IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL SERVICES DIVISION
CONSERVATION RECREATION DIVISION
GUIDANCE DOCUMENT FOR FISH KILLS/STREAM SAMPLING/COST RECOVERY

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BACKGROUND

This guidance will assist in the investigation and assessment of fish kills by each division to ensure coordination between the divisions. This guidance will also ensure the costs for fish restitutions, salaries, meals, lodging and miscellaneous expenses are collected uniformly between the divisions. This guidance does not constitute a rule and only provides assistance for employees in both divisions. This guidance is intended only for use by the staff of the Iowa DNR as an internal management procedural tool, and does not affect private rights or procedures available to persons or entities outside the Iowa DNR. It is not intended to create or add to rights otherwise held by any person outside the Iowa DNR; nor is it intended to reduce, eliminate or limit any rights held by any person outside the Iowa DNR.

A. COORDINATION OF RESPONSE ACTIVITIES BY ESD AND CRD

I. COMMUNICATIONS/NOTIFICATION PROCEDURES

a. Either the Environmental Services Division (ESD) or the Conservation and Recreation Division (CRD) upon learning of an alleged fish kill shall immediately notify the field office (FO) of the other division having jurisdiction over the area.

b. Generally, the ESD FO shall initiate the investigation and sampling at the site. However, in limited cases, CRD's Fisheries Bureau may need to initiate the investigation if ESD FO staff is not able to travel to the site in a timely manner.

c. In cases where a spill has occurred and a fish kill is expected, Fisheries staff must exercise caution with respect to the concentration of the chemical(s) involved. It may be necessary for ESD FO staff or local officials to conduct an initial hazmat assessment to determine if the area is safe to investigate.

d. If a spill or fish kills occurs on a border river in a National Fish and Wildlife Refuge, notification of Iowa DNR state and federal counterparts is required as outlined in the *Upper Mississippi River Spill Response Plan and Resource Manual* and the *Omaha-Council Bluffs Sub-Area Contingency Plan*. This notification shall be made by ESD FO or the Iowa DNR's Emergency Response Coordinator.

II. FOLLOW-UP INVESTIGATION

a. Typically, fish kills involving sources such as animal feeding operations, industries, agricultural chemicals and spills would be investigated by ESD. Typically, CRD would investigate fish kills involving natural causes (winter kill, disease, low dissolved oxygen from natural causes, etc.).

b. Joint follow-up may help speed up completion of the investigation. Decisions on follow-up shall be made by the supervisory staff of both divisions.

III. WRITTEN REPORTS

Each division shall forward copies of all written reports to the other division.

IV. ENFORCEMENT ACTIONS

a. ESD is responsible for determining the source and identity of pollutants and collecting water quality samples. CRD is responsible for documenting the extent of the fish kill, assessing fish losses and determining the compensation value and lost recreational value, if applicable.

b. When the cause of the fish kill can be documented as a discharge of pollutants, ESD will normally pursue enforcement for violations of water pollution laws. Restitution for the dead fish may also be sought. ESD shall take the lead on the enforcement case and incorporate the findings and reports from the Fisheries Bureau into the referral package to the Legal Services Bureau.

B. INVESTIGATION AND SAMPLING

I. PHOTOGRAPHS AND VIDEOS

a. Photographs and videos are useful in documenting cases of water pollution.

b. Each photograph or video shall note the photographer, time of day, location, and description of the scene. It is recommended that the time-date stamp be turned on so the photographs or video contain the time-date stamp to help with the legal documentation.

c. ESD FO shall take photographs or video of the pollution source and areas where water samples are collected. If there is an active discharge at the time of the investigation, a video is beneficial. Any impacts potentially related to the pollution source shall also be documented in photographs or video.

d. Fisheries shall take photographs of the dead fish to document the type of fish as well as the extent of the kill.

II. INITIAL ON-SCENE INVESTIGATION

a. Note the physical conditions of the following:

1. Water involved (ESD FO and Fisheries)
   a) Stagnant
   b) Slow moving
   c) Fast moving-oxygenated by riffles
   d) Shallow, deep, cold, warm, color
   e) Odors and sheen
   f) Field tests shall be taken for temperature, dissolved oxygen, pH and ammonia (ESD FO)

2. Aquatic Organisms (Fisheries)
   a) Alive or dead
   b) Stressed
   c) Location in the stream (floating, on the bottom, on the bank)
   d) Fish behavior such as piping, jumping out of the water, etc.

3. Species Affected (Fisheries)
   a) Identify those dead
   b) Identify those stressed
   c) Identify those normal

b. Attempt to determine the cause of the fish kill, particularly any source and/or entry point of contaminants into the water in which the fish kill took place. Once this has been done, fish kill counting procedures and sampling method shall follow the American Fisheries Society (AFS) guidelines as identified in 571 IAC 113. Monetary value assessment shall also follow AFS guidelines pursuance to 571 IAC 113. Fisheries shall report these findings to the ESD FO.

