provide protection when they are wet. Damp weather can be dangerous to operating personnel.

7. Only U/L approved three-wire extension cords will be used for plugging in hand held power tools.

8. Regard all wires as live and dangerous. Do not permit objects being handled to come into contact with electrical lines.

9. Aisles or passageways leading to electrical panels will be kept clear and free of any obstructions.

10. All fuse boxes and circuit breakers will be labeled (MN/OSHA Regulation).

OFFICE BUILDING AND LABORATORIES

GENERAL

1. Employees using mail carts, furniture dollies, hand carts, or building service cleaning carts should not park them unattended in passageways. When it is necessary to park them in the halls, they will be parked close to the walls but never close to a doorway or hall intersection.

2. Employees will report for correction any broken, cracked, or humped tile on floors, or turned-up corners on rugs which constitute a hazard.

3. Employees will be familiar with first-aid locations and emergency alarm stations. They also will know the locations of fire extinguishers and be instructed in their use.

4. Broken glass and other sharp objects should be wrapped in heavy paper, marked "broken glass" or "sharp objects", and placed beside, not in, the waste basket.

5. Approach and open closed doors with caution to avoid having the opening door strike someone. Keep to the right in corridors and at corners.

6. Use the handrail when ascending or descending stairs. Keep stairways clean and clear.

7. Employees should immediately report defective handrails, stair treads, or other hazards on the stairways. Broken or split treads on stairways will be properly replaced or repaired.

8. Every stairway of 4 risers or more will be railed. Railings will be maintained in a firm and secure condition. Stairways having both sides open will have a railing along each side.

EXITS AND EXIT MARKINGS

1. Every exit must have the word "EXIT" in plainly legible letters not less than 6 inches high with the strokes of the letters not less than three-fourths of an inch wide.

2. Doors, passageways, or stairways which are neither an exit nor a way to an exit, should be clearly marked NOT AN EXIT or should be marked by a sign indicating its actual use, e.g., "storage room", "to basement", etc.

3. When the direction to the nearest exit may not be apparent to an occupant, an EXIT sign with an arrow indicating direction should be used.

4. Exit access should be arranged so that is is unnecessary to travel toward any area of high hazard potential in order to reach the nearest exit (unless the path of travel is effectively shielded by suitable partitions or other physical barriers).

5. Nothing would impair the visibility of the exit sign, such as decorations, furnishings, or other signs.

6. All exit doors must be of the side hinged swing type. The exit doors must swing in the direction of travel if the exit is for an area of high hazard potential.

7. Areas around exit doors and passageways leading to the exit must be free of obstructions at all times.

8. If occupancy is permitted at night, or if normal lighting levels are reduced at times during working hours, exit signs should be suitably illuminated by a reliable light source.

9. Exits and ways to exits may not be through rooms or doors that can be locked from the other side.

10. Where occupants may be endangered by the locking of any single exit due to fire or smoke, there must be at least two means of exit remote from each other.

11. Rooms in which flammable or combustible liquids are stored or handled by pumps must have exit facilities arranged to prevent occupants from being trapped in the event of a fire. These exits must be clearly marked and maintained unobstructed.

OFFICE MACHINES, FURNITURE, AND EQUIPMENT

1. Employees will not operate a machine until they have been thoroughly trained to operate it safely. Supervisors will ensure that all machine guards are kept in place and the employees follow the safety instructions for the machine being operated.

2. Disconnect electrical equipment before repair or maintenance. Electrical machines will always be shut off and the electrical circuit disconnected before attempting to adjust or clean the machine. Only qualified personnel will make the adjustments.

3. Filing:

a. File drawers will not be left open while unattended.

b. The heaviest drawers will be at the bottom to avoid tipping the files.

c. Employees should avoid opening more than one file drawer at a time.

d. File cabinets should be fastened together.

4. Telephone and power cords should not be left loose on the floor or in any other position where they could cause someone to trip. Arrange to have them shortened or anchored to a desk or wall.

5. Hand-operated paper trimmers or "Guillotine" type papercutters will be used with the utmost caution. Never leave the blade in an upright position. Keep the guard in place at all times.

6. Swivel chairs, file drawers, and other unstable office equipment will not be used as a means of climbing or reaching. Ask for help if it is necessary to move office equipment or furniture when it is beyond your physical ability.

LABORATORIES

1. Adequate ventilation will be provided, either natural or forced, in areas where volatile or toxic gases exist.

2. When Bunsen Burners or electric heaters are used, tables will be covered with non-flammable tops.

3. Use heavy heat-resistant gloves for handling hot pans or apparatus.

4. Where strong acid is used, tables will be covered with an acid-resistant coating. Rubber gloves must be used, and face shields and/or goggles will be used.

5. Flammables must be carefully stored away from heat.

6. Unauthorized personnel will be kept out of experimental or storage rooms, unless under the guidance of laboratory personnel.

7. Laboratory personnel will be familiar with fire protective devices.

8. Respirators will be available for areas which may need them.

9. Wear goggles whenever there is a chance of splashing anything in your eyes.

10. Do not pick up extra-heavy samples or materials. Use carts or hand trucks whenever possible.

11. Bottles and containers will be plainly labeled.

12. The ends of glass tubing will be fire polished.

13. Electric heaters, rather than open flame burners will be used in rooms where volatile liquids or gases are used.

14. Chemical showers and/or eye wash stations will be provided in any area where checicals, acids, or other hazardous products are being worked with.

15. Spill carts are provided and employees trained in the event of an accidental spill of a hazardous material.

CHEMICAL USE

The use of chemicals or potentially hazardous substances is needed to keep MZG equipment in working order. Even the most hazardous substances can be used safely, if they are used correctly. Employees are expected to be sure they know and use whatever precautions are advised including personal protective equipment such as gloves and respirators, ventilation, or specific handling procedures.

MZG will occasionally monitor employee exposure to potentially hazardous substances. This may be done to determine usual exposure levels or because a problem is being investigated.

If an employee believes he or she has health problems because of a substance at work, the employee's supervisor and safety officer should be notified as soon as possible. Employees are reminded that being able to smell a chemical does not necessarily mean that the employee is overexposed: Some chemicals can be smelled at safe air concentrations, while others may not be able to be smelled until thay are at hazardous levels.

HAZARDOUS WASTE

Substances which are flammable, corrosive, reactive, or toxic require special handling for disposal. These include many paints and paint thinners, solvent from extraction booths, and many types of parts-washing liquid. The safety office must be consulted for procedures to use for disposal of any waste produced at MZG facilities.

The following procedure should be followed if abandoned containers of chemicals or unknown wastes are found on MZG property:

1. Inspect the container for leaks or spills Do NOT open the container or touch, sniff, or taste the material. You do not know how hazardous the substance is.

2. Try to identify the container's owner. Look for labels or markings on the container.

3. Notify your supervisor and safety officer, so that the Minnesota Pollution Control Agency (MPCA) can be informed. The MPCA is responsible for testing the material.

4. Do not move the container until you have checked with your safety officer and know what precautions you need to take.

EMPLOYEE RIGHT TO KNOW

Employees have the right to know the potential hazards of air contaminants, chemicals, or physical agents in their work environments. Air contaminants and chemicals do not include consumer products, sealed packages, or chemicals which have essentially no hazard. Physical agents include noise, heat, and radiation.

There are three ways to get information about the potential hazards:

* Material safety data sheets, written by the manufacturer. Contact your supervisor or safety officer to find out where these are kept.

* Labels on the chemical containers and equipment which produces harmful physical agents. Labels are not required for small containers which are filled each day.

* Training, which all routinely exposed employees should receive before they begin working with the potentially hazardous substance or agent. Annual refresher training is also required.

The Minnesota Employee Right to Know Law also gives you the right to refuse to work if you believe the work will put you in immediate danger of death or severe physical harm. To protect your pay and benefits you must:

1. Ask your supervisor to correct the problem.
2. If that does not work, call your safety officer.
3. If you disagree with Safety's opinion, call the Department of Labor and Industry (Minnesota OSHA) within 24 hours.

Revised 6/21/90

NOTES:

RATTLESNAKE MANAGEMENT PLAN

Handling Protocol for Timber Rattlesnakes

1. Handling of rattlesnakes is considered to be any time an exhibit or holding cage containing rattlesnakes is opened and any time a rattlesnake is transported. The period of handling is complete once the rattlesnakes are secured in a locked exhibit or holding cage and once transport is complete.

2. All handling of rattlesnakes will be done in their exhibit (MI-272), their holding area (MI-273), or in the SAH snake rooms (H-53, 54, or 55). Any transport of snakes between the MN Trail, and SAH will be done with a locked, secure holding cage.

3. Snakes will be handled only during regularly scheduled switchboard hours and the handler or backup will carry a checked radio. Radio checks prior to handling rattlesnakes will include the call # followed by the word snake in order to alert the switchboard to the reason for radio check. Following snake handling, radios will clear through the switch board. For example: "73 alpha-snake radio check", "73 alpha-snake all clear"

4. Rattlesnakes will only be handled with the assistance of a back up person. The primary handler and the back up person must both understand what is going to be done and by whom.

5. Prepare the work area before handling rattlesnakes. Check back up lights and the equipment to be used. Snake hooks will be used when moving rattlesnakes. Pilsner tongs will be present only for emergencies.

6. Exhibits and holding cages containing rattlesnakes will be labeled "hot snakes". When exhibits or holding cages do not contain hot snakes the "hot" label will be removed.

7. Access will be restricted into areas where rattlesnakes are being handled. The entrance door to service area (MI-273) will be labeled, 'No Entrance - Rattlesnakes Being Worked With'.

8. Locate all snakes before opening the exhibit or holding cage door.

9. Always wear proper footwear (leather or rubber boots that cover the ankle, not tennis shoes).

10. Always remain alert to the animal and your control of it. Never take your eyes off the animal.

11. Any dead rattlesnakes will be handled and transported as though alive.

12. All people handling rattlesnakes will be familiar with MZG snake bite procedures and will be trained to handle hot snakes by MZG personnel experienced in handling hot snakes.

13. Snake bite protocol together with emergency numbers will be posted in MI-273 and the MN Interior Kitchen.

VENOMOUS SNAKEBITE PROCEDURES

PROCEDURE FOR VICTIM AND CO-WORKER

A. Secure and confine the snake(s).
B. Radio Switchboard (4100) and inform them that:

1 A snakebite has occurred.
2 Exact location.
3 Name of victim.
4 Species of snake.
5 Part of body bitten.
6 Time bite occurred.

C. Victim sits or lies down outside of holding area.
D. Victim or backup places species ID card attached to each snake cage) on bitten person's clothing.
E. Remove rings, bracelets, watches, false teeth, contact lenses from victim.
F. Wait for assistance.

PROCEDURE FOR SWITCHBOARD

A. When notified of venomous snakebite, obtain the following information:
   1. Exact location of victim
   2. Name of victim
   3. Species of snake
   4. Part of body bitten
   5. Time bite occurred

B. Contact Ambulance - 911 Hot Line - and inform them:
   1. A snakebite has occurred at MZG
   2. Victim needs to be transported to Hennepin County Medical Center Emergency Room.
   3. A zoo staff person will meet them at Gate 2 on Johnny Cake Ridge Road to escort them to bite location.

C. Clear all non-emergency radio traffic; inform all units in service to stay off the air except for emergency communication.

D. Contact Health & Safety (4130) and staff in A building: Jenny Prom (x265), Kay Kamps (x266) and have one person go to Gate 2, open the gate and escort the ambulance to the bite location. If no one is available, proceed to E and advise the duty officer immediately.

E. Contact by radio: Jim Pichner (4178) or Chris Kline (4173 Alpha). If no response contact one of the following in this order: Kevin Willis (4171) or Jim Streater (4175).

When contact is made, announce the following:

1. Snakebite has occurred
2. Where and when bite occurred
3. Species of snake and name of victim
4. When ambulance was called and who is escorting ambulance from gate 2.

F. Contact Medical Personnel:

Call Hennepin County Medical Switchboard (612 347-2121); inform them of situation and have them page the Staff Clinical Toxicologist on call:

Dr. Paul Pentel
Phone: 612 347-2705 (hospital), 522-6628 home; Pager: 336-0604

If Dr. Pentel is unavailable his backup is:

Dr. Milt Bullock
Phone 612 347-2705 (hospital), 574-9233 home; Pager: 530-8504

Dr. Louis Ling
Phone 612 347-3418 (hospital), 949-9500 home; Pager: 336-0716

Dr. Dan Keyler
Phone 612 337-8760 (hospital), 933-2055 home; Pager: 530-8674

G. When medical-staff contact is made, inform curator by radio.
H. Contact Kris Petrini, Jim Rasmussen or back up vet on duty:

Kris Petrini	Jim Rasmussen
Phone: 261	Phone: 371
Radio: 4161	Radio:4161 Jim

PROCEDURE FOR Zoologist or VETERINARIAN

A. Obtain the health form of the bite victim from the MN Trail kitchen. Antivenin is at Hennepin County Hospital.
B. Confirm that:
   Ambulance is called
   Medical personnel are contacted
   Snake is secured or confined
   Assist in transporting victim to ambulance

C. Contact Switchboard when the victim is en route to hospital.

D. Notify Connie Braziel and/or Lee Ehmke.

<u>IF THE SWITCHBOARD DOES NOT RESPOND TO THE REPORT OF A SNAKEBITE, THE ZOOLOGIST, VETERINARIAN, OR CO-WORKER IS RESPONSIBLE FOR CARRYING OUT THE PROCEDURE FOR THE SWITCHBOARD.</u>

STATE OF MINNESOTA
MINNESOTA ZOOLOGICAL GARDEN
POLICIES/PROCEDURE E-18

Chief Executive Officer's Signature

Eff. Date 10/94
Rev. Date 11/00

ANIMAL ESCAPES

POLICY:
It shall be the policy of the Minnesota Zoo to keep the zoo a safe place for staff, guests and the animal collection. All animal and recapture efforts are supervised by Biological Programs/Animal Health personnel.

PURPOSE:
The escape of any animal from its primary enclosure is a potentially dangerous situation. The objective of the Animal Escape Procedure is to rapidly regain control of the animal. In all escapes the priorities are: (1) safeguard the public, (2) minimize danger to the staff, and (3) recapture the animal (no zoo animal should be allowed to leave the zoo site).

PROCEDURE:
1. **AUTHORITY**

In the event of an animal escape the chain of authority is as follows:

1) Sr. Vice President of Biological Programs
2) Section Zoologist
3) Section Zookeeper or Conservation Manager

The Director of Biological Programs will be equal and lateral to the Zoologists/Conservation Managers and will determine the appropriateness of modes of restraint, assisting in recapture.

One of the above will assume the responsibility of the recapture coordinator to:

1) Immediately identify themself as the Recapture Coordinator and direct the immediate assembly of TEAM 1
2) Notify the switchboard of evacuation details so it can be relayed to guests by Team 2 and 3.
3) Coordinate the recapture of the animal
4) Notify the switchboard when the area is safe
5) Notify the MZG CEO and the Sr. Vice President of Biological Programs when the animal has been recaptured.

The recapture Coordinator is the zoologist of the unit from which the animal escaped. If the unit zoologist is unavailable, the senior animal keeper on the scene acts as the Recapture Supervisor until the first zoologist arrives That zoologist may assume the role of Recapture Coordinator if they so desire.
If the Zoologist/Conservation Manager of the section from which the animal has escaped does not reply promptly, any other Zoologist should assume command and act as Recapture Coordinator. If this occurs, keepers in the section affected should notify the Recapture Coordinator of his/her presence.

If the animal provides a direct threat to human life, or a threat to the animal collection, the decision to use deadly force will be made by the **Firearms Handler**. A suitable weapon must be used to ensure a quick, humane death. Weapons should be brought to the scene as discreetly as possible so as not to cause the public to panic. A cautious approach will serve the shooter well in that it won't spook the animal and will give them time to sizeup the situation. A reckless approach with a loaded weapon could have disastrous results

All other zoo staff are temporarily under the direction of the Recapture Coordinator.

If the animal leaves zoo property, the Police Department will be notified and will assist the MZG staff in the recapture. If the situation involves an animal from the dangerous animal list, a call to the Police Department may be advisable earlier than stated above to alert them to the possibility of needing their assistance.

2. **REPORTING**

All animal escapes will be identified on the radio by the use of a code word. The following code will be used:

CODE RED - REFERS TO AN ANIMAL ESCAPE FROM ITS PRIMARY ENCLOSURE

The first person to discover an animal escape will notify the switch board by radio (4100) that:

This is (individuals name) at (location) {holding area, public area, etc.}.
There is a code <u>RED</u> with (species) that is (doing what).

The discoverer of the escaped animal should keep it under observation and not attempt to recapture it.
No attempt to recapture the animal should be made until directed by the Recapture Coordinator **Unless the member of the shoot/recapture team can safely intercede and cause the animal to retreat back to it's holding area. This decision will be at the Biological Staff members discretion and is allowed based on their information they have at the time and their experience.** Nets and other capture equipment must remain hidden from the escaped animal at this time. An escaped animal is in a situation strange to them and will feel frightened and desperate. This is because it is in an unknown place, sees unknown people, and experiences unfamiliar noises and movements. It may see these items (nets, hoses, guns) or people with which is associates negative consequences. All of these negative stimuli should be avoided as much as possible unless they are decided to be used to coax the animal back into its holding area.

<u>*Avoid all excess radio traffic--Avoid all excess radio traffic--Avoid all excess radio traffic*</u>

It is the responsibility of the switchboard to follow switchboard procedures. (See attached sheet).

3. **SUPPORT TEAMS**

Support staff identified to assist during an escape will:

1. Assist guests to safety
2. Secure the area and/or Zoo site and,
3. Assist with recapture of the animal

SUPPORT TEAMS WILL CONSIST OF THE FOLLOWING:

TEAM 1 (RECAPTURE COORDINATOR)

<u>Biological Programs staff and Veterinary Staff</u>

TEAM 2 (SITE SECURITY/CLEAR PUBLIC)

- Building Services staff, Operations, Safety Officer

TEAM 3 (COMMUNICATIONS)

- Guest Services, Volunteers

4. **GENERAL TEAM RESPONSIBILITIES**

A. TEAM ASSEMBLY AND COORDINATION

TEAM 1 will assemble as directed by the Recapture Coordinator. Recapture Coordinator will request the appropriate level of response depending on species and individual animal, its location (e.g. outside of its primary holding area but still secondarily confined, approaching the perimeter fence),time of day and proximity to the public. If police assistance is requested, the Police dispatcher will be notified immediately. The police will identify an officer to serve as the on-site police supervisor as part of the recapture team and that officer will gather and organize the police officers. The police will follow the direction of the recapture Coordinator.

The initial goal is to establish a wide perimeter around the escaped animal to try to contain it while a recovery plan is being formulated and to keep people safely away.

TEAM 2 will assemble in the Building Services office/Keeper lunchroom area in the Tropics and will wait for a call from the Coordinator before proceeding to secure the escape area, and escort the public to safety.

TEAM 3 will assemble at the Guest Services desk and be responsible for communication with the public.

B. SPECIFIC ANIMAL AREA, TEAM RESPONSIBILITIES

(A) TROPICS ESCAPE

- TEAM 1 or 2: Lock these walkway doors

  1. From Tropics to Dolphin Viewing (non-sliding doors have upper and lower latches on the sides of the doors and use a 3A1 key to lock.)
  2. Building doors at Small Bird Aviary
  3. Visitor Entrance doors at the bottom of the Tropics Ramp
  4. Station one team member at the tropics nocturnal rollup door and have them wait for further instructions. Door may be best left up or could be ordered down depending on the situation.

A member of Team 1 or 2 will remain at each of these doors to stop guests from entering the area. The Recapture Coordinator will specify how the building will be evacuated and the remaining members of TEAMS 1 and 2 will escort guests to a safe location.

(B) MINNESOTA TRAIL ESCAPE

- TEAM 1 or 2: Lock these doors

  1. Beaver Exhibit
  2. Lynx Exhibit

A member of Team 2 will be stationed at the trail by the skunk exhibit to stop guests from entering the trail, remaining members of TEAMS 1 and 2 will escort guests to a safe location.

(C) NORTHERN TRAIL ESCAPE

- TEAM 1 Will assemble as directed by the escape coordinator
- TEAM 2: Four members should proceed immediately to and secure:

  1. Children's Zoo Gate #4
  2. Heating Plant Gate #5
  3. FARM (Galaxie) Gate
  4. Gate #2

One of the TEAM members will remain at the gates until the **all clear** is given by the Recapture Coordinator.

- Two TEAM members should go to:

  1. The bottom of the exterior stairwell at lower dolphin viewing
  2. The doors from guest services to the exterior plaza
  3. The doors from Lancers Restaurant to the Lower Plaza.

These TEAM members should prevent people from entering the Northern Trail

- One TEAM member should go to:

  1. The Education wing doors near Zoofari Park

The remaining TEAM 1 and 2 members should clear the Northern Trail, Bird Show Amphitheater and My Back Yard/Pony Ride Area as instructed by the Recapture Coordinator.

(D) ANIMAL HEALTH/LARGE ANIMAL HOLDING ESCAPE

- TEAM 1 Will assemble as directed by the escape coordinator
- TEAM 2: Four members should immediately proceed to and secure:

  1. Children's Zoo Gate #4
  2. Heating Plant Gate #5
  3. FARM (Galaxie) Gate
  4. Gate 2

One of the TEAM 2 members will remain at the gates until the **all clear** is given by the Recapture Coordinator.

The remaining members of TEAM 1 and 2 should secure other areas as instructed by the Recapture Coordinator.

Keeper/Zoologist Actions

The escaped animal's keepers should immediately implement its passive containment plan, to allow the escaped animal to return on its own to a home enclosure or if home enclosure is compromised to prepare an enclosure for the escaped animal after it is recovered.

If the escaped animal is outside the secondary containment, appropriate keepers should immediately try to shift all bears, big cats, wolves, and other dangerous animals as necessary.

At the direction of the recapture coordinator, animal staff on the scene should begin to establish a perimeter. Again, there should be no premature attempt to recapture the animal, and no nets, guns, or other recapture equipment should be visible to the animal unless directed by the recapture coordinator. (see Appendix A)

The perimeter should be well beyond the animal's flight distance (see Appendix A). **Non-animal staff should remain clear of the scene unless asked to participate.**

Once the perimeter is established, the recapture supervisor may direct the keepers to adjust the perimeter to allow/encourage the animal to return to its home enclosure on its own. The animal should not be approached closely, and there should be no waving, shouting or running that might alarm it unless so directed by the Recapture Coordinator.

Veterinary Staff

Veterinarians will respond as quickly as possible when informed of an escape by the Recapture Coordinator. When chemical immobilization is required, the veterinarian will work with the recapture coordinator and use established safety practices in regard to the chemical agent.

Team 2

Move visitors and non-involved zoo staff away from the site of the escaped animal and, if appropriate, into buildings. They should be calmly informed of the escape, and instructed to remain inside until they are told that the animal has been recaptured. A zoo staff member should stay with each evacuated group to help maintain calm and provide communications.

In the case of nighttime, or weekend escapes, there will be fewer animal staff available to monitor the animals' position and possibly greater delay in assembling the recapture team. Winter can cause unusual conditions as well and can greatly delay response time.

Other considerations

Facilities and building management will stand by ready to provide ropes, chains, cages, fire extinguishers, portable lights, vehicles and other heavy equipment as requested by the recapture coordinator.

Health and safety staff will be prepared and ready to respond to injuries as needed.

The Zoo Public Information Officer will be summoned to inform and respond to the media if necessary, and control access if the media personnel arrive during the recapture effort. An area of the zoo should be identified and designated as the information center for the incident. Media personnel should be kept safely away from the recapture effort to not jeopardize their safety or inhibit the recapture plan.

After Recapture

When the escaped animal has been secured, the recapture coordinator will give the **all clear** announcement to all staff. The zoo will then release the public and resume normal operations. The recapture coordinator will immediately report to the Biological Programs Director to give them a verbal accounting of the incident. The Bio Programs director will assist the Public Information Officer in preparing a statement for the media if necessary.

The recapture Coordinator will provide a written report of the incident to the Bio Programs director **as soon as possible** but no later than 24 hours of the incident.

A debriefing of the incident will be arranged within one week of the incident. Employee Assistance Program (EAP) will be encouraged with employees needing critical stress relief from the episode.

Training and Readiness

The director of Biological Programs will ensure that these procedures are reviewed annually with each Biological Programs employee and each Minnesota Zoo Supervisor. Each new keeper will be given a copy of the Animal Escape Plan to review and prepare themselves.

The Bio Programs Director will annually review and update , if necessary, the contact list for veterinarians, zoologists, and members of the recapture team. This list must be kept current and be conveniently and quickly available to the switchboard operator in case of an escape.

The Firearms Coordinator will ensure that suitable heavy weapons and ammunition are readily available. The Firearms coordinator will also ensure members of the shoot team are certified in firearms safety and qualified each

year at a shooting range. A Bureau of Criminal Apprehension background check will be performed on each firearms handler.

Zoologists will prepare passive containment plans for their trail and make sure that staff is familiar with them.

All supervisors will ensure that this procedure is discussed with their staff and that this policy is readily available to them. All previous versions of the Minnesota Zoological Gardens Animal Escape Procedures are located and destroyed

The lead Veterinarian will maintain an animal escape protocol directed at equipment readiness which will be posted for hospital staff and revised annually. This protocol will include anesthetic dosages for all species considered dangerous at the Minnesota Zoo.

The lead Veterinarian will ensure that drugs and the drug delivery systems suitable for recapture are available to the veterinary staff and that the veterinarians are trained for their use in recapture efforts.

SWITCHBOARD PROCEDURES

1. **Immediately contact the Zoologist and Conservation Manager of the area, if present in the Zoo, and the veterinarian on duty and Sr. Vice President of Biological Programs (see attached chart).**

2. **Clear the airways. ("ALL 4100 UNITS - YOUR ATTENTION PLEASE, CLEAR ALL AIRWAYS –10-33 EMERGENCY TRAFFIC ONLY.")**

3. **Broadcast a radio message to all animal staff units informing them of the emergency.**

4. **Contact the veterinarian on duty via the radio (4161 alpha or 4161 Jim or 4161Melissa) or the long distance pager. (See attached chart)**

5. **Have team members assemble at predetermined locations to await further instructions from Recapture Coordinator.**

6. **Notify CEO and public relations staff.**

7. **Follow any other instructions given by Recapture Coordinator.**

ANIMAL *RECAPTURE* STAFF DAYS OFF
TRAIL/RADIO/PAGER CALL NUMBERS

	Trail	Radio	Pager	Days Off
Geiszler (Zoologist)	Northern	4172A		Friday/Saturday
Kline (Zoologist)	Minnesota	4173A		Sunday/Monday
Pichner (Zoologist)	Birds	4178		Sunday/Monday/Tuesday
Schoeberl (Zoologist)	Tropics	4175A		Thursday/Friday/Saturday
Trechsel (Zoologist)	Tropics	4175B		Sunday/Monday
Weismann (Veterinarian)	Animal Health	4161Melissa		Normally here only Thurs.
Streater (VP Bio Prog.)	Bio Prog.	4175	601-2850	Saturday/Sunday
Rasmussen (Veterinarian)	Animal Health	4161Jim	601-5032	Friday/Saturday
Petrini (Veterinarian)	Animal Health	4161Alpha	601-2836	Sunday/Monday
Fisher (Supervisor)	Farm	4179	601-3502	Sunday/Monday
Fusco (Zoologist)	Dolphin	4174		Friday/Saturday
Maguire (Zoologist)	Aquariums	4176		Saturday/Sunday

All pager numbers are in area code 612 unless designated otherwise

APPENDIX A

THE BIOLOGY AND PSYCHOLOGY OF ESCAPED ANIMALS, AND GENERAL PRINCIPLES OF RECAPTURE

Recapture may involve chemical anesthesia, netting or trapping, physical restraint, or simply encouraging the animal to return to the home enclosure.

Each animal has its own **flight distance.** Flight distance is the distance at which an animal will flee from a pursuer. Staff should stay beyond the flight distance when observing an escaped animal or establishing a perimeter around it. A familiar person or vehicle can approach most animals more closely than a stranger can. Also, a calm, Slow moving person can approach more closely than one who is shouting, running, or waving. Flight distance of an escaped animal is greater than its flight distance inside its home enclosure.

An animal about to flee has its hair or feathers erected. Its ears are up (if it's a mammal), and its eyes wide open. It may crouch slightly, or open its wings. It may take a few quick steps and then stop. If it's a jumping animal it may stare intently at a landing spot.

Each animal has a **critical distance.** This is the distance at which an animal will attack a pursuer if it cannot flee. The critical distance is always smaller than the flight distance. If an animal is cornered and you have gone inside its flight distance, you will be approaching its critical distance.

A big cat about to attack will lower its ears, and may snarl, hiss or show its teeth. A bear may stand upright on its hind legs. A monkey will stare intently, and may yawn. A deer or antelope will lower its head, pointing its horn or antlers and shaking them from side to side. A keeper most familiar with these " intention signals " of a particular species can best predict whether an escaped animal will flee or attack.

Zoo animals usually have a strong attachment for their home enclosure. Thus if an escaped animal has not ventured too far from its primary enclosure, it may be possible to lure it back inside. Keepers will thus shift cage mates out of the home enclosure of an escaped animal so that the door or gate can be left open (count and account for all cage mates at the same time to be sure that others have not escaped unnoticed). The enclosure may be baited with preferred food. One recapture strategy is to form a perimeter around the escaped animal, slowly intrude on its flight distance and herd the animal back toward the enclosure. When using this strategy, if the animal breaks toward the perimeter of people it should be allowed to pass through. The perimeter can then be reestablished after the animal stops.

An escaped animal is in a strange situation and will feel frightened and desperate. This is because it is in an unknown place, sees unknown people, and experiences unfamiliar noises and movements. It may see items (nets, hoses, guns) or people with which it associates negative consequences. All of these negative stimuli should be avoided as much as possible.

Examples of positive factors that will calm an escaped animal are being near a familiar area, sensing familiar people or animals, seeing food, or hearing coaxing sounds normally made by its keeper. One strategy is to purposefully expose or empty food or garbage in the vicinity, especially for a primate, to help with containment.

In the event that staff encounter Zoo guests with disabilities that impede or delay the evacuation of an assigned area, that staff member should radio their group leader for assistance. The group leader will send the necessary assistance to help bring the guest to safety. The group leader may need to assign additional staff to coordinate the rest of the evacuation of that trail.

First aid and security staff with assistance of other Zoo staff will clear all trails, public areas, and staff areas of guests and employees. Employees with disabilities that affect communicating because of hearing impairments, will be assigned to a "buddy system" and will be given personal assistance for evacuation. The "buddy" is assigned at the time of hire.

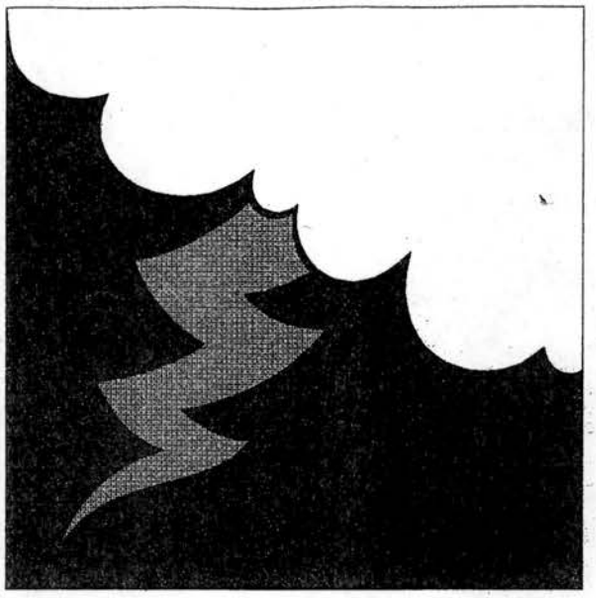
Staff performing the evacuation will carry signs on the trails that will advise the guests that an evacuation is underway: Sign will state: "EMERGENCY EVACUATION IN PROGRESS, PLEASE FOLLOW ME".

TELEPHONE NOTIFICATION SYSTEM 2000

Dispatcher or Vice President or Other Designee

Monorail Station	Ext. 205
Monorail Maintenance	Ext. 223
Zoo Farm	Ext. 556
Discovery Bay	Ext. 529
Imation Imax Theater	997-9720 / Box Office
School of Environmental Studies	431-8750
Northern Trail Lunchroom	Ext. 383
Lancer Food Service	953-0667
Guest Services	Ext. 213
Education	Ext. 234
Gift Store	Ext. 210
Bio Programs Administative Asst.	Ext. 271
Main Kitchen	Ext. 290
Garage	Ext. 250
Grounds Shop	Ext. 246
Heat Plant	Ext. 251
Greenhouse	Ext. 281
Zoolab	Ext. 239
"B" Building	Ext. 312/if no answer Ext. 280
"A" Building	Ext. 262/if no answer Ext. 265

MINNESOTA ZOOLOGICAL GARDEN
SEVERE WEATHER EVACUATION PLAN
(Revised) June 2000



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MZG SEVERE WEATHER EVACUATION PLAN

OVERVIEW: This plan is designed for the protection of the guests, volunteers, and employees of the Minnesota Zoological Garden in the event of severe weather. It provides Zoo staff with procedures to be followed in the event of a weather related emergency. Severe weather notifications will be based mainly on the **National Weather Services "Weather Services Watch and Warning Systems."** The decision to activate the evacuation procedures will be made by the following staff:

*** SAFETY ADMINISTRATOR ***

or in the absence of above

First Aid/Security Staff on Duty

OUTSIDE EVACUATION procedures will be implemented for **SEVERE THUNDERSTORM** and **TORNADO WARNINGS** by the above individuals taking into consideration the local weather conditions. The objective of the **OUTSIDE EVACUATION** is to get all guests into the Main Building Complex as soon as possible. Additionally, a **FULL EVACUATION** will be implemented in the event of a **TORNADO WARNING.** The objective of the **FULL EVACUATION** is to direct guests to designated areas that are considered the "safest" areas available on Zoo site.

I. NOTIFICATION

A. Each time the **"weather radio"** announces a weather **WATCH/WARNING** for the seven county Metro Area even though it may not include **Dakota County**, First Aid , Northern Trail Staff and Monorail Station Staff and Drivers shall be advised of the announcement and area of coverage by the MZG Dispatcher.

B. When directed by Management personnel to put the evacuation plan into action, the following steps shall be taken by the Dispatcher in the following order:

OUTSIDE EVACUATION

(a) Activate the telephone tree. The Dispatcher will ask a staff person in the vicinity to place telephone tree calls. Message to be transmitted - **"Outside Evacuation procedures are now in effect. Please report to your assigned area."** (Telephone tree listed on page 6.)

(b) Radio announcement to staff stating: **"All 4100 units, your attention please, all personnel report to your assigned areas for Outside Evacuation."**

(c) P.A. announcement will be made by Guest Services staff or designee: **"Your attention please, there is severe weather in the area. Please remain indoors until further notice. All staff and Zoo volunteers report to your assigned area."**

FULL EVACUATION

(a) Activate the telephone tree. The MZG Dispatcher will ask a staff person in the vicinity to place telephone tree calls. Message to be transmitted: **"Full evacuation procedures are now in effect. Please direct guests to safe areas."**

(b) Radio announcement stating: **"All 4100 units your attention please, Full Evacuation procedures are now in effect. Please direct guests to safe areas."**

(c) P.A. announcement will be made by Guest Services Staff or designee - **"High winds and possible tornadoes have been reported in the area. Please follow the direction of Zoo staff members in your area."**

II. DESIGNATED AREAS

This is a listing of the safest areas available on the Zoo site in the event that a Tornado/Full Evacuation is called:

Tropics Nocturnal Hallway
Coral Reef Ramp
Minnesota Nocturnal
All rest rooms in the main building complex
Service tunnels
Lower Level of "A" Building
On the farm site - Farmhouse & Lower Level of the Dairy Barn
Theater (use last)

If the above areas fill up, the following areas should be utilized:

Minnesota Fish Tank hallway away from glass
"B" Building
2nd & 3rd Floor hallways and rooms away from glass
Guest Services supervisor's office
Mechanical areas in service tunnels
Any ditch or depression
Northeast side of any hill

The following areas should be avoided:

Tropics
Discovery Bay / Marine Education Center
Imation Imax Theater
Education Wing, Classroom, Office & Zoolab
All areas of "OLD" dolphin viewing except the ramp for guests with disabilities.
All out buildings
Greenhouse
Garage
Top level of "A" Building
Monorail Maintenance
All other glass walled areas
Vehicles
Outdoor open and exposed areas

III. EVACUATION GROUPS

A. The following is a listing and composition of the three primary evacuation groups and group leaders:

GROUP 1:	**Building Services Staff**
Report to:	Building Services Office
Group Leader:	Building Services Supervisor or Designee
Group 2:	**Skytrail Drivers, and Station Staff, Education, Guest Services, Gift Shop, Volunteers, Available Second and Third Floor Staff**
Report to:	Indoor theater
Group Leader:	Guest Services Supervisor on duty
Group 3	**Aquarium Staff and available Minnesota and Tropics Trail Staff**
Report to:	Indoor viewing area for outdoor pool
Group Leader:	Senior Aquarium staff on duty.
Group 4	**Marine Mammals Staff**
Report to:	Dolphin Staff Office
Group Leader:	Senior Marine Mammals Staff on duty
Group 5	**Zoo Farm Staff**
Report to:	Farmhouse
Group Leader:	Senior Farm Staff Person on Duty

B. **<u>In addition to the above groups, the following staff responsibilities will apply:</u>**

(1) Engineers will standby at their work locations and handle any mechanical problems that may arise.

(2) All Bio Programs Staff not listed in the above groups will secure animals as necessary and stay with them until the ALL CLEAR is given. Any extra personnel will be sent to the theater for assignment. In the case of a **FULL EVACUATION**, proceed to one of the safe areas.