1. If Fisheries staff deviates from the AFS, the staff shall document why the deviation occurred; include written explanation and photographs.
2. Fisheries staff must indicate the specific factors that were used to determine the AFS counting method.
3. For each fish kill incident the Fisheries staff should complete the following forms: Fish Kill Notification and Fish Kill Methodology. A copy of each of the forms should be included in the referral document sent to Iowa DNR Legal Services.
   a) Fish Kill Notification Form – used when the initial notification is received. This form should be used to demonstrate consistency and thoroughness in each fish kill assessment
   b) Fish Kill Methodology Form – will be used to document what AFS method was chosen and will provide an explanation as to why the method was chosen.

III. SAMPLING

a. Investigation of Surface Water Pollution

1. Prior to investigating incidents of water pollution, ESD FO shall determine the classification of the affected water body as described in the ESD water quality standards and identify the boundaries of the classifications. In many cases, a stream may have different classifications within the same segment.
2. When investigating water pollution of water bodies with designated use(s) sampling shall be conducted to determine whether violations of numeric water quality criteria have occurred. Refer to the Bacteria Criteria Table and Tables 1-4 of the water quality standards to determine the appropriate numerical water quality standard(s) for the designated use(s) of the stream segment. Some of the most common parameters to sample include: BOD, pH, temperature, DO, ammonia, TSS, E.coli and common pesticides.
3. Upstream and downstream samples shall be obtained, since some criteria are related to the degree to which contamination is increased by a pollution source. Parameters need not be tested if there is no reason to suspect a parameter is included in the pollution source. When sampling for ammonia nitrogen, water temperature and pH must be included with each sample. Water shall first be field tested for ammonia nitrogen, and if positive results are obtained, samples for laboratory analysis shall be collected.
4. Normal procedure is to obtain a discharge source sample, an upstream sample, and one or more downstream samples. One downstream sample shall be taken near the confluence of the discharge and receiving water in the plume of the contamination, and additional samples would normally be advisable at one or more downstream locations (or more remote in the case of lakes) to document the extent of contamination. Any tributaries in the vicinity of the pollution event and sampling area shall also be sampled and observed for dead or stressed fish and aquatic life prior to entering the receiving stream. It is important to check all tributaries near the contamination to rule out other sources of pollutants.
5. Estimates of the duration of the pollution event shall be provided. These estimates can be based on information from the person reporting the incident or complaint. Field staff shall document any impacts potentially related to the pollution event (e.g., dead fish, floating debris, abnormal water color). All surface waters, including waters with designated uses as well as “general” waters, are protected by the “narrative” water quality criteria of subrule 567 IAC 61.3(2), which include free from the following:
   a) Settleable substances attributable to point source discharges that form sludge deposits;
   b) Nuisance floating debris, oil, grease, scum, etc.;
   c) Materials producing objectionable odors, color, etc.;
   d) Substances that are acutely toxic to human, animal or plant life; and
   e) Substances in quantities that produce undesirable or nuisance aquatic life.

6. In addition, numeric criteria apply to all waters, as follows:
   a) Turbidity cannot be increased more than 25 Nephelometric units by a point source (this analysis is infrequently performed)
   b) Cations and anions guidelines values to protect livestock water may be found in the “Supporting Document for Iowa Water Quality Management Plan,” Chapter IV, July 1976, as revised on November 11, 2009 (these parameters are sampled infrequently)
   c) The E.coli content of water which enters sinkhole or losing stream segment, regardless of the water body’s designated use, shall not exceed a geometric mean of 126 organisms/mL or a sample maximum value of 235 organisms/100mL.

7. Observations and sampling relevant to applicable narrative or numeric criteria shall be conducted to document apparent violations of any of these standards. Visual or olfactory observation, including photographs or videotape, would normally be sufficient to document violations of narrative criteria, though samples for settleable solids, oil and grease or dissolved oxygen, ammonia nitrogen or other chemicals may be appropriate. Sampling for turbidity, cation/ions or E.coli would be necessary to document violations of the numeric criteria set forth above.
8. Samples of water shall have chain of custody documentations from the field to the laboratory. Sample containers shall be a 1 quart glass jar with a Teflon lid. Sampling technique: dip quart jar into, and in an arc, back out of the water. This gives a rough composite. If contaminated product is floating or pooling,

you should sample as much of the material as possible. Samples will be sent to the University of Iowa State Hygienic Laboratory (SHL) or closer lab recommended by FO.

b. Fish Flesh Samples
   1. Fish kills are normally caused by short-term exposures to acute levels of toxic chemicals, diseases or other altered environmental conditions such as low dissolved oxygen. Fish tissue sampling normally reveals the bioaccumulation (long-term) of chemicals, and seldom is useful in determining short term chemical exposures or toxic conditions, such as low dissolved oxygen. Therefore, fish tissue samples are not helpful in evaluating the majority of fish kills. An exception is where a disease is causing significant fish kills in a single major drainage basin. CRD may decide in such a case that samples are warranted for fish disease evaluation. Samples for this type of evaluation are not included in the SHL contract.
   2. SHL prefers that fresh samples be frozen within 24 hours of death. Stressed and recently dead fish within the affected area are the best specimens to freeze.
      a) Identify the location from which the sample was taken.
      b) Written information is to accompany sample:
         i. Coloring or mottling noted specimen at collection time
         ii. Inflamed gills or spots on body
         iii. Rigidity of specimen body

   3. Sample preparation for shipment to laboratory
      a) All jars shall be tightly sealed and placed in plastic bags and sealed.
      b) Each jar shall have identifying information printed on a label
      c) Jars shall be placed in a Styrofoam shipping container; iced down and scaled for shipment
      d) Follow chain-of-custody procedures

IV. RIGHT OF ENTRY

ESD and CRD may enter private property to conduct a fish kill count without it being considered trespassing, but may need consent or a warrant to access specific areas within the property. The need for a warrant is fact specific, and questions should be directed to the local Conservation Officer, DNR's Legal Services Bureau, or the local county attorney.

If the waterbody can be accessed for a fish count from public access points, such as public roadways, public lands, or navigating in via public waters, staff should avoid walking or driving across private property. Iowa law allows for all persons to be on navigable waters, even if the underlying water bed is privately owned.

Consent from the property or business owner negates the need for a warrant, so staff should always prioritize obtaining permission. If permission is granted, staff shall document in field notes who gave the permission and the date and time it was received.

If private property must be accessed to conduct a fish count and no one is available to give permission, or if permission is not granted:

a. For private residences: Is the waterbody so close to the house that accessing it would require going through the house's "curtilage"? If so, do not proceed until a warrant is obtained, or permission is ultimately granted (CONTACT THE LOCAL CO, COUNTY ATTORNEY, OR DNR LEGAL).
   1. The term "curtilage" refers to the area immediately surrounding a house that is so intimately associated with the home and the privacies of life that it is given the same constitutional protection as the house itself. The curtilage need not be fenced, and can extend to and include outbuildings (such as barns or garages) some distance from the house.
   2. If there is a fenced-in area surrounding or adjacent to the home, assume it is constitutionally-protected space accessible only with permission or a warrant.
   3. If the waterbody can be accessed without going through the curtilage, no warrant or consent is likely necessary and the fish count should proceed to avoid the destruction or loss of evidence.

b. For businesses: Businesses have less constitutional protection than homes, but consent or a warrant may still be necessary to access areas not open to the public or if it is before or after regular business hours.
   1. If the waterbody cannot be accessed except by going through areas that are fenced off, locked, are otherwise inaccessible to the public, do not proceed until a warrant is obtained or permission is granted (CONTACT THE LOCAL CO, COUNTY ATTORNEY, OR DNR LEGAL).
   2. If the waterbody can be accessed by going through areas open to the public, such as parking lots, no warrant or consent is likely necessary and the fish count should proceed to avoid the destruction or loss of evidence.

The access standards applicable to a fish kill count are different than those that govern any follow-up investigations into the cause (e.g., if it determined the fish did not die of a natural event). Pursuant to Iowa Code section 455B.103(4), ESD FO staff involved in a fish kill cause investigation must always obtain either consent or a warrant before searching a property believed to be the source of the kill.

C. DOCUMENTATION OF COSTS

Field Services and Fisheries staff shall document the following costs of investigation

I. Wages for staff time spent investigating the fish kill, compiling data, and preparing reports. This also includes time spent overseeing investigation and cleanup of the spill
II. Iowa DNR indirect costs for staff wages
III. Meals, lodging, and miscellaneous costs consistent with the State of Iowa reimbursement policy and rates in place at the time of the investigation. Meals, lodging and miscellaneous costs shall be documented on a travel voucher. A copy of the travel voucher signed by the supervisor or acting supervisor is to be included with the referral package as part of the documentation.
IV. Costs of samples collected and analyzed during the investigation
V. SHL administrative costs for sample analysis
VI. Mileage must be calculated on a per vehicle basis rather than using the standard rates listed on the Iowa Department of Administrative Services' website.

D. REFERRAL

The following documents must be included with the referral to Iowa DNR Legal Services

I. Referral Template and Supporting Documents (ESD)
II. Fish Kill Notification Form (Fisheries)
III. Fish Kill Methodology Form (Fisheries)
IV. Fish Restitution Memo (Fisheries)
V. Fisheries Staff Costs - see example below (Fisheries)
VI. ESD Staff Costs – see example below (ESD)
VII. Total Staff Costs and Restitution – see example below

Expenses	**Personnel Costs**	
Wages	Joe Smith – 20 hours @ $26.78/hour	$535.60
	Sara Jones – 14 hours @ $28.50/hour	$399.00
	Total Wages	$934.60
Indirect	SFY18 Rate = 12.58%	$117.57
SHL Samples	7 Samples @ $95.00 (all analyses)	$665.00
SHL Administration	SFY18 Rate = 8.0%	$53.20
Meals	N/A	N/A
Lodging	N/A	N/A
Miscellaneous	Rope for Sampling	$7.96
Total		**$1,778.33**

Where the Money Goes

Description	Fund
Fish Restitution	Fish and Wildlife Trust Fund
Fisheries Bureau Costs	Fish and Wildlife Trust Fund
Field Services Bureau Costs	Hazardous Substance Remedial Fund