(3) Internal Services and Horticulture staff should suspend all outside activities and be prepared to proceed to a safe area in the event of a **FULL EVACUATION.**

(4) Internal Services and Horticulture staff working in the main building complex are to report to the theater for assignment.

(5) Electrical Supervisor and Electrician staff will standby to switch electrical load at "F" Mechanical room in main building and mechanical room in "A" building.

(6) Monorail Electricians will secure all monorail trains after getting passengers off and will turn off all power on tracks if possible. They will then report to "F" mechanical for further instructions from the Electrical Supervisor.

OUTSIDE EVACUATION

An **OUTSIDE EVACUATION** will be instituted in the event of a **TORNADO WARNING** or **SEVERE THUNDERSTORM WARNING.**

OBJECTIVE: **To get all guests into the Main Building Complex as soon as possible.**

A. **GROUP I:**

1. **MEET AT:** The Building Services Office

2. **RESPONSIBILITIES:** Direct all visitors on the Northern Trail, picnic grounds and parking lots into the Main Building Complex.

3. **PROCEDURES:**

A. One Vehicle (First Aid vehicle if possible) will make a sweep of the picnic grounds and parking lots.

B. Two vehicles will make a complete sweep of all Northern Trail pathways. Person clearing from the main bridge by Arctic Fox also clears Musk Ox dead end loop and Amphitheater.

In the event that staff encounter Zoo guests or employees with disabilities that impede or delay the evacuation of an assigned area, a staff member will radio their group leader for assistance. The group leader may need to assign additional staff at the time of the emergency to coordinate the rest of the evacuation of that trail.

First aid and security staff with assistance of other Zoo staff will clear all trails, public areas, and staff areas of guests and employees. Employees with disabilities that affect communicating because of hearing impairments, will be assigned to a "buddy system" and will be given personal assistance for evacuation. The "buddy" is assigned at the time of hire.

Staff performing the evacuation will carry signs on the trails that will advise the guests that an evacuation is underway: Sign will state: "EMERGENCY EVACUATION IN PROGRESS, PLEASE FOLLOW ME".

C. Station one vehicle on the plaza by the Education Classroom

D. Station the second vehicle on the plaza by the stairway to the Dolphin pool and Food Service area.

E. **DO NOT** let anyone back onto the Northern Trail.

4. **GROUP LEADER WILL DIRECT ADDITIONAL STAFF TO THE THEATER FOR ASSIGNMENT.**

5. Group leader will radio switchboard when areas have been secured.

B. **GROUP II**

1. **MEET AT:** Theater

2. **RESPONSIBILITIES:** Direct all guests or advise guests to remain in the Main Building Complex.

3. **PROCEDURES:**

Send assistants to:

A. Imation Imax Theater Box Office - Unlock Upper South Gate (Large Swing Gate) to allow Imax staff to evacuate guests to second floor and tunnels . Send second person to second floor doors to hold open for evacuating guests from theater.

B. Central Plaza/Zoofari Park - Send person with motorized cart - clear - guests to return to Main Building. Return to theater when assignment is complete.

C. West Education wing doors - guests to remain indoors.

D. Lower Plaza doors - guests to remain indoors.

E. Outdoor stairway - lower level by outdoor tank - guests to remain indoors at Food Service. This person should stop at the main Food Service area first to determine if Manager is aware that we are implementing evacuation procedures.

H. Snow Monkey Ramp - lower level - guests indoors - pit area.

I. Main Food Service - Outside doors - guests to remain indoors.

P.A. announcement will be made by Guest Services staff or designee. "High winds and possible tornadoes have been reported in the area. Please follow the direction of Zoo staff members in your area."

Those of you assigned to the following location will report, but no action will be necessary unless a **FULL EVACUATION** is called. If a **FULL EVACUATION** is called, direct guests to remain in the safe area you are currently in or if that area fills to capacity, open the emergency exit door so guests may enter the tunnel areas. Be sure to check the area yourself as soon as you arrive so that you know which way to direct guests. All guests should line up next to the wall on both sides as you direct them. Additional staff will be assigned to assist you as available. Remain with guests until the **ALL CLEAR** is given.

I. Send three staff to indoor viewing area for the outdoor tank to assist the other group.

4. GROUP LEADER WILL RADIO SWITCHBOARD WHEN ALL AREAS HAVE BEEN SECURED.

GROUP III

1. **MEET AT:** Upper Indoor viewing area for outdoor tank

2. **RESPONSIBILITIES:** Directing all guests into the Main Building Complex from the Upper Plaza.

   Direct all guests entering from East and/or South Admissions to Indoor Viewing area for Outdoor tank entrance.

3. **PROCEDURES:**

   A. Station staff by the doors at the Indoor Viewing area for outdoor tank.

   B. Tropics -NE corner- glass doors - no one outside - visitors to Nocturnal if **FULL EVACUATION** is called.

   C. Tropics - emergency exit across from Gibbons.

   D. Tropics - emergency exit in the Coral Reef ramp.

   E. Tropics - emergency exit - Nocturnal.

   F. Station staff by East admissions.

   G. Station staff by South admissions.

4. **IF POSSIBLE, ALERT THE SWITCHBOARD OPERATOR THAT AREA HAS BEEN SECURED.**

A **FULL EVACUATION** will be instituted in the event of a **TORNADO WARNING.** In all cases when the guests have been secured, staff will remain with them to keep them calm. Non-assigned Bio Programs Staff will immediately increase the light levels.

In addition to the **OUTSIDE EVACUATION** procedures, the following additional group responsibilities are in effect in the case of a **FULL EVACUATION.**

GROUP IV

1. **MEET AT:** Dolphin Staff Office

2. **RESPONSIBILITIES:** Direct all guests into the Main Building Complex from Discovery Bay.

3. **PROCEDURES:** Station Staff by:

   A. Children's Zoo - clear - guests return to Main Building. Clear guests from Central Plaza and Zoofari Park back to main building. Remain at the Central Plaza Fountain until entire area is cleared. Return to Discovery Bay when assignment is complete.

   B. Dolphin Stadium Upper Emergency Exit Doors - **Do not allow guests to exit the building and expose them to the inclement weather.**

   C. After hours entrance/exit

   D. Entrance/Exit Doors to Northeast Plaza

   E. Monorail Station Entrance to Discovery Bay

4. **AS SOON AS AREA IS SECURED, ALERT THE SWITCHBOARD OPERATOR AND LET THEM KNOW.**

A **FULL EVACUATION** will be instituted in the event of a **TORNADO WARNING.** In all cases when the guests have been secured, staff will remain with them to keep them calm. Non-assigned Bio Programs Staff will immediately increase the light levels.

In addition to the **OUTSIDE EVACUATION** procedures, the following additional group responsibilities are in effect in the case of a **FULL EVACUATION.**

GROUP V:

1. **MEET AT :** FarmHouse

2. **RESPONSIBILITIES:** Direct all guests back to the Main Building Complex from the Farm Site.

3. **PROCEDURES:**

A. Weather permitting, the preferred action would be to direct guests back to the main building as soon as possible and not wait until the storm is on top of the Zoo. If the storm is approaching too fast, then it would be more appropriate to evacuate them to the safe areas. Farmhouse lower level and lower level of dairy barn are the farmsite safe areas.

B. Please make a P.A. (Public Address) announcement on the Farm P.A. system.
" High winds and possible tornadoes have been reported in the area. Please follow the direction of Zoo staff members in your area.

C. Send staff to all buildings on Farm Site and alert guests of the severe weather in the area. Direct guests to one of the areas of safety on the Farmsite.

A **FULL EVACUATION** will be instituted in the event of a **TORNADO WARNING.** In all cases when the guests have been secured, staff will remain with them to keep them calm. Non-assigned Bio Programs Staff will immediately increase the light levels.

IF POSSIBLE, ALERT THE SWITCHBOARD OPERATOR OR INCIDENT COMMANDER THAT THE AREA HAS BEEN SECURED.

GROUP I:

1. **DRIVE TO THE MAIN BUILDING.**

2. The vehicle at the northeast corner of Tiger viewing is to proceed to the stairs by the main food service and assist clearing guests from the main food service area to the tunnels via the food service kitchen. **If a large group of guests have been evacuated from the amphitheater, it may be necessary to utilize the lower level old dolphin viewing doors to bring guests through old dolphin viewing and the mechanical room door to the tunnel by the keeper lunchroom/main kitchen.**

3. The vehicle in position near the Children's Zoo is to proceed to the Education wing doors by the Monorail ticket booth and assist clearing the Education wing, directing guests to the theater, 2nd floor, 3rd floor and rest rooms as necessary.

4. The vehicle in the picnic/parking area will proceed to the Main Building Complex to take cover.

GROUP II:

1. Secure all cash drawers and direct guests from the Guest Services and pit area to the tunnels and 2nd & 3rd floor via the stairwell; **Do Not use the Elevator.**

2. Clear guests from the Tropics door near the Food Service to the front entry.

3. Staff will stay at the lower entrance doors until the area is clear.

4. As staff become available, start clearing guests from the Tropics Trail exit into Aquarium and ramp area.

5. Staff already stationed at the emergency exit doors in the Tropics will direct guests into the tunnels as necessary.

6. The theater will be filled last allowing for stragglers.

GROUP III

1. Direct guests from the Indoor viewing area for the Outdoor tank, Tropics area, Tropics ramp, and Minnesota Exterior to the Minnesota Nocturnal, and Aquarium viewing (Overflow and Guests with Disabilities), Tunnels at Gibbon , Nocturnal and Coral Reef.

2. When these areas become saturated, direct guests to the tunnels via the stairs by the exit to the Minnesota exhibit and/or through the filter room to tunnel area near main kitchen/Keeper Lunchroom.

3. Staff will stay with the guests to keep them calm.

GROUP IV

1. Direct guests from Discovery Bay to the tunnels in the main building using the tunnel access at the rear of the gift store. **Do not use the elevators in Discovery Bay except for evacuating guests with disabilities.**

2. Staff will remain at all exits until all guests have been safely evacuated into the main building.

GROUP V

1. Direct all guests to remain indoors at the safe areas of the farm until the all clear is given.

VI. ALL CLEAR

When the ALL CLEAR has been issued by the weather radio, the Dispatcher will:

A. Contact the Vice President who will evaluate the situation at the Zoo. When he/she has determined the weather situation has stabilized, the following steps will be taken by the Dispatcher:

(1) Contact the Northern Trail staff by radio, advise he/she to check fence lines for problems, and to advise the Dispatcher when all animals have been accounted for and secured.

(2) Contact **Group 1** leader on duty by radio. Advise he/she of **ALL CLEAR.** Direct them to check the Northern Trail walkway, parking lots, picnic areas for problems, to post staff in vehicles on Northern Trail walkways and to keep the walkway closed until further notice.

3) Upon notification from the Northern Trail staff that all animals are accounted for, ask permission of a Vice President to pass on the **ALL CLEAR** to all staff and guests. When granted the Dispatcher will:

(A) Advise a Vice President or other staff person in the vicinity, to activate the telephone tree to give the **ALL CLEAR** message.

(B) Radio (both tones) and state: **"All 4100 units the ALL CLEAR has been issued. Please escort visitors to public areas."**

(C) P.A. announcement will be made by Guest Services or designee: **"Your attention please, the ALL CLEAR has been issued. Please continue your visit and thank you for your cooperation."**

***** Please note: The ALL CLEAR message may be modified depending on facility/animal problems (i.e., the message may include: "Northern Trail is closed until further notice.")**

(D) When the **ALL CLEAR** has been issued via the communications system, the theater will be cleared first as this will be the triage area.

(E) All staff return to the doors they were assigned to prior to the **FULL EVACUATION** to prohibit any guests from going outside until the safety of the Northern Trail and/or other areas has been assured.

(F) Assist guests out of safe areas and into the Tropics, Guest Services or the pit area.

(G) Any guest or employee requiring first aid will be brought to the theater for first aid. If there is a person injured and they are unable to be moved, call the first aid staff or dispatcher by radio, or send a runner to the theater to report it.

GROUP 1 CHECKLIST

GROUP LEADER: Building Services Supervisor/Leadworker

OUTSIDE EVACUATION

_____1. One staff person and vehicle will advise guests in the picnic area and all grass areas of the weather situation and suggest that visitors either return to the main building or leave Zoo site.

_____2. Send two staff, each in a vehicle, to sweep the Northern Trail advising guests to return to the main building. Upon completion of the sweep, one vehicle will park at the back door of the Education hallway. The second vehicle will park by the main Food Service. Each will advise guests entering the Northern Trail of the weather condition and suggest they return to the main building for their safety.

_____3. Additional staff will report to the theater for assignment.

FULL EVACUATION

_____1. The south vehicle will drive up to the Education wing and the employee will assist in clearing the Education wing.

_____2. The north vehicle will drive up to the main Food Service and assist in clearing guests through the kitchen to the tunnels. **If necessary assist with bringing guests from the amphitheater through old lower dolphin veiwing to safety in the tunnels by the keeper lunchroom/main kitchen.**

_____3. The picnic vehicle will advise those remaining in the picnic grounds and/or grass areas of the change in weather conditions, then immediately report to the main building to take cover.

_____4. Advise 4100 when areas have been secured.

ALL CLEAR

_____1. Upon receiving the **ALL CLEAR**, the Northern trail vehicles will immediately check the Northern Trail Walkways for visitor safety problems as well as animal exhibit fence lines that are visible from the walkway.

_____2. The picnic vehicle will check the picnic area and parking lot for damage and/or injuries.

_____3. Advise 4100 of problems noted. Attempt to clear brush and debris.

GROUP II CHECKLIST

GROUP LEADER: Guest Services Supervisor

OUTSIDE EVACUATION

_____1. Imation Imax Theater Box Office - unlock swing gate and station one person at the second floor doors to help direct guests to the tunnels at the end of the hallway.

_____2. Lower Plaza Doors - all guests are to remain indoors.

_____3. Outside stairway - lower level by outdoor tank - guests to remain indoors at Food Service. Also top at Food Service to let the manager know of impending weather.

_____4. Snow Monkey Ramp - lower level - all guests remain indoors in the pit area.

_____5. Main Food Service - by outside doors - all guests to remain indoors.

_____6. Send three staff to indoor viewing of the Dolphins to assist other group.

_____7. Advise 4100 when all areas have been secured.

FULL EVACUATION

_____1. Staff directs guests into tunnel areas through the gift store stairs and by elevator and first aid room.

_____2. Staff at exits remain there until all guests are cleared from the area and are safely being detained in the tunnels. Staff then seeks refuge there also.

_____3. Staff remain with guests to help keep them calm and to keep them from areas of potential danger. Staff also update guests with information on status of the storm as soon as it is learned.

_____4. Notify 4100 when the area has been secured.

ALL CLEAR

Assign staff to all exterior doors and allow no one outside until the Northern Trail has been checked and found safe by Animal Management and Operations staff.

Assign staff to the following areas:

_____1. West Education wing doors.

_____2. Both sets of Lower Plaza doors.

_____3. Main Food Service doors.

_____4. Outside doors at indoor viewing for the Dolphins.

GROUP III CHECKLIST

GROUP LEADER: Senior Aquarium Staff on Duty

OUTSIDE EVACUATION

_____1. Meet at indoor viewing for the old Ocean Trail.

_____2. Direct guests on Upper Plaza into the main complex

_____3. Direct guests entering East entrance to Old Ocean Trail indoor viewing area.

Assign staff to the following areas:

_____1. Doors to outside at indoor viewing for old Dolphin pool.

_____2. Tropics, NE corner, glass doors, allow no one outside. Guests to Nocturnal area if **FULL EVACUATION** is called.

_____3. Tropics, emergency exit across from Gibbons.

_____4. Tropics, emergency exit in Coral Reef ramp.

_____5. Tropics, emergency exit in Nocturnal next to Fruit Bats.

_____6. East admissions.

_____7. South admissions.

ALLOW NO ONE OUTSIDE!!!!!!!

_____8. Advise 4100 when all areas have been secured.

FULL EVACUATION

Direct guests to the following safe areas:

_____1. Minnesota Nocturnal

_____2. Coral Reef ramp

_____3. Old Ocean Trail ramp

If the safe areas become saturated, direct guests into the tunnels via the stairway by the Minnesota Nocturnal and through the filter room near the Aquariums

_____4. Staff will stay with the guests to keep them calm.

_____5. Advise 4100 when all areas have been secured.

ALL CLEAR

Assign staff to all exterior doors and allow no one outside until the Northern Trail has been checked and found safe by Animal Management and Operations staff.

GROUP IV CHECKLIST

GROUP LEADER: **Senior Marine Mammals Staff on Duty**

OUTSIDE EVACUATION

_____1. Meet at Dolphin Staff Offices

_____2. Children's Zoo - Clear, all guests to return to main building. Remain at the Children's Zoo foot bridge until entire area is cleared. Return to theater when assignment is complete.

_____3. Zoofari Park - Direct guests in Central Plaza and Zoofari Park to return to the main building

_____4.Lodge - clear - guests to return to the Main Building. Return to theater when assignment is complete.

FULL EVACUATION

Direct guests to the following safe areas:

_____1. Tunnels via the gift store door at the rear of the gift store. In the event of a disabled guest or for wheelchair patrons, please direct them to the indoor Zoo theater to avoid having to carry guests down stairway to tunnel.

_____2. Staff will stay with the guests to keep them calm.

_____3. Advise 4100 when all areas have been secured.

ALL CLEAR

When the **ALL CLEAR** is given, proceed to the area assigned to prior to the **FULL EVACUATION** to prohibit guests from going outside until the safety of the Northern Trail is assured.

GROUP V CHECKLIST

Group Leader: **Senior Farm Keeper Staff on Duty**

OUTSIDE EVACUATION

_____1. Meet at the Farmhouse

_____2. Direct guests back to the main building

_____3. Assist with building services staff to clear Northern Trail , if necessary.

FULL EVACUATION

_____1. Direct remaining guests into the lower level of the farm house and into the lower level of the dairy barn once the farmhouse is full.

_____2. Remain with guests to help keep them calm.

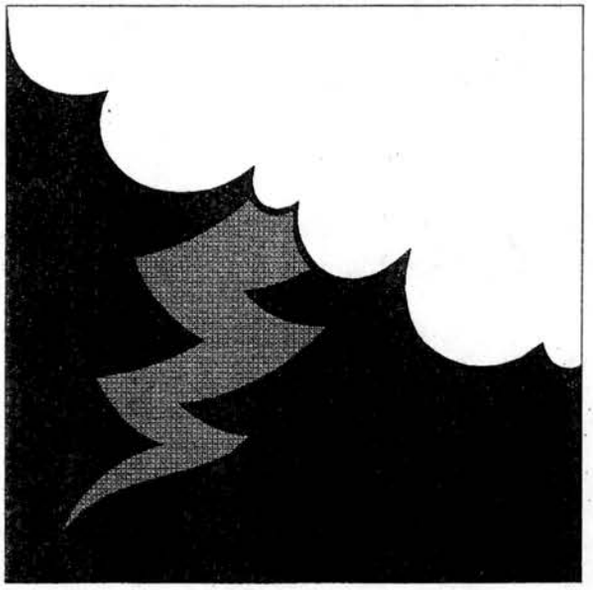
_____3. Advise 4100 when all areas have been secured.

ALL CLEAR

When the **ALL CLEAR** is given, proceed to the area assigned to prior to the **FULL EVACUATION** to prohibit guests from going outside until the safety of the Northern Trail is assured.

IMAX IMATION THEATRE

SEVERE WEATHER EVACUATION PLAN



Upon notification from zoo personnel (in person or by phone) of emergency weather evacuation, the following will occur:

1. The box office staff (first response team) will alert all staff via radio that an emergency weather evacuation will take place.

2. The manager on duty will personally alert the following staff :

   Lead Gift Store Clerk
   Projection Staff
   Lead Usher
   Lancer Food Staff

3. Gift store staff will clear the store of cusomers and close the gate.

4. Lead usher will contact all ushers and begin evacuation of the auditorium.

5. Ushers/Box Office Staff will be assigned to the following areas.

   Outside the main doors on the Upper South path to help direct traffic
   One person to clear the bathrooms
   Two staff to clear the auditorium down both ramps out to the main path
   One staff person stationed in the lobby to help direct traffic out
   One staff person to the office and cash room area

6. **When it appears that the building is clear, manager on duty should conduct one last sweep of the building and final radio check.**

7. All staff and guests will proceed through the Upper South Zoo entrance into the main building and down into the zoo tunnels.

8. Remain with the guests to keep them calm and reassure them that they are in a safe area from the weather.

Remain in the tunnels until notified from zoo staff that the "ALL CLEAR" has been given.

MINNESOTA ZOOLOGICAL GARDEN
FIRE EVACUATION PLAN
TROPICS

APRIL 1991
(Revised April 1997)

Scope: This plan is designed to protect and evacuate the visitors, volunteers and employees of the Minnesota Zoological Garden in the event of a **confirmed smoke or fire** emergency. It also provides Zoo Staff with procedures to follow during such an emergency. As time is of the essence in all fire-related emergencies it is imperative that **911** be called immediately, even before notifying the Zoo Safety Officer or other Zoo personnel. After calling **911** and activating the emergency response teams, the following people need to be notified:

Health & Safety Officer
General Director
Division Directors
Curators on Duty

Evacuation procedures must be implemented in all confirmed cases. A confirmed case being, **visible smoke or fire** identified in the building. The objective should **first** be maintaining the safety and welfare of all visitors, volunteers, and staff; and **second**, to the safety and welfare of the animal collection.

Dispatcher Responsibilities

Notification:

A. When the fire evuacation plan is activated, the dispatcher shall take the following steps in the order listed:

1. Activate the telephone tree. The dispatcher will instruct an available staff person in the vicinity to place the telephone tree calls. Message to be transmitted **" A Code Red situation has developed at _____ of the tropics building. Emergency procedures are now in effect. Please report to your assigned staging area."**

2. Transmit message to radio carriers stating **"all 4100 units, your attention please, a Code Red situation has developed at _____ . All Personnel in the tropics area report to your assigned areas for emergency evacuation.**

3. Group page units from Tropics and Minnesota Trail **(611)** and also page Marine Mammals staff **(663)** and Aquarium staff **(620)** separately.

Telephone Notification Tree
April 1992

Dispatcher or Other Designee

Main Kitchen	Ext. 290
Keeper Lunchroom (Tropics)	Ext. 287
Minnesota Kitchen	Ext. 292
Building Services Break Room	Ext. 249
Guest Services	Ext. 213

Evacuation Groups

Group 1. Building Services Staff and Aquarium Staff

Report to: Building Services Office

Group Leader: Building Services Supervisor or Designee

Group 2. Tropics Animal Programs Staff

Report to: Tropics Trail Entrance

Group Leader: Senior Tropics Staff Member on Duty

Group 3. Marine Mammal & Minnesota Trail Staff

Report to: Tropics Trail Exit

Group Leader: Senior Staff Member on Duty

In addition the engineers will standby at their work stations and handle any mechanical problems that may arise.

Group 1:

Objective: To evacuate guests from the Tropics Bldg ASAP.

A. Meet at: Building Services Office

B. Responsibilities: Proceed as quickly as pssible to cover the five (5) exit areas of the tropics building.

C. Procedures:

1. Group leader proceeds to the **Coral Reef Emergency Exit [Exit # 3]** and assists by directing guests out of those doors and down to the exit behind the tropics building.

2. Two staff people proceed to the doors **between the tropics and dolphin exhibit [Exit #1]** and positions themselves so they are covering both sets of doors to direct guests outside to the upper plaza area .

3. One staff person proceeds to the emergency exit doors in the **Northeast Corner of the tropics building [Exit # 5]** and directs guests outside through the doors on the **Minnesota Trail side if possible.** The other set of doors are directly over the "F" mechanical room and it is likely that a fire on that side of tropics would be in that room.

4. One staff person proceeds to the **emergency exit door across from Gibbon Island [Exit # 2]** and directs guests **up the stairwell** and outside to safety. ***Note: People with disabilities will have to continue through the trail { as long as it's safe to do so } to thecoral reefexit as they have trouble negotiating stairwells. This applies to all people in wheelchairs but may include other people with disabilities also.***

5. One staff person proceeds to the **emergency exit doors located in the tropics nocturnal tunnel next to the fruit bats [Exit #4]** and directs guests up the stairwell and outside to safety. ***Note: People with disabilities will have to continue through the trail { as long as it's safe to do so } to the coral reef exit as they have trouble negotiating stair-***

wells. This applies to all people in wheelchairs but may include other people with disabilities also.

Stay at your station and don't admit anyone into the building until the building is determined safe !! You will be contacted either in person or by radio when you should evacuate to the outside.

Group 2:

Objective: To evacuate guests from the Tropics Bldg ASAP

A. **Meet at:** Tropics Trail Entrance

B. **Responsibilities:** Clear trails and assist guests to the emergency exits along the pathways.

C. **Procedures:**

1. Accompany and direct guests to safety. If possible, upon reaching each exit one staff person will proceed outside with the visitor group leading guests away from the building.

2. Clearing is complete when group two meets up with group three.

3. Any remaining staff from these two groups then safely exits the building.

Group 3:

Objective: To evacuate guests from the Tropics Bldg ASAP

A. **Meet at:** Tropics Trail Exit

B. **Responsibilities:** Clear trails and assist guests to emergency exits along the pathways.

C. **Procedures:**

1. Accompany and direct guests to safety. If possible, upon reaching each exit one staff person will proceed outside with the visitor group leading guests away from the building.

2. Clearing is complete when group three meets up with group two.

3. Any remaining staff from these two groups then safely exits the building.

Someone from group two or three radios staff from group one stationed at the exits to inform them that the trail is clear and it is now time for them to also exit the building.

Maintenance Standards:

Heating (Central Heating Plant):

Consists of three (3) heating boilers for the Zoo Complex.

a. Maintenance is performed by staff on a preventive maintenance schedule
b. Repairs are completed with staff or outside Vendors as conditions warrant.
c. Boilers, as well as all Mn Zoo pressure vessels inspected by State Boiler Inspectors.

Chilling Equipment:

Consists of multiple units ranging in size from fractional Horsepower to 500 Ton centrifical chillers.

a. Routine checks are performed by staff.
b. Repairs to units are performed by staff (certified for refrigeration work) or by outside Vendors as conditions warrant.
c. Annual service contract on units larger than 7 tons.

Fire Alarm:

Consists of Central station for "Tropics", "Discovery Bay", "Amphitheater" and "Farm Exhibit" with remote stations at Small Animal Holding (Animal treatment area), and Koala Lodge.

Ventilation (Heating / Cooling):

Consists of multiple air handling systems.

a. Maintenance is performed by staff on a preventive maintenance schedule
b. Repairs are completed with staff or outside Vendors as conditions warrant.

Plumbing:

Consisting of interior to buildings or exhibits.

a. Maintenance and repairs are performed by staff or outside Vendors as conditions warrant.
b. Backflow preventors are in place and tested in accordance with Statute (min. Annually).

Site Utilities:

Consisting of Water, Sewer, Power lines, Generator Sets, and Communication lines.

a. Staff performs locating underground lines.
b. Annual Service contracts on Generator sets.
c. Power line work is co-ordinated with the local utility company.
d. Sewage lift stations are under annual contract.
e. Preventive Maintenance checks performed by staff on lift stations.

Hazardous Waste collection is co-ordinated by staff and collection areas checked. See attached

The last of or Underground Storage Tanks were replaced last year. Ensuring compliance with EPA and MPCA guidelines.

Upcoming major maintenance project:

Replacement of the underground High Temperature Hot Water lines. To ensure the reliability and increase efficiency.

DATE: MAR. 17 1993

TO: ALL STAFF:

FROM: DON APPEL :

REGARDING: HAZARDOUS WASTE (BATTERIES AND THEIR DISPOSAL):

All batteries are classified as hazardous waste due to the heavy metals (and/or corrosive) content. and are therefore banned from landfill disposal. Also in this classification is "button" (photo, watch) batteries.

Therefore I am asking that all old batteries be returned to the storeroom. They will be stored here until we have sufficent number to be disposed of!

The lead/acid batteries will continue to be stored (for disposal) by the Garage!

RECYLE AT: DAKOTA COUNTY RECYCLABLE COLLECTION CENTER

1350 LARC INDUSTRIAL BLVD.

BRNSVL.

PHONE: 895-5745

OR CALL:
GAYLE (431-1158) /DAKOTA PLANNING

All used oil is run through the "Garage" into a storage tank, until it becomes full enough to call for recyling.

All waste paint related materials are stored in the "Paint shop" until full, at which time a call is made to "Safety Kleen" for disposal (incineration).

All parts cleaner's are recyled through "Safety Kleen".

TO : ALL STAFF

27 MAR 1992

FROM: DON APPEL

REGARDING:

THE "EPA'S" NEW RULES FOR HANDLING OF FLOURESCENT, MERCURY VAPOR, METAL HALIDE, AND ALL OTHER "VAPOR LAMPS":
AND THE "LAND BAN" DISPOSAL OF LAMPS!

THESE LAMPS ARE NO LONGER ALLOWED TO BE THROWN INTO THE DUMPSTERS. THEY MUST BE HANDLED AS HAZARDOUS WASTE DUE TO THE LEAD AND MERCURY CONTENT IN THESE BULBS.

THERE IS HOWEVER A SLIGHT PROBLEM:
AS OF THIS TIME THERE IS NO LEGALLY ACCEPTED PLACE IN OR NEAR MINN. TO "RECYLE" THESE BULBS. THEREFORE THE LEGALLY ACCEPTED WAY OF DEALING WITH THESE BULBS IS AS FOLLOWS:

1) STORED IN THE SAME BOX THE NEW LAMPS CAME IN AND THEN PLACED IN A SECURE AREA (SO AS TO MINIMIZE THE RISK OF BREAKAGE). UNTIL SUCH TIME AS A RECYCLING CENTER BECOMES AVAILABLE TO THE MINN. AREA.

2) BROKEN LAMPS MUST HAVE THE ENDS CONTAINING THE LEAD AND MERCURY PICKED UP AND STORED IN SUCH A MANNER AS TO MINIMIZE THE RISK OF FURTHER BREAKAGE.

SO THEREFORE PLEASE, RETURN ALL "DEAD" BULBS TO THE STOREROOM WHERE THEY WILL BE STORED UNTIL THERE IS A FULL CARTON.

FOR THOSE PEOPLE ON SITE THAT NORMALLY CHECK OUT; CARTONS OF BULBS YOU ARE TO KEEP AN OLD CARTON TO PLACE THE OLD BULBS IN UNTIL THE CARTON IS FULL.

THEN THE FULL CARTONS WILL BE MOVED TO ANOTHER LOCATION (TO BE DETERMINED LATER) FOR STORAGE UNTIL SUCH TIME AS RECYCLING BECOMES A VIABLE OPTION!

Minnesota Zoological Garden
Infectious Waste Management Plan
1990

1) Minnesota Zoological Garden
12101 Johnny Cake Ridge Road
Apple Valley, MN 55124
(612) 431-9200

2) Kathryn Roberts, Ph.D.

3) Animal Health Division - Animal Hospital
Biological Programs Division - Animal Holding areas

4) Laboratory Waste and Sharps

5) All laboratory waste is separated and placed in Biohazard bags in a plastic container marked BIOHAZARD. All sharps after being used are placed in approved sharps containers and stored within these containers until disposal.

6) All sharps are packaged in puncture and leak proof containers. All laboratory waste is packaged in plastic bags within plastic spill proof containers.

7) All laboratory waste is placed in bags marked with the biohazard symbol. This waste is stored in a plastic container marked with the biohazard symbol. This waste is then stored in a cabinet marked with the words INFECTIOUS WASTE. All sharps are placed in containers marked with the words, INFECTIOUS WASTE. All full sharps containers are stored in boxes that are marked with the words INFECTIOUS WASTE.

8) All laboratory waste is placed immediately into a biohazard bag. All sharps that are generated within the hospital are placed within the storage area by the hospital personnel. All sharps that are generated outside of the hospital are placed into approved sharps containers and brought to the hospital, (central collection point) when they are full.

9) TEMPORARY COLLECTION POINTS:

a) No laboratory waste is generated outside of the central collection point. All sharps that are generated outside of the central collection point are stored in approved sharps containers until such time that the container is full. The containers hold approximately one quart and will fill up in variable amounts of time, depending upon usage.

b) All sharps containers that are in temporary collection points are located in areas, (counter tops) where there is no access by vermin and where only authorized persons have access.

15) Minnesota Zoo employees that may come into contact with any infectious waste will be trained by the Animal Health Division staff in the proper way to handle and dispose of such waste. This training will be done on a yearly basis and will be updated if any changes in procedure are made. Individual responsible for management of infectious waste is:
Peregrine L. Wolff, DVM
(612) 431-9361

The Minnesota Zoo requires that all employees will go through OSHA EMPLOYEE RIGHT-TO-KNOW training in reference to proper handling of infectious waste after starting employment at the Zoo.

All employees that may be exposed to hazardous materials are provided with and required to wear protective clothing during that exposure period.

16) All infectious waste that is generated on site could be decontaminated and stored at (40°F) in vermin proof, areas that were inaccessible to unauthorized persons until such time that another waste disposal facility and company could be located.

18) Peregrine L. Wolff D.V.M.
Kristine R. Petrini D.V.M.
Terry J. Kreeger D.V.M.
Brian E. Joseph, D.V.M.

This plan reflects the current handling of infectious wastes generated by the Minnesota Zoological Garden

_____ Date _____

General Director
Minnesota Zoological Garden

MINNESOTA ZOOLOGICAL GARDEN 431-9436

HAZARD COMMUNICATION PROGRAM

02/25/94

It is the policy of this organization to provide our employees with the information and training necessary to safely perform their duties. To implement this policy and comply with OSHA's Right to Know laws the following Hazard Communication Program is adopted.

Ken Weisenburger will be the Hazard Communication Program Coordinator. The Coordinator of this program is responsible for:

a. Preparing and updating a list of all chemicals within this facility. This will include the name and storage location for each chemical.
b. Obtaining and maintaining Material Safety Data Sheets for each chemical.
c. Ensuring this Hazard Communication Program, the list of chemicals and the Material Safety Data Sheets are readily available for employee use.
d. Ensuring the proper Personal Protective Equipment is available and in good working order for each employee exposed to a hazard (as listed on the MSDSs).
e. Ensuring all of the chemicals are in properly labeled containers.
f. Ensuring a written Training program is developed and maintained which will include who is responsible for training and class outlines for mandatory training.
g. Ensuring new employees are trained to properly handle hazards prior initial assignment.
h. Ensuring all employees are trained annually to properly handle hazards.
i. Ensuring employees are trained to handle new or non-routine chemicals, jobs and hazards prior to performing work in those situations.
j. Documenting the employee training.
k. Ensuring the list of chemicals used is saved for 30 years (including chemical name, where and when used).
l. Ensuring Hazardous Chemical coordination with other employers performing work within these facilities.
m. Ensuring employees are trained and protected from hazardous chemicals to which they are exposed even if this organization did not bring the hazard to the site.
n. Ensuring chemicals transported are properly packed and labeled prior to shipment.

The Hazard Communication Program Coordinator will be available to answer employee questions and or complaints about this program, employee training and or Material Safety Data Sheets.

Department of Environmental Management
Hazardous Waste Regulation
14955 Galaxie Avenue
Apple Valley, MN 55124
(952) 891-7557 Fax (952) 891-7588
www.co.dakota.mn.us

Inspector: Bill Freischel

Dakota COUNTY

2000 Hazardous Waste Generator Annual Report and License Renewal Application

Minnesota Zoo

Generator No.:	224	Phone No.:	(952) 431-9238	Site Address:		Mail Address:	
EPA ID No.:	MND102273539	Fax No.:	(612) 431-9201	Minnesota Zoo		Minnesota Zoo	
Contact Person:	Don Appel			13000 Zoo Blvd		13000 Zoo Blvd	
Email:				Apple Valley	MN 55124-	Apple Valley	MN 55124-

Complete the "Amount of Waste Generated in 2000", mark the appropriate units, complete all blank areas, and make any necessary changes. (See Instruction Sheet for details)

ID #		Waste Name	Waste Code(s)	Transporter Name(s) and EPA ID Number(s)	Facility Name(s) and EPA ID Number(s)	Management Method	Amount of Waste Generated in 2000. Include the units.
444	H	**Parts Washer Solvent**	D001	Safety Kleen ILD051060408	Safety Kleen MND981097884	Recycle/Beneficial Use	44 [X] Gallons [ ] Pounds [ ] Items
445	H	**Carb Cleaner**	F002	Safety Kleen ILD051060408	Safety Kleen MND981097884	Recycle/Beneficial Use	0 [ ] Gallons [ ] Pounds [ ] Items
446	N	**Lead Acid Batteries**	D002 D008	Bauer Bilt	GNB	Recycle/Beneficial Use	605 [ ] Gallons [ ] Pounds [X] Items
447	N	**Used Oil**	M100	OSI MNR000034488	OSI MNR000034488	Oil Hauler or Service Station	480 [X] Gallons [ ] Pounds [ ] Items
1558	H	**Paint**	F005	Safety Kleen ILD051060408	Safety Kleen MND981097884	Incineration/Thermal Treatment	55 [X] Gallons [ ] Pounds [ ] Items

1559 H	Pain[redacted]iner	F005	Safety Kleen ILD051060408	Safet[redacted]en MND[redacted]7884	Burning for Fuel	24	[X] Gallons [ ] Pounds [ ] Items
2094 N	Oil Filters	M200	Safety Kleen MND981097884	Safety Kleen MND981097884	Oil Filters Recycled	35	[X] Gallons [ ] Pounds [ ] Items
2095 N	Antifreeze	D008	Safety Kleen ILD051060408	Safety Kleen MND981097884	Recycle/Beneficial Use	0	[ ] Gallons [ ] Pounds [ ] Items
2905 N	Fluorescent/Mercury Lamps	D009	Mercury Waste Solutions MND985759315	Mercury Waste Solutions MND985759315	Recycle/Beneficial Use	681	[ ] Gallons [ ] Pounds [X] Items
4950 H	Lab Packs	MN02	Laidlaw SCD987574647	Laidlaw ILD980502744	Recycle/Beneficial Use	0	[ ] Gallons [ ] Pounds [ ] Items
5734 A	Fixer Solution	D011	Environchem Unknown	Environchem Unknown	Sewered after Treatment	0	[ ] Gallons [ ] Pounds [ ] Items
5735 A	Scrap Film	D011	Environchem Unknown	Environchem Unknown	Recycle/Beneficial Use	0	[ ] Gallons [ ] Pounds [ ] Items
6005 N	PCB Ballasts	MN03	Laidlaw ILD987574647	Laidlaw ILD987574647	Recycle/Beneficial Use	0	[ ] Gallons [ ] Pounds [ ] Items

Minnesota Department of Administration
State Government Resource Recovery Program
1999 Recycling Recovery Rates of Metropolitan Offices and Operations

Agency and Location	Recycling Rate Percentage	Recovered Materials
Transportation Department		
1900 County Road I, Arden Hills	46	P, BC
1959 Sloan Place, Maplewood	**	**
2055 North Lilac Drive, Golden Valley	73	P, B, M, AL, TI
222 Plato Boulevard, Saint Paul ++	63	P, BC, G, PL, LT
2229 Pilot Knob Road, Mendota Heights	34	P, LT
3485 Hadley Avenue North, Oakdale ++	96	P, M, AL, B, TI
6000 Minnehaha Avenue, Fort Snelling ++	91	P, M
616 Pierce Butler Route, Saint Paul	74	P
Ford Building, Saint Paul	83	P, BC, G, PL
Transportation Building, Saint Paul	53	P, BC, G, PL
Veterans Affairs		
Veterans Service Building, Saint Paul	50	P, BC, G, PL, LT
Veterans Home		
1200 East 18th Street, Hastings ++	*	*
5101 Minnehaha Avenue South, Minneapolis	*	*
Veterans Homes Board		
Veterans Service Building, Saint Paul ++	50	P, BC, G, PL, LT
Veterans of Foreign Wars		
Veterans Service Building, Saint Paul	50	P, BC, G, PL
Veterans of Foreign Wars, Ladies Auxiliary		
Veterans Service Building, Saint Paul	50	P, BC, G, PL
Veterinary Medicine Board		
2829 University Avenue Southeast, Minneapolis	**	**
Water and Soil Resources Board		
One West Water Street, Saint Paul	63	P, BC, G, PL
Workers' Compensation, Court of Appeals		
Judicial Center, Saint Paul	69	P, BC, G, PL, LT
Zoological Garden		
13000 Zoo Boulevard, Apple Valley	69	P, BC, G, PL, M, B, FL, O, TI, PC, C, PA, AF

Legend

AF-Antifreeze	C-Compost	GBT-Grease, Bones, Tallow	PA-Paint	TI-Tires
AL-Aluminum	CM-Construction Material	LT-Laser Toner Cartridges	PC-Parts Cleaner	TY-Typewriter Ribbons
B-Batteries, Auto	FL-Fluorescents	M-Metal	PL-Plastic	TX-Textiles
BA-Batteries, Appliance	FW-Food Waste	O-Oil, Automotive	S-Solvent	WO-Wood Waste
BC-Beverage Cans	G-Glass	P-Paper	RF-Refrigerant	WW-Waste Water

* No response
** Data unavailable due to collection arrangements
\+ Metropolitan regional government
++ Waste reduction plan implemented

Compiled by Resource Recovery Office 2/00

SECTION 1- PRODUCT INFORMATION

PRODUCT :	OZONE
MANUFACTURER :	PCI OZONE & CONTROL SYSTEMS, INC.
EMERGENCY PH #:	(201) 575-7052
MANUFACTURING FACILITY :	One Fairfield Crescent West Caldwell, New Jersey
CHEMICAL FAMILY:	Gaseous Oxident
CHEMICAL FORMULA:	O_3

SECTION 2 - PHYSICAL DATA

MELTING POINT:	Centigrade -251
BOILING POINT:	Centigrade -111
WATER SOLUBILITY:	14 mg/l from 2% ozone in air.
APPEARANCE :	Clear colorless gas.
ODOR :	Pungent

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

Ozone is most often generated from air at concentrations of 1-10% by weight. At these concentrations ozone is non-explosive. Ozone at these concentrations will support combustion only slightly better than air itself. Firefighting equipment would be any equipment suitable for fighting fires suitable for other hazards.

If high ozone concentrations are present. Self contained breathing apparatus should be used.

SECTION 4 - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :	0.12 mg/l in air for a weighted 8 hour exposure according to O.S.H.A.
EFFECTS OF EXPOSURE:	Coughing, headaches, loss of appetite, drowsiness, inflamation of upper respiratory track.

EMERGENCY AND FIRST AID PROCEDURES :	Remove from air containing ozone: administer oxygen, if necessary.
PRIMARY ROUTE OF ENTRY:	By the pulmonary.

SECTION 5 - REACTIVITY

STABILITY :	Slowly decomposes to oxygen from which it was made.
CONDITIONS TO AVOID:	Concentrating ozone to high levels (20%) where its reactivity and rate of decomposition accelerates.
INCOMPATABILITY :	Most organic materials are ozone reactive. Reactivity increases with materials which are saturated.

SECTION 6 - LEAK PROCEDURES

Leave area and remove ozone by exhausting the atmosphere should ozone be released.

SECTION 7 - SPECIAL PROTECTION INFORMATION

Respiratory protection:	Self-contained breathing apparatus approved by U.S. Bureau of Mines is adequate if used for a short period of time.
Ventilation:	Use in well ventilated areas if leaks are anticipated.
Protective gloves:	Plastic rather than rubber.
Other Protective Equipment:	Plastic suits.

SECTION 8 - SPECIAL PRECAUTIONS

Precautions to be taken in handling: are	Do not attempt to produce pure or high concentrations of ozone. If leaks anticipated use only in well ventilated areas.

PO #
30013488

DPC INDUSTRIES, INC.
P.O. BOX 24600
HOUSTON, TEXAS 77229

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION

Trade Name: Dixichlor

Chemical Name: Sodium Hypochlorite, Aqueous Solution

Emergency Phone: 1-713-457-4888 **Chemtrec:** 1-800-424-9300

Date of Issue: 11-06-86 **Revised Date:** 09-13-94

HMIS HAZARD RATING

Health: 2
Fire: 0
Reactivity: 1

0 = Least
1 = Slight
2 = Moderate
3 = High
4 = Extreme

Note: N.E.-NOT ESTABLISHED; N/A-NOT APPLICABLE

SECTION 2 - INGREDIENTS

Components	Percent	TLV	CAS No.
Sodium Hypochlorite	10%	LD50 12g/kg (Rat Oral)	7681-52-9
Sodium Chloride	7-8%		7647-14-5
Sodium Hydroxide	.5-2%		1310-73-2
Water	Remainder		

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

Flash Point (C.C.): Nonflammable

Flammable Limits (% in Air):
Lower [N/A] **Higher** [N/A]

Extinguishing Media: N/A

Special Firefighting Procedures/Precautions: Use extinguishing media that is appropriate for surrounding fire. Use water spray from a safe distance to cool fire exposed containers, to dilute liquid and control vapors. Firefighters should wear full protection clothing and self-contained breathing apparatus. Protection is needed against corrosive fumes if liquid is released.

Unusual Fire and Explosion Information: This material is an oxidizing agent, vigorous reactions can occur with oxidizable materials in a fire situation. It can be decomposed by heat. If safe, remove containers from fire area to prevent pressure rupture.

SECTION 4 - HEALTH HAZARD DATA

ACGIH - TLV: N.E.

Eye Contact: Liquid or mist contact can produce severe irritation to the eyes.

Skin Contact: Liquid contact can produce blistering and eczema.

Ingestion: Can cause corrosion of mucous membranes, perforation of esophagus and stomach.

Inhalation: Mist or fumes can cause bronchial irritation, coughing, difficult breathing, nausea and pulmonary edema.

Carcinogenicity: **Listed by NTP:** NO **IARC:** NO **OSHA:** NO

SECTION 4 - HEALTH HAZARD DATA CONTINUED

First Aid Procedures

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get medical attention immediately.

Skin Contact: Immediately remove contaminated clothing or shoes, wipe excess from skin and flush with plenty of water for at least 15 minutes. Use soap if available or follow by washing with soap and water. Do not reuse clothing until thoroughly cleaned. Get medical attention for burns.

Inhalation: Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

Ingestion: Rinse mouth with water. Do not induce vomiting. If conscious, give large quantities of water or milk and take immediately to the hospital. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON!

SECTION 5 - SPILL OR LEAK PROCEDURES

For Spill: Contain material and recover. Prevent liquid from entering sewers or water ways. Do not use **COMBUSTIBLE** absorbents. When necessary, hypochlorite solutions can be neutralized with **weak** reducing agents. Clean-up personnel should use protective equipment to prevent contact.

Waste Disposal: Dispose of waste materials according to all federal, state, and local regulations.

SECTION 6 - HANDLING & STORAGE

Store containers in a cool (below 85° F), dry well ventilated area away from direct sunlight, heat, and incompatible materials. Protect containers from physical damage.

THIS PRODUCT DEGRADES WITH AGE. USE A CHLORINE TEST KIT AND INCREASE DOSAGE AS NECESSARY TO OBTAIN THE REQUIRED LEVEL OF AVAILABLE CHLORINE.

SECTION 7 - SPECIAL PROTECTION

Respiratory Protection: Use NIOSH approved respirator protection; for canistertype respirators, use chlorine filters. In case of fire, wear self-contained breathing apparatus for rescue.

Ventilation:

Local Exhaust:	Recommended
Special:	None
Mechanical:	Recommended
Other:	None

Protective Gloves: Chemical impervious gloves (PVC).

Eye Protection: Chemical goggles or full face shield.

Other Protective Equipment: Wear chemical resistant clothing to avoid skin contact.

Work Practices: Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing and wash thoroughly before reuse. Shower after work using plenty of soap and water.

SECTION 8 - PHYSICAL DATA

Boiling Point: Decomposes

Freezing Point: N/A

Vapor Pressure (mmHg @ 20°C): 17.5 mmHg

Vapor Density (Air=1): N/A

Solubility in H_2O: Completely Soluble

Appearance/Odor: Clear, pale yellow or greenish liquid with a chlorine odor.

Specific Gravity (H_2O=1): 1.15

Evap. Rate (Butyl Acetate=1): N/A

pH: 12 - 12.5

SECTION 9 - REACTIVITY DATA

Chemical Stability: Stable under normal operating conditions.

Incompatible materials: Any acid material, ammonia, urea, oxidizable materials, and metals, such as nickel, copper, tin, aluminum, and iron.

Decomposition products: Chlorine gas rate of decomposition increases with the concentration with temperatures above 85° F.

Hazardous Polymerization: Will not occur.

SECTION 10 - TRANSPORTATION INFORMATION

DOT Description: Hypochlorite Solution
8, UN1791, III, RQ (Sodium Hypochlorite)

SECTION 11 - REGULATORY INFORMATION

CERCLA LISTED HAZARDOUS SUBSTANCES:

Chemical	CAS No.	RQ (lbs)
Sodium Hypochlorite	7681-52-9	100

SARA Title III - Section 312 EPA Hazards

Acute: YES **Chronic:** NO

Flammable: NO **Reactive:** NO

Sudden Release of Pressure: NO

SARA TITLE III - Section 313 Toxic Materials

Chemical	CAS No.	Percentage
**********Not currently listed**********		

TSCA (TOXIC SUBSTANCES CONTROL ACT), 40 CFR 710:
Sources of the raw materials used in this mixture assure that all chemical ingredients present are in compliance with Section 8(b) Chemical Substance Inventory, or are otherwise in compliance with TSCA.

EPA Registration: 813-16

DISCLAIMER

The data presented is true and correct to the best of our knowledge and belief; however, neither seller nor preparer makes any warranties, express or implied, concerning the information presented. The user is cautioned to perform his own hazard evaluation and to rely upon his own determinations.

Aquarium Emergency Procedures

The aquarium definition of a catastrophic event would be an aquarium tank that is loosing water at a rate faster than it can be replaced in a reasonable amount of time. This water loss would be considered life threatening and require immediate action to save the animals' lives. The animals would need to be relocated to another tank appropriate to their size and swimming requirements. The relocation tanks need to have the proper salinity, temperature, and filtration to support the relocated animals. These tanks would have to be on operational "stand-by" at all times due to the length of time it takes to prepare a holding tank for occupancy.

The following list is of current exhibits and their corresponding potential relocation tanks as emergency holding.

AQUARIUM WORK AREAS

TROPICS BUILDING

OB-196 (holding pool) and OB-197 (Coral Reef exhibit)	SH-1 (Shark holding)
OB-185 (Asian fish exhibit)	AQF-1 thru 4 (Tropics fish holding)

MINNESOTA TRAIL

MI-265 (Trout exhibit) and MI-266 (Trout stream)	SH-1 or 2 (Shark holding)
MI-263 (Minnesota aviary pond exhibit)	AQF-1 thru 6 (Tropics fish holding)
ME-236 (Minnesota exterior fish exhibit)	AQF-1 thru 6 (Tropics fish holding)

DISCOVERY BAY

MEC-10 (Shark exhibit)	SH-1 (Shark holding)
MEC-11 (Estuary exhibit)	SH-2 or 3 (Shark holding)
MEC-12 (Tide pool exhibit)	SH-1 or 2 (Shark holding)
MEC-13 (Anemone fish exhibit)	AQF-7 thru 12 (Tropics fish holding)
MEC-14 (Live rock exhibit)	Ocean trail holding
MEC-15 (Shrimp by-catch exhibit)	Ocean trail holding
MEC-16 (Elasmobranch exhibit)	Ocean trail and tropics holding

Subject: Written contingency plan for USDA Marine Mammal Utilities Section 3. 101 (6)

A. In the event of a disruption in normal electrical power service or a failure of the primary electrical source to the dolphin life support system (i.e. filter pumps, chemical injection pumps, brine pumps, water heater and water cooling unit) the following measures are taken:

1. The zoo's back up generator automatically restores power to the system within10 to 20 seconds.
2. If for some reason the generator does not restore power immediately, plant engineers immediately notify Dakota County Electric Service. Depending on the reason for and the location of the power failure, Dakota Electric will have power fully restored within several hours.
3. Plant engineers as well as marine mammal staff provide twenty-four coverage monitoring the dolphin life support system. If power failure occurs, plant engineers will notify the marine mammal area zoologist and Life Support Systems (LSS) staff to assess them of the situation. The LSS will monitor the system until power is fully restored and the system is back on line and operating correctly. The marine mammal area zoologist will be notified as soon as the system is back on line by LSS staff. Plant engineers will be notified by LSS of any related problems.
4. Dolphin pool water temperature, water level, system flow, ozone operation and oxidation reduction potential (ORP) levels are continually monitored and warning alarms are designed to alert LSS staff and plant engineers to potential malfunctions. In the event of a high level alarm warning, plant engineers will notify LSS supervisor who will take appropriate action. LSS staff will notify marine mammal area zoologist.
5. C. Emery Nelson, Inc. of Hamel, MN is the local distributor for INDECK POWER EQUIPMENT (see attachments) which provide portable filter equipment as well as chiller/heater units and chemical feed units to be used in case of major dolphin life support failure.

B. The Minnesota Zoo's dolphin exhibit is a closed water system. Apple Valley city water is the source of the pool's water. There are three city main lines that enter the zoo.

1. Occasionally, the city of Apple Valley or zoo staff work on water lines that would affect the dolphin pool's water source. In cases such as this, plant engineers are notified 24 hours prior to commencement of a possible break in service. They in turn will notify all zoo staff via e-mail.
2. In the case of an emergency situation such as a break in a water filter circulation line, the plant engineer, LSS and the marine mammal area zoologist are immediately notified so the section where the break has occurred may be isolated from the rest of the system. Work to repair the break is done immediately and LSS monitors the situation until the problem is corrected.

3. It would be highly unlikely to loose the primary source of water for any critical length of time or be in a situation where the pool water level would be considered critically low. However, if this were to occur several options could be implemented depending on the situations. The marine mammal area zoologist and the staff veterinarian would confer before any decision to implement a plan is made.
   a. Water could be added to enclosure from adjacent pools and/or one of the other water lines entering the zoo could be used for adding water.
   b. In the event of catastrophic failure of all of the dolphin pool enclosures, the dolphins could be moved to another pool location on zoo site that could be utilized as a short term temporary holding.
   c. The zoo has transport crates and stretchers on site for each dolphin if holding and transporting animals is necessary. There are several facilities within an eight hour driving distance from the zoo and an emergency transport could be arranged.

The health, safety and well being of the Minnesota Zoo's dolphins are always of primary concern. In the event of any emergency, protocol and plans will be followed to assure for the optimal care and treatment of the dolphins.

Staff contact and notification:

Name	Work Phone	Home Phone	Pager	Cell Phone
John Prevost LSS	952-431-9539	507-663-6009	612-601-2712	
Gregg Bezdicek LSS	952-431-9539			
Ernie Opheim LSS	952-431-9539	612-537-8843		
Don Appel Plant engineer	952-431-9238 952-431-9251	612-423-4511		
Kevin Willis Bio Prog Manager	952-431-9272	952-431-9932		
Diane Fusco, Zool. Marine Mammal	952-431-9274	651-454-4048	612- 601-0012	
Kris Petrini Vet	952-431-9261	651-488-4574	612-601-2836	612-618-3017
Jim Rasmussen Vet	952-431-9371	715-426-0991	612-601-5032	601-618-3017

MINNESOTA ZOO

Memorandum

DATE: February 7, 2001

TO: Don Appel, Kevin Willis, Kim Thomas

FROM: John Prevost

RE: LSS Emergency Protocol

The following is Life Support's list of people to contact following animal or facility emergencies. We also utilize the Zoo side Emergency Number list from September 2000.

	Work	Home	Pager
Diane Fusco	x274	651-454-4048	612-601-0012
Lynne Haisting	x274	651-322-5822	
Jenny Beem	x274	651-688-8133	
Michelle Darsow	x274	952-938-5194	
Brian Nagurski	x274	651-225-0699	
Alan Maguire	x289	651-460-6956	
Ken Weisenburger		651-452-8078	612-203-6582
Jim Streater	x275	612-823-0447	612-670-6276
Kris Petrini	x261	651-488-4574	612-601-2836
Chris Kline	x238	651-322-7087	

Alarms for the life support systems are issued at the workstation #252 in LSS and workstation #251 at the Heat Plant. Thresholds for the alarms are set per Bio Programs requirements and equipment specifications. Notification of staff occurs when alarm cannot be resolved at the workstation.

Health and safety staff will contact State Duty Officer in the event of a toxic release.

MINNESOTA ZOOLOGICAL GARDEN

SAFETY
CONFINED SPACE ENTRY

1. POLICY:

All work units are required to implement work procedures involving confined space which conform with this policy. Employees who may be required to enter any confined space shall ensure that a dangerous air contamination, or oxygen deficiency, does not exist in the space prior to entry. Under no circumstances may an employee enter a confined space without a properly completed confined space entry permit or when monitoring equipment indicates the presence of an unsafe atmosphere. All employees with confined space entrys shall be properly trained in operating and rescue procedures, and on the hazards they may encounter, at least, annually.

2. AUTHORITY:

Minnesota Rules 5205.1000

3. PURPOSE:

A. To ensure that employees know the proper confined space entry procedure.

B. To ensure that the atmospheric condition in a confined space has been proven safe prior to an employee entry.

C. To ensure that employees are aware of the dangers associated with entry into a confined space.

4. DEFINITIONS:

A. Atmospheric Testing (Monitoring) Device

A device which tests for a specific contaminant and the oxygen concentration of an air sample.

B. Confined Space

A special configuration that could result in any of the following:

1). A dangerous air contamination, oxygen deficiency, or oxygen enrichment may exist or develop;

2). The emergency removal of a suddenly disabled person is difficult due to the location and size of the access opening.

3). The risk of engulfment exists or could develop.

C. Confined Space Entry

An action resulting in any part of the worker's face breaking the plane of any opening of the confined space, and includes any ensuing work activities inside the confined space.

D. Dangerous Air Contamination

An atmosphere presenting a threat of death, acute injury, illness, or disablement due to the presence of flammable, explosive, toxic, or otherwise injurious or incapacitating substances.

E. Engulfment

The surrounding and capture of a person by finely divided particulate matter or a liquid.

F. Locked Out

The process of ensuring that valves, switches, accumulators, etc., are secured with an individual lock to prevent unauthorized startup.

G. Lower Explosive Level (LEL)

The concentration of a gas or vapor in air above which an explosion may occur in the presence of an ignition source.

H. Oxygen Deficiency

An atmosphere containing oxygen at a concentration of less than 19.5% by volume.

I. Part Per Million (PPM)

Parts of a contaminant per million parts of air by volume.

J. Unsafe Atmosphere

An atmosphere with an oxygen deficiency or a dangerous air contamination.

K. Ventilation System

Equipment which is capable of changing the atmosphere of a confined space.

L. Zero Mechanical State (ZMS)

The process of ensuring that any equipment power source (electrical, pressurized fluid, mechanical) is secured in as safe a position and possible subsequent employee injury.

5. RESPONSIBILITIES:

A. Division Directors:

Identify all confined spaces with area of responsibility (in conjunction with Safety and Health Officer).

B. Safety and Health Officer:

1) Establish procedures and obtain the necessary equipment to effectively implement this policy.

2) Identify all confined spaces (in conjunction with Division Directors).

3) Assisting supervisors in providing training to employees who may be required to enter a confined space.

4) Sign the Confined Space Entry Permit prior to entry.

5) Ensure that the required atmospheric testing devices are properly calibrated.

C. Supervisors:

1) Provide the necessary training to all employees engaging in confined space entry work (in conjunction with Health and Safety Officer).

2) Ensure that the atmosphere in all possible confined spaces is tested and proven safe immediately prior to employee entry.

3) Ensure that Confined Space Entry Permits are completed immediately prior to entry.

4) Ensure that the confined space atmosphere is continuously monitored while employees are in the space.

5) Maintain employee confined space entry training records, with copy to Safety and Health Officer.

6. PROCEDURES:

A. Supervisors:

1) A confined Space Entry Permit (attachment I) shall be completed for each entry.

Permit completion requires that:

a) All lines that convey flammable, corrosive, or other injurious substances into the space be disconnected, blanked, or locked out.

b) All drive mechanisms and equipment shall be placed and secured in a zero mechanical state.

c) The atmosphere in the confined space must be tested for the presence of oxygen (must be between 19.5% and 23%); carbon monoxide (must be below 50ppm); hydrogen sulfide (must be below 10% LEL methane).

IMPORTANT: If the atmospheric test indicates conditions outside the above parameters, the space shall not be entered. A ventilation system can be used to ventilate the space. The space can be retested when the atmosphere in the space is purged. When the atmosphere is safe the entry procedure may be resumed.

2) The permit shall be signed by the Safety and Health Officer or designee prior to employee entry.

3) Provisions must be made to ensure continuous atmospheric monitoring and ventilation while the confined space is occupied.

4) Whenever continuous atmospheric monitoring of the occupied confined space identifies a hazardous condition the employee must immediately exit the confined space. (The Safety and Health Officer, in conjunction with Supervisors will identify subsequent steps to be taken prior to re-entry.)

B. Safety and Health Officer:

1) Surveys, with the Division Directors, and identifies all possible confined spaces at the facility.

2) Coordinates annual training to all employees involved in confined space entries.

3) Ensures that atmospheric testing devices are properly calibrated prior to use.

4) After ensuring their accuracy, signs the Confined Space Entry Permit.

5) Maintains a file for completed Confined Space Entry Permits.

C. Division Directors:

With the Safety and Health Officer ensures that all confined spaces are identified.

D. Supervisor and Health and Safety Officer:

Maintain employee confined space entry training records.

MINNESOTA ZOOLOGICAL GARDEN 1990

CONFINED SPACE ENTRY PERMIT/CHECK LIST

1. Date of Entry_____ 2. Location_____

_____

3. Time Issued_____ 4. Expiration Date_____

5. Employees Assigned to Enter_____

6. Person in Charge_____ 7. Position_____

8. Description of known hazards present in confined space_____

_____

	Test Results
9. Atmospheric test before and during entry	
a. Oxygen (19.5% to 23%)	_____
b. Hydrogen Sulfide gas (below 10 ppm)	_____
c. Explosive gases (less than 10% LEL)	_____
d. Carbon Monoxide (less than 50 ppm)	_____

10. Designated person performing testing_____

	Yes	No
11. Worker wearing atmospheric monitor?	___	___
12. Worker wearing proper personal protection?	___	___
13. Ventilation equipment operational and installed	___	___
14. All power sources in ZMS?	___	___

Description of any additional hazards that may be expected to be generated by the entrance activities in the space and action taken to correct condition

_____

_____

_____

Personnel involved in this entry have received instructions on safety procedures and hazards of this job and the permit is complete

_____
Signature of Person in Charge

_____
Signatures of Person(s) assigned to enter

_____
Signature of Safety Officer

U.S. Department of Labor
Assistant Secretary for
Occupational Safety and Health
Washington, D.C. 20210

SS-22

OSHA Instruction STD 1-7.3

SEP 11 1990

Directorate of Compliance Programs

SUBJECT: 29 CFR 1910.147, the Control of Hazardous Energy (Lockout/Tagout)--Inspection Procedures and Interpretive Guidance

A. Purpose. This instruction establishes policies and provides clarification to ensure uniform enforcement of the Lockout/Tagout Standard.

B. Scope. This instruction applies OSHA-wide.

C. References.

1. General Industry Standards, 29 CFR 1910, Subpart O, Subpart S, and other specific subparts.

2. OSHA Instruction CPL 2.45B, June 15, 1989, the Revised Field Operations Manual (FOM).

D. Effective Date of Requirements. All requirements of 29 CFR 1910.147 have an effective date of January 2, 1990. The information collection requirements contained in this section have been approved by the Office of Management and Budget (OMB) and listed under OMB control number 1218-0150, as announced at Federal Register, Volume 54, No. 199, October 17, 1989.

E. Action. Regional Administrators and Area Directors shall ensure that the guidelines and interpretive guidance in this instruction are followed and that compliance officers are familiar with the contents of the standard.

F. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of this change to the State designee as requested.

3. Ensure that State designees acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include the State's intention to follow the inspection guidelines described in this instruction, or a description of the State's alternative guidelines which are "at least as effective" as the Federal guidelines.

   a. If a State intends to follow the revised inspection guidelines described in this instruction, the State must submit either a revised version of this instruction, adapted as appropriate to reference State law, regulations and administrative structure, or a cover sheet describing how references in this instruction correspond to the State's structure. The State's acknowledgment letter may fulfill the plan supplement requirement if the appropriate documentation is provided.

   b. Any alternative State inspection guidelines must be submitted as a State plan supplement within 6 months. If the State adopts an alternative to Federal guidelines, the State's submission must identify and provide a rationale for all substantial differences from Federal guidelines in order for OSHA to judge whether a different State guideline is as effective as a comparable Federal guideline.

4. After Regional review of the State plan supplement and resolution of any comments thereon, forward the State submission to the National Office in accordance with established procedures. The Regional Administrator shall provide a judgment on the relative effectiveness of each substantial difference in the State plan change and an overall assessment thereof with a recommendation for approval or disapproval by the Assistant Secretary.

5. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State personnel.

2. Explain the technical content of this change to the State designee as requested.

3. Ensure that State designees acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment should include the State's intention to follow the inspection guidelines described in this instruction, or a description of the State's alternative guidelines which are "at least as effective" as the Federal guidelines.

   a. If a State intends to follow the revised inspection guidelines described in this instruction, the State must submit either a revised version of this instruction, adapted as appropriate to reference State law, regulations and administrative structure, or a cover sheet describing how references in this instruction correspond to the State's structure. The State's acknowledgment letter may fulfill the plan supplement requirement if the appropriate documentation is provided.

   b. Any alternative State inspection guidelines must be submitted as a State plan supplement within 6 months. If the State adopts an alternative to Federal guidelines, the State's submission must identify and provide a rationale for all substantial differences from Federal guidelines in order for OSHA to judge whether a different State guideline is as effective as a comparable Federal guideline.

4. After Regional review of the State plan supplement and resolution of any comments thereon, forward the State submission to the National Office in accordance with established procedures. The Regional Administrator shall provide a judgment on the relative effectiveness of each substantial difference in the State plan change and an overall assessment thereof with a recommendation for approval or disapproval by the Assistant Secretary.

5. Review policies, instructions and guidelines issued by the State to determine that this change has been communicated to State personnel.

G. Background. The Standard for Control of Hazardous Energy (Lockout/Tagout), 29 CFR 1910.147, was promulgated on September 1, 1989, at Federal Register, Volume 54, No. 169 (pages 36644-36696), and was effective on January 2, 1990, as announced at Federal Register, Volume 54, No. 213, November 6, 1989 (page 46610). Previously existing section 29 CFR 1910.147 was redesignated as 29 CFR 1910.150, Sources of Standards.

1. Since the inception of its enforcement program, OSHA has relied on the "General Duty Clause" (Section 5(a)(1) of the OSH Act) to ensure that employers safeguarded their maintenance and service employees through the use of lockout/tagout from the hazards involving the unintentional release of hazardous energy. Such violations reached a level so significant that the development and promulgation of a lockout/tagout standard was required.

2. The new rule addresses practices and procedures that are necessary to disable machinery or equipment and to prevent the release of potentially hazardous energy while maintenance and servicing activities are being performed.

3. The lockout/tagout provisions of this standard are for the protection of general industry workers while performing servicing and maintenance functions and augment the safeguards specified at Subparts O, S, and other applicable portions of 29 CFR 1910.

H. Inspection Guidelines. The standard incorporates performance requirements which allow employers flexibility in developing lockout/tagout programs suitable for their particular facilities.

1. The compliance officer shall determine whether servicing and maintenance operations are performed by the employees. If so, the compliance officer shall further determine whether the servicing and maintenance operations are covered by 29 CFR 1910.147 or by the requirements or employee safeguarding specified by other standards as discussed in I.1.

2. Evaluations of compliance with 29 CFR 1910.147 shall be conducted during all general industry inspections

within the scope of the standard in accordance with the FOM, Chapter III, D.7. and 8., Additional Information to Supplement Records Review. The review of records shall include special attention to injuries related to maintenance and servicing operations.

3. The compliance officer shall evaluate the employer's compliance with the specific requirements of the standard. The following guidance provides a general framework to assist the compliance officer during inspections:

   a. Ask the employer for any hazard analysis or other basis on which the program related to the standard was developed. Although this is not a specific requirement of the standard, such information, when provided, will aid in determining the adequacy of the program. It should be noted that the absence of a hazard analysis does not indicate non-compliance with the standard.

   b. Ask the employer for the documentation including: procedures for the control of hazardous energy including shutdown, equipment isolation, lockout/tagout application, release of stored energy, verification of isolation; certification of periodic inspections; and certification of training. The documented procedure must identify the specific types of energy to be controlled and, in instances where a common procedure is to be used, the specific equipment covered by the common procedure must be identified at least by type and location. The identification of the energy to be controlled may be by magnitude and type of energy. Note the exception to documentation requirements at paragraph 1910.147(c)(4)(i), "Note". The employer need not document the required procedure for a particular machine or equipment when all eight(8) elements listed in the "Note" exist.

   c. Evaluate the employer's training programs for "authorized", "affected", and "other" employees. Interview a representative sampling of selected employees as a part of this evaluation (29 CFR 1910.147 (c)(7)(i)).

(1) Verify that the training of authorized employees includes:

(a) Recognition of hazardous energy;

(b) Type and magnitude of energy found in the workplace;

(c) The means and methods of isolating and/or controlling energy; and

(d) The means of verification of effective energy control, and the purpose of the procedures to be used.

(2) Verify that affected employees have been instructed in the purpose and use of the energy control procedures.

(3) Verify that all other employees who may be affected by the energy control procedures are instructed about the procedure and the prohibition relating to attempts to restart or reenergize such machines or equipment.

(4) When the employer's procedures permit the use of tagout, the training of authorized, affected, and other employees shall include the provisions of 29 CFR 1910.147(c)(7)(ii) and (d)(4)(iii).

d. Evaluate the employer's manner of enforcing the program (29 CFR 1910.147(c)(4)(ii)).

4. In the event that deficiencies are identified by following the guidelines in H.3. of this instruction, the compliance officer shall evaluate the employer's compliance with specific requirements of the standard, with particular attention to the interpretive guidance provided in section I. and to the following:

a. Evaluate compliance with the requirements for periodic inspection of procedures.

b. Ensure that the person performing the periodic inspection is an authorized employee other than

the one(s) utilizing the procedure being inspected.

c. Evaluate compliance with retraining requirements which result from the periodic inspection of procedures and practices, or from changes in equipment/processes.

d. Evaluate the employer's procedures for assessment, and correction of deviations or inadequacies identified during periodic inspections of the energy control procedure.

e. Identify the procedures for release from lockout/tagout, including:

(1) Replacement of safeguards, machine or equipment inspection, and removal of non-essential tools and equipment;

(2) Safe positioning of employees;

(3) Removal of lockout/tagout device(s); and

(4) Notification of affected employees that servicing and maintenance is completed.

f. Ensure that when group lockout or tagout is used, it affords a level of protection equivalent to individual lockout or tagout as amplified in I.7. through I.9. of this instruction.

5. The lockout/tagout standard is a performance standard; therefore, additional guidance is provided in Appendix C of this instruction to assist in effective implementation by employers and for uniform enforcement by OSHA field staff.

I. Interpretive Guidance. The following guidance relative to specific provisions of 29 CFR 1910.147 is provided to assist compliance officers in conducting inspections where the standard may be applicable:

1. Scope of the Standard.

a. The standard as specified in 29 CFR 1910.147(b), applies to any source of mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

(1) The standard applies to piping systems, and requires, at 29 CFR 1910.147(d)(5), that all potentially hazardous stored or residual energy be relieved, disconnected, restrained, and otherwise rendered safe. If there is a possibility of reaccumulation of stored energy to a hazardous level, continued monitoring shall be performed while a potential hazard exists.

(2) The standard also applies to high intensity electromagnetic fields regulated at 29 CFR 1910.97, nonionizing radiation. Such electromagnetic devices shall be deenergized and held off whenever workers are present within a high intensity ambient field.

(3) Servicing/maintenance of fire alarm and extinguishing systems and their components, upon which other employees are dependent for fire safety, are not required to meet the requirements of this standard if the workers performing servicing/maintenance upon fire extinguishing systems are protected from hazards related to the unexpected release of hazardous energy by appropriate alternative measures. (See 29 CFR 1910, Subpart L.)

b. The standard does not apply to servicing and maintenance when employees are not exposed to the unexpected release of hazardous energy.

c. Safeguarding workers from the hazards of contacting electrically live parts (exposure to electric current) continues to be regulated at Subpart S.

d. Servicing and maintenance functions conducted during normal production operations are not regulated at 29 CFR 1910.147 if the safeguarding

provisions of Subpart O or other applicable portions of 29 CFR 1910 prevent worker exposure to hazards created by the unexpected energization or start-up of the machine or equipment. However, lockout/tagout procedures are required if the production safeguards are rendered ineffective while an employee is exposed to hazardous portions of the machines or equipment.

e. Generally, activities such as lubrication, cleaning or unjamming, servicing of machines or equipment, and making adjustments or tool changes, where the employee may be exposed to the UNEXPECTED energization or start-up of the equipment or release of hazardous energy, are covered by this standard. However, minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of equipment for production, and if work is performed using alternative protective measures which provide effective employee protection. Thus, lockout or tagout is not required by this standard if the alternative protective measures enable the servicing employee to clean or unjam, or otherwise service the machine without being exposed to unexpected energization or activation of the equipment, or the release of stored energy.

NOTE: Appendix C, section A, provides further guidance in this area.

f. The exclusion of plug and cord connected electric equipment, at 29 CFR 1910.147(a)(2)(iii)(A), applies only when the equipment is unplugged and the plug is under the exclusive control of the employee performing the servicing and/or maintenance.

(1) The plug is under the exclusive control of the employee if it is physically in the possession of the employee, or in arm's reach and in line of sight of the employee, or if the employee has affixed a lockout/tagout device on the plug.

(2) The company lockout/tagout procedures required by the standard at 29 CFR 1910.147(c)(4) shall specify the acceptable procedure for handling cord and plug connected equipment.

2. Procedures.

a. The employer must develop and document procedures and techniques to be used for the control of hazardous energy. The standard, at 29 CFR 1910.147(c)(4)(i) "Note," identifies eight (8) conditions that must exist in order to excuse the employer's obligation to maintain a written procedure for a specific machine or piece of equipment.

b. 29 CFR 1910.147(d)(3) and (d)(5) provide that energy isolation be a mandatory part of the employer's control procedure where either a lockout system or a tagout system is used.

c. Similar machines and/or equipment (such as those using the same type and magnitude of energy and the same or similar types of controls) can be covered with a single written procedure.

3. Lockout vs. Tagout.

a. OSHA has determined that lockout is a surer means of ensuring deenergization of equipment than tagout, and that it is the preferred method.

b. 29 CFR 1910.147(c)(3)(ii) provides that: When using a tagout program in those instances where the equipment is capable of being locked out, the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained when using a lockout program. Additional means beyond those necessary for lockout are required. (Additional means include: additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra

disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.)

c. 29 CFR 1910.147(c)(4)(ii) provides that: Where lockout/tagout programs are used, the employer is required to implement an effective means of enforcing the program.

d. 29 CFR 1910.147(c)(7)(ii)(A-F) provide that: Additional training of authorized, affected and other employees is required when tagout programs are used.

e. 29 CFR 1910.147(c)(5)(ii)(A) requires that lockout and tagout devices be capable of withstanding the environment to which they are exposed. Devices which are not exposed to harsh environments need not be capable of withstanding such exposure.

f. 29 CFR 1910.147(c)(5)(ii)(C)(2) requires that tagout devices having reusable, non-locking, easily detachable means of attachment (such as string, cord, or adhesive) are not permitted.

4. Employees and Training.

a. The standard recognizes three types of employees: (1)"authorized" and (2)"affected", defined in 1910.147 (b), and (3)"other", defined in 1910.147 (c)(7)(ii)(C). Different levels of training are required based upon the respective roles of employees in the control of energy and the knowledge which they must possess to accomplish their tasks safely and to ensure the safety of fellow workers as related to the lockout/tagout procedures (1910.147(c)(7)(i)).

b. Employees who exclusively perform functions related to normal production operations, and who perform servicing and/or maintenance under the protection of normal machine safeguarding, need only be trained as "affected" (rather than "authorized") employees even if tagout procedures are used. (See, I.1.d. and I.1.e. of this instruction.)

c. The employer's training program must cover, at a minimum, the following three areas: energy control program, elements of energy control procedures relevant to employee duties, and the pertinent requirements of the standard (1910.147(c)(7) and (d) through (f)).

d. The employer must provide:

(1) Effective initial training;

(2) Effective retraining as needed; and

(3) Certification of training. The certification shall contain each employee's name and dates of training (1910.147(c)(7)(iv)).

e. Retraining of authorized and affected employees is required:

(1) Whenever there is a change in employee job assignments;

(2) Whenever a new hazard is introduced due to a change in machines, equipment or process;

(3) Whenever there is a change in the energy control procedures; or

(4) Whenever a periodic inspection by the employer reveals inadequacies in the company procedures or in the knowledge of the employees.

5. Periodic Inspection by the Employer

a. At least annually, the employer shall ensure that an authorized employee other than the one(s) utilizing the energy control procedure being inspected, is required to inspect and verify the effectiveness of the company energy control procedures. These inspections shall at least provide for a demonstration of the procedures and may be implemented through random audits and planned visual observations. These inspections are intended to ensure that the energy control

procedures are being properly implemented and to provide an essential check on the continued utilization of the procedures (29 CFR 1910.147 (c)(6)(i)).

(1) When lockout is used, the employer's inspection shall include a review of the responsibilities of each authorized employee implementing the procedure with that employee. Group meetings between the authorized employee who is performing the inspection and all authorized employees who implement the procedure would constitute compliance with this requirement.

(2) When tagout is used, the employer shall conduct this review with each affected and authorized employee.

(3) Energy control procedures used less frequently than once a year need be inspected only when used.

b. The periodic inspection must provide for and ensure effective correction of identified deficiencies (29 CFR 1910.147(c)(6)(i)(B)).

c. The employer is required to certify that the prescribed periodic inspections have been performed (29 CFR 1910.147(c)(6)(ii)).

6. Equipment Testing or Positioning. Under 29 CFR 1910.147(f)(1), OSHA allows the temporary removal of lockout or tagout devices and the reenergization of the machine or equipment ONLY during the limited time necessary for the testing or positioning of machines, equipment or components. After the completion of the temporary reenergization, the authorized employees shall again deenergize the equipment and resume lockout/tagout procedures.

7. Group Lockout/Tagout. Group lockout/tagout procedures shall be tailored to the specific industrial operation and may be unique in the manner that employee protection from the release of hazardous energy is

procedures are being properly implemented and to provide an essential check on the continued utilization of the procedures (29 CFR 1910.147 (c)(6)(i)).

(1) When lockout is used, the employer's inspection shall include a review of the responsibilities of each authorized employee implementing the procedure with that employee. Group meetings between the authorized employee who is performing the inspection and all authorized employees who implement the procedure would constitute compliance with this requirement.

(2) When tagout is used, the employer shall conduct this review with each affected and authorized employee.

(3) Energy control procedures used less frequently than once a year need be inspected only when used.

b. The periodic inspection must provide for and ensure effective correction of identified deficiencies (29 CFR 1910.147(c)(6)(i)(B)).

c. The employer is required to certify that the prescribed periodic inspections have been performed (29 CFR 1910.147(c)(6)(ii)).

6. Equipment Testing or Positioning. Under 29 CFR 1910.147(f)(1), OSHA allows the temporary removal of lockout or tagout devices and the reenergization of the machine or equipment ONLY during the limited time necessary for the testing or positioning of machines, equipment or components. After the completion of the temporary reenergization, the authorized employees shall again deenergize the equipment and resume lockout/tagout procedures.

7. Group Lockout/Tagout. Group lockout/tagout procedures shall be tailored to the specific industrial operation and may be unique in the manner that employee protection from the release of hazardous energy is

achieved. Irrespective of the situation, the requirements of this generic standard specify that each employee performing maintenance or servicing activities shall be in control of hazardous energy during his/her period of exposure.

a. Group operations normally require that a lockout/tagout program be implemented which ensures that each authorized employee is protected from the unexpected release of hazardous energy by his/her personal lockout/tagout device(s). No employee may affix the personal lockout/tagout device of another employee. Various group lockout/tagout procedures discussed in Appendix C provide for each authorized employee's use of his/her personal lockout/tagout device(s).

b. One of the most difficult problems addressed by the standard involves the servicing and maintenance of complex equipment. Such equipment is frequently used in the petrochemical and chemical industries. Acceptable group lockout/tagout procedures for complex equipment are discussed further at Appendix C.

8. Compliance with Group Lockout/Tagout. These operations shall, at a minimum, provide for the following:

a. Before the machine or equipment is shut down, each authorized employee who is to be involved during the servicing/maintenance operation shall be made aware by the employer of the type, magnitude, and hazards related to the energy to be controlled and of the method or means to control the energy. In the event that the machine or equipment is already shut down, the authorized employee shall be made aware of these elements before beginning his/her work (29 CFR 1910.147(d)(1)). Verification shall be performed as noted at I.8.f. of this instruction.

b. An orderly shutdown of the machine or equipment shall be conducted which conforms to the documented company procedure and which will not create hazards (29 CFR 1910.147(d)(2)).

c. All energy isolating devices needed to isolate the machine or equipment shall be effectively positioned and/or installed (29 CFR 1910.147(d)(3)).

d. The authorized employee(s) performing the servicing or maintenance (following the company procedure) shall personally affix a lock or tag upon each energy isolating device (29 CFR 1910.147(d)(4)(i). The company procedure must ensure that no employee affixes a personal lockout/tagout device for another employee.

(1) A single lock upon each energy isolating device, together with the use of a lockbox for retention of the keys and to which each authorized employee affixes his/her personal lock or tag, also satisfies the requirement (29 CFR 1910.147(f)(3)(i)).

(2) Locks shall be affixed in a manner that will hold the energy isolating device in a safe (off) position (29 CFR 1910.147(d)(4)(ii)).

(3) Tagout devices, where used, shall be affixed at the same location as would a lock if such fittings are provided, or shall be affixed in a manner that will clearly indicate that movement of the isolating device is prohibited (29 CFR 1910.147(d)(4)(iii)).

e. Following the application of locks or tags, all potentially hazardous stored energy or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe (29 CFR 1910.147(d)(5)(i)).

(1) Verification of energy isolation shall be monitored as frequently as necessary if there is a possibility of reaccumulation of stored energy (29 CFR 1910.147(d)(5)(ii)).

(2) Monitoring may be accomplished, for example, by observation or with the aid of a monitoring device which will sound an alarm if a hazardous energy level is being approached.

f. Authorized employees shall verify that isolation and deenergization have been effectively accomplished before starting servicing/maintenance work. Verification is also necessary by each group of workers before starting work at shift changes.

g. Release from lockout/tagout shall be accomplished in compliance with the requirements at 29 CFR 1910.147(e).

(1) The machine or equipment area shall be cleared of nonessential items to prevent malfunctions which could result in employee injuries (29 CFR 1910.147(e)(1)).

(2) The authorized employees shall remove their respective locks or tags from the energy isolating devices or from the group lock-box(s) following the procedure established by the company (29 CFR 1910.147(e)(3)).

(3) In all instances, the company procedure must provide a system which identifies each authorized employee involved in the servicing/maintenance operation.

(4) Before reenergization, all employees in the machine or equipment area shall be safely positioned or moved from the area, and the affected employees shall be notified that the lockout/tagout devices have been removed (29 CFR 1910.147(e)(2)).

h. During all group lockout/tagout operations where the release of hazardous energy is possible, each authorized employee performing servicing or maintenance shall be protected by his/her personal lockout or tagout device and by the company procedure. As described at Appendix C, B.1.g., a master tag is a personal tagout device if each employee personally signs on and signs off on it and if the tag clearly identifies each authorized employee who is being protected by it.

9. Compliance of Outside Personnel. Outside servicing and maintenance personnel (contractors, etc.) engaged in activities regulated under 29 CFR 1910.147 are subject to the requirements of that standard.

   a. The CSHO shall verify that the outside employer and the on-site employer have exchanged information regarding the lockout/tagout energy control procedures used by each employer's workers (29 CFR 1910.147(f)(2)(i)).

   b. The CSHO shall verify that the on-site employer has effectively informed his/her personnel of the restrictions and prohibitions associated with the outside employer's energy control procedures (29 CFR 1910.147(f)(2)(ii)).

   c. When an outside employer is engaged in servicing and maintenance activities within an on-site employer's facility and if that contractor's activities are subject to the requirements of 29 CFR 1910.147, the CSHO shall coordinate with the Area Director to obtain permission to initiate an independent inspection of the outside contractor's activities.

10. Appendix B contains an example of a functional flow diagram to implement safe lockout/tagout procedures. This flow diagram is presented solely as an aid and does not constitute the exclusive or definitive means of complying with the standard in any particular situation.

J. Classification of Violations.

1. A deficiency in the employer's energy control program and/or procedure that could contribute to a potential exposure capable of producing serious physical harm or death shall be cited as a serious violation.

2. The failure to train "authorized", "affected", and "other" employees as required for their respective classifications should normally be cited as a serious violation.

3. Paperwork deficiencies in lockout/tagout programs where effective lockout/tagout work procedures are in place shall be cited as other-than-serious.

K. Evaluation. In keeping with agency policy, each Region shall evaluate the effectiveness of the guidance in this instruction annually. Each Regional Administrator shall submit a written evaluation report to the Directorate of Compliance Programs within 30 days of the close of the fiscal year.

Gerard F. Scannell
Assistant Secretary

DISTRIBUTION: National, Regional, and Area Offices
All Compliance Officers
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Pulp, Paper and Paperboard Mills

1910.261(b)(4)
1910.261(f)(6)(i)
1910.261(g)(15)(i)
1910.261(g)(19)(iii)
1910.261(j)(4)(iii)
1910.261(j)(5)(iii)
1910.261(k)(2)(ii)

Textiles

1910.262(c)(1)
1910.262(n)(2)
1910.262(p)(1)
1910.262(q)(2)

Bakery Equipment

1910.263(l)(3)(iii)(b), 1910.263(l)(8)(iii)

Sawmills

1910.265(c)(12)(v), 1910.265(c)(13), 1910.265(c)(26)(v)

Grain Handling

1910.272(e)(1)(ii)
1910.272(g)(1)(ii)
1910.272(l)(4)

Electrical

1910.305(j)(4)(ii)(A), 1910.305(j)(4)(ii)(C)(1)

Appendix A

The following listing indicates a number of OSHA standards which currently impose lockout/tagout related requirements. The list does not necessarily include all lockout/tagout related OSHA 29 CFR 1910 standards.

Powered Industrial Trucks

1910.178(q)(4)

Overhead and Gantry Cranes

1910.179(g)(5)(i), (ii), (iii)
1910.179(l)(2)(i)(c), (d)

Derricks

1910.181(f)(2)(i)(c), (d)

Woodworking Machinery

1910.213(a)(10)
1910.213(b)(5)

Mechanical Power Presses

1910.217(b)(8)(i)
1910.217(d)(9)(iv)

Forging Machines

1910.218(a)(3)(iii), (iv)
1910.218(d)(2)
1910.218(e)(1)(ii), (iii)
1910.218(f)(1)(i), (ii), (iii)
1910.218(f)(2)(i), (ii)
1910.218(h)(2), (5)
1910.218(i)(1), (2)
1910.218(j)(1)

Welding, Cutting and Brazing

1910.252(c)(1)(i)

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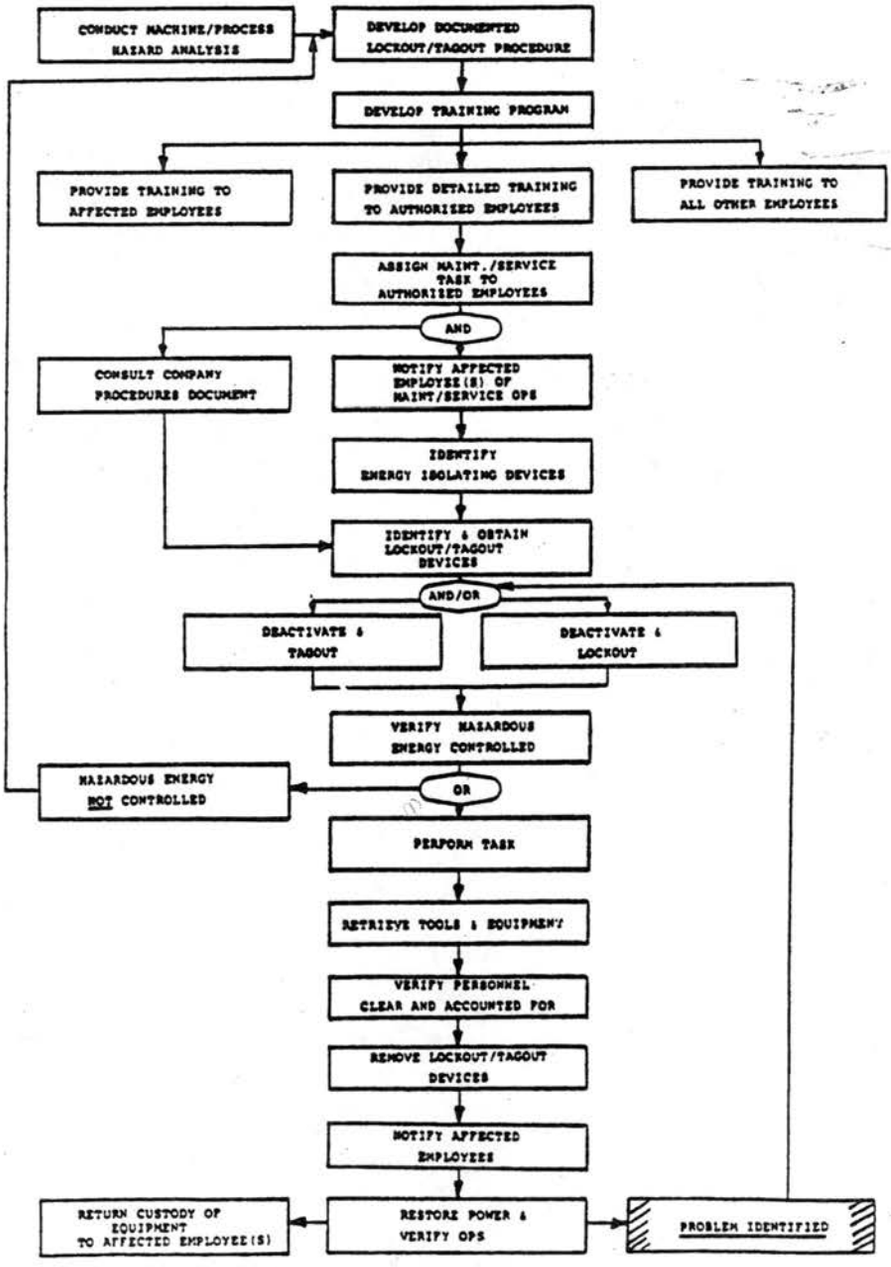
Appendix B

This flow diagram does not constitute the exclusive or definitive means of complying with the standard in any particular situation and is presented solely as an aid.

EXAMPLE - FUNCTIONAL FLOW DIAGRAM FOR IMPLEMENTATION OF LOCKOUT / TAGOUT REQUIREMENTS



Appendix C

This appendix provides guidelines to assist the compliance officer during evaluations of employer operations.

A. Normal Production Operations. The lockout/tagout standard, 29 CFR 1910.147, addresses the safety of employees engaged in servicing and maintenance activities in general industry workplaces. The standard complements the requirements for machine and process operator safety prescribed by the various general industry standards in 29 CFR Part 1910. Subpart O of 29 CFR 1910 provides the principal, though not exclusive, machine guarding requirements.

1. Safeguarding of servicing and maintenance workers can be ensured either by:

   a. Effective machine safeguarding in compliance with Subpart O, or

   b. Compliance with 29 CFR 1910.147 in situations where the normal production operations safeguards are rendered ineffective or do not protect the servicing/maintenance worker.

2. Activities which are routine, repetitive, and integral to the use of equipment for production are not covered by this standard if alternative measures provide effective worker protection from hazards associated with unexpected energization. Compliance with the machine guarding requirements of Subpart O is an example of such alternative measures. In addition, supplemental personal protective equipment may be necessary during a servicing or maintenance operation when a toxic substance is to be isolated. Under such circumstances, the requirements of applicable standards, such as 29 CFR 1910.134 and Subpart Z, also must be met.

3. An employer who requires employees to perform routine maintenance and/or servicing while a machine or process is operating in the production mode, must provide employee safeguarding under the applicable requirements of Subpart O. (Ref. 29 CFR 1910.212(a)(1)). Operations such as lubricating, draining sumps, servicing of filters, and inspection for leaks and/or mechanical malfunction are examples of routine

operations which often can be accomplished with effective production-mode safeguards. However, the replacement of machine or process equipment components such as valves, gauges, linkages, support structure, etc., is not considered to be a normal routine maintenance function which can safely be accomplished during machine or process equipment operation. Such maintenance requires energy isolation and should be evaluated by OSHA field staff. They also may be an appropriate subject of a variance request.

4. Several alternative means of safeguarding the hazardous portions of machines and equipment are presented by the national consensus standard, ANSI B11.19-1990. Although that standard is not all inclusive, it describes effective safeguarding alternatives for the protection of employees. The safeguards described include: interlocked barrier guards, presence sensing devices and various devices under the exclusive control of the employee. Such devices or guards, properly applied, may be used in clearing minor jams and performing other minor servicing functions which occur during normal production operations and which meet the criteria described in paragraph A.2. of this appendix.

B. Group Lockout/Tagout. The group lockout/tagout procedures described in this instruction at paragraph I.8. require each authorized employee to be in control of potentially hazardous energy release during their servicing/maintenance work assignments. Under most circumstances, where servicing/maintenance is to be conducted during only one shift by an individual or a small number of persons working together, the installation of each individual's lockout/tagout device upon each energy isolating device would not be a burdensome procedure. However, when many energy sources or many persons are involved, and/or the procedure is to extend over more than one shift, (possibly several days, or weeks) consideration must be given to the implementation of a lockout/tagout procedure that will ensure the safety of the employees involved and will provide for each individual's control of the energy hazards. The following procedures are presented as examples to illustrate the implementation of a group lockout/tagout procedure involving many energy isolating devices and/or many servicing/maintenance personnel. They illustrate several alternatives for having authorized employees affix personal lockout/

tagout devices in a group lockout/tagout setting. These examples are not intended to represent the only acceptable procedures for conducting group operations.

1. Definitions. Various terms used in the examples are defined below.

   a. PRIMARY AUTHORIZED EMPLOYEE is the authorized employee who exercises overall responsibility for adherence to the company lockout/tagout procedure. (See 29 CFR 1910.147(f)(3)(ii)(A).)

   b. PRINCIPAL AUTHORIZED EMPLOYEE is an authorized employee who oversees or leads a group of servicing/maintenance workers (e.g., plumbers, carpenters, electricians, metal workers, mechanics).

   c. JOB-LOCK is a device used to ensure the continuity of energy isolation during a multi-shift operation. It is placed upon a lock-box. A key to the job-lock is controlled by each assigned primary authorized employee from each shift.

   d. JOB-TAG with TAB is a special tag for tagout of energy isolating devices during group lockout/ tagout procedures. The tab of the tag is removed for insertion into the lock-box. The company procedure would require that the tagout job-tag cannot be removed until the tab is rejoined to it.

   e. MASTER LOCKBOX is the lockbox into which all keys and tabs from the lockout or tagout devices securing the machine or equipment are inserted and which would be secured by a "job-lock" during multi-shift operations.

   f. SATELLITE LOCKBOX is a secondary lockbox or lock-boxes to which each authorized employee affixes his/her personal lock or tag.

   g. MASTER TAG is a document used as an administrative control and accountability device. This device is normally controlled by the operations department personnel and is a personal tagout device if each employee personally signs on and signs off on it and if the tag clearly identifies each authorized employee who is being protected by it.

h. WORK PERMIT is a control document which authorizes specific tasks and procedures to be accomplished.

2. Organization. A group lockout/tagout procedure might provide the following basic organizational structure:

a. A primary authorized employee would be designated. This employee would exercise primary responsibility for implementation and coordination of the lockout/tagout of hazardous energy sources, for the equipment to be serviced.

b. The primary authorized employee would coordinate with equipment operators before and after completion of servicing and maintenance operations which require lockout/tagout.

c. A verification system would be implemented to ensure the continued isolation and deenergization of hazardous energy sources during maintenance and servicing operations.

d. Each authorized employee would be assured of his/her right to verify individually that the hazardous energy has been isolated and/or deenergized.

e. When more than one crew, craft, department, etc., is involved, each separate group of servicing/maintenance personnel would be accounted for by a principal authorized employee from each group. Each principal employee is responsible to the primary authorized employee for maintaining accountability of each worker in that specific group in conformance with the company procedure. No person may sign on or sign off for another person, or attach or remove another person's lockout/tagout device, unless the provisions of the exception to 29 CFR 1910.147(e)(3) are met.

3. Examples of Procedures for Group Lockout/Tagout. Examples are presented for the various methods of lockout/tagout using lockbox procedures. An example of an applicable method for complex process equipment is also presented.

a. The following procedures address circumstances ranging from a small group of servicing/

maintenance employees during a one-shift operation to a comprehensive operation involving many workers over a longer period.

(1) Type A. Each authorized employee places his/her personal lock or tag upon each energy isolating device and removes it upon departure from that assignment. Each authorized employee verifies or observes the deenergization of the equipment.

(2) Type B. Under a lockbox procedure, a lock or job-tag with tab is placed upon each energy isolation device after deenergization. The key(s) and removed tab(s) are then placed into a lockbox. Each authorized employee assigned to the job then affixes his/her personal lock or tag to the lockbox. As a member of a group, each assigned authorized employee verifies that all hazardous energy has been rendered safe. The lockout/tagout devices cannot be removed or the energy isolating device turned on until the appropriate key or tab is matched to its lock or tag.

(3) Type C. After each energy isolating device is locked/tagged out and the keys/tabs placed into a master lockbox, each servicing/maintenance group "principal" authorized employee places his/her personal lock or tag upon the master lockbox. Then each principal authorized employee inserts his/her key into a satellite lockbox to which each authorized employee in that specific group affixes his/her personal lock or tag. As a member of a group, each assigned authorized employee verifies that all hazardous energy has been rendered safe. Only after the servicing/maintenance functions of the specific subgroup have been concluded and the personal locks or tags of the respective employees have been removed from the satellite lockbox can the principal authorized employee remove his/her lock from the master lockbox.

(4) Type D. During operations to be conducted over more than one shift (or even many days or weeks) a system such as described here might be used. Single locks/tags are affixed upon a lockbox by each authorized employee as described at Type B or Type C above. The master lockbox is first secured with a job-lock before subsequent locks by the principal authorized employees are put in place on the master lockbox. The job-lock may have multiple keys if they are in the sole possession of the various primary authorized employees (one on each shift). As a member of a group, each assigned authorized employee verifies that all hazardous energy has been rendered safe. In this manner, the security provisions of the energy control system are maintained across shift changes while permitting reenergization of the equipment at any appropriate time or shift.

b. Normal group lockout/tagout procedures require the affixing of individual lockout/tagout devices by each authorized employee to a group lockout device, as discussed in paragraph B.3.a. of this appendix. However, in the servicing and maintenance of sophisticated and complex equipment, such as process equipment in petroleum refining, petroleum production, and chemical production, there may be a need for adaptation and modification of normal group lockout/tagout procedures in order to ensure the safety of the employees performing the servicing and maintenance. To provide greater worker safety through implementation of a more feasible system, and to accommodate the special constraints of the standard's requirement for ensuring employees a level of protection equivalent to that provided by the use of a personal lockout or tagout device, an alternative procedure may be implemented if the company documentation justifies it. Lockout/tagout, blanking, blocking, etc., is often supplemented in these situations by the use of work permits and a system of continuous worker accountability. In evaluating whether the equipment being serviced or maintained is so complex as to necessitate a departure from the normal group lockout/tagout procedures (discussed

in paragraph B.3.a.), to the use of an alternative procedure as set forth below, the following factors (often occurring simultaneously) are some of those which must be evaluated: physical size and extent of the equipment being serviced/ maintained; the relative inaccessibility of the energy isolating devices; the number of employees performing the servicing/maintenance; the number of energy isolating devices to be locked/tagged out; and the interdependence and interrelationship of the components in the system or between different systems.

(1) Once the equipment is shut down and the hazardous energy has been controlled, maintenance/servicing personnel, together with operations personnel, must verify that the isolation of the equipment is effective. The workers may walk through the affected work area to verify isolation. If there is a potential for the release or reaccumulation of hazardous energy, verification ofiso- lation must be continued. The servicing/ maintenance workers may further verify the effectiveness of the isolation by the procedures that are used in doing the work (e.g., using a bleeder valve to verify depressurization, flange-breaking techniques, etc.). Throughout the maintenance and/or servicing activity, operations personnel normally maintain control of the equipment. The use of the work permit or "master tag" system (with each employee personally signing on and signing off the job to ensure continual employee accountability and control), combined with verification of hazardous energy control, work procedures, and walk-through, is an acceptable approach to compliance with the group lockout/tagout and shift transfer provisions of the standard. (Note, B.1.g. of this appendix.)

(2) Specific issues related to the control of hazardous energy in complex process equipment are described below in a typical situation which could be found at any facility. This

discussion is intended only as an example and is not anticipated to reflect operations at any specific facility.

(a) Complex process equipment which is scheduled for servicing/maintenance operations is generally identified by plant supervision. Plant supervision would issue specific work orders regarding the operations to be performed.

(b) In most instances where complex process equipment is to be serviced or maintained, the process equipment operators can be expected to conduct the shutdown procedure. This is generally due to their in-depth knowledge of the equipment and the need to conduct the shutdown procedure in a safe, economic and specific sequence.

(c) The operations personnel will normally prepare the equipment for lockout/tagout as they proceed and will identify the locations for blanks, blocks, etc., by placing "operations locks and/or tags" on the equipment. The operations personnel can be expected to isolate the hazardous energy, and drain and flush fluids from the process equipment following a standard procedure or a specific work permit procedure.

(d) Upon completion of shutdown, the operations personnel would review the intended job with the servicing and maintenance crew(s) and would ensure their full comprehension of the energy controls necessary to conduct the servicing or maintenance safely. During or immediately after the review of the job, the servicing and maintenance crews would install locks, tags and/or special isolating devices at previously identified equipment locations following the specified work permit procedure.

(e) Line openings necessary for the isolation of the equipment would normally be permitted only by special work permits issued by operations personnel. (Such line openings should be monitored by operations personnel as an added safety measure.)

(f) All of the previous steps should have been documented by a master system of accountability and retained at the primary equipment control station for the duration of the job. The master system of accountability may manifest itself as a Master Tag which is subsequently signed by all of the maintenance/servicing workers if they fully comprehend the details of the job and the energy isolation devices actuated or put in place. This signing by the respective workers further verifies that energy isolation training relative to this operation has been conducted.

(g) After the system has been rendered safe, the authorized employees verify energy controls as described in B.3.b.(1) of this appendix.

(h) Specific work functions are controlled by work permits which are issued for each shift. Each day each authorized employee assigned must sign in on the work permit at the time of arrival to the job and sign out at departure. Signature, date, and time for sign-in and sign-out would be recorded and retained by the applicable crew supervisor who upon completion of the permit requirements would return the permit to the operations supervisor. Work permits could extend beyond a single shift and may subsequently be the responsibility of several supervisors.

(i) Upon completion of the tasks required by the work permit, the authorized employees' names can be signed off the Master Tag by their supervisor once all employees have signed off the work permit. The work permit is then attached to the Master Tag. (Accountability of exposed workers is maintained.)

(j) As the work is completed by the various crews, the work permits and the accountability of personnel are reconciled jointly by the primary authorized employee and the operations supervisor.

(k) During the progress of the work, inspection audits are conducted.

(l) Upon completion of all work, the equipment is returned to the operations personnel after the maintenance and servicing crews have removed their locks, tags, and/or special isolating devices following the company procedure.

(m) At this time all authorized employees who were assigned to the tasks are again accounted for and verified to be clear from the equipment area.

(n) After the completion of the servicing/maintenance work, operations personnel remove the tags originally placed to identify energy isolation.

(o) Operations personnel then begin check-out, verification and testing of the equipment prior to being returned to production service.

C. It should be noted that the purpose of the lockout/tagout standard is to reduce the likelihood of worker injuries and fatalities during servicing/maintenance operations. Therefore, when compliance officers inspect workplaces, they should evaluate the potential for employee exposure to the

unexpected release of hazardous energy during servicing/ maintenance operations. When a hazard is noted, the various requirements of the standard should be applied in a manner which will result in abatement of the hazardous circumstance.

*U.S. Government Printing Office: 1990-262-258/20019

MINNESOTA ZOOLOGICAL GARDENS

SCUBA DIVING SAFETY

MARINE MAMMAL

DIVER SKILLS DEMONSTRATION

Diver's Name: _____

SCUBA Certification Level: _____

Certifying Agency: _____

Date Issued: _____

CPR and First Aid Certification: yes____ no____ date_____

A briefing will occur before the diver is asked to demonstrate the following skills. The PADI Open Water Diver Video and the PADI Open Water Diver Manual will be viewed before the skills demonstration. The skills may not necessarily be performed in the order listed below. The diver should ask any questions of the Zoologist before the demonstration begins. Clarification may be solicited from the Marine Systems Zoologist during the demonstration. Acceptable skills need not be explained. Unacceptable skills need a brief explanation under the appropriate heading. Further comments may be made on the back of the form by the zoologist.

SKILLS CHECK LIST

	Acceptable	Unacceptable
1. Assembly and handling of SCUBA diving gear and wet suit	____	____
2. Proper weighting	____	____
3. Knowledge and use of basic underwater communication (hand signals)	____	____
4. Proper water entry as instructed for dolphin facility	____	____
5. Maintain neutral buoyancy and hover motionless for 1 minute	____	____
6. Mask removal, replacement and clearing	____	____
7. Recover regulator hose and clear regulator	____	____

	Acceptable	Unacceptable
8. Surface swim length of pool alternating from snorkel to SCUBA	____	____
9. Orally inflate buddy's B.C at the surface	____	____
10. Tired diver tow for length of pool	____	____
11. Safe ascent while buddy breathing	____	____
12. Emergency ascent (regulator in mouth)	____	____
13. Proper exit from water as instructed	____	____
14. Proper dissassembly and maintenance of equipment	____	____
15. Understands verbal or signed communications	____	____
16. Overall comfort level	____	____
17. Overall skills	____	____
18. Overall impression	____	____

RECOMMENDATION

Acceptable ___ Unacceptable at this time ___ Needs second opinion ___

Zoologist, Marine Systems:_____

Diver:_____

Date:_____

A copy of this form will be forwarded to the diver, the Marine Systems Zoologist (Marine mammal) and the Safety Officer

2/94

MINNESOTA ZOOLOGICAL GARDENS

DIVE POLICY
MARINE MAMMAL

PROTOCOLS FOR SPOTTERS

1. The spotter should be at poolside when the diver is entering and leaving the water. The diver will radio 4130 that there is a diver in the pool and then give the radio to the spotter as he/she enters the water.

2. When the diver is in the pool the spotter should remain at poolside. If mutually agreed upon by the diver and the spotter, some situations may warrant the spotter viewing from below after the diver has entered the water.

3. The spotter should always be poolside when the diver is entering and leaving the water.

4. The spotter will be attentive to the diver and not be distracted by visitors etc.

5. The diver will radio 4130 upon safely exiting the pool.

6. In the event of a diver emergency the spotter will follow the emergency protocol as outline in the Procedure For Diver Emergency In The Dolphin Pool.

MINNESOTA ZOOLOGICAL GARDEN

DIVE POLICY

MARINE MAMMAL

PROCEDURE FOR DIVER EMERGENCY IN THE DOLPHIN EXHIBIT

If the diver appears unconscious, shows signs of distress or panic, or is unable to respond to spotter, or shows signs of breathing difficulty, the spotter must immediately implement the following emergency plan:

1. Call 4130 on the radio and notify them that there is a potential emergency in the dolphin exhibit. Call 4100 on the radio and inform them that there is a potential emergency in the dolphin exhibit. The switchboard should then: 1) call the Marine Systems Curator, 2) page marine mammal staff, Aquarist staff and Assistant Director of Biological Programs and inform them that there is a potential diver emergency in the dolphin exhibit.

2. If the distressed diver is still in the pool, attempt to retrieve the diver by offering the diver the shepard"s crook. If this fails, throw the safety ring past the diver and pull the safety line such that the ring is drawn over the diver so he/she can grasp it. If both these methods fail enter the pool (DO NOT ENTER THE POOL UNTIL BACK UP HELP HAS ARRIVED) and remove the diver's weight belt, and assist them to the side of the pool.

3. Once at the side of the pool, remove the diver's mask. If the diver is conscious, assist them out of the tank and then follow basic first aid procedures.

4. If the diver is unconscious, stay in the water with the diver and support their head out of the water until help arrives.

5. If the diver is not breathing, begin mouth to mouth resuscitation until help arrives. Get diver onto deck and administer first aid and CPR until paramedics arrive.

NOTE: The first marine mammal staff member to arrive on the scene is immediately in charge until such time until that trainer voluntarily relinquishes that authority to another trainer, or until the arrival of the Marine Systems Curator or the Assistant Director or Director of Biological Programs.

STATE OF MINNESOTA
MINNESOTA ZOOLOGICAL GARDEN
POLICIES/PROCEDURE E-7

Chief Executive Officer's Signature

Eff. Date 2/
Rev. Date 12/00

FIREARMS

POLICY: It shall be the policy of the Minnesota Zoo to establish and maintain a procedure for handling of firearms on the Zoo site.

1. CRITERIA FOR QUALIFICATIONS TO HANDLE FIREARMS

- Any individual that handles a firearm at the Zoo will be certified as having passed a Minnesota firearms safety training class, other approved firearms safety class or have had military training.
- A Bureau of Criminal Apprehension background check will be performed on each firearms handler. The check will be repeated every five years to coincide with AZA accreditation. Each individual is required to inform the firearms coordinator immediately, if there is any change in his or her status between checks. Failure to notify the firearms coordinator can be grounds for disciplinary action, up to and including dismissal.
- Any individual certified to handle a firearm at the Zoo is required to shoot a minimum of 5-rounds/MZG firearm, two times a year. Targets will be turned in to the firearms program coordinator.
- Each person must shoot from 25 or 50 yards, and as time and weather permits from 100 yards.

2. INDIVIDUALS QUALIFIED TO HANDLE FIREARMS AT THE MINNESOTA ZOO

This list is comprised of individuals who satisfy the above requirements and above all feel comfortable handling firearms. The program coordinator must review and accept the competency level of the individual before that person is authorized to handle Minnesota Zoo firearms.

All individuals will be required to provide their proof of certification to the program coordinator. The program coordinator will be responsible for the maintenance of all records and will keep all supplies and equipment up to date and in good repair. The coordinator will also conduct on-site training to make sure all individuals are familiar with all procedures.

The following is a list of individuals that have qualified and are certified to handle Minnesota Zoo firearms as of December 28, 2000.

• Tony Fisher	• Jimmy Pichner	• Mark Nelson
• Chris Lanphear	• Jim Streater	• Jackie Fallon
• Brad Geiszler	• Beth Jo Schoeberl	• Jim Rasmussen
Jason Olson	*Josh Peterson*	*Brian Billmeyer*

Members in italics are not certified yet.

Each of the firearms handlers has the authority to decide if and when to shoot an escaped animal.

3. RESPONSIBILITIES OF PROGRAM COORDINATOR

a. The program coordinator will be responsible for the maintenance of all records and will keep all supplies and equipment up to date and in good repair. The coordinator will also conduct on-site training to make sure all individuals are familiar with all procedures.

b. The program coordinator will collect and file all targets.

4. FIREARMS LOCATIONS/ZONES OF ASSIGNMENT

a. **GUN SAFES** are located in three areas on zoo site (see attached maps). It is each individual's responsibility to be familiar with these locations.

1. Main Building 2nd floor (B216)
2. Animal Health Rear room in necropsy (A133)
3. Tiger Barn - Northern Trail Zoologist Office (A33H)
4. Farm House – Supervisors Office

Each gun safe contains a minimum of a 7mm Remington Magnum, and a 12 gauge shotgun. Two 22 rim fire rifles, three 223 rifles and a pellet gun are also located on site and kept in the gun safes.

5. ESCAPED ANIMAL SHOOTING LIST

IT IS IMPERATIVE THAT ANIMALS, EVEN MODERATELY DANGEROUS, NOT LEAVE ZOO GROUNDS OR ESCAPE UNDER COVER OF DARKNESS.

This list is based on potential danger of the animals. If possible, the public should be evacuated from the area before shooting commences.

a. Shoot

• Siberian Tiger	Northern Trail
• Puma	Minnesota Trail
• Spotted Leopard	Tropics

b. Shoot depending on situation (animal showing aggression toward human or human in immediate danger).

• Mexican Wolves	Northern Trail
• Bison	Northern Trail
• Moose	Northern Trail
• Musk Ox	Northern Trail
• Takin	Northern Trail
• Canadian Lynx	Minnesota Trail
• Fisher	Minnesota Trail
• North American River Otter	Minnesota Trail
• Wolverine	Minnesota Trail
• Clouded Leopard	Tropics
• Sun Bear	Tropics
• White Cheeked Gibbon	Tropics
• Japanese macaque	Tropics
• Holstein Bull	Farm

c. Do not shoot unless animal is close to escape from zoo site.

- Remainder of animal collection

This list is a guideline and the firearms handler has the responsibility, during an escape, to evaluate each situation and make a judgment whether to shoot or not.

6. ANIMAL CONTROL

The uncontrolled presence of certain wild and domestic animals also poses a threat to the health and safety of the animal collection. The control of such animals may require the use of firearms.

When firearm use on zoo site is scheduled, i.e. planned deer control, the Senior Vice President, Mammal Conservation Manager and the Safety Officer will be notified in advance.

Status of All Classes Inventory - Net Specimen Counting
Minnesota Zoological Garden

Report Start Date: 7 Feb 2001

Report End Date: 7 Feb 2001

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
AMPHIBIA									
ANURA									
HYLIDAE									
LITORIA CAERULEA									
frog, white's tree	2. 0. 0								2. 0. 0
RANIDAE									
PYXICEPHALUS ADSPERSUS									
bullfrog, african	0. 1. 1								0. 1. 1

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Sta 07/02/2001
REPTILIA									
CHELONIA CRYPTODIRA									
CHELONIIDAE									
CHELONIA MYDAS									
turtle, green sea	+ 0. 0. 3	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	__.__.__	+ 0. 0. 3
EMYDIDAE BATAGURINAE									
GEOEMYDA SPENGLERI (no subsp)									
black-breasted leaf turtle	0. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	0. 1. 0
GEOEMYDA SPENGLERI SPENGLERI									
turtle,viet.wood/black-breastd leaf	1. 8. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	1. 8. 0
EMYDIDAE EMYDINAE									
CLEMMYS INSCULPTA									
turtle, wood	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	1. 0. 0
GRAPTEMYS OUACHITENSIS OUACHITENSIS									
turtle, ouachita map	3. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	3. 1. 0
TERRAPENE CAROLINA CAROLINA									
turtle, eastern box	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	1. 0. 0
TESTUDINIDAE									
GEOCHELONE ELEGANS									
star tortoise	3. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	3. 1. 0
	+ 1. 0. 0	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	__.__.__	+ 1. 0. 0
MANOURIA EMYS PHAYREI									
burmese / asian brown tortoise	2. 2. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	2. 2. 0
	- 1. 1. 0	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	__.__.__	- 1. 1. 0
CROCODYLIA									
CROCODYLIDAE CROCODYLINAE									
TOMISTOMA SCHLEGELII									
false gavial	- 1. 1. 0	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	__.__.__	- 1. 1. 0
SQUAMATA SAURIA									
AGAMIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
ACANTHODRACO VITTICEPS									
inland bearded dragon	3. 0. 0								3. 0. 0
ANGUIDAE									
OPHISAURUS APODUS									
lizard, glass / scheltopusik	0. 0. 2								0. 0. 2
GEKKONIDAE									
EUBLEPHARIS MACULARIUS									
leopard gecko	3. 3. 1								3. 3. 1
GEKKO GECKO									
tokay gecko	0. 0. 4								0. 0. 4
PTYCHOZOON KUHLI									
gliding gecko	4. 4. 6								4. 4. 6
[redacted]CIDAE									
CORUCIA ZEBRATA									
skink, prehensile-tailed / solomon	2. 1. 1								2. 1. 1
TILIQUA SCINCOIDES (no subsp)									
skink, blue-tongued	- 1. 0. 0								- 1. 0. 0
TILIQUA SCINCOIDES SCINCOIDES									
skink, eastern blue-tongued	0. 0. 4								0. 0. 4
VARANIDAE									
VARANUS DUMERILI									
dumeril's monitor	- 1. 0. 0								- 1. 0. 0
VARANUS KOMODOENSIS									
komodo monitor	1. 0. 0								1. 0. 0
VARANUS SALVATOR (no subsp)									
malayan water monitor	+ 1. 0. 0								+ 1. 0. 0
[redacted]MATA SERPENTES									
BOIDAE BOINAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Sta 07/02/2001
BOA CONSTRICTOR (no subsp)									
boa constrictor	2. 3. 1	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	2. 3. 1
BOIDAE PYTHONINAE									
CHONDROPYTHON VIRIDIS									
python, green tree	0. 0. 1	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 0. 1
PYTHON MOLURUS BIVITTATUS									
burmese python	1. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 1. 0
PYTHON REGIUS									
python, royal/ball	2. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	2. 0. 0
COLUBRIDAE									
ELAPHE GUTTATA (no subsp)									
cornsnake/red ratsnake	0. 2. 1	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 2. 1
ELAPHE GUTTATA GUTTATA									
cornsnake/red ratsnake	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 0. 0
ELAPHE VULPINA VULPINA									
western fox snake	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 0. 0
HETERODON NASICUS (no subsp)									
western hognose snake	3. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	3. 0. 0
LAMPROPELTIS GETULUS CALIFORNIAE									
california kingsnake	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 0. 0
LAMPROPELTIS TRIANGULUM (no subsp)									
milksnake	0. 2. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 2. 0
PITUOPHIS MELANOLEUCUS SAYI									
bullsnake	3. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	3. 0. 0
VIPERIDAE CROTALINAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
CROTALUS HORRIDUS HORRIDUS timber rattlesnake	2. 0. 0	_._._	_._._	_._._	_._._	_._._	_._._	___.___.___	2. 0. 0

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Sta 07/02/2001
AVES									
CASUARIIFORMES									
RHEIDAE									
AMAZONA OCHROCEPHALA AUROPALLIATA									
yellow-naped amazon	0. 1. 2	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 1. 2
CICONIIFORMES									
PHOENICOPTERIDAE									
PHOENICONAIAS MINOR									
flamingo, lesser	9. 6. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	9. 6. 0
ANSERIFORMES									
ANATIDAE									
ANSER CAERULESCENS CAERULESCENS									
snow goose / blue goose	18. 15. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	18. 15. 0
BRANTA RUFICOLLIS									
red-breasted goose	1. 2. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 2. 0
	- 3. 3. 0	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	___.___.___	- 3. 3. 0
CYGNUS CYGNUS BUCCINATOR									
trumpeter swan	2. 3. 4	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	2. 3. 4
	- 4. 3. 9	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	-__.__.__	___.___.___	- 4. 3. 9
	+ 1. 2. 0	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	___.___.___	+ 1. 2. 0
DENDROCYGNA ARCUATA (no subsp)									
wandering whistling duck	0. 2. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 2. 0
AIX GALERICULATA									
mandarin duck	1. 5. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 5. 0
ANAS ACUTA (no subsp)									
pintail	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 0. 0
ANAS ACUTA ACUTA									
pintail, common	0. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 1. 0

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
ANAS CLYPEATA shoveler, common	1. 1. 0								1. 1. 0
ANAS CRECCA (no subsp) green-winged teal	0. 1. 0								0. 1. 0
ANAS CRECCA CAROLINENSIS green-winged teal (american)	2. 1. 0								2. 1. 0
ANAS FALCATA (no subsp) falcated duck	1. 1. 0								1. 1. 0
	- 1. 0. 0								- 1. 0. 0
ANAS FORMOSA baikal teal	2. 2. 0								2. 2. 0
ANAS QUERQUEDULA garganey	1. 3. 0								1. 3. 0
AYTHYA AMERICANA redhead	1. 3. 0								1. 3. 0
GALLUS DOMESTICUS chicken, domestic	2. 17. 0								2. 17. 0
MERGUS CUCULLATUS merganser, hooded	1. 2. 5								1. 2. 5
MERGUS MERGANSER (no subsp) merganser, common	- 0. 1. 0								- 0. 1. 0
TADORNA FERRUGINEA shelduck, ruddy	2. 2. 0								2. 2. 0
FALCONIFORMES CATHARTIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Sta 07/02/2001
SARCORHAMPHUS PAPA									
vulture, king	0. 0. 1								0. 0. 1
ACCIPITRIDAE									
AQUILA CHRYSAETOS (no subsp)									
eagle, golden	1. 0. 0								1. 0. 0
BUTEO JAMAICENSIS (no subsp)									
red-tailed hawk	4. 0. 0								4. 0. 0
HALIAEETUS LEUCOCEPHALUS (no subsp)									
eagle, bald	+ 1. 2. 0								+ 1. 2. 0
HALIAEETUS VOCIFER									
eagle, african sea eagle	1. 0. 0								1. 0. 0
PARABUTEO UNICINCTUS (no subsp)									
harris' hawk/bay-winged hawk	0. 3. 0								0. 3. 0
FALCONIDAE									
FALCO PEREGRINUS (no subsp)									
falcon, peregrine	0. 1. 0								0. 1. 0
GALLIFORMES									
PHASIANIDAE									
MELEAGRIS GALLOPAVO SILVESTRIS									
wild turkey	3. 0. 0								3. 0. 0
ARGUSIANUS ARGUS GRAYI									
bornean great argus	- 0. 1. 0								- 0. 1. 0
BAMBUSICOLA THORACICA (no subsp)									
bamboo partridge	3. 0. 1								3. 0. 1
	+ 2. 0. 0								+ 2. 0. 0

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
CHRYSOLOPHUS AMHERSTIAE lady amhersts pheasant	1. 1. 0								1. 1. 0
CHRYSOLOPHUS PICTUS golden pheasant	2. 1. 0								2. 1. 0
GALLOPERDIX SPADICEA (no subsp) red spur-fowl	0. 1. 0								0. 1. 0
GALLUS GALLUS (no subsp) junglefowl, red	3. 1. 5								3. 1. 5
POLYPLECTRON BICALCARATUM (no subsp grey peacock pheasant	1. 0. 0								1. 0. 0
ROLLULUS ROULROUL crested wood partridge	2. 3. 11								2. 3. 11
TRAGOPAN TEMMINCKII temminck's tragopan	3. 1. 0								3. 1. 0
GRUIFORMES									
GRUIDAE									
ANTHROPOIDES VIRGO demoiselle crane	1. 1. 0								1. 1. 0
GRUS CANADENSIS (no subsp) sandhill crane	0. 1. 0								0. 1. 0
RALLIDAE									
PORZANA CAROLINA sora	0. 0. 1								0. 0. 1
CHARADRIIFORMES									
RECURVIROSTRIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
HIMANTOPUS HIMANTOPUS MEXICANUS									
black-necked stilt	2. 3. 1								2. 3. 1
CHARADRIIDAE									
PLUVIALIS DOMINICA (no subsp)									
lesser golden plover	0. 0. 1								0. 0. 1
VANELLUS SPINOSUS									
spur-winged lapwing	3. 2. 0								3. 2. 0
COLUMBIFORMES									
COLUMBIDAE									
CALOENAS NICOBARICA (no subsp)									
nicobar pigeon	7. 10. 7								7. 10. 7
CHALCOPHAPS INDICA (no subsp)									
green-winged dove	1. 0. 0								1. 0
COLUMBA LIVIA (no subsp)									
pigeon	0. 1. 32								0. 1. 32
DUCULA BICOLOR									
pied imperial pigeon	9. 2. 1								9. 2. 1
GALLICOLUMBA LUZONICA									
bleeding heart pigeon	3. 0. 0								3. 0. 0
	+ 2. 0. 0								+ 2. 0. 0
GEOPELIA CUNEATA (no subsp)									
diamond dove	0. 1. 0								0. 1. 0
GOURA VICTORIA (no subsp)									
victoria crowned pigeon	1. 3. 1								1. 3. 1
	- 1. 1. 0								- 1. 1. 0

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
MACROPYGIA UNCHALL (no subsp)									
bar-tailed cuckoo-dove	- 1. 0. 0								- 1. 0. 0
PTILINOPUS MELANOSPILA (no subsp)									
black-naped fruit dove	2. 1. 0								2. 1. 0
PSITTACIFORMES									
CACATUIDAE									
CACATUA GALERITA GALERITA									
sulphur-crested cockatoo	1. 0. 0								1. 0. 0
EOLOPHUS ROSEICAPILLUS (no subsp)									
cockatoo, rose-breasted / galah	1. 0. 0								1. 0. 0
PSITTACIDAE									
AMAZONA OCHROCEPHALA PANAMENSIS									
panama yellow-crowned amazon	1. 0. 0								1. 0. 0
ANODORHYNCHUS HYACINTHINUS									
hyacinth macaw	1. 0. 0								1. 0. 0
ARA ARARAUNA									
blue-and-yellow macaw	- 1. 1. 0								- 1. 1. 0
ARA CHLOROPTERA									
green-winged macaw	0. 0. 2								0. 0. 2
ARA MILITARIS (no subsp)									
military macaw	0. 0. 1								0. 0. 1
PSITTACUS ERITHACUS (no subsp)									
parrot, grey	0. 1. 1								0. 1. 1
CUCULIFORMES									
CUCULIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Sta 07/02/2001
CARPOCOCCYX RENAULDI									
renauld's ground cuckoo	1. 0. 0								1. 0. 0
	+ 0. 1. 0								+ 0. 1. 0
STRIGIFORMES									
STRIGIDAE									
AEGOLIUS ACADICUS (no subsp)									
saw-whet owl	0. 0. 2								0. 0. 2
ASIO OTUS (no subsp)									
long-eared owl	1. 0. 1								1. 0. 1
BUBO BUBO (no subsp)									
eurasian eagle owl	1. 0. 0								1. 0. 0
BUBO VIRGINIANUS (no subsp)									
owl, great horned	1. 2. 0								1. 0
CAPRIMULGIFORMES									
PODARGIDAE									
PODARGUS STRIGOIDES (no subsp)									
tawny frogmouth	1. 2. 1								1. 2. 1
	+ 1. 0. 0								+ 1. 0. 0
CORACIIFORMES									
CORACIIDAE									
CORACIAS BENGHALENSIS (no subsp)									
indian roller	1. 1. 0								1. 1. 0
BUCEROTIDAE									
BUCEROS BICORNIS (no subsp)									
hornbill, great	1. 1. 0								1. 1. 0
BUCORVUS ABYSSINICUS									
hornbill, abyssinian ground	0. 0. 1								0. 0. 1
PICIFORMES									
CAPITONIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
MEGALAIMA MYSTACOPHANOS (no subsp)									
gaudy red-throated barbet	0.	1.	0						0. 1. 0
RAMPHASTIDAE									
RAMPHASTOS SULFURATUS (no subsp)									
keel-billed toucan	1.	0.	0						1. 0. 0
RAMPHASTOS TOCO (no subsp)									
toco toucan	1.	0.	0						1. 0. 0
RAMPHASTOS TUCANUS (no subsp)									
red-billed toucan	1.	0.	0						1. 0. 0
PICIDAE									
DRYOCOPUS PILEATUS									
pileated woodpecker	1.	1.	0						1. 1. 0
[redacted]ERIFORMES									
PITTIDAE									
PITTA SORDIDA (no subsp)									
hooded pitta	0.	1.	0						0. 1. 0
MIMIDAE									
DUMETELLA CAROLINENSIS									
catbird, common	0.	0.	1						0. 0. 1
MUSCICAPIDAE									
CATHARUS GUTTATUS (no subsp)									
thrush, hermit	0.	0.	1						0. 0. 1
COPSYCHUS MALABARICUS (no subsp)									
shama thrush, common	1.	1.	2						1. 1. 2
COPSYCHUS SAULARIS (no subsp)									
dhyal thrush / magpie robin	2.	1.	0						2. 1. 0

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
GARRULAX CHINENSIS (no subsp) black-throated laughing thrush	1. 1. 2								1. 1. 2
GARRULAX GALBANUS SIMAOENSIS yellow-bellied laughing thrush	2. 2. 0								2. 2. 0
GARRULAX LEUCOLOPHUS (no subsp) white-crested laughing thrush	2. 2. 0								2. 2. 0
	+ 0. 1. 0								+ 0. 1. 0
GARRULAX MILNEI (no subsp) red-tailed laughing thrush	4. 2. 0								4. 2. 0
LEIOTHRIX LUTEA (no subsp) red-billed leiothrix	9. 4. 39								9. 4. 39
PARIDAE									
PARUS CAERULEUS (no subsp) blue tit	0. 2. 0								0. 2. 0
PARUS SPILONOTUS tit, yellow-cheeked	0. 1. 0								0. 1. 0
EMBERIZIDAE									
PHEUCTICUS LUDOVICIANUS rose-breasted grosbeak	1. 1. 1								1. 1. 1
PARULIDAE									
DENDROICA PETECHIA (no subsp) yellow warbler	0. 1. 0								0. 1. 0
SEIURUS AUROCAPILLUS ovenbird	1. 0. 0								1. 0. 0
SETOPHAGA RUTICILLA redstart, american	2. 0. 0								2. 0. 0
ESTRILDIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
AMANDAVA AMANDAVA (no subsp)									
red avadavit	1. 0. 0								1. 0. 0
AMANDAVA SUBFLAVA (no subsp)									
orange(gold)-breasted avadavit	1. 0. 0								1. 0. 0
URAEGINTHUS BENGALUS (no subsp)									
red-cheeked cordon-bleu	2. 0. 0								2. 0. 0
STURNIDAE									
AMPELICEPS CORONATUS									
golden-crested mynah	3. 3. 0								3. 3. 0
APLONIS PANAYENSIS									
red-eyed / glossy starling	2. 8. 1								2. 8. 1
[illegible]COPSAR ROTHSCHILDI									
[illegible]li/rothschild's mynah	6. 5. 1								6. 5. 1
SCISSIROSTRUM DUBIUM (no subsp)									
grosbeak starling	2. 2. 2								2. 2. 2
ORIOLIDAE									
ORIOLUS CHINENSIS (no subsp)									
black-naped oriole	0. 1. 0								0. 1. 0
	+ 1. 0. 0								+ 1. 0. 0
CORVIDAE									
CRYPSIRINA TEMIA									
racket-tailed treepie	+ 1. 1. 0								+ 1. 1. 0
CYANOCITTA CRISTATA									
blue jay	0. 0. 1								0. 0. 1

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
MAMMALIA									
MARSUPIALIA									
DIDELPHIDAE									
DIDELPHIS VIRGINIANA									
opossum, north american	0. 5. 0								0. 5. 0
MACROPODIDAE									
DENDROLAGUS MATSCHIEI (no subsp)									
matschie's tree-kangaroo	1. 0. 0								1. 0. 0
	+ 0. 1. 0								+ 0. 1. 0
INSECTIVORA									
ERINACEIDAE									
ATELERIX ALBIVENTRIS									
hedgehog, african	2. 1. 0								2. 1. 0
TUPAIIDAE									
TUPAIA TANA (no subsp)									
shrew, large tree	0. 1. 0								0. 1. 0
CHIROPTERA									
PTEROPODIDAE									
PTEROPUS GIGANTEUS									
flying fox, indian	2. 13. 0								2. 13. 0
PHYLLOSTOMATIDAE									
ARTIBEUS JAMAICENSIS									
big fruit bat	22. 0. 0								22. 0. 0
PRIMATES									
LORISIDAE									
NYCTICEBUS COUCANG (no subsp)									
slow loris	3. 2. 0								3. 2. 0
NYCTICEBUS PYGMAEUS									
pygmy loris	1. 1. 0								1. 1. 0
CERCOPITHECIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
MACACA FUSCATA (no subsp)									
japanese macaque									
	7. 18. 0								7. 18. 0
	+ 1. 0. 0								+ 1. 0. 0
PONGIDAE									
HYLOBATES CONCOLOR LEUCOGENYS									
white cheeked gibbon / black gibbon									
	1. 2. 0								1. 2. 0
	- 3. 3. 0								- 3. 3. 0
EDENTATA									
DASYPODIDAE									
TOLYPEUTES MATACUS									
armadillo, la plata three-banded									
	+ 0. 1. 0								+ 0. 1. 0
LAGOMORPHA									
LEPORIDAE									
ORYCTOLAGUS CUNICULUS									
rabbit, old world / domestic									
	2. 5. 0								2. 5. 0
SYLVILAGUS FLORIDANUS									
rabbit, eastern cottontail									
	0. 1. 0								0. 1. 0
RODENTIA									
SCIURIDAE									
CALLOSCIURUS PREVOSTI (no subsp)									
prevost's squirrel									
	1. 1. 0								1. 1. 0
	+ 1. 1. 0								+ 1. 1. 0
GLAUCOMYS VOLANS (no subsp)									
squirrel, southern flying									
	11. 11. 0								11. 11. 0
CASTORIDAE									
CASTOR CANADENSIS (no subsp)									
beaver									
	0. 1. 0								0. 1. 0
MURIDAE									
RATTUS NORVEGICUS									
rat, norway									
	0. 8. 0								0. 8. 0
ERETHIZONTIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
ERETHIZON DORSATUM (no subsp)									
porcupine, north american	2. 3. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	2. 3. 0
CAVIDAE									
CAVIA PORCELLUS									
guinea pig	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 0. 0
CHINCHILLIDAE									
CHINCHILLA LANIGER									
chinchilla	3. 3. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	3. 3. 0
CETACEA									
DELPHINIDAE									
TURSIOPS TRUNCATUS (no subsp)									
bottle-nosed dolphin	0. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 1. 0
	+ 2. 0. 0	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	___.___.___	+ 2. 0. 0
TURSIOPS TRUNCATUS TRUNCATUS									
bottle-nosed dolphin	0. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 1. 0
CARNIVORA									
CANIDAE									
CANIS LUPUS BAILEYI									
wolf, mexican	1. 0. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	1. 0. 0
	+ 0. 1. 0	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	___.___.___	+ 0. 1. 0
UROCYON CINEREOARGENTEUS (no subsp)									
fox, grey	0. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 1. 0
URSIDAE									
HELARCTOS MALAYANUS (no subsp)									
sun bear, malayan	0. 1. 0	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	__.__.__	___.___.___	0. 1. 0
HELARCTOS MALAYANUS EURYSPILUS									
malayan sun bear	+ 1. 1. 0	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	+__.__.__	___.___.___	+ 1. 1. 0
PROCYONIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
AILURUS FULGENS FULGENS									
red panda	1. 0. 0								1. 0. 0
	+ 0. 1. 0								+ 0. 1. 0
AILURUS FULGENS STYANI									
red panda	+ 1. 1. 0								+ 1. 1. 0
MUSTELIDAE									
GULO GULO (no subsp)									
wolverine	2. 3. 0								2. 3. 0
MARTES PENNANTI (no subsp)									
fisher	2. 1. 0								2. 1. 0
MUSTELA ERMINEA BANGSI									
ermine	2. 1. 0								2. 1. 0
SPILOGALE PUTORIUS (no subsp)									
skunk, spotted	0. 2. 0								0. 2. 0
SPILOGALE PUTORIUS AMBARVALIS									
skunk, florida spotted	2. 0. 0								2. 0. 0
AONYX CINEREA (no subsp)									
otter, oriental small-clawed	3. 0. 0								3. 0. 0
	+ 1. 1. 0								+ 1. 1. 0
LUTRA CANADENSIS (no subsp)									
otter, north american river	1. 2. 0								1. 2. 0
VIVERRIDAE									
ARCTICTIS BINTURONG (no subsp)									
binturong	2. 0. 0								2. 0. 0
SURICATA SURICATTA (no subsp)									
slender-tailed meerkat	3. 1. 0								3. 1. 0
FELIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
FELIS CONCOLOR (no subsp)									
puma	1. 1. 0								1. 1. 0
FELIS LYNX CANADENSIS									
lynx, canadian	1. 1. 0								1. 1. 0
FELIS VIVERRINUS									
fishing cat	1. 2. 0								1. 2. 0
PANTHERA PARDUS ORIENTALIS									
leopard, amur	- 1. 4. 1								- 1. 4. 1
	+ 1. 1. 0								+ 1. 1. 0
PANTHERA TIGRIS ALTAICA									
tiger, siberian / amur	4. 1. 0								4. 1. 0
	- 1. 0. 0								- 1. 0. 0
NEOFELIS NEBULOSA (no subsp)									
clouded leopard	2. 1. 0								2. 1. 0
	+ 0. 1. 0								+ 0. 1. 0
PERISSODACTYLA									
EQUIDAE									
EQUUS CABALLUS									
horse, domestic	2. 1. 0								2. 1. 0
EQUUS PRZEWALSKII									
przewalskis / asian wild horse	3. 5. 0								3. 5. 0
	- 1. 1. 0								- 1. 1. 0
	+ 0. 1. 0								+ 0. 1. 0
TAPIRIDAE									
TAPIRUS INDICUS									
tapir, malayan	0. 1. 0								0. 1. 0
	+ 1. 1. 0								+ 1. 1. 0
ARTIODACTYLA									
SUIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
SUS SCROFA (domestic)									
pig, domestic or viet. pot bellied	1. 3. 0								1. 3. 0
CAMELIDAE									
CAMELUS BACTRIANUS (no subsp)									
camel, bactrian	0. 6. 0								0. 6. 0
	- 2. 0. 0								- 2. 0. 0
CAMELUS BACTRIANUS BACTRIANUS									
camel, bactrian	1. 2. 0								1. 2. 0
TRAGULIDAE									
TRAGULUS NAPU (no subsp)									
chevrotain, larger malayan	1. 4. 0								1. 4. 0
	+ 2. 2. 0								+ 2. 2. 0
CERVIDAE									
[illegible]TIACUS REEVESI (no subsp)									
[illegible]eves' muntjac	1. 2. 0								1. 2. 0
ALCES ALCES (no subsp)									
moose	0. 1. 0								0. 1. 0
ALCES ALCES AMERICANA									
moose	+ 1. 0. 0								+ 1. 0. 0
ALCES ALCES GIGAS									
moose	0. 1. 0								0. 1. 0
RANGIFER TARANDUS CARIBOU									
caribou, american woodland	6. 5. 0								6. 5. 0
ANTILOCAPRIDAE									
ANTILOCAPRA AMERICANA (no subsp)									
pronghorn	3. 9. 0								3. 9. 0
BOVIDAE									

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
BISON BISON (no subsp)									
bison, american	2. 4. 0								2. 4. 0
BOS TAURUS									
cow, domestic	0. 9. 0								0. 9. 0
	+ 1. 2. 0								+ 1. 2. 0
BUDORCAS TAXICOLOR TIBETANA									
takin	- 0. 1. 0								- 0. 1. 0
	+ 2. 1. 0								+ 2. 1. 0
CAPRA HIRCUS									
goat, domestic	4. 26. 0								4. 26. 0
HEMITRAGUS HYLOCRIUS									
nilgiri tahr	+ 1. 2. 0								+ 1. 2. 0
OVIBOS MOSCHATUS (no subsp)									
musk ox	3. 7. 0								3. 7. 0
OVIS ARIES									
sheep, domestic	2. 4. 0								2. 4. 0

Summary using Net Specimen Counting

	Specimens Owned at Institution	Specimens Owned on Loan Out	Specimens Not Owned on Loan In
Status 7 Feb 2001	313.368.155 = 836	23. 21. 10 = 54	27. 26. 3 = 56
Births	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Other Acquisitions	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Deaths	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
[Deaths < 30 Days of Birth]	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
[Deaths < 30 Days of Other Acq.]	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Other Dispositions	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Status 7 Feb 2001	313.368.155 = 836	23. 21. 10 = 54	27. 26. 3 = 56

Total Specimens Owned by Minnesota Zoological Garden: 336. 389. 165 = 890

Legend - Transaction Counting

1. 1. 1 = specimen counts as males.females.unknown sex
- 1. 1. 1 = specimens on Loan Out from Minnesota Zoological Garden
+ 1. 1. 1 = specimens on Loan In to Minnesota Zoological Garden

Legend - Net Collection Inventory Counting

1. 1. 1 = specimen Owned and On Site as males.females.unknown sex
- 1. 1. 1 = specimens Out On Loan from Minnesota Zoological Garden
+ 1. 1. 1 = specimens In On Loan to Minnesota Zoological Garden

Status of All Classes Inventory - Net Specimen Counting

Report Start Date: 7 Feb 2001

Minnesota Zoological Garden

Report End Date: 7 Feb 2001

Class / Order / Family	Orders in this class / Families in this order / Species in this family
AMPHIBIA	1
ANURA	2
HYLIDAE	1
RANIDAE	1

Class summary for: AMPHIBIA

Orders in this class (% of collection): 1(3.23%)
Families in this class (% of collection): 2(2.50%)
Species in this class (% of collection): 2(1.02%)

REPTILIA	4
CHELONIA CRYPTODIRA	4
CHELONIIDAE	1
EMYDIDAE BATAGURINAE	2
EMYDIDAE EMYDINAE	3
TESTUDINIDAE	2
CROCODYLIA	1
CROCODYLIDAE CROCODYLINAE	1
SQUAMATA SAURIA	5
AGAMIDAE	1
ANGUIDAE	1
GEKKONIDAE	3
SCINCIDAE	3
VARANIDAE	3
SQUAMATA SERPENTES	4
BOIDAE BOINAE	1
BOIDAE PYTHONINAE	3
COLUBRIDAE	7
VIPERIDAE CROTALINAE	1

Class summary for: REPTILIA

Orders in this class (% of collection): 4(12.90%)
Families in this class (% of collection): 14(17.50%)
Species in this class (% of collection): 32(16.24%)

AVES	15
RHEIDAE	1
CASUARIIFORMES	1
CICONIIFORMES	1
PHOENICOPTERIDAE	1
ANSERIFORMES	1
ANATIDAE	18
FALCONIFORMES	3
CATHARTIDAE	1
ACCIPITRIDAE	5
FALCONIDAE	1
GALLIFORMES	1
PHASIANIDAE	10
GRUIFORMES	2
GRUIDAE	2
RALLIDAE	1

Report Start Date: 7 Feb 2001

Report End Date: 7 Feb 2001

Class / Order / Family	Orders in this class / Families in this order / Species in this family
CHARADRIIFORMES	2
RECURVIROSTRIDAE	1
CHARADRIIDAE	2
COLUMBIFORMES	1
COLUMBIDAE	9
PSITTACIFORMES	2
CACATUIDAE	2
PSITTACIDAE	6
CUCULIFORMES	1
CUCULIDAE	1
STRIGIFORMES	1
STRIGIDAE	4
CAPRIMULGIFORMES	1
PODARGIDAE	1
CORACIIFORMES	2
CORACIIDAE	1
BUCEROTIDAE	2
PICIFORMES	3
CAPITONIDAE	1
RAMPHASTIDAE	3
PICIDAE	1
PASSERIFORMES	10
PITTIDAE	1
MIMIDAE	1
MUSCICAPIDAE	8
PARIDAE	2
EMBERIZIDAE	1
PARULIDAE	3
ESTRILDIDAE	3
STURNIDAE	4
ORIOLIDAE	1
CORVIDAE	2

Class summary for: AVES

Orders in this class (% of collection):	15(48.39%)
Families in this class (% of collection):	32(40.00%)
Species in this class (% of collection):	100(50.76%)

MAMMALIA	11
MARSUPIALIA	2
DIDELPHIDAE	1
MACROPODIDAE	1
INSECTIVORA	2
ERINACEIDAE	1
TUPAIIDAE	1
CHIROPTERA	2
PTEROPODIDAE	1
PHYLLOSTOMATIDAE	1
PRIMATES	3
LORISIDAE	2

Class / Order / Family	Orders in this class / Families in this order / Species in this family
CERCOPITHECIDAE	1
PONGIDAE	1
EDENTATA	1
DASYPODIDAE	1
LAGOMORPHA	1
LEPORIDAE	2
RODENTIA	6
SCIURIDAE	2
CASTORIDAE	1
MURIDAE	1
ERETHIZONTIDAE	1
CAVIDAE	1
CHINCHILLIDAE	1
CETACEA	1
DELPHINIDAE	2
CARNIVORA	6
CANIDAE	2
URSIDAE	2
PROCYONIDAE	2
MUSTELIDAE	7
VIVERRIDAE	2
FELIDAE	6
PERISSODACTYLA	2
EQUIDAE	2
TAPIRIDAE	1
ARTIODACTYLA	6
SUIDAE	1
CAMELIDAE	2
TRAGULIDAE	1
CERVIDAE	5
ANTILOCAPRIDAE	1
BOVIDAE	7

Class summary for: MAMMALIA

Orders in this class (% of collection):	11(35.48%)
Families in this class (% of collection):	32(40.00%)
Species in this class (% of collection):	63(31.98%)

Number of different classes:	4
Number of different orders:	31
Number of different families:	80
Number of different species:	197

Status of All Classes Inventory - Net Specimen Counting - Groups

Report Start Date: 7 Feb 2001 | Minnesota Zoological Garden | Report End Date: 7 Feb 2001

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
AMPHIBIA									
ANURA									
DENDROBATIDAE									
DENDROBATES AZUREUS									
frog, blue poison dart	2	_._._	_._._	_._._	_._._	_._._	_._._	___._._	2
DISCOGLOSSIDAE									
BOMBINA ORIENTALIS									
toad, oriental fire-bellied	20	_._._	_._._	_._._	_._._	_._._	_._._	___._._	20
HYLIDAE									
HYLA VERSICOLOR									
frog, grey tree	1	_._._	_._._	_._._	_._._	_._._	_._._	___._._	1
LEPTODACTYLIDAE									
LEPTODACTYLUS FALLAX									
frog, carribean mountain chicken	4	_._._	_._._	_._._	_._._	_._._	_._._	___._._	4
MICROHYLIDAE									
DYSCOPHUS GUINETI									
frog, sambava tomato	4	_._._	_._._	_._._	_._._	_._._	_._._	___._._	4
RANIDAE									
RANA SYLVATICA									
wood frog	3	_._._	_._._	_._._	_._._	_._._	_._._	___._._	3

Identification	Status 07/02/2001	Births	Other Acquis'n	Deaths	[< 30 Days] Births	[< 30 Days] Acquis'n	Other Dispos'n	Row Change	Status 07/02/2001
MAMMALIA									
CHIROPTERA									
PHYLLOSTOMATIDAE									
ARTIBEUS JAMAICENSIS									
big fruit bat	22								22
RODENTIA									
SCIURIDAE									
CYNOMYS LUDOVICIANUS									
prairie dog, black-tailed	80								80
GLAUCOMYS VOLANS (no subsp)									
squirrel, southern flying	1								1
ARTIODACTYLA									
SUIDAE									
SUS SCROFA (domestic)									
pig, domestic or viet. pot bellied	7								7

Summary using Net Specimen Counting

	Specimens Owned at Institution	Specimens Owned on Loan Out	Specimens Not Owned on Loan In
Status 7 Feb 2001	144. 0. 0 = 144	0. 0. 0 = 0	0. 0. 0 = 0
Births	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Other Acquisitions	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Deaths	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
[Deaths < 30 Days of Birth]	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
[Deaths < 30 Days of Other Acq.]	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Other Dispositions	0. 0. 0 = 0	0. 0. 0 = 0	0. 0. 0 = 0
Status 7 Feb 2001	144. 0. 0 = 144	0. 0. 0 = 0	0. 0. 0 = 0

Total Specimens Owned by Minnesota Zoological Garden: 144. 0. 0 = 144

Legend - Transaction Counting

1. 1. 1 = specimen counts as males.females.unknown sex
- 1. 1. 1 = specimens on Loan Out from Minnesota Zoological Garden
+ 1. 1. 1 = specimens on Loan In to Minnesota Zoological Garden

Legend - Net Collection Inventory Counting

1. 1. 1 = specimen Owned and On Site as males.females.unknown sex
- 1. 1. 1 = specimens Out On Loan from Minnesota Zoological Garden
+ 1. 1. 1 = specimens In On Loan to Minnesota Zoological Garden

Status of All Classes Inventory - Net Specimen Counting - Groups

Report Start Date: 7 Feb 2001

Minnesota Zoological Garden

Report End Date: 7 Feb 2001

Class / Order / Family	Orders in this class / Families in this order / Species in this family
AMPHIBIA	1
ANURA	6
DENDROBATIDAE	1
DISCOGLOSSIDAE	1
HYLIDAE	1
LEPTODACTYLIDAE	1
MICROHYLIDAE	1
RANIDAE	1

Class summary for: AMPHIBIA

Orders in this class (% of collection): 1(25.00%)
Families in this class (% of collection): 6(66.67%)
Species in this class (% of collection): 6(60.00%)

Class / Order / Family	Orders in this class / Families in this order / Species in this family
MAMMALIA	3
CHIROPTERA	1
PHYLLOSTOMATIDAE	1
RODENTIA	1
SCIURIDAE	2
ARTIODACTYLA	1
SUIDAE	1

Class summary for: MAMMALIA

Orders in this class (% of collection): 3(75.00%)
Families in this class (% of collection): 3(33.33%)
Species in this class (% of collection): 4(40.00%)

Number of different classes: 2
Number of different orders: 4
Number of different families: 9
Number of different species: 10

TOTAL FISH INVENTORY
INVENTORY
MINNESOTA ZOOLOGICAL GARDEN

Start Date
07 February 2001

Printed: 08 February 2001

End Date
07 February 2001

Phylum / Class / Order / Family / *Latin Name* / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
<?>								
<?>								
<?>								
<?>								
CAREHARHINUS PLUMBEUS	0.5.0	0.0.0	0.0.0	0.0.0			0.0.0	0.5.0
CHORDATA								
CHONDRICHTHYES								
CHIMAERIFORMES								
CALLORHYNCHIDAE								
HAPLOCHROMIS PYROCEPHALUS	8.12.0	0.0.0	0.0.0	0.0.0			0.0.0	8.12.0
red-head rock cichlid								
<?>								
CHONDRICHTHYES								
CHIMAERIFORMES								
<?>								
HYPENTELIUM NIGRICANS	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
northern hognose sucker								
CHORDATA								
CHONDRICHTHYES								
HETERODONTIFORMES								
HETERODONTIDAE								
HETERODONTUS FRANCISCI	1.3.0	0.0.0	0.0.0	0.0.0			0.0.0	1.3.0
horn shark								
LAMNIFORMES								
ODONTASPIDAE								
ODONTASPIS TAURUS	2.2.0	0.0.0	0.0.0	0.0.0			0.0.0	2.2.0
shark, sandtiger								
RAJIFORMES								
RHINOBATIDAE								
PLATYRHINOIDIS TRISERIATA	2.0.1	0.0.0	0.0.0	0.0.0			0.0.0	2.0.1
thornback ray								
DASYATIDAE								
DASYATIS AMERICANA	0.9.0	0.0.0	0.0.0	0.0.0			0.0.0	0.9.0
stingray, southern								

TOTAL FISH INVENTORY
INVENTORY

MINNESOTA ZOOLOGICAL GARDEN

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07 February 2001

Printed: 08 February 2001

End Da
07 February 2001

Phylum / Class / **Order** / Family / ***Latin Name*** / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
NEOGLYPHIDION OXYODON javaneese damsel	0.0.9	0.0.0	0.0.0	0.0.0			0.0.0	0.0.9
ORECTOLOBIFORMES								
HEMISCYLLIIDAE								
CHILOSCYLLIUM PUNCTATUM brownbanded bamboo shark	8.10.0	0.0.0	0.0.0	0.0.0			0.0.0	8.10.0
CHILOSCYLLIUM PLAGIOSUM whitespotted bambooshark	2.0.0	0.0.0	0.0.0	0.0.0			0.0.0	2.0.0
HEMISCYLLIUM OCELLATUM epaulette shark	0.1.0	0.0.0	0.0.0	0.0.0			0.0.0	0.1.0
STEGOSTOMATIDAE								
STEGASTOMA FASCIATUM zebra shark / leopard shark	0.2.0	0.0.0	0.0.0	0.0.0			0.0.0	0.2.0
CARCHARHINIDAE								
TRIAENODON OBESUS white tip shark	0.1.0	0.0.0	0.0.0	0.0.0			0.0.0	0.1.0
CARCHARHINIFORMES								
SCYLIORHINIDAE								
CEPHALOSCYLLIUM VENTRIOSUM shark, swell	3.1.0	0.0.0	0.0.0	0.0.0			0.0.0	3.1.0
CARCHARHINIDAE								
CARCHARHINUS ACRONOTUS blacknose shark	2.5.0	0.0.0	0.0.0	0.0.0			0.0.0	2.5.0
TRIAKIDAE								
TRIAKIS SEMIFASCIATA leopard shark	1.0.0	0.0.0	0.0.0	0.0.0			0.0.0	1.0.0
ACTINOPTERYGII								
AMIIFORMES								
AMIIDAE								
AMIA CALVA bowfin	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
ANGUILLIFORMES								
MURAENIDAE								
GYMNOMURAENA ZEBRA zebra moray	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	[illegible]
GYMNOTHORAX FUNEBRIS green moray	0.0.8	0.0.0	0.0.0	0.0.0			0.0.0	0.0.8

TOTAL FISH INVENTORY
INVENTORY

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Phylum / Class / **Order** / Family / ***Latin Name*** / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
ECHIDNA NEBULOSA snowflake moray	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
GONORYNCHIFORMES								
CHANIDAE								
CHANOS CHANOS milkfish	0.0.65	0.0.0	0.0.0	0.0.0			0.0.0	0.0.65
CYPRINIFORMES								
CYPRINIDAE								
BARBUS SCHWANENFELDI tinfoil barb	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
DANIO MALABARICUS giant danio	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
MORULINUS CHRYSOPHEKADION black shark	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
PUNTIUS CONCHONIUS rosy barb	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
HOMALOPTERIDAE								
EPALZEORHYNCHUS KALLOPTERUS flying fox (fish)	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
GYRINOCHEILIDAE								
GYRINOCHEILUS AYMONIERI chinese algae-eater	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CATOSTOMIDAE								
CATOSTOMUS COMMERSONI white sucker	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
SILURIFORMES								
ICTALURIDAE								
ICTALURUS NEBULOSUS brown bullhead	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
BAGRIDAE								
MYSTUS VITTATUS purple striped catfish	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
SALMONIFORMES								
ESOCIDAE								
ESOX LUCIUS northern pike	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2

TOTAL FISH INVENTORY
INVENTORY
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07 February 2001

Phylum / Class / Order / Family / *Latin Name* / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
SALMONIDAE								
SALVELINUS FONTINALIS brook trout	0.0.22	0.0.0	0.0.0	0.0.0			0.0.0	0.0.22
CYPRINODONTIFORMES								
POECILIIDAE								
XIPHOPHORUS MACULATUS platy	0.0.20	0.0.0	0.0.0	0.0.0			0.0.0	0.0.20
XIPHOPHORUS VARIATUS marigold variatus	0.0.10	0.0.0	0.0.0	0.0.0			0.0.0	0.0.10
XIPHOPHORUS HELLERI swordtail	0.0.10	0.0.0	0.0.0	0.0.0			0.0.0	0.0.10
ATHERINIFORMES								
POECILIIDAE								
POECILIA RETICULATA guppy	0.0.10	0.0.0	0.0.0	0.0.0			0.0.0	[illegible]
POECILIA LATIPINNA molly, black & lyretail	0.0.19	0.0.0	0.0.0	0.0.0			0.0.0	0.0.19
POECILIA MEXICANA molly, sphenops & gold dust yucatan	0.0.20	0.0.0	0.0.0	0.0.0			0.0.0	0.0.20
POECILIA VELIFERA green velifera molly	0.0.10	0.0.0	0.0.0	0.0.0			0.0.0	0.0.10
BERYCIFORMES								
HOLOCENTRIDAE								
HOLOCENTRUS ASCENSIONIS longjaw squirrelfish	0.0.16	0.0.0	0.0.0	0.0.0			0.0.0	0.0.16
HOLOCENTRUS RUFUS longspine squirrelfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
SARGOCENTRON ITTODAI samurai squirrelfish	0.0.13	0.0.0	0.0.0	0.0.0			0.0.0	0.0.13
SARGOCENTRON PRASLIN dark-striped squirrelfish	0.0.16	0.0.0	0.0.0	0.0.0			0.0.0	0.0.16
SARGOCENTRON DIADEMA crown squirrelfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
PLECTRYPOPS LIMA cardinal soldierfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	[illegible]
MYRIPRISTIS MURDJAN red soldierfish	0.0.10	0.0.0	0.0.0	0.0.0			0.0.0	0.0.10

TOTAL FISH INVENTORY
INVENTORY

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Phylum / Class / **Order** / Family / ***Latin Name*** / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
SCORPAENIFORMES								
SCORPAENIDAE								
SEBASTES NEBULOSA china rockfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
HEXAGRAMMIDAE								
HEXAGRAMMOS STELLERI greenling, whitespotted	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
COTTIDAE								
MYOXOCEPHALUS SCORPIUS shorthorn sculpin	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
PERCIFORMES								
SERRANIDAE								
CROMILEPTES ALTIVELIS pantherfish	0.0.6	0.0.0	0.0.0	0.0.0			0.0.0	0.0.6
HYPOPLECTRUS UNICOLOR barred / butter hamlet	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
GRAMMISTIDAE								
GRAMMISTES SEXLINEATUS skunkfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
GRAMMIDAE								
LABRACINUS LINEATUS giant red dotty	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
PSEUDOCHROMIS NOVAEHOLLANDIAE red & green dottyback	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
PLESIOPIDAE								
ASSESSOR MACNEILLI blue devilfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CALLOPLESIOPS ALTIVELIS comet	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
CENTRARCHIDAE								
AMBLOPLITES RUPESTRIS rock bass	0.0.8	0.0.0	0.0.0	0.0.0			0.0.0	0.0.8
LEPOMIS GIBBOSUS pumpkinseed	0.0.8	0.0.0	0.0.0	0.0.0			0.0.0	0.0.8
LEPOMIS MACROCHIRUS bluegill sunfish	0.0.20	0.0.0	0.0.0	0.0.0			0.0.0	0.0.20

TOTAL FISH INVENTORY
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MICROPTERUS DOLOMIEUI smallmouth bass	0.0.9	0.0.0	0.0.0	0.0.0			0.0.0	0.0.9
MICROPTERUS SALMOIDES largemouth bass	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
POMOXIS NIGROMACULATUS black crappie	0.0.20	0.0.0	0.0.0	0.0.0			0.0.0	0.0.20
PERCIDAE								
PERCA FLAVESCENS yellow perch	0.0.15	0.0.0	0.0.0	0.0.0			0.0.0	0.0.15
STIZOSTEDION VITREUM walleye	0.0.9	0.0.0	0.0.0	0.0.0			0.0.0	0.0.9
PRIACANTHIDAE								
HETEROPRIACANTHUS CRUENTATUS glasseye snapper	0.0.14	0.0.0	0.0.0	0.0.0			0.0.0	0.0.14
RACHYCENTRIDAE								
RACHYCENTRON CANADUM cobia	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CARANGIDAE								
TRACHINOTUS CAROLINUS pompano	0.0.8	0.0.0	0.0.0	0.0.0			0.0.0	0.0.8
CARANAX SP. jack / blue runner	0.0.114	0.0.0	0.0.0	0.0.0			0.0.0	0.0.114
LUTJANIDAE								
LUTJANUS KASMIRA bluelined snapper	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
LUTJANUS GRISEUS gray snapper	0.0.19	0.0.0	0.0.0	0.0.0			0.0.0	0.0.19
SYMPHORICHTHYS SPILURUS blue-lined sea bream	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
HAEMULIDAE								
HAEMULON CHRYSARGYREUM smallmouth grunt	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
HAEMULON FLAVOLINEATUM french grunt	0.0.7	0.0.0	0.0.0	0.0.0			0.0.0	0.0.7
HAEMULON SCIURRUS bluestriped grunt	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2

TOTAL FISH INVENTORY
INVENTORY
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Phylum / Class / Order / Family / *Latin Name* / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
HAEMULON MELANURUM cottonwick	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
PLECTORHINCHUS ALBOVITTATUS sailfin sweetlips	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
PLECTORHINCHUS GATERINOIDES lined sweetlips	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
ANISOTREMUS VIRGINICUS porkfish	0.0.27	0.0.0	0.0.0	0.0.0			0.0.0	0.0.27
SCIAENIDAE								
EQUETUS ACUMINATUS high hat	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
MONODACTYLIDAE								
MONODACTYLUS ARGENTEUS mono	0.0.9	0.0.0	0.0.0	0.0.0			0.0.0	0.0.9
EPHIPPIDIDAE								
PLATAX ORBICULARIS orbiculate batfish	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
PLATAX TEIRA longfin spadefish	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
SCATOPHAGIDAE								
SCATOPHAGUS ARGUS scat	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
CHAETODONTIDAE								
CHAETODON AURIGA threadfin butterflyfish/auriga butt	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
CHAETODON LUNULA raccoon butterflyfish	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
CHAETODON ULIETENSIS pacific double-saddle/wide saddled	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CHAETODON RAFFLESII latticed butterflyfish	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
CHAETODON VAGABUNDUS vagabond butterflyfish	0.0.6	0.0.0	0.0.0	0.0.0			0.0.0	0.0.6
CHELMON MULLERI muller's coralfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
HENIOCHUS ACUMINATUS long-fin bannerfish	0.0.8	0.0.0	0.0.0	0.0.0			0.0.0	0.0.8

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07 February 2001

Phylum / Class / Order / Family / *Latin Name* / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
CORADION ALTIVELIS highfin coralfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
POMACANTHIDAE								
CENTROPYGE POTTERI potters pygmy angelfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CENTROPYGE TIBICEN keyhole angelfish / tibicen angel	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
CENTROPYGE VROLICKI pearl-scaled angel	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
CENTROPYGE ARGI cherubfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CHAETODONTOPLUS MESOLEUCUS vermiculated / singapore angel	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
HOLACANTHUS PASSER passer angel	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	
POMACANTHUS ANNULARUS blue-ringed angelfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
POMACANTHUS SEMICIRCULATUS semicircle angelfish	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
POMACANTHUS NAVARCHUS blue-girdled angelfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
POMACANTHUS XANTHOMETAPON blue-faced angelfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
GENICANTHUS SEMIFASCIATUS japanese swallow angel	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
GENICANTHUS MELANOSPILOS black-spot angelfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
APOLEMICHTHYS XANTHURUS indian yellow-tail angelfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
CICHLIDAE								
CICHLASOMA MEEKI firemouth	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
CICHLASOMA MEEKI firemouth	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
CRENICICHLA LEPIDOTA pike cichlid	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1

TOTAL FISH INVENTORY
INVENTORY
MINNESOTA ZOOLOGICAL GARDEN

Start Date 07 February 2001 | Printed: 08 February 2001 | End Date 07 February 2001

Phylum / Class / Order / Family / *Latin Name* / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
CICHLASOMA CYANOGUTTATUM texas cichlid	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
EMBIOTOCIDAE								
BRACHYISTIUS FRENATUS seaperch, kelp	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
POMACENTRIDAE								
ABUDEFDUF SAXATILIS sargeant major	0.0.10	0.0.0	0.0.0	0.0.0			0.0.0	0.0.10
AMPHIPRION AKALLOPISOS skunk-striped anemone fish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
AMPHIPRION CLARKII yellow-tailed anemonefish	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
AMPHIPRION FRENATUS tomato anemonefish	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
AMPHIPRION PERCULA percula clownfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
AMPHIPRION PERIDERAION false skunk-striped anemone fish	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
AMPHIPRION MELANOPUS dusky anemonefish	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
AMPHIPRION OCELLARIS clown anemonefish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
AMPHIPRION EPHIPPIUM saddle anemonefish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CHROMIS CYANEA blue chromis / blue reef	0.0.40	0.0.0	0.0.0	0.0.0			0.0.0	0.0.40
CIRRHITIDAE								
PARACIRRHITES ARCATUS arc-eye hawkfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
PARACIRRHITES FORSTERI freckled hawkfish	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
CIRRHITUS PINNULATUS stocky hawkfish	0.0.7	0.0.0	0.0.0	0.0.0			0.0.0	0.0.7
LABRIDAE								
BODIANUS RUFUS spanish hogfish	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5

TOTAL FISH INVENTORY
INVENTORY
MINNESOTA ZOOLOGICAL GARDEN

Start Date
07 February 2001

Printed: 08 February 2001

End Date
07 February 2001

Phylum / Class / **Order** / Family / ***Latin Name*** / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
BODIANUS DIANA diana's hogfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CORIS GAIMARD yellowtail coris	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
THALASSOMA LUNARE moon / crescent / lyretail wrasse	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
THALASSOMA AMBLYCEPHALUM twotone wrasse	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
THALASSOMA PURPUREUM surge wrasse	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
THALASSOMA QUINQUEVITTATUM five-stripe surge wrasse	0.0.8	0.0.0	0.0.0	0.0.0			0.0.0	0.0.8
THALASSOMA HARDWICKII sixbar wrasse	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
THALASSOMA JANSENI jansen's wrasse	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
CHEILINUS FASCIATUS red-breasted wrasse	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
CHEILINUS UNDULATUS humphead wrasse	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
LIENARDELLA FASCIATA harlequin tuskfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
GOBIIDAE								
GOBIOSOMA MACRODON tiger goby	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
ACANTHURIDAE								
ACANTHURUS ACHILLES achilles tang	0.0.20	0.0.0	0.0.0	0.0.0			0.0.0	0.0.20
ACANTHURUS COERULEUS blue tang	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
ACANTHURUS LEUCOSTERNON powder blue surgeonfish	0.0.15	0.0.0	0.0.0	0.0.0			0.0.0	0.0.15
ACANTHURUS LINEATUS bluebanded surgeonfish/clown surgn	0.0.5	0.0.0	0.0.0	0.0.0			0.0.0	0.0.5
ACANTHURUS OLIVACEUS orangeband surgeonfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2

TOTAL FISH INVENTORY
INVENTORY
MINNESOTA ZOOLOGICAL GARDEN

Start Date 07 February 2001 | Printed: 08 February 2001 | End Date 07 February 2001

Phylum / Class / Order / Family / *Latin Name* / Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
NASO VLAMINGII bignose unicornfish	0.0.10	0.0.0	0.0.0	0.0.0			0.0.0	0.0.10
NASO UNICORNIS bluespine unicornfish	0.0.3	0.0.0	0.0.0	0.0.0			0.0.0	0.0.3
NASO BREVIROSTRIS spotted unicornfish	0.0.12	0.0.0	0.0.0	0.0.0			0.0.0	0.0.12
ZEBRASOMA FLAVESCENS yellow tang	0.0.7	0.0.0	0.0.0	0.0.0			0.0.0	0.0.7
ZEBRASOMA VELIFERUM sailfin tang	0.0.13	0.0.0	0.0.0	0.0.0			0.0.0	0.0.13
ZEBRASOMA SCOPAS brown tang	0.0.4	0.0.0	0.0.0	0.0.0			0.0.0	0.0.4
ZEBRASOMA XANTHURUM purple surgeonfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
CTENOCHAETUS STRIGOSUS goldring surgeonfish	0.0.12	0.0.0	0.0.0	0.0.0			0.0.0	0.0.12
CTENOCHAETUS HAWAIIENSIS black surgeonfish	0.0.2	0.0.0	0.0.0	0.0.0			0.0.0	0.0.2
PARACANTHURUS HEPATUS palette surgeonfish	0.0.19	0.0.0	0.0.0	0.0.0			0.0.0	0.0.19
SIGANIDAE								
LO VULPINUS foxface	0.0.31	0.0.0	0.0.0	0.0.0			0.0.0	0.0.31
SIGANUS SPINUS scribbled rabbitfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
SIGANUS CORALLINUS coral rabbitfish	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
OSPHRONEMIDAE								
OSPHRONEMUS GORAMY gourami	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
TETRAODONTIFORMES								
BALISTIDAE								
MELICHTHYS VIDUA pink-tail trigger	0.0.1	0.0.0	0.0.0	0.0.0			0.0.0	0.0.1
RHINECANTHUS ACULEATUS picassofish	0.0.7	0.0.0	0.0.0	0.0.0			0.0.0	0.0.7

TOTAL FISH INVENTORY
INVENTORY
MINNESOTA ZOOLOGICAL GARDEN

Start Date
07 February 2001

Printed: 08 February 2001

End Date
07 February 2001

Phylum Class **Order** Family ***Latin Name*** Common Name	Status 07/02/2001	Births	Other Acquis'n	Deaths	Deaths < 30 days from Birth	Deaths < 30 days from Acquis'n	Other Dispos'n	Status 07/02/2001
BALISTOIDES CONSPICILLUM clown triggerfish	0.5	0.0	0.0	0.0			0.0	0.5
BALISTAPUS UNDULATUS orangestriped triggerfish	0.2	0.0	0.0	0.0			0.0	0.2
BALISTES CAPRISCUS gray trigger	0.1	0.0	0.0	0.0			0.0	0.1
BALISTES VETULA queen trigger	0.7	0.0	0.0	0.0			0.0	0.7
XANTHICHTHYS AUROMARGINATUS bluechin triggerfish	0.6	0.0	0.0	0.0			0.0	0.6
TETRAODONTIDAE								
AROTHRON NIGROPUNCTATUS blackspotted puffer	0.1	0.0	0.0	0.0			0.0	0.1
AROTHRON HISPIDUS whitespotted puffer	0.2	0.0	0.0	0.0			0.0	
CANTHIGASTER VALENTINI valentinni's sharpnose puffer	0.4	0.0	0.0	0.0			0.0	0.4
CANTHIGASTER SOLANDRI spotted sharpnose puffer	0.2	0.0	0.0	0.0			0.0	0.2
CANTHIGASTER COMPRESSA fingerprint sharpnose puffer	0.1	0.0	0.0	0.0			0.0	0.1
CANTHIGASTER JANTHINOPTERA whitespotted sharpnose puffer	0.4	0.0	0.0	0.0			0.0	0.4
DIODON HOLOCANTHUS balloon fish / spiny puffer	0.5	0.0	0.0	0.0			0.0	0.5
DIODON HYSTRIX porcupinefish	0.3	0.0	0.0	0.0			0.0	0.3

Summary

	Specimens Owned at Institution	Specimens Owned on Loan Out	Specimens Not Owned on Loan In
Status 07 February 2001	29. 51. 1031	Not applicable	Not applicable
Births	0. 0. 0		
Other Acquisitions	0. 0. 0		
Deaths	0. 0. 0		
[Deaths < 30 days of birth]	0. 0. 0	Deaths at less than 30 days not calculated because of group ID numbers	
[Deaths < 30 days of birth]	0. 0. 0		
Other Dispositions	0. 0. 0		
Status 07 February 2001	29. 51. 1031		

Total Specimens Owned by Minnesota Zoological Garden: 29. 51. 1031 = 1111

Legend
1.1.1 = specimen counts as males.females.unknown sex
- 1.1.1 = specimen counts on Loan Out from Minnesota Zoological Garden
+1.1.1 = specimen counts on Loan In to Minnesota Zoological Garden

FISH INVENTORY SUMMARY ŸÕÕ

Inventory CATEGORY Quantities

07 February 2001

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2 Phyla

3 Classes

19 Orders

55 Families

168 Genus Species (Latin Name)

INVERTEBRATE STATUS AS OF 09 February

07 February 2001

PHYLUM . CLASS .. ORDER ... FAMILY *GENUS / SPECIES / SUBSPECIES*	COMMON NAME	MAL . FEM . UNK	TRAIL
CHORDATA			
. ACTINOPTERYGII			
.. SCORPAENIFORMES			
... SPARIDAE			
ARCHOSARGUS RHOMBOIDALIS	sea bream	0 . 0 . 1	AQ
.. PERCIFORMES			
... POMACANTHIDAE			
APOLEMICHTHYS XANTHURUS	indian yellow-tail angelfish	0 . 0 . 2	AQ
COELENTERATA			
. ALCYONARIA			
.. PENNATULACEA			
... PENNATULIDAE			
PTILOSARCUS GURNEYI	sea pen, orange	0 . 0 . 1	AQ
. ZOANTHARIA			
.. ACTINIARIA			
... ACTINIIDAE			
URTICINA CORIACEA	anemone, buried	0 . 0 . 14	AQ
URTICINA CRASSICORNIS	tealia, painted	0 . 0 . 24	AQ
URTICINA LOFOTENSIS	anemone, beaded / sea	0 . 0 . 84	AQ ZL
URTICINA PISCIVORA	tealia, fish-eating	0 . 0 . 86	AQ
URTICINA COLUMBIANA	tealia, columbia	0 . 0 . 29	AQ
TEALIA COLUMBIANA	tealia, columbia	0 . 0 . 11	AQ ZL
ANTHOPLEURA SP.	anemone, green sea	0 . 0 . 2	ZL
ANTHOPLEURA ARTEMISIA	anemone, brown / burrowing anemone	0 . 0 . 3	AQ
ANTHOPLEURA ELEGANTISSIMA	anemone, aggregating	0 . 0 . 96	ZL AQ
ANTHOPLEURA XANTHOGRAMMICA	anemone, green	0 . 0 . 114	AQ
CRIBINOPSIS FERNALDI	anemone, crimson	0 . 0 . 7	AQ
METRIDIUM SENILE	anemone,plumose /white /powder-puff	0 . 0 . 49	AQ ZL
STOMPHIA DIDEMON	anemone, swimming	0 . 0 . 1	AQ
... METRIDIIDAE			
METRIDIUM GIGANTEUM	anemone, giant plumed	0 . 0 . 57	AQ
... AIPTASIIDAE			
HETERACTIS CRISPA	anemone, wavy giant	0 . 0 . 3	AQ
HETERACTIS MAGNIFICA	anemone, giant fingered	0 . 0 . 1	AQ

INVERTEBRATE STATUS AS OF 09 February

07 February 2001

PHYLUM ..CLASS .. ORDER ... FAMILY *GENUS / SPECIES / SUBSPECIES*	COMMON NAME	MAL . FEM . UNK	TRAIL
ANNELIDA			
. POLYCHAETA			
.. SABELLIDA			
... SABELLIDAE			
EUDISTYLIA POLYMORPHA	feather duster worm	0 . 0 . 8	AQ ZL
CRUSTACEA			
. MALACOSTRACA			
.. DECAPODA			
...			
PENAEUS DUORARUM	shrimp, pink	0 . 0 . 21	AQ
... NEPHROPIDAE			
HOMARUS AMERICANUS	lobster, north american	0 . 0 . 2	AQ
... PAGURIDAE			
PAGURUS SP.	crab, hermit	0 . 0 . 6	AQ
... MAJIDAE			
OREGONIA GRACILIS	crab, decorator	0 . 0 . 1	AQ
... CANCRIDAE			
CANCER PRODUCTUS	crab, red rock	0 . 0 . 3	AQ
... MAJIDAE			
CHLORILA LONGIPES	crab, longhorn decorator	0 . 0 . 1	AQ
ARTHROPODA			
. INSECTA			
.. COLEOPTERA			
...			
ELEODES sp.	beetle, darkling	0 . 0 . 4	ZL
. ARACHNIDA			
.. ARANEAE			
... THERAPHOSIDAE			
BRACHYPELMA SMITHI	tarantula, orange-kneed	0 . 0 . 3	ZL
GRAMMOSTOLA SPATULATUS	tarantula, common chilean	0 . 0 . 3	ZL
GRAMMOSTOLA CALA	tarantula, chilean rose	0 . 0 . 1	ZL
. DIPLOPODA			
.. DIPLOPODA			
... MYRIOPODAE			
SPIROSTREPTUS GIGANTIS	millipede, giant african	0 . 0 . 14	ZL
MOLLUSCA			
. POLYPLACOPHORA			
.. NEOLORICATA			

INVERTEBRATE STATUS AS OF 09 February

07 February 2001

PHYLUM . CLASS .. ORDER ... FAMILY *GENUS / SPECIES / SUBSPECIES*	COMMON NAME	MAL . FEM . UNK	TRAIL
... CHITONIDAE			
CRYPTOCHITON STELLERI	chiton, giant gumboot	0 . 0 . 9	ZL AQ
...			
KATHARINA TUNICATA	chiton, black leather	0 . 0 . 2	AQ
TONICELLA LINEATA	lined chiton	0 . 0 . 4	AQ
... MOPALIIDAE			
MOPALIA MUSCOSA	chiton, mossy	0 . 0 . 1	AQ
. GASTROPODA			
.. ARCHAEOGASTROPODA			
... TROCHIDAE			
ASTRAEA GIBBEROSA	red turban / turban shell	0 . 0 . 7	AQ
... FISSURELLIDAE			
MEGATHURA CRENULATA	limpet, giant keyhole	0 . 0 . 2	AQ
.. MESOGASTROPODA			
... NATICIDAE			
POLINICES LEWISII	snail, moon	0 . 0 . 5	[illegible]
. BIVALVIA			
.. PTERIOIDEA			
... PECTINIDAE			
HINNITES GIGANTEUS	rock scallop	0 . 0 . 1	AQ
. CEPHALOPODA			
.. SEPIOIDEA			
... SEPIIDAE			
SEPIA OFFICINALIS	cuttlefish, european	0 . 0 . 10	AQ
ECHINODERMATA			
. STELLEROIDEA			
.. VALVATIDA			
... ODONTASTERIDAE			
ASTERIA MINIATA	sea star, bat	0 . 0 . 83	AQ ZL
DERMASTERIAS IMBRICATA	sea star, leather	0 . 0 . 44	AQ
HENRICIA LEVIUSCULA	star, blood	0 . 0 . 22	AQ
OPHIOPTERIS PAPILLOSA	sea star, brown brittle	0 . 0 . 20	AQ
ORTHASTERIAS KOEHLERI	sea star, rainbow	0 . 0 . 31	AQ
PISASTER BREVISPINUS	sea star, short-spined	0 . 0 . 25	[illegible]
PISASTER GIGANTEUS	sea star, jewel	0 . 0 . 9	[illegible]
PISASTER OCHRACEUS	sea star, common / purple	0 . 0 . 35	AQ
.. SPINULOSIDA			
... SOLASTERIDAE			

INVERTEBRATE STATUS AS OF 09 February

07 February 2001

PHYLUM . CLASS .. ORDER ... FAMILY *GENUS / SPECIES / SUBSPECIES*	COMMON NAME	MAL . FEM . UNK	TRAIL
... SOLASTERIDAE			
SOLASTER STIMPSONI	sunstar, striped / morning	0 . 0 . 9	AQ
CROSSASTER PAPPOSUS	star, rose	0 . 0 . 2	AQ
.. OPHIURIDA			
... OPHIOTHRICIDAE			
OPHIOTHRIX SPICULATA	sea star, brittle	0 . 0 . 20	AQ
. ECHINOIDEA			
.. CIDAROIDA			
... ECHINIDAE			
STRONGYLOCENTROTUS PURPURATUS	urchin, purple	0 . 0 . 15	AQ
STRONGYLOCENTROTUS FRANCISCANUS	urchan, giant red sea	0 . 0 . 11	AQ

SUMMARY

Total number of phyla:	**7**			
Total number of classes:	**14**			
Total number of orders:	**18**			
Total number of families:	**22**			
Total number of species:	**52**	**Total Specimens:**	**0. 0. 1019**	

form tax_cur

ATTACHMENT AC-4 & AC-5

AC-4. All mammals, birds, reptiles and amphibians are registered with ISIS. Fish and invertebrates are given group ID numbers, and their data are maintained in a FoxPro application written for the Minnesota Zoo. Fish and invertebrate data are stored and retrieved in a manner similar to ARKS. Inventory, enclosure and transaction reports can be generated for a specified span of dates.

AC-5. A variety of methods are used to physically mark and identify specimens, depending upon the species. Most mammals are marked with tattoos, transponders and/or ear tags. Birds are marked with leg bands (one or both legs) and occasionally with wing tags or transponders as well. Herps are often identified using toe clips or scute notches. Physically distinguishing features (e.g., coloration, scars) are also noted and used for identification. These identifiers are noted in the computer records for the specimen.

STATE OF MINNESOTA
MINNESOTA ZOOLOGICAL GARDEN
POLICIES/PROCEDURE A-2

Director and Chief Executive Officer's Signature

Eff. Date 3/89
Rev. Date 8/93, 4/98, 2/01

ANIMAL ACQUISITION/EXHIBITION/DISPOSITION POLICY

Introduction

The Minnesota Zoo believes in the value to the public and is committed to the display of captive animals.

A logical and ethical policy for the acquisition, exhibition and disposition of species and individual animals is essential for the Minnesota Zoo. Acquisition/exhibition/disposition (A/E/D) decisions are among the most important to the successful management of a modern zoo's animal collection. Conflicting values and ethical perspectives exist regarding animals among our supporting public. It is essential that our policies be clearly stated. Decisions may seem arbitrary and inconsistent without a clear institutional policy.

This policy applies to the acquisition, exhibition and disposition of living animals, their parts and remains.

I. GENERAL GUIDELINES

A. There are three basic tenets that must be balanced in any A/E/D decision:

1) the interests of the individual animal, which focus on its humane treatment;
2) the interests of the species, which are usually expressed as conservation issues; and
3) the interests of the Minnesota Zoo, which are defined in its mission statement and Long Range Plan.

B. Humane treatment is defined in part by laws, and more fully by the biological knowledge and experience of Minnesota Zoo professional staff. The Minnesota Zoo A/E/D policy fully respects the rights of individual animals to humane treatment. The A/E/D policy supports the quality of an individual animal's life rather than longevity.

C. When acquiring endangered species and/or species managed in a International or Regional Species Conservation Plan (RSCP) the Minnesota Zoo accepts the responsibility to manage those individuals in the best interest of the species.

D. The interests of the Minnesota Zoo are defined as the cost of maintaining animals, and the value of maintaining animals.

1. Costs are straightforward and quantifiable. They include:

- administration
- exhibit design, construction and maintenance
- food and supplies
- acquisition and transportation
- medical support
- animal care staff

2. Value is a more subjective interest, but extremely important. Value to the Minnesota Zoo is determined by the species' value in:

- conservation and education programs
- exhibition and recreation
- visitor appeal and public relations
- research
- trade or sale worth

3. In cases where value is judged to be greater than cost, the interests of the Minnesota Zoo are served. Conversely, when value is judged to be less than cost, the interests of the Minnesota Zoo are not served.

E. Species selection and all necessary planning will be the responsibility of the Zoo staff and will be consistent with the Long Range Plan exhibit strategies. Proposed projects in need of capital funding will be evaluated according to the following criteria to ensure a positive long-term effect upon the Zoo prior to endorsement by the Zoo Board:

- effect on operating expenses
- effect on accrued debt
- effect on revenue including retail and marketing opportunities
- effect on attendance
- effect on existing Zoo facilities
- consistency with Land Use Master Plan.

F. Planning must precede the acquisition, exhibition, reproduction and/or disposition of individual animals. Animal management plans identify the purpose(s) the species will serve, how many individual animals will be maintained, how they will be housed and managed, demographic and genetic issues, breeding requirements and detailed surplus plans for the short and long term.

G. The animal management committee is composed of the Minnesota Zoo veterinary staff, animal collection management staff, public relations staff and any other individuals appointed by the Director and CEO. The Minnesota Zoo animal management committee makes A/E/D decisions by consensus.

H. The Minnesota Zoo will comply with all municipal, state, federal and international laws pertaining to the acquisition, transportation, maintenance, and disposition of animals.

II. ACQUISITION

A. Species must promote the mission statement of the Minnesota Zoo: "Strengthening the bond between people and the living earth." Species selection must precede the acquisition of individual animals.

B. It is acceptable for the Minnesota Zoo to acquire and maintain species for conservation purposes only. These species may or may not be exhibited. Maintenance of these species will depend upon conservation value and resource availability.

C. Minnesota Zoo resources should be able to:

- meet the species' needs for health, social structure, and diet
- provide requirements for and encourage reproduction, where appropriate
- promote high quality, engaging programming in conservation education

D. Species characterized by extraordinary public interest and the potential for controversy must meet two of the three following criteria:

- The species needs captive propagation; i.e, it is part of an International or Regional Species Conservation Plan
- The Minnesota Zoo participates in or supports in situ conservation programs for the remaining free-ranging populations, if any
- The Minnesota Zoo participates in or supports a thoughtful research program that focuses on captive reproductive and/or husbandry/medical needs.

III. EXHIBITION

A. Each new exhibit and exhibit renovation must have a well defined mission and goals, be appealing to visitors, and must deliver appropriate conservation and education messages.

B. Exhibit species should meet aesthetic guidelines of being presentable to our guests:

- in a manner that is appealing, educational, entertaining, and exciting
- in a manner that brings the guest into the animals' environment by eliminating apparent and obtrusive barriers and maximizes their visibility
- in an environment that appears natural and real
- in social groups that foster the expression of natural behavior
- in an environment that is safe for the species, animal caretakers and our visitors

C. Exhibit species selection will be consistent with and maximize the larger thematic components of the Minnesota Zoo exhibit programs described in the Long Range Plan.

IV. DISPOSITION

A. Species disposition will be considered when:

- changes in legal status, conservation status or professional standards reduce the degree to which existing species meet acquisition and exhibition requirements
- programmatic goals change such that a particular species no longer furthers the Zoo's conservation, education and recreation goals
- existing facilities are eliminated by redesign or construction of new facilities appropriate for a different species.

B. Individual animals may be dispositioned when:

- the genetic or demographic needs of the species are no longer served
- overcrowding and/or social pressures are evident
- removal for medical diagnosis or therapy is necessary that is unavailable at the Minnesota Zoo.

C. Animal disposition is accomplished by:

- sale
- trade
- loan/loan return
- donation
- release.

D. Every effort will be made to ensure that surplus animals do not find their way into the hands of those not qualified to care for them properly as is dictated by the American Zoo and Aquarium Association's Code of Professional Ethics.

V. EUTHANASIA

A. Individual animals may be euthanized when:

- it is superannuated, diseased, crippled, disfigured or poses an infectious disease threat to other animals or to humans
- the animal's quality of life cannot be maintained at a minimally acceptable standard or the animal is suffering as determined by the animal management committee
- no suitable facility exists in this or any other appropriate institution that would provide an acceptable quality of life to the individual.
-

B. The Minnesota Zoo Director and CEO will confirm euthanasia decisions made by the animal management committee.

C. Emergency euthanasias may be performed for humane reasons at the discretion of a Minnesota Zoo veterinarian in consultation with appropriate animal management staff without approval of the animal management committee or the Director and CEO.

LOAN AGREEMENT

between

MINNESOTA ZOOLOGICAL GARDEN

and

WHEREAS, the **MINNESOTA ZOOLOGICAL GARDEN** (hereinafter called the OWNER) is concerned with the preservation and propagation of certain animals; and

WHEREAS, (hereinafter called the RECIPIENT) is concerned with the preservation and exhibition of certain animals;

NOW THEREFORE, the parties hereto agree to the conditions set forth below concerning the loan of:

1. The OWNER hereby loans to the RECIPIENT the above listed specimen for the purpose of exhibition. Such exhibition must be consistent with the best care available at the RECIPIENT's institution, and with a view to protecting the behaviors of said specimen.

2. The RECIPIENT agrees to provide necessary housing, food, and veterinary care for the specimen according to the highest acceptable standards prevailing at its institution. The OWNER agrees that in the event of disease, injury, or death of the specimen allocated to the OWNER, the RECIPIENT, and its agents and employees, will be free of all responsibility to the OWNER for such affliction, in the absence of gross negligence.

3. The RECIPIENT agrees to furnish the OWNER with a complete report in case of death of, or injury to, the specimen allocated to the OWNER. At the option and expense of the OWNER, the RECIPIENT shall preserve intact all portions of the carcass for delivery to the OWNER.

4. The OWNER and its officers and employees shall not be responsible for any damage, loss, death, or injury occurring by reason of anything done or omitted to be done by the RECIPIENT under or in connection with the execution of this Agreement if such acts or omissions are not under the direct supervision and control of the OWNER.

5. This Agreement will remain in effect for the lifetime of the specimen. Both parties hereto reserve the right to terminate this Agreement unilaterally by giving the other party thirty (30) days prior written notice.

6. The transportation charges for shipping the specimen from the OWNER to the RECIPIENT will be borne by the RECIPIENT. All transportation charges for shipping the specimen from the RECIPIENT back to the OWNER will be borne by the OWNER.

7. Neither this Agreement, nor any rights or privileges granted hereunder, shall be assigned without prior written consent by both parties hereto.

8. Any conflicts arising from implementation of this Agreement shall be resolved solely in the interest of the welfare of the named specimen as determined through joint consultation by the parties.

10. This Agreement may be amended or modified in writing by mutual consent of both parties hereto. Such amendments shall be incorporated into this Agreement as addenda.

MINNESOTA ZOOLOGICAL GARDEN

By

Title

Date

_____

By

Title

Date

BREEDING LOAN AGREEMENT

between

MINNESOTA ZOOLOGICAL GARDEN

and

WHEREAS, the **MINNESOTA ZOOLOGICAL GARDEN** (hereinafter called the OWNER) is concerned with the preservation and propagation of certain animals; and

WHEREAS, the (hereinafter called the RECIPIENT) is concerned with the preservation and propagation of certain animals;

NOW THEREFORE, the parties hereto agree to the conditions set forth below concerning the loan of:

1. The OWNER hereby loans to the RECIPIENT the above listed specimen for the purpose of propagation. In the event the RECIPIENT wishes to exhibit the specimen and progeny to the public at its facilities, such exhibition must be consistent with the best care available at the RECIPIENT's institution, and with a view to protecting the breeding habits of said specimen.

2. The RECIPIENT agrees to provide necessary housing, food, and veterinary care for the specimen and progeny according to the highest acceptable standards prevailing at its institution. The OWNER agrees that in the event of disease, injury, or death of the specimen or progeny allocated to the OWNER pursuant to paragraph 5 herein, the RECIPIENT, and its agents and employees, will be free of all responsibility to the OWNER for such affliction, in the absence of gross negligence.

3. The RECIPIENT agrees to furnish the OWNER with a complete report in case of death of, or injury to, the specimen or progeny allocated to the OWNER pursuant to paragraph 5 herein. At the option and expense of the OWNER, the RECIPIENT shall preserve intact all portions of the carcass for delivery to the OWNER.

4. The OWNER and its officers and employees shall not be responsible for any damage, loss, death, or injury occurring by reason of anything done or omitted to be done by the RECIPIENT under or in connection with the execution of this Agreement if such acts or omissions are not under the direct supervision and control of the OWNER.

5. The RECIPIENT will undertake its best efforts to breed the specimen with mates approved by the OWNER. Any viable young produced by such breeding and born either during the term of this Agreement, or within a period after termination of this Agreement equivalent to the normal gestation term of this particular species, will be divided as follows:

1st, 3rd, 5th, and so on: OWNER
2nd, 4th, 6th, and so on: RECIPIENT

6. This Agreement will remain in effect for the lifetime of the specimen. Both parties hereto

reserve the right to terminate this Agreement unilaterally by giving the other party thirty (30) days prior written notice.

7. The transportation charges for shipping the specimen from the OWNER to the RECIPIENT will be borne by the RECIPIENT. All transportation charges for shipping the specimen and progeny from the RECIPIENT back to the OWNER will be borne by the OWNER.

8. Neither this Agreement, nor any rights or privileges granted hereunder, shall be assigned without prior written consent by both parties hereto.

9. Any conflicts arising from implementation of this Agreement shall be resolved solely in the interest of the welfare of the named specimen and progeny as determined through joint consultation by the parties.

10. This Agreement may be amended or modified in writing by mutual consent of both parties hereto. Such amendments shall be incorporated into this Agreement as addenda.

MINNESOTA ZOOLOGICAL GARDEN

By

Title

Date

_____

By

Title

Date

USDA

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Care

INSPECTION REPORT

STATE OF MINNNESOTA	Site 001	41-C--0019
MINNESOTA ZOOLOGICAL GARDEN	MN ZOOLOGICAL GARDEN	02-22-00
13000 ZOO BLVD	SAME	0930
APPLY VALLEY, MN 55124		ROUTINE

NARRATIVE

LAST COMPLETE INSPECTION: 12/15/98 (Partial PPEQ inspection conducted 6/17/99)

INVENTORY:
Guinea pigs-2
Rabbits-7
Primates-
- slow loris-6
- pygmy loris-1
- Japanese macaques-27
- gibbons-3

Marine mammals- 4 bottle-nosed dolphins
Other animals-see attached inventory

CATEGORY III: Non-compliant item(s) identified this inspection.
SECTION 3.131(a) CLEANING- The water in the beaver pools is so murky that the inside surfaces of the pool cannot be seen and the cleanliness of the pool cannot be assessed. In addition, the lower pool area has a scummy-appearing top layer with debris and feathers floating on the surface. Correct by 4/22/00. 6 beavers affected.

NOTE: PPEQ inspection was conducted at this inspection.

Inspection conducted with Zookeepers B.J., Jerry, Brad, Tony, Diane and Dr. Kris Petrini, Zoo Veterinarian.

Prepared By: _____ Date: 2/22/00

Title: Catherine Hovancsak, Veterinary Medical Officer, USDA, APHIS, Animal Care LARIS ID NO. 1032

Copy Received By: Kris R Petrini, D.V.M. Date: 22FEB2000

Title: Senior Veterinarian

Did 100% water Δ today.

cleaning:
6-8 wk

2 people 6 hr.

Flow-through
water

Ducks

Abandon make up water

Skimming syst - flow over.

No skimming

Algae growth this last year

Add make-up water on regular basis

USDA

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Care

INSPECTION REPORT

STATE OF MINNESOTA MINNESOTA ZOOLOGICAL GARDEN 13000 ZOO BLVD APPLE VALLEY, MN 55124	Site 001 MN ZOOLOGICAL GARDEN SAME	41-C-0019 12-15-98 0930 ROUTINE/ PPEQ INSPECTION

NARRATIVE

LAST INSPECTION:5/20/98

INVENTORY:
Guinea Pigs-2
Rabbits-7
Primates-40
slow loris-3 japanese macaques-31
pygmy loris-3 gibbons-3
Marine Mammals-6 Dolphins
Other Animals-378(see attached inventory)

CATEGORY I: Non-compliant item(s) previously identified that have been corrected.
PRIMARY ENCLOSURES-PRIMATES SECT 3.80(a)(2)(ix)-Cinder blocks have been covered with ceramic tile.

STRUCTURE & CONSTRUCTION-OTHER ANIMALS SECT 3.125(a)-Tree shrew and Asion otter pens have been repainted.

No non-compliances identified this inspection.

CH

Prepared By: Cathy Hovancsak Date: 12/15/98
Title: Catherine Hovancsak, Veterinary Medical Officer, USDA, APHIS, Animal Care LARIS ID NO. 1032

Copy Received By: James M. [illegible] Date: 15 Dec 98
Title: Associate Veterinarian

This report is required by law (9 CFR 92). Failure to complete this form will result in zoo animals not being released from quarantine.

FORM APPROVED: OMB NO. 40-R33

U. S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
VETERINARY SERVICES

RCS #: 34-VS-40

ZOOLOGICAL PARK INSPECTION REPORT

1. NAME AND MAILING ADDRESS OF ZOO	MN ZOOLOGICAL GARDEN 13000 ZOO BLVD APPLE VALLEY, MN 551
2. NAME OF ZOO DIRECTOR	KATHRYN ROBERTS
3. ADMINISTRATION	FEDERAL ☐ STATE ☒ COUNTY ☐ MUNICIPAL ☐ PRIVATE ☐
4. ZOO VETERINARIAN (Name and Address)	LYNN KRAMER KRIS PETRINI JIM RASMUSSEN
5. RESPONSIBLE OFFICIAL (Name and Address)	LYNN KRAMER SAME AS ZOO
PHONE	
6. VETERINARY SERVICE (Check one)	FULL TIME ☒ PART TIME ☐ ON CALL ☐

7. LOCATION OF ZOO	CITY OR TOWNSHIP	PARK	COUNTY
	APPLE VALLEY	MN ZOOLOGICAL GARDEN	DAKOTA

8. TOTAL ACREAGE IN ZOO	9. APPROX. ZOO ACREAGE USED FOR RESTRICTED RUMINANTS AND SWINE	10. NO. RESTRICTED ANIMALS ON ZOO PROPERTY NOW	11. NO. OTHER RUMINANTS OR SWINE HELD WITH RESTRICTED ANIMALS NOW	12. APPROX. TOTAL ANIMALS ON ZOO PROPERTY NOW: RUMINANTS	SWINE	EQUINE
480	2 ACRES %	0	0	80	0	10

	CHECK YES	CHECK NO	IF "NO," FOR ANY ITEM, COMMENT REQUIRED (Attach additional sheet, if necessary)
13. Is zoo completely enclosed by a fence that is an adequate livestock barrier?	X		
14. Are restricted animal exhibits isolated from contact with public?	X		NO RESTRICTED ANIMALS
15. Are restricted animal exhibits isolated from domestic livestock?	X		CURRENTLY AT FACILITY
16. Are post mortem examinations performed on all restricted animals? (If "yes," check) On zoo grounds ☒ Other ☒	X		IF HAD TO DO POST-MORTEMS WOULD DO AT ZOO OR UNIV. OF MN. DIAGNOSTIC LA
17. Are post mortem examinations performed on all other animals? (If "yes," check) On zoo grounds ☒ Other ☒	X		OTHER => U. OF MN
18. Are records kept of all post mortem findings?	X		
19. Is manure, unused feed and other waste from restricted animals disposed of within zoo grounds? (If "yes," check) Composted at least 6 months ☒ Incinerated ☐ Buried ☐	X		
20. Are restricted animal carcasses disposed of within zoo grounds? (If "yes," check) Incinerated ☒ Buried ☐	X		
21. Is there an adequate area of zoo property where restricted animals and manure could be buried?	X		
22. Is there an adequate area of zoo property where restricted manure could be composted for six months?	X		
23. Is there an incinerator within the zoo property?	X		
24. Will incinerator handle restricted animal wastes and carcasses?	X		
25. Does zoo operate without any domestic livestock being used or exhibited on zoo property?		X	
26. Is surface run off such that it does not flow onto areas outside zoo property which hold domestic livestock?	X		
27. Are "65 series forms" in order and up to date?	N/A		

28. SIGNATURE OF INSPECTOR	29. DATE OF INSPECTION
Cathy Newman, DVM USDA APHIS AC	12/15/98

REPLACES VS FORM 17-65A (9/71) WHICH MAY BE USED UNTIL EXHAUSTED (OVER)

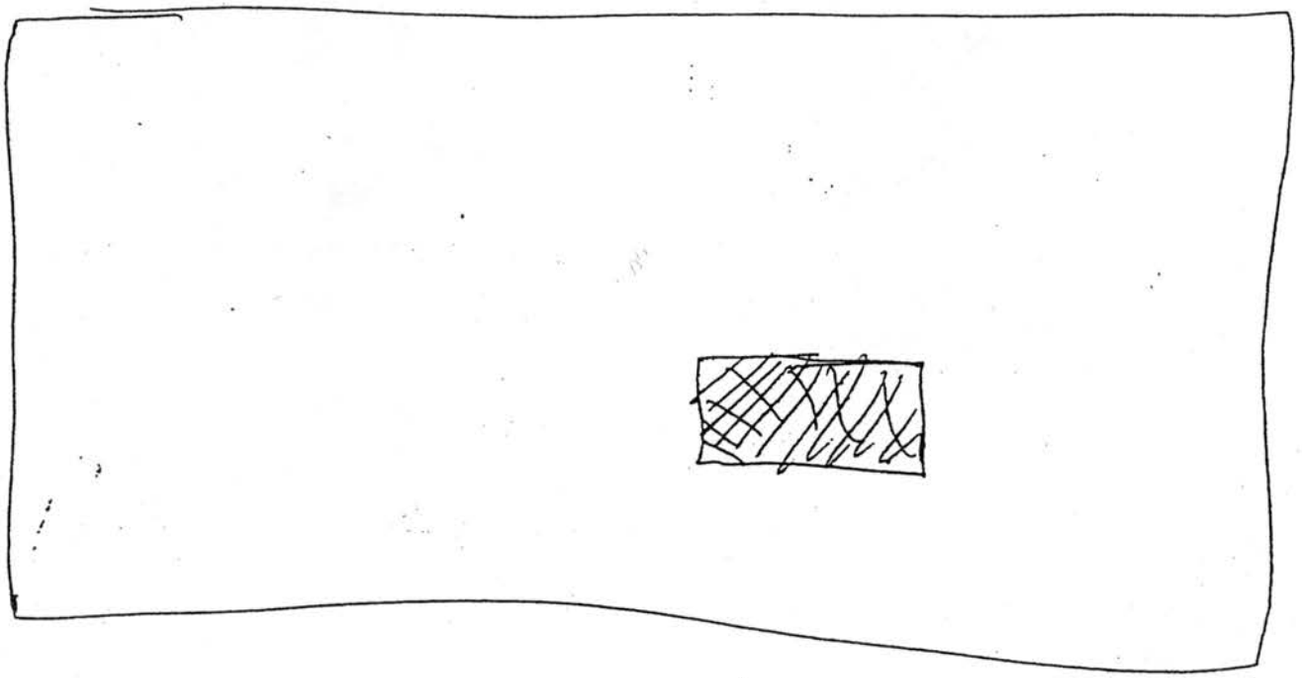
30. TABULATION OF RESTRICTED ANIMALS IN ZOO

TATTOO	SPECIES	VERIFIED BY			PRESENT STATUS		
		READING TATTOO	CHECKING ZOO RECORDS	OFFICIAL STATEMENT	ON ZOO (✓)	TRANSFERRED TO	DIED (Date
A	B	C	D	E	F	G	H

31. COMMENTS OR REMARKS

No restricted animals currently on premises

32. SKETCH OF ZOO PROPERTY *(Show area of restricted animal exhibits by shading)*



USDA

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Care

INSPECTION REPORT

STATE OF MINNESOTA
MN ZOOLOGICAL GARDEN
13000 ZOO BLVD
APPLE VALLEY, MN 55124

Site 001
SAME

41-C-0019
05-20-98
0915
REINSPECTION/
PPEQ INSPECTION

NARRATIVE

THIS IS A PARTIAL INSPECTION OF NON-COMPLIANCES IDENTIFIED ON 9/20/97 INSPECTION AND SEMI-ANNUAL PPEQ CERTIFICATION INSPECTION.

LAST INSPECTION: 9/30/97

INVENTORY: ANIMALS SEEN ON THIS INSPECTION:
MARINE MAMMALS-6
OTHER ANIMALS-1
TREE SHREW-1

CATEGORY I: Non-compliant item(s) previously identified that have been corrected.
VETERINARY CARE SECT 2.40(b)(2)-Drugs in ER Room are in date.
STRUCTURE & CONSTRUCTION-MARINE MAMMALS Sect 3.101(a)(3)-Viewing Windows have been resealed and no water is leaking out.
FOOD STORAGE-MARINE MAMMALS Sect 3.101(d)-Zoo keepers' food is being stored seperately from marine mammal food.
SANITATION-MARINE MAMMALS Sect 3.107(b)-Floor in marine mammal kitchen has been resealed and does not have cracks and open seams.
STRUCTURE & CONSTRUCTION-OTHER ANIMALS Sect 3.125(a)
-Wood doors have been repaired.
-Chipped paint in LA Holding Pen EF 119CH has been repaired.

CATEGORY IV: Non-compliant item(s) previously identified that have not been corrected.

PRIMARY ENCLOSURES-PRIMATES Sect 3.80(a)(2)(ix)-Paint on cinder block walls of primate squeeze cage and cage OA256 has not been repaired. NOTE-Zoo is looking into different substances to cover walls rather than using paint.

Prepared By: Cathy Hovancsak Date: 5/20/98
Title: Catherine Hovancsak, Veterinary Medical Officer, USDA, APHIS, Animal Care LARIS ID NO. 1032

Copy Received By: R. R. Peters Date: 20 MAY 98
Title: V of Serv

STRUCTURE & CONSTRUCTION-OTHER ANIMALS Sect 3.125(a)
-Asian Otter holding pen still has chipped paint along bottom blocks
-Tree shrew holding pen still has chipped paint. NOTE: The tree shrew is scheduled to be moved to a different holding pen and this room will be repaired.

This is a notice that you have had the same alleged violation(s) documented on the last two inspections. You are being given the opportunity to correct these alleged violations. If similar violations are documented on subsequent inspections, all past and future alleged violations may be used as evidence for formal legal action against you.

Prepared By: Cathy Hovancsak Date: 5/20/98

Title: Catherine Hovancsak, Veterinary Medical Officer, USDA, APHIS, Animal Care LARIS ID NO. 1032

Copy Received By: K. R. Peter Date: 20 MAY 98

Title: Vet Senior

This report is required by law (9 CFR 92). Failure to complete this form will result in zoo animals not being released from quarantine.

FORM APPROVED: OMB NO. 40-R3314

U. S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
VETERINARY SERVICES

RCS #: 34-VS-40

ZOOLOGICAL PARK INSPECTION REPORT

1. NAME AND MAILING ADDRESS OF ZOO
MN ZOOLOGICAL GARDEN
13000 ZOO BLVD
APPLE VALLEY MN 55124

2. NAME OF ZOO DIRECTOR
KATHRYN ROBERTS

3. ADMINISTRATION
FEDERAL ☐ STATE ☒ COUNTY ☐ MUNICIPAL ☐ PRIVATE ☐

4. ZOO VETERINARIAN (Name and Address)
LYNN KRAMER
KRIS PETRINI
JIM RASMUSSEN

5. RESPONSIBLE OFFICIAL (Name and Address)
LYNN KRAMER
SAME AS ZOO

PHONE

6. VETERINARY SERVICE (Check one)
FULL TIME ☒ PART TIME ☐ ON CALL ☐

7. LOCATION OF ZOO — CITY OR TOWNSHIP: APPLE VALLEY — PARK: MN ZOOLOGICAL GARDEN — COUNTY: DAKOTA

8. TOTAL ACREAGE IN ZOO: 480

9. APPROX. ZOO ACREAGE USED FOR RESTRICTED RUMINANTS AND SWINE: 2 ACRES %

10. NO. RESTRICTED ANIMALS ON ZOO PROPERTY NOW:

11. NO. OTHER RUMINANTS OR SWINE HELD WITH RESTRICTED ANIMALS NOW: N/A

12. APPROX. TOTAL ANIMALS ON ZOO PROPERTY NOW

RUMINANTS	SWINE	EQUINE
90	2	13

	CHECK YES	CHECK NO	IF "NO," FOR ANY ITEM, COMMENT REQUIRED (Attach additional sheet, if necessary)
13. Is zoo completely enclosed by a fence that is an adequate livestock barrier?	X		
14. Are restricted animal exhibits isolated from contact with public?	X		NO RESTRICTED ANIMALS CURRENTLY AT FACILITY
15. Are restricted animal exhibits isolated from domestic livestock?	X		
16. Are post mortem examinations performed on all restricted animals? (If "yes," check) On zoo grounds ☐ Other ☐	X		WHEN HAVE RESTRICTED ANIMAL
17. Are post mortem examinations performed on all other animals? (If "yes," check) On zoo grounds ☒ Other ☒	X		OTHER: UNIV. OF MN DIAGNOSTIC LAB
18. Are records kept of all post mortem findings?	X		
19. Is manure, unused feed and other waste from restricted animals disposed of within zoo grounds? (If "yes," check) Composted at least 6 months ☒ Incinerated ☐ Buried ☐	X		
20. Are restricted animal carcasses disposed of within zoo grounds? (If "yes," check) Incinerated ☒ Buried ☐	X		
21. Is there an adequate area of zoo property where restricted animals and manure could be buried?	X		
22. Is there an adequate area of zoo property where restricted manure could be composted for six months?	X		
23. Is there an incinerator within the zoo property?	X		
24. Will incinerator handle restricted animal wastes and carcasses?	X		
25. Does zoo operate without any domestic livestock being used or exhibited on zoo property?		X	
26. Is surface run off such that it does not flow onto areas outside zoo property which hold domestic livestock?	X		
27. Are "65 series forms" in order and up to date?	X		

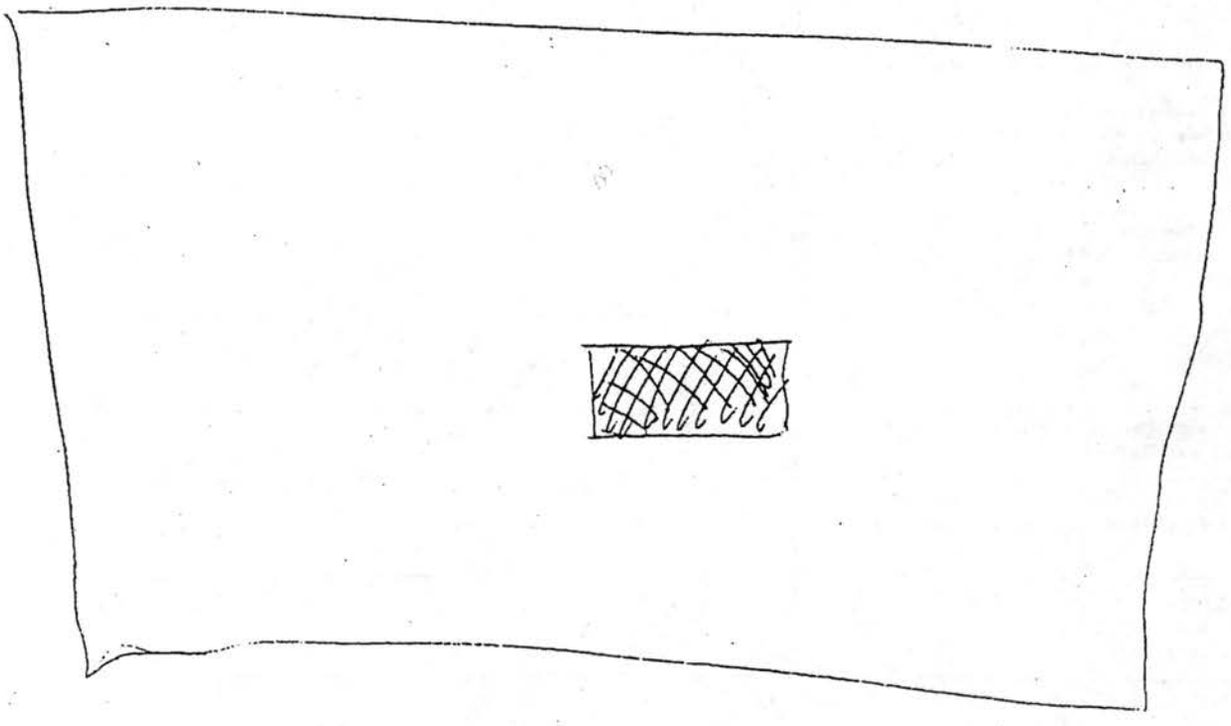
30. TABULATION OF RESTRICTED ANIMALS IN ZOO

TATTOO	SPECIES	VERIFIED BY			PRESENT STATUS		
		READING TATTOO	CHECKING ZOO RECORDS	OFFICIAL STATEMENT	ON ZOO (✓)	TRANSFERRED TO	DIED (Date)
A	B	C	D	E	F	G	H

31. COMMENTS OR REMARKS

No restricted animals currently on premises

32. SKETCH OF ZOO PROPERTY *(Show area of restricted animal exhibits by shading)*



USDA

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Care

INSPECTION REPORT

STATE OF MINNESOTA MN ZOOLOGICAL GARDEN 13000 ZOO BLVD APPLE VALLEY, MN 55124	Site 001 SAME	41-C-0019 9-30-97 0900 ROUTINE

NARRATIVE

LAST INSPECTION: 10-29-96

INVENTORY:
Guinaea Pigs-6
Rabbits-11
Primates-39
Marine Mammals-6 dolphins
Other Animals-241(see attached inventory)

CATEGORY III: Non-compliant item(s) identified this inspection

VETERINARY CARE Sect 2.40(b)(2)-There are a number of expired drugs in the ER drug treatment room. Expired drugs cannot be used on covered species. **To be corrected by: 10/14/97.**

PRIMARY ENCLOSURES-PRIMATES Sect. 3.80(a)(2)(ix)-Paint on cinder block walls of primate squeeze cage and cage OA256 is peeling and large area of the walls are no longer impervious to moisture. **To be corrected by: 4/1/98**

STRUCTURE & CONSTRUCTION-MARINE MAMMALS Sect. 3.101(a)(3)-Viewing Windows in public areas are not properly sealed and dolphin pool water is leaking out through the windows. Dolphin pools must be maintained in good repair. **To be corrected by: 4/1/98**

FOOD STORAGE-MARINE MAMMALS Sect. 3.101(d)-Zoo keepers' food in being stored in refrigerator with dolphin food. Employees' food needs to be stored separate from animals' food. **To be corrected by: 10/1/97**

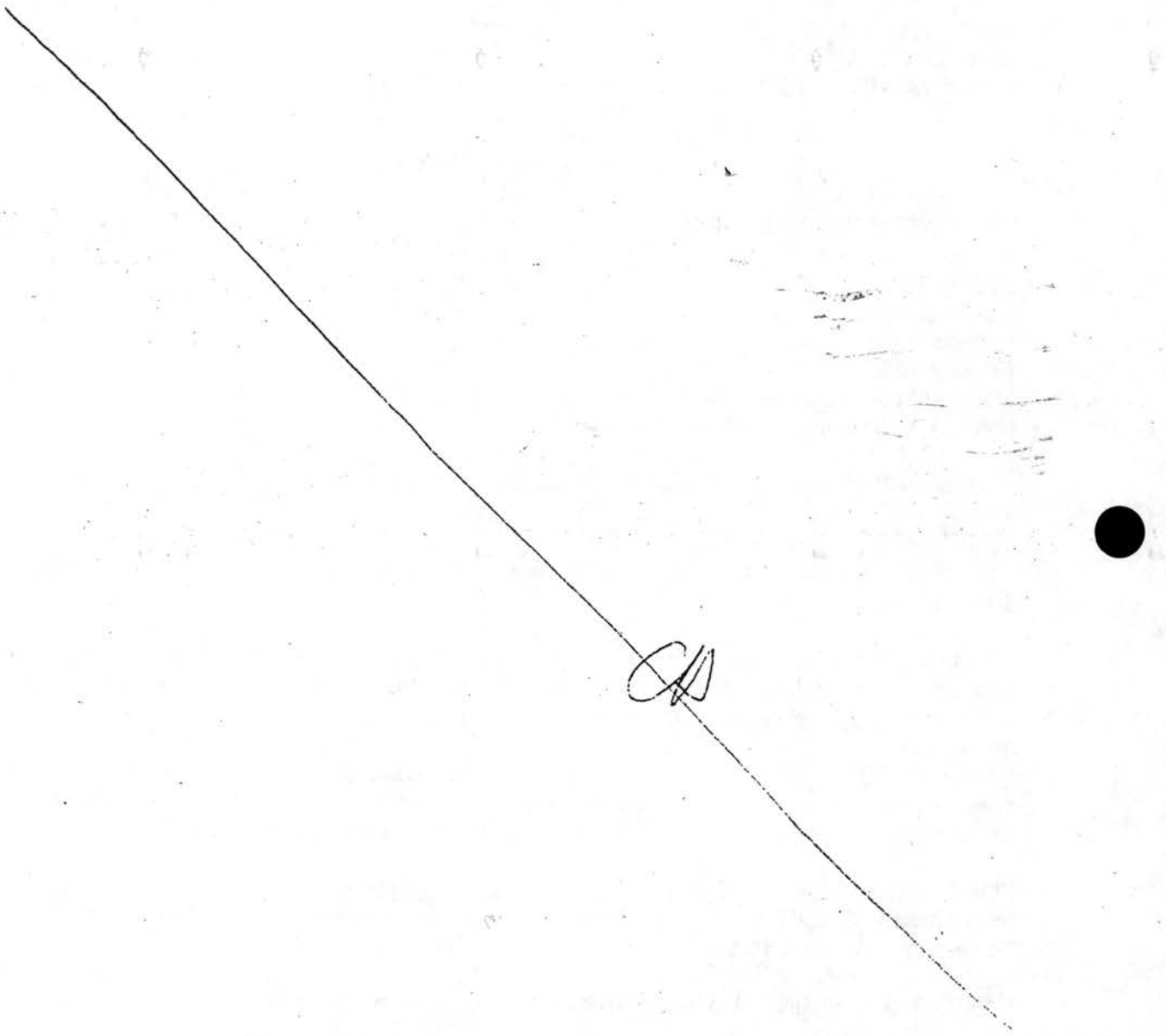
SANITATION-MARINE MAMMALS Sect. 3.107(b)-Floor in marine mammal kitchen has cracks

Prepared By: Cathy Hovancsak Date: 9/30/97
Title: Catherine Hovancsak, Veterinary Medical Officer, USDA, APHIS, Animal Care LARIS ID NO. 1032

Copy Received By: K. A. Petersen Date: 30 Sept 97
Title: Senior Veterinarian

and wide open seams which allow for accumulation of dirt and food waste. Also, coating on floor is pitting. Floor needs to have cracks and seams repaired and maintained in good condition so it can be properly cleaned and sanitized. **To be corrected by: 1/1/98**

STRUCTURE AND CONSTRUCTION-OTHER ANIMALS Sect. 3.125(a)
-Wood doors in Large Animal Holding Building are rotting along the bottoms and could cause injury to an animal.
-There is paint chipping in the Large Animal Holding Building Pen EF 119CH, the Asian otter holding pen, and the tree shrew holding pen.
To be corrected by: 4/1/98



Prepared By: Cathy Hovancsak Date: 9/30/97

Title: Catherine Hovancsak, Veterinary Medical Officer, USDA, APHIS, Animal Care LARIS ID NO. 1032

Copy Received By: K. L. Fetter Date: 30 Sept 97

Title: Senior Veterinarian

Minnesota Zoological Garden

13000 Zoo Blvd
Apple Valley, MN 55124
612-431-9261
Fax: 612-431-9427

COPY

December 27, 1997

Betty Goldentyer, D.V.M.
Director-Animal Care, Eastern Division
U.S.D.A., A.P.H.I.S., Animal Care
2568-A Riva RD., Suite 302
Annapolis, MD 21401-7400

Dear Dr. Goldentyer,

I am writing to request a 3 month extension of the correction date for a USDA violation (Sect. 3.107 (b), Sanitation -Marine Mammals) that was sited in our inspection dated 30 September 1997. I have attached a copy of the report with the non-compliant item circled. We have been working with the contractors of our new marine mammal facility to find a more durable product with which to coat the floor. The first product that was recommended was unacceptable because of the solvents that it contained. It is now our challenge to find a durable product which contains a low level of solvent. There are fish and sharks present in the vicinity which are extremely susceptible to volatile organic compounds, and this is also the area where the food fish are prepared for the dolphins.

The contractors are supposed to have this problem resolved by 15 January 1998, however, we are requesting an extension until 1 April 1998 anticipating that there could be delays beyond our control. Please call me if you have any questions regarding this request. Thank you for your consideration.

Sincerely,

Kristine R. Petrini, DVM
Senior Veterinarian

United States Department of Agriculture

Animal and Plant Health Inspection Service

Animal Care

Eastern Region
2568-A Riva Road
Suite 302
Annapolis, MD 21401-7400

December 31, 1997

Kristine R. Petrini, DVM
Minnesota Zoological Garden
13000 Zoo Blvd.
Apple Valley, MN 55124

Dear Dr. Petrini:

We have received your letter requesting an extension of time to complete repairs to the floor in the marine mammal area. After consulting with your inspector, your request for an extension until April 1, 1998 is hereby granted. If you have any questions regarding this matter, please feel free to call this office at (410) 571-8692. Thank you for your cooperation.

Sincerely,

F. Miava Binkley, DVM
Supervisory Animal Care Specialist

cc: Hovancsak
File

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANIMAL CARE INSPECTION REPORT

[X] Routine [ ] Reinspection [ ] Pre-license [ ] Attempted [ ] Other

1. LICENSE NO. OR REGISTRATION NO.	2. PAGE
41-C-0019	1 OF 2
3. DATE OF INSPECTION	**4. TIME**
10/29/96	9:00 AM
5. DATE OF LAST INSPECTION	**6. TIME**
1/9/96	9:15 AM

7. NAME AND MAILING ADDRESS OF LICENSEE OR REGISTRANT
STATE OF MN - MN ZOOLOGICAL GARDEN
13000 ZOO BLVD
APPLE VALLEY, MN 55124

8. ADDRESS OF PREMISES AT TIME OF INSPECTION *(If different than item 7)*

STANDARDS AND REGULATIONS			DOGS	CATS	GUINEA PIGS	HAMSTERS	RABBITS	PRIMATES	MARINE MAMMALS	OTHER (See attached write-up)			
			A		B		C	D	E				
9. NO. OF ANIMALS INSPECTED					3		5	39	6	382			
FACILITIES	GENERAL	10. Structure and Construction	3.1	3.1	~~3.25~~	3.25	~~3.50~~	~~3.75~~	~~3.101~~	~~3.125~~			
		11. Condition and Site	3.1	3.1				~~3.75~~	~~3.101~~				
		12. Surfaces & Cleaning	3.1	3.1				~~3.75~~	~~3.101~~				
		13. Utilities/Washrooms/Storage	3.1	3.1	~~3.25~~	3.25	~~3.50~~	~~3.75~~	~~3.101~~	~~3.125~~			
		14. Drainage and Waste Disposal	3.1	3.1	~~3.25~~	3.25	~~3.50~~	~~3.75~~	~~3.101~~	~~3.125~~			
	INDOOR	15. Temperature/Ventilation/Lighting	3.2	3.2	~~3.26~~	3.26	~~3.51~~	~~3.76~~	~~3.102~~	~~3.126~~			
		16. Interior Surfaces	3.2	3.2	~~3.26~~	3.26	~~3.51~~		~~3.101~~				
		17. Drainage							~~3.101~~	~~3.126~~			
	SHELTERED	18. Temperature/Ventilation/Lighting	3.3	3.3				~~3.77~~					
		19. Shelter from elements	3.3	3.3				~~3.77~~					
		20. Surfaces	3.3	3.3									
		21. Capacity/Perimeter fence/Barrier						~~3.77~~					
	OUTDOOR	22. Restrictions or Acclimation	3.4	3.4	~~3.27~~	3.27		~~3.78~~	~~3.103~~				
		23. Shelter from elements	3.4	3.4	~~3.27~~		~~3.52~~	~~3.78~~	~~3.103~~	~~3.127~~			
		24. Drainage			~~3.27~~		~~3.52~~			~~3.127~~			
		25. Construction	3.4	3.4	~~3.27~~			~~3.78~~	~~3.101~~				
		26. Capacity/Perimeter fence/Barrier						~~3.78~~	~~3.101~~	~~3.125~~			
	MOBILE	27. Temperature/Ventilation/ Lighting	3.5	3.5				~~3.79~~					
		28. Public Barrier						~~3.79~~					
PRIMARY ENCLOSURE		29. General Requirements	3.6	3.6	~~3.28~~	3.28	~~3.53~~	~~3.80~~	~~3.104~~	~~3.125~~			
		30 Space & Additional Requirements	3.6	3.6	~~3.28~~	3.28	~~3.53~~	~~3.80~~	~~3.104~~	~~3.128~~			
		31. Protection from Predators	3.6	3.6	~~3.25~~	3.25	~~3.52~~	~~3.80~~	~~3.101~~	~~3.125~~			
ANIMAL HEALTH AND HUSBANDRY		32. Exercise and Socialization	3.8										
		33. Environment Enhancement						~~3.81~~					
		34. Feeding	3.9	3.9	~~3.29~~	3.29	~~3.54~~	~~3.82~~	~~3.105~~	~~3.129~~			
		35. Watering	3.10	3.10	~~3.30~~	3.30	~~3.55~~	~~3.83~~	~~3.106~~	~~3.130~~			
		36. Cleaning and Sanitation	3.11	3.11	~~3.31~~	3.31	~~3.56~~	~~3.84~~	~~3.107~~	~~3.131~~			
		37. Housekeeping and Pest Control	3.11	3.11	~~3.31~~	3.31	~~3.56~~	~~3.84~~	~~3.107~~	~~3.131~~			
		38. Employees	3.12	3.12	~~3.32~~	3.32	~~3.57~~	~~3.85~~	~~3.108~~	~~3.132~~			
		39. Social Grouping and Separation	3.7	3.7	~~3.33~~	3.33	~~3.58~~		~~3.109~~	~~3.133~~			
TRANSPORTATION		40. Primary Enclosure	3.14	3.14	~~3.36~~	3.36	~~3.60~~	~~3.87~~	~~3.113~~	~~3.137~~			
		41. Primary Conveyance	3.15	3.15	~~3.37~~	3.37	~~3.62~~	~~3.88~~	~~3.114~~	~~3.138~~			
		42. Food and Water	3.16	3.16	~~3.38~~	3.38	~~3.63~~	~~3.89~~	~~3.115~~	~~3.139~~			
		43. Care in Transit	3.17	3.17	~~3.39~~	3.39	~~3.64~~	~~3.90~~	~~3.116~~	~~3.140~~			
		44. Handling during Transportation	3.19	3.19	~~3.41~~	3.41	~~3.66~~	~~3.92~~	~~3.118~~	~~3.142~~			

45. Identification - 2.38 & 2.50
46. Records & Holding Period - 2.35, .38, .75-.78, .101, .132 & .133
47. Handling - 2.38 & 2.131
48. Veterinary Care - 2.33, 2.40 & 3.110
49. IACUC - 2.31
50. Personnel Qualifications - 2.32
51. Other items? YES *(If yes, see continuation sheet)* NO

52. PREPARED BY *(Signature and title)*
DR. CATHERINE F. HOVANCSAK
Veterinary Medical Officer
USDA - APHIS - REAC - AC

53. DAT 10/29/

54. COPY RECEIVED BY *(Signature and title)*

55. DAT

56. REVIEWED BY *(Signature and title)*

57. DAT

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

CONTINUATION SHEET FOR ANIMAL CARE INSPECTION REPORT (S)

(APHIS FORMS 7004 and 7008)

1. LICENSEE OR REGISTRANT AND NUMBER	2. LIC. OR REG. NO.	3. DATE	4. PAGE
STATE OF MN	41 C-0019	10/29/96	2 OF 2

5. LOCATION OR SITE	6. WAYBILL NUMBER AND DATE (If Applicable.)
MN ZOOLOGICAL GARDEN 13000 ZOO BLVD APPLE VALLEY, MN 55124	

7. NARRATIVE: I. Non-compliant item(s) previously identified that have been corrected; II. Non-compliant item(s) previously identified for which time remains for correction; III. Non-compliant item(s) identified this inspection; IV. Non-compliant item(s) previously identified that have not been corrected

I.
Item 36 Cleaning Sect 3.131(a) Armadillo pen repaired.
Item 08 Veterinary Care Sect 2.40(b)(2) drugs [updated] up to date

No non-compliant standards or regulations identified on this inspection

8. PREPARED BY (Signature)	9. TITLE	10. DATE
[signature]	DR. CATHERINE F. HOVANCSAK Veterinary Medical Officer USDA - APHIS - REAC - AC	10/29/96
11. COPY RECEIVED BY (Signature)	**12. TITLE**	**13. DATE**
[signature]	[illegible]	
14. REVIEWED BY (Signature)	**15. TITLE**	**16. DATE**

APHIS FORM 7100

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANIMAL CARE INSPECTION REPORT

☒ Routine ☐ Reinspection ☐ Pre-license ☐ Attempted ☐ Other

1. LICENSE NO. OR REGISTRATION NO.	2. PAGE
41-C-019	1 OF 2
3. DATE OF INSPECTION	**4. TIME**
1/9/96	9:15AM
5. DATE OF LAST INSPECTION	**6. TIME**
1/26/95	9:30AM

7. NAME AND MAILING ADDRESS OF LICENSEE OR REGISTRANT
STATE OF MINNESOTA - MN ZOOLOGICAL GARDEN
13000 ZOO BLVD
APPLE VALLEY, MN 55124

8. ADDRESS OF PREMISES AT TIME OF INSPECTION *(If different than item 7)*

STANDARDS AND REGULATIONS	DOGS A	CATS A	GUINEA PIGS B	HAMSTERS B	RABBITS C	PRIMATES D	MARINE MAMMALS E	OTHER F			
9. NO. OF ANIMALS INSPECTED			4		8	39	5	362			

"X" If in compliance; CIRCLE Non-compliant items *(explain on APHIS FORM 7100, Continuation Sheet)*; NA If not applicable; NS If not seen.

FACILITIES	GENERAL	10. Structure and Construction	3.1	3.1	~~3.25~~	3.25	~~3.50~~	~~3.75~~	~~3.101~~	~~3.125~~			
		11. Condition and Site	3.1	3.1				~~3.75~~	~~3.101~~				
		12. Surfaces & Cleaning	3.1	3.1				~~3.75~~	~~3.101~~				
		13. Utilities/Washrooms/Storage	3.1	3.1	~~3.25~~	3.25	~~3.50~~	~~3.75~~	~~3.101~~	~~3.125~~			
		14. Drainage and Waste Disposal	3.1	3.1	~~3.25~~	3.25	~~3.50~~	~~3.75~~	~~3.101~~	~~3.125~~			
	INDOOR	15. Temperature/Ventilation/Lighting	3.2	3.2	~~3.26~~	3.26	~~3.51~~	~~3.76~~	3.102	~~3.126~~			
		16. Interior Surfaces	3.2	3.2	~~3.26~~	3.26	~~3.51~~		3.101				
		17. Drainage							3.101	~~3.126~~			
	SHELTERED	18. Temperature/Ventilation/Lighting	3.3	3.3				~~3.77~~					
		19. Shelter from elements	3.3	3.3				~~3.77~~					
		20. Surfaces	3.3	3.3									
		21. Capacity/Perimeter fence/Barrier						~~3.77~~					
	OUTDOOR	22. Restrictions or Acclimation	3.4	3.4	3.27	3.27		3.78	~~3.103~~				
		23. Shelter from elements	3.4	3.4	3.27		3.52	3.78	~~3.103~~	~~3.127~~			
		24. Drainage			3.27		3.52			~~3.127~~			
		25. Construction	3.4	3.4	3.27			3.78	~~3.101~~				
		26. Capacity/Perimeter fence/Barrier						3.78	~~3.101~~	~~3.125~~			
	MOBILE	27. Temperature/Ventilation/ Lighting	3.5	3.5				3.79					
		28. Public Barrier						3.79					
PRIMARY ENCLOSURE		29. General Requirements	3.6	3.6	~~3.28~~	3.28	~~3.53~~	~~3.80~~	~~3.104~~	~~3.125~~			
		30 Space & Additional Requirements	3.6	3.6	~~3.28~~	3.28	~~3.53~~	~~3.80~~	~~3.104~~	~~3.128~~			
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		33. Environment Enhancement						~~3.81~~					
		34. Feeding	3.9	3.9	~~3.29~~	3.29	~~3.54~~	~~3.82~~	~~3.105~~	~~3.129~~			
		35. Watering	3.10	3.10	~~3.30~~	3.30	~~3.55~~	~~3.83~~	~~3.106~~	~~3.130~~			
		36. Cleaning and Sanitation	3.11	3.11	~~3.31~~	3.31	~~3.56~~	~~3.84~~	~~3.107~~	3.131			
		37. Housekeeping and Pest Control	3.11	3.11	~~3.31~~	3.31	~~3.56~~	~~3.84~~	~~3.107~~	~~3.131~~			
		38. Employees	3.12	3.12	~~3.32~~	3.32	~~3.57~~	~~3.85~~	~~3.108~~	~~3.132~~			
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TRANSPORTATION		40. Primary Enclosure	3.14	3.14	3.36	3.36	~~3.61~~	~~3.87~~	~~3.113~~	3.137			
		41. Primary Conveyance	3.15	3.15	~~3.37~~	3.37	~~3.62~~	~~3.88~~	~~3.114~~	~~3.138~~			
		42. Food and Water	3.16	3.16	3.38	3.38	~~3.63~~	~~3.89~~	~~3.115~~	3.139			
		43. Care in Transit	3.17	3.17	~~3.39~~	3.39	~~3.64~~	~~3.90~~	~~3.116~~	3.140			
		44. Handling during Transportation	3.19	3.19	~~3.41~~	3.41	~~3.66~~	~~3.92~~	~~3.118~~	~~3.142~~			

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48. Veterinary Care - 2.33(2.40, & 3.110
49. IACUC - 2.31
50. Personnel Qualifications - 2.32
51. Other items? YES *(If yes, see continuation sheet)* NO

52. PREPARED BY *(Signature and title)*
DR. CATHERINE F. HOVANCSAK
Veterinary Medical Officer
USDA - APHIS - REAC - AC
53. DATE 1/9/96

54. COPY RECEIVED BY *(Signature and title)*
55. DATE 1/9/96

56. REVIEWED BY *(Signature and title)*
57. DATE

APHIS FORM 7006 (FEB 92) (Previous edition may be used)

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

CONTINUATION SHEET FOR ANIMAL CARE INSPECTION REPORT (S)

(APHIS FORMS 7004 and 7008)

1. LICENSEE OR REGISTRANT AND NUMBER	2. LIC. OR REG. NO.	3. DATE	4. PAGE
STATE OF MN - MN ZOOLOGICAL GARDEN	41-C-019	1/9/96	2 OF 2

5. LOCATION OR SITE	6. WAYBILL NUMBER AND DATE (If Applicable.)
13000 ZOO BLVD APPLE VALLEY, MN 55124	

7. NARRATIVE: I. Non-compliant item(s) previously identified that have been corrected; II. Non-compliant item(s) previously identified for which time remains for correction; III. Non-compliant item(s) identified this inspection; IV. Non-compliant item(s) previously identified that have not been corrected

I.
Line 29 General Requirements Sect 3.125(a) - LA Isolation pen rebuilt.
Line 15 Ventilation Sect 3.126(b) - Ventilation ducts in Rm A1 are clean + free of dust/dirt, etc.
Line 37 Housekeeping Sect 1.31(c) Rm A116H cleaned of clutter
Line 29. General Requirements Sect 3.125(a) - Hole in floor of LA holding pen EF1116BH is repaired.

III.
Line 36. Cleaning Sect 3.131(a) Wood walls in armadillo pens in Zoo Lab are scratched & chewed & can not be properly cleaned. Correct by 2/9/96
Line 48. Veterinary Care Sect 2.40(b)(2) The medicine cabinet in the X ray room, the Pharmacy & the emergency kit in the Pharmacy had expired drugs in them for use on the mammals. Corrected at time of inspection

8. PREPARED BY (Signature)	9. TITLE	10. DATE
Cathy Hovancsak	DR. CATHERINE F. HOVANCSAK Veterinary Medical Officer USDA - APHIS - REAC - AC	1/9/96
11. COPY RECEIVED BY (Signature)	12. TITLE	13. DATE
[signature]	Veterinarian Senior	1/9/96
14. REVIEWED BY (Signature)	15. TITLE	16. DATE

APHIS FORM 7100
(AUG 91)

PART 2 - FACILITY

MEMO

To: Kathryn Roberts, Nick Reindl, Kathy Castle, Jimmy Pichner, Jim Rasmussen, Judy Thompson

From: Kris Petrini KP

Subject: USDA Inspection

Date: February 8, 1996

The USDA completed an inspection of our facility on 9 Jan 96. Thanks to everyone who took time out of their busy day to escort the inspector through the animal areas.

This inspection was one of the most positive to date, with only one violation to be corrected: The wood walls in the armadillo pen were scratched and chewed on such that it could not be effectively cleaned. This needs to be corrected by 9 Feb 96.

Also noted on our report was that outdated drugs were found in the emergency kits and on the pharmacy shelves. This was corrected at the time of the inspection and a procedure has been implemented to avoid this problem in the future.

Although not cited at this inspection, Dr. Hovancsak did mention the peeling paint in Japanese macaque holding. This issue may have to be addressed in the future.

All past non-compliant items had been corrected. Please share this information with your staff and commend them on a job well done. Dr. Hovancsak commented on the overall cleanliness and upkeep of our zoo and was very impressed with our new isolation pens on the Northern Trail!

Thanks!

ATTACHMENT AC-15 (a)

The immediate problem was resolved on February 22nd, 2000 when the beaver ponds were drained, cleaned and filled. A water clarity protocol, based on underwater visibility measurements that are taken daily, has been put in place. We have been able to maintain good to excellent water clarity with combinations of draining, filling, pond cleanings, overflowing and reducing the number of fly-in ducks. The surface film problem on the lower pond has not reoccurred with these measures in place.

6-10-2000

Beaver Pond Water Clarity Check: Pond Cleaning Protocol

In order to track the water clarity in the beaver pond, a visual measure will be checked by Minnesota Trail staff just after zoo opening, when the keeper goes out to check the animals. The "score" will be recorded on the beaver lodge temperature chart.

The scoring is based on the estimation of viewing distance using measured landmarks.

- **0** <8' visibility: cannot clearly see plunge hole from submerged windows
- **1** <10' visibility: plunge hole visible through submerged windows but spillway not visible from half-subr windows
- **2** 10 to 20' visibility: dam visible to the far side of the spillway from half-submerged windows
- **3** 20 to 30' visibility: full length of dam visible from half-submerged windows, the entire pond is viewabl though not from one location
- **4** full visibility: plunge hole visible from half-submerged windows

Criteria for pond cleaning (outside of winter duck season)

(a) clarity score below 3
(b) 3 keepers available
(c) temperature above freezing (32 F) at sunrise

Criteria for pond cleaning (winter duck season)

(a) clarity score below 2
(b) 3 keepers available
(c) temperature above freezing (32 F) at sunrise

In either case the pond would only be cleaned if it has not already been cleaned in the prior two months.

If a pond cleaning is not feasible (or warranted) the Minnesota Trail staff will request that Life Support Systems crew run make-up water to overflow the ponds and clarify the water.

Biological Programs staff will take measures to discourage wild ducks from over-wintering on the Minnesota Trail beaver ponds.

ATTACHMENT AC-16

The Estuary and Tide Pool are located in Discovery Bay. Volunteers are responsible for monitoring and interpretation of this area during public hours from 9 AM until closing. Both the Estuary and Tide Pool are limited to "touch only." Sharks and skates in the Estuary have the option to move into exhibit areas not accessible by the public. It is not necessary to rotate animals through these exhibits.

ANIMAL TRAINING AND MANAGEMENT

General Index

ANIMAL TRAINING AND MANAGEMENT

WHY WE TRAIN OUR ANIMALS

The training and enrichment programs designed for the dolphins at the Minnesota Zoo are viewed as a significant portion of the animal's life and enhances their quality of life. Through training we can provide optimal care for our animals insuring quality medical, physiological and psychological well-being.
In addition, the Minnesota Zoo's guests are provided with educational and entertaining program experiences.

1. **Animal Health:** By training animals to participate in their own health care we can better manage the animals. Various behaviors such as blood sampling, morphometrcis and ultrasounds are trained to help us monitor their health.

2. **Mental Stimulation:** Training provides daily mental stimulation for the animals and helps to create an enriching environment by providing them with new, interesting and challenging stimulation to their environment.

3. **Physical Exercise:** Daily training provides the animals with physical activity that helps us in keeping them in good physical condition.

4. **Public Education and Entertainment:** Behaviors are trained to demonstrate the animal's natural abilities and adaptations as well as safely interact with zoo guests. These behaviors are important to achieving the goals of the Minnesota Zoo.

5. **Animal Management:** To assist in good animal management, the animals are trained to perform basic behaviors such as moving from pools to pools and animal separations when necessary.

6. **Research:** The animals may be trained a variety of behaviors to assist researchers gain knowledge into animal physiology and behavior.

TRAINING PHILOSOPHY

The Minnesota Zoo's dolphin training program utilizes the most current and acceptable methods of **operant conditioning**. Operant conditioning is the modification of behavior through the consequences that follow. We believe that learning is an important part of our animal's lives and continue to teach them new behaviors consistently throughout their time with us.

PRINCIPLES THAT CONTROL BEHAVIOR

Behavior, trained or untrained, is controlled by influences in the animal's environment. All interactions that are encountered by the animal on a daily basis are influencing or shaping an animal to behave in a certain way. This occurs outside of sessions as well as during training sessions. For example, a dolphin does a fast swim along the perimeter of the exhibit splashing water over the glass. The guest's reaction is to jump away and /or make a sound. The guest's reaction may have reinforced this fast swim behavior, causing this behavior to increase over time.

The following principles are used to control behavior:

Reinforcer - increases the frequency of the behavior it follows.

Positive - an addition to the animal's environment.

Punisher - Anything that decreases the frequency of the behavior it follows.

Negative - To remove from the animal's environment.

1. Positive Reinforcement: The addition of something to the animal's environment that increases the frequency of the behavior it follows. An effective way to modify behavior, positive reinforcement is the focus of our training program. The two types of positive reinforcers are:

> **Primary reinforcers:** Reinforcers that are inherently reinforcing to the animal that satisfies a biological need. For example: food, water, reproduction.
>
> **Secondary or Conditioned Reinforcers:** Reinforcers that acquire their reinforcing value through association or pairing with a primary reinforcer. A secondary reinforcer can be conditioned over time if paired with primary reinforcers. Examples: rubdowns, whistle, water spray.

2. **Negative Reinforcement:** The removal of something unpleasant or aversive from the animal's environment that increases the frequency of the behavior it follows. For example, the dolphins refuse to move from one pool to another. A net (aversive stimulus) is used to push the animals into the other pool by creating a wall. The net slowly decreases the size of the pool the dolphins are in until they decide to swim into the other larger pool. By swimming away from the net into the larger pool, the dolphin's action has removed (negative) the aversive stimulus from their environment and the behavior of swimming into the larger pool has been increased (reinforcement).

3. **Positive Punishment:** The addition of an aversive stimulus to the environment that decreases the behavior it follows. In the previous example, the positive punishment is the addition of the net (aversive stimulus) to the environment. This created an environment that the dolphin wanted to avoid, decreasing (punishing) the behavior of staying in the pool with the net.

4. **Negative Punishment:** The removal of something (positive stimulus) from the environment that decreases the frequency of the behavior it follows. For example, at the start of a training session the animals will not station properly. The trainers decide to take a "time out" and leave (negative) for a period of time. Upon returning the dolphins station correctly. The behavior of not stationing was decreased (punished) by the removal of the opportunity to receive reinforcement.

5. **Extinction:** If a behavior receives no reinforcement, positive or negative, it will not increase in frequency and will eventually disappear or become extinct. For example, in the previous scenario of a dolphin fast swimming and splashing the guests; if the guest's reaction could be controlled so there was no reaction, that particular behavior would receive no reinforcement and eventually decrease until it becomes extinct.

Minnesota Zoo's Training System Overview

(key areas of the training program)

- Our system always sets the animal up succeed.
- Our system focuses energy on reinforcers to increase motivation.
- Our system avoids predictability.
- Our system maintains a focus on the animal and expects the same in return.
- Our system avoids calling attention to undesirable behavior and focuses on desirable behavior.
- Our system maintains that it is behavior that is reinforced or punished, not the animal.
- Our system avoids telling the animal it is wrong through the use of a delta signal.
- Our system maintains clear and consistent Sds. The animal should respond immediately to the first Sd. No pre-Sds should be used.
- Our system uses clear and concise bridges. The animals should respond to the first bridge.
- Our system maintains clear criteria for all behaviors.
- Our system avoids using negative reinforcement to control behavior.
- Our system maintains the proper use of extinction techniques.
- Our system maintains that learning should be fun for the animals.
- Our system promotes good communication within the work area as well as interdepartmental and between other professional facilities.

World of Birds Show Training Philosophy and Protocols

The World of Birds Show focuses on the natural behaviors of the birds. They are trained using positive reinforcement and weight management. Training is defined as the act of conditioning an animal to perform a specific behavior at a specific time. Training is based on two-way communication between the trainer and the animal. At the bird show we use food treats as the primary reinforcement to train and reinforce a desired behavior. The birds are kept at a healthy working weight during show season, and given the majority of their food during shows. By receiving food treats during or immediately following a desired behavior it encourages and reinforces the desired behavior.

For each show season, the bird show staff writes detailed training plans for each bird used in the show. All staff follow the training plan for the duration of the show season, making changes when necessary. All training plans are based wholly on positive reinforcement training. Training plans include a detailed description of the desired behavior, the steps necessary to achieve the behavior, a description of the treats to be used for reinforcement, and an approximate time line to accomplish the desired behavior.

The goal of the World of Birds Show at the Minnesota Zoo is to strengthen the bond between people and the living earth by providing unique educational experiences with live birds presented in an entertaining manner.

OUR OBJECTIVES ARE:

1. To present the birds in the Bird Show collection in a manner that:

   a) Respectfully demonstrates their natural behaviors and abilities.

   b) Represents their role in the ecosystem.

   c) Leaves our audience with the message that all species on the planet are essential to the survival of all other species.

   d) Empowers our visitors to take environmentally responsible actions in their daily lives.

2. To continually evaluate our presentation programs so that the most current and pertinent information is related to our audiences.

3. To monitor the Bird Show audiences regularly to determine the impact and effectiveness of our presentations.

4. To manage, train and exhibit the Bird Show collection so that the individual birds we present to the public are impressive ambassadors for their species in the wild.

5. To work with other members of the Minnesota Zoo staff to enhance educational programs outside the Bird Show.

MINNESOTA ZOO

Bird Show Species Inventory

Common Name	Scientific Name	Sex	Name	mzg#	DOB
African Fish Eagle	Haliaetus vocifer	1.0	Fenwick	7229	1/8/91
Golden Eagle	Aquila chrysaetos	1.0	Phoenix	6159	5/1/89
Bald Eagle	H. leucocephalus	0.1	Tempest	7907	/85
Harris' Hawk	Parabuteo unicinctus	0.1	Mariah	5192	/78
Harris' Hawk	Parabuteo unicinctus	0.1	Chessie	4825	5/20/81
Harris' Hawk	Parabuteo unicinctus	0.1	Harriet	7049	5/1/91
Red-tailed Hawk	Buteo jamaicensis	1.0	Luke	4611	5/1/74
Red-tailed Hawk	Buteo jamaicensis	1.0	Ivory	7118	5/1/90
Red-tailed Hawk	Buteo jamaicensis	1.0	Baron	8595	4/21/95
Eurasian Eagle Owl	Bubo bubo	1.0	Orville	6639	5/1/90
Great Horned Owl	Bubo virginianus	1.0	Bert	5195	5/1/83
King Vulture	Sarcoramphus papa	0.0.1	Arthur	8606	7/9/95
Abyssinian Ground Hornbill	Bucorvus abyssinicus	0.0.1	Beaker	5888	5/2/88
Rose-breasted Cockatoo	Eolophus roseicapillus	1.0	Floyd	7156	7/21/91
Sulphur-crested Cockatoo	Cacatua galerita galerita	1.0	Coconut	9210	4/10/97
African Grey Parrot	Psittacus erithacus	0.1	Koko	5207	5/1/76
African Grey Parrot	Psittacus erithacus	0.0.1	Alex	D528	3/1/79
Yellow-naped Amazon	Amazona orchrocephala	0.0.1	Fred	6207	10/1/83
Yellow-naped Amazon	Amazona orchrocephala	0.0.1	Burrito	9249	6/4/85
Green-winged Macaw	Ara chloroptera	0.0.1	Greenwing	5208	5/1/79
Green-winged Macaw	Ara chloroptera	0.0.1	Geordi	7264	2/14/91
Blue & Gold Macaw	Ara ararauna	0.0.1	Ferris	7265	12/7/91
Hyacinth Macaw	Andorynchus hyacinthus	1.0	Gandalf	8376	7/4/94
Keel billed Toucan	Ramphastos Sulfuratus	1.0	Houdini	9681	10/8/98
Red junglefowl	Gallus gallus	1.0	Henry	8353	2/16/95
Red junglefowl	Gallus gallus	1.0	Bagel	8393	4/7/95
Tragopan	Tragopan temminckii	1.0	Zamfir	9648	5/7/99
Norway rat	Rattus norvegicus	0.1	Black 1	9799	10/01/99
Norway rat	Rattus norvegicus	0.1	Black 2	9800	10/01/99
Norway rat	Rattus norvegicus	0.1	Blue 1	9801	10/01/99
Norway rat	Rattus norvegicus	0.1	Blue 2	9802	10/01/99
Norway rat	Rattus norvegicus	0.1	Green 1	9803	10/01/99
Norway rat	Rattus rattus	0.1	Brown 4	9271	10/26/97
Domestic rat	Rattus norvegicus	0.1	Green 2	9804	10/01/99
Norway rat	Rattus norvegicus	0.1	Red 1	9805	10/01/99
Norway rat	Rattus norvegicus	0.1	Red 2	9806	10/01/99
Norway rat	Columba livea	0.0.35			
Pigeons					

February 2000

Dolphin Exhibit Maintenance and Water Quality
6/00

D. Water Quality - to maintain a safe, clean and healthy environment for the marine mammals and to provide an aquatic environment that is esthetically pleasing to zoo visitors.

1. **Summary of USDA standards:**

- the water shall not be detrimental to the health of the animals
- coliform bacteria count shall not exceed 1,000MPN per 100 ml
- added chemicals shall not cause harm or discomfort to the animals
- any chemical additives shall be tested and recorded
- adequate water quality shall be maintained by adequate filtration, chemical treatment etc.
- records for at least one year will be available for inspection, permanent records are kept in the desk of the LSS supervisor in the computer room of the LSS building.

2. All water quality will fall within the regulations as stated in the Animal Welfare Act (see attached) and will remain within the established parameters as designated by the veterinary and marine mammal staff. Water quality parameters are posted in the trainer's office on the board next to the computer.

3. **Established Dolphin Pool Water Quality Parameters**

Changed 6/21 See Following Page

Test	Test Schedule	Parameters
ph	Daily	7.8 - 8.4
Temperature	Daily	65 - 68
Salinity	Daily	28 - 32ppt
ORP	Daily	350 - 400
DPD Bromine	2x Daily	0 - 0.5mg/l
DPD Chlorine	2x Daily	0 - 0.2mg/l
Ammonia (NH4)	Daily	,1.00mg/l
Nitrate	Daily	No set limit
Nitrite	Daily	0.1mg/l
Dissolved Oxygen	Monthly	
Total Coliform	2x Weekly	<50
Fecal Coliform	Weekly	<50
Total Bacteria	2x Weekly	<200

4. The dolphin pool water quality testing is conducted by the Life Support System staff (LSS). Test results are monitored daily by the marine mammal zoologist (or in her absence the most senior marine mammal staff person). The test results are recorded and made accessible to the veterinary and marine mammal staff for daily review. Test results can be accessed by the marine mammal staff by logging onto the computer network at mmam, password, Excel, Group, Water, click onto dolphinlab to open records. Permanent records are located in the LSS building and maintained by LSS staff.

Test	Parameters Levels	Test Schedule
PH	7.8 – 8.4 (8.3 ideal)	Daily
Salinity	28 – 32 ppt (30 ideal)	Daily
Temperature	65 – 68 F	Daily
ORP (in line)	400 – 700	1x Daily
ORP (in pool)	350 – 400	Monthly
DPD Chlorine	<0.5mg/l	1x Daily
DPD Bromine	<0.8mg/l	1x Daily
Total Coliforms	<200 colonies/100ml	2x/week, Tues and Friday
Fecal Coiforms	<200 colonies/100ml	1x/week on Friday
Standard Plate Count	No set limit	1xweek on Friday
Ammonia	<1.00 mg/l	Weekly
Nitrate	No set limit	Weekly
Nitrite	<0.1 mg/l	Weekly
Dissolved Oxygen	5.0 –8.8ppm	Monthly

- Water quality records are to be reviewed daily by zoologist or in her absence, the assigned staff member.
- Records can be accessed on the computer network:
  - log on mmam
  - enter password
  - click on Excel program
  - click on Group
  - click on Water
  - open either dolphin microlab or dolphin lab

- Please do not enter anything onto these records, they are maintained by LSS, they are for our information and review only.
- Any deviation noted from the above listed normal parameters should be reported to LSS staff and Kris Petrini and Jim Rasmussen e-mailed.
- Report any other water system related concerns to LSS staff, e.g cloudy water, air bubbles etc.
- If there is any medical procedure, special event etc that is scheduled for a specific day and time notify all LSS staff by e-mail so water level remains normal.
- LSS should not be backwashing on weekends.

5. Any deviation from the normal parameters noted by the marine mammal staff (or in her absence the most senior marine mammal staff person) will be reported to LSS staff. If there are animal health concerns, animal staff will notify the zoo veterinarian immediately. LSS staff will also notify the marine mammal staff and veterinary staff of any unusual problems that they have discovered and/or encountered.

6. Bacterial culture test and results

a. Dolphin Pool Bacterial culture tests are conducted on a regular weekly schedule by LSS staff.
b. Fecal coliform will be conducted once per week on Tuesday - cultured at 44.5 C for 24-26 hours
c. Standard Plate Count will be run on Friday and Sunday - cultured at 28-30 C for 48 - 96 hours
d. Total coliform tests will be conducted on Monday and Thursday or each week - cultured at 35 C for 22-24 hours.
e. Test results will be entered into the computer for review by the veterinary and marine mammal staff for review as well as part of the permanent record. The zoologist (or in her absence the most senior marine mammal staff person) will check these records daily. These records may be accessed by logging onto the computer network, mmam, password, Excel, Group, Water, and click on dolphin micro lab.
f. If bacterial culture results exceed the following values (established parameters) the LSS staff will notify Kris Petrini, Jim Rasmussen, Diane Fusco and all the marine mammal staff by e-mail.
g. Reportability trigger levels:
   Total bacteria count greater than 200
   Colifrom count greater than 50
   Fecal coliforms greater than 50

   LSS will follow up and take appropriate corrective action following high bacterial counts.

7. Miscellaneous

The marine mammal zoologist or assigned person will notify all LSS staff individually by e-mail if there is a medical procedure, special event etc. that requires normal water levels in the pools.

F. Dolphin Exhibit Life Support System

1. Staffing

Three full time Life Support System(LSS) Staff maintain the dolphin system water quality, operation and maintenance of all system components for the million gallon Discovery Bay Dolphin Exhibit.

A Life Support System Coordinator acts as a liaison with the Husbandry Staff and is directly reportable to the Chief Engineer. LSS staff records testing of water quality, microbial testing and daily system status. Reports are updated daily on the zoo's computer network for review by veterinary and marine mammal staff. Bi-weekly meetings are attended by LSS Coordinator, Chief Engineer, Veterinarian, Aquarium and Marine Mammal Zoologist to insure thorough communication with all affected staff.

2. Mechanical Filtration

- The objective of mechanical filtration is to remove feces, and other particulate matter from the water in a reasonable time to minimize the degree of ammonification and improve water clarity and the effectiveness of the disinfection process.
- Seven horizontal 8x16 foot Stark fiberglass filter vessels support the sand media used to filter the exhibit water. Filters and pumps are located in the LSS Building which is remote from the dolphin exhibit.
- Optimum flows are 1400gpm per filter or 9600gpm for the system
- Turnover rate for the system is 2 hours.
- Backwashing occurs approximately every 12 days or when filter flow rates are reduced by 25%. Backwash is reclaimed out of a pair of 12,000-gallon recovery basins and stored in a 32,000-gallon basin. Recovered salt water is re-introduced to the system through the 8x16 filters.

3. Disinfecting

- Ozone is used to disinfect and de-colorize the exhibit water. A by-pass loop allows high dosage treatment of the water in contact chambers. This flow is later directed to a concrete de-gassing chamber where it is mixed with the system water.
  Three fiberglass ozone contact towers were constructed. Two 14-lb./day PCI medium frequency ozone generators were installed. We use one generator and one tower at a time to disinfect the system's water. A Mazzei 4090 injector is used on each tower to contact the ozonated air with the system water. Contact chamber dosage is 325-gpm system water mixed with 315 cfh 1.1% ozone at 16 psi. Contact time is 8 minutes. Measured ozone dosage at the injector averages 1.25mg/l, leaving the tower at 0.50mg/l. Pool testing indicates no measurable ozone, testing for Total Oxidant as Bromine averages below .20mg/l.
- Emergency protocol for maintenance of the disinfection of the system includes redundant ozone generators, air compressors, electric generators and contact chambers. In the event of total loss of ozone equipment, metering pumps and piping are pre-installed to disinfect using chlorine as sodium hypochlorite.

4. **Heating and Cooling**

- Heating is provided as hi-pressure hot water from a central heat plant. A plate heat exchanger rated at 750 MBTU/hr heats the system water. Cooling is provided by a pair of 150-ton chillers. A plate heat exchanger rated at 120 tons cools the water. Projected operational range of the system is 50 to 90 F. Prior to animals inhabiting the exhibit we have operated the pool from 52.5 to 75 F. Now operation as the dolphin habitat temperature is maintained at 68 F.

5. **Isolation of Medical Pool**

- A 10,300-gallon medical pool is part of the Marine Mammal Water System. It may be operated in an isolated or open system mode. A 170,000 Btu heat pump heats or cools the pool water to desired temperature in isolation mode. Before animals were transferred to the new system we have been able to operate the system from 59.7 F to 80.2 F. Isolation filtration and water circulation is provided by a 60 inch vertical sand filter and a 340-gpm pump. Metering pumps and piping are pre-installed to disinfect using chlorine as sodium hypochlorite.

6. **Manipulation of Water Levels**

- Water levels of the Presentation, East, West, Medical Pools and the De-Aeration/De-Gassing Tower are monitored independently with (5) Milltronics ultrasonic level monitors. These are installed within stilling wells to eliminate false readings. Using water tight doors, any combination of pools may be isolated, lowered or dropped. Only the medical pool has an independent filtration system. Up to 85,000 gallons of exhibit water may be recovered from dropping the system. Lost water is made up through the municipal water supply.

7. **Salt**

- One 25 ton Brine Tank was installed in the Life Support Building. A certified assay is supplied at the time of delivery. "Hi-Grade" granular sodium chloride without anti-caking additives is used. and is delivered as needed using a pneumatic tanker truck. The truck's cargo arrives sealed and is opened in front of LSS staff.

8. **Record Keeping**

- Records of water quality, microbiological testing, filter logs, maintenance logs and all reports are bound and maintained in the LSS Control Room. Duplicate records are maintained on the zoo's computer network system for water quality and microbiological testing. Network logs are updated at least once daily to provide immediate access for husbandry and operations staff. Mechanical system logs are maintained on the control system network.

9. **Dolphin Life Support System designed by Enartec**

MINNESOTA ZOO

Memorandum

DATE: February 9, 2001

TO: Don Appel, Kim Thomas, Alan Maguire

FROM: John Prevost

RE: Aquarium Water Quality Parameters

The parameters for water quality in aquarium water systems are established for the following exhibits. Emphasis is on a lack of rapid change in parameters. Holding tanks will match parameters for the display that species are being held. Twice a year, samples are sent to ENC Labs to test for products we are not equipped to monitor. Records of all testing is maintained and available on the zoo's network.

Tropical Marine Systems:

MEC 10 - Shark Exhibit – 220,000 gallons
OB 197 - Coral Reef Exhibit – 82,500 gallons

Test	Parameters Levels	Test Schedule
PH	7.9 –8.3	Daily
Salinity	27 – 33 ppt	Daily
Temperature	74 - 78 F	Daily
ORP (in line)	400 – 650 mv	1x Daily
ORP (in pool)	200 – 400 mv	Monthly
DPD Chlorine	<0.10 mg/l	1x Daily
DPD Bromine	<0.20 mg/l	1x Daily
Ammonia	<0.05 mg/l	Weekly
Nitrate	<40 mg/l	Weekly
Nitrite	<0.010 mg/l	Weekly
Dissolved Oxygen	5.0 –8.8 ppm	Monthly

Coldwater Marine Systems:

MEC 11 - Estuary (Shark Touch Tank) – 15,000 gallons
MEC 12 - Tide Pool – 10,000 gallons

Test	Parameters Levels	Test Schedule
PH	7.9 –8.3	Daily
Salinity	27 – 33 ppt	Daily
Temperature	50 -55 F	Daily
ORP (in line)	400 – 550 mv	1x Daily
ORP (in pool)	200 – 400 mv	Monthly
DPD Chlorine	<0.10 mg/l	1x Daily
DPD Bromine	<0.20 mg/l	1x Daily
Ammonia	<0.05 mg/l	Weekly
Nitrate	<30 mg/l	Weekly
Nitrite	<0.010 mg/l	Weekly
Dissolved Oxygen	7.0 –10.0 ppm	Monthly

Tropical Freshwater Systems:

OB 185 - Asian fish exhibit – 1192 gallons
MI 263 - Minnesota aviary pond exhibit – 936 gallons

Test	Parameters Levels	Test Schedule
PH	7.8 – 8.3	Weekly
Temperature	74 - 78 F	Daily
Ammonia	<1.00 mg/l	Weekly
Nitrate	<10.0 mg/l	Weekly
Nitrite	<0.1 mg/l	Weekly
Dissolved Oxygen	7.0 –12.0 ppm	Monthly

Coldwater Freshwater Systems:

ME 236 - Lake Exhibit – 8,000 gallons
MI 265 -Trout exhibit and MI-266 -Trout stream – 1010 gallons

Test	Parameters Levels	Test Schedule
PH	7.8 – 8.3	Weekly
Temperature	62 - 68 F	Daily
Ammonia	<1.00 mg/l	Weekly
Nitrate	<10.0 mg/l	Weekly
Nitrite	<0.1 mg/l	Weekly
Dissolved Oxygen	7.0 –12.0 ppm	Monthly

Methods of Testing:

At the Minnesota Zoo, we utilize ozone on invertebrate, fish, dolphin, beaver and river-otter systems. Effective treatment is subjectively determined by the visual clarity, color, chemistry and microbial levels of the water sampled.

Measurement of the treatment of ozone is by direct and indirect measurement of the effects of the ozone and its byproducts. At this facility we measure dissolved ozone utilizing an Indigo test for ozone. Oxidizing byproducts of the ozone reaction are measured with DPD Total Chlorine reagent. The sample result from DPD we record as Bromine. Ozone gas generated is measured using a PCI Series 400 High Level Ozone Monitor. ORP is monitored in-line using Great Lakes Instruments 690B ORP Meter. Pool ORP levels are measured with a handheld Corning 313 pH/mv meter equipped with a Cole Parmer Redox probe.

Chemical testing is conducted with a Hach DR/2010 Spectrophotometer. Micro testing utilizes Millipore's Milliflex-100 Test System. pH is measured with a desktop Corning 430 meter. Dissolved oxygen is measured with an YSI 51B DO meter. Salinity is determined with an Atago S/Mill-E refractometer.

ATTACHMENT AC-28

Appropriate vendors are contacted and requested to provide capture location and capture methods to determine if the vendor employs environmentally friendly collection methods. After this information has been provided, a supplier is selected.