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Environment, Safety, Health Directorate

ENV-ES: Environmental Stewardship Services

Technical Procedure

COLLECTION OF CRAWFISH IN THE RIO GRANDE

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REVISION HISTORY

Document Number and Revision <i>[Include revision number, beginning with Revision 0]</i>	Effective Date <i>[Document Control Coordinator inserts effective date]</i>	Description of Changes <i>[List specific changes made since the previous revision]</i>
SOP-5249, R0	8/13/09	New Document
ENV-ES-TP-008, R0	9/30/2015	Renumbered and reformatted to ENV Division. Supersedes SOP-5249.

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1.0 PURPOSE AND SCOPE

Crawfish (crayfish, crawdads, mud bugs), which prefer small fish and decomposing vegetation and unlike fish, do not travel far distances, may yield information as to the potential contamination of a particular site in water bodies.

The purpose of this procedure is to describe the process for collecting and processing crawfish upstream and downstream of Los Alamos National Laboratory (LANL) in the Rio Grande.

This procedure applies to the individual(s) assigned to collect biota samples as part of the Soil, Foodstuffs, and Biota (SFB) Monitoring Project, Environmental Surveillance Program to fulfill DOE Orders.

2.0 BACKGROUND AND PRECUATIONS

2.1 Background

This document establishes the basic requirements for collecting and processing crawfish samples upstream and downstream of LANL in the Rio Grande. The main objective of the procedure is to determine if there are any impacts to the Rio Grande from LANL operations. Whole-body samples will be analyzed for radionuclides, target analyte list (TAL) elements (mostly metals), and polychlorinated biphenyl (PCB) congeners. Work performed by LANL personnel under this procedure will occur only after required training to applicable documents has been completed and documented.

This monitoring program is part of the Environmental Surveillance Program mandated by U.S. Department of Energy DOE Order 458.1.

Samples are collected in the Rio Grande at two locations with respect to being upstream or downstream of LANL:

Upstream:

1. Upstream of Otowi Bridge to Black Mesa, about 2 river miles upstream.

Downstream:

1. Downstream of the Los Alamos Canyon confluence to Anchor Canyon.

2.2 Precautions

Individuals are required to be trained in the following disciplines before performing this procedure.

- First aid
- Cardiopulmonary resuscitation
- General field safety for all employees
- All participants near the water must know how to swim

A minimum of two (2) people are required to perform field work. Do not perform field work under conditions that you consider unsafe. Before beginning any work described in this procedure, review the hazards and safety controls in Attachment 1.

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3.0 EQUIPMENT AND TOOLS

- 6.5 × 12 in. stainless-steel mesh crawfish traps
- 15- to 20-ft sections of nylon rope
- Paper towels
- Chain-of-custody (and sample description) forms
- Ice chest with ice
- Full-length, arm protecting Nalgene® gloves
- Ziploc® bags (1- and 2-gal. sizes)
- Chest waders and belt
- First-aid kit, snake leggings, and bite kit

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 Preparatory Activities

Field Team Leader:

1. Monitor the Rio Grande for water levels (depth and current). In general, crawfish traps should be placed into the Rio Grande after the main monsoon floods that occur in July–August and the currents are no greater than 3 ft/s in the proposed sampling sites.
2. Since some samplers will be placed in the Rio Grande within the Pueblo of San Ildefonso lands, it is required that the field team leader (FTL) check in with the Pueblo Environmental Department at least 2 weeks in advance and let them know in writing about the sampling.
3. Conduct a hazard review in accordance with Attachment 1, Hazard Review for Crawfish Sampling.
4. Check the condition of the vehicle and the fuel level before leaving the field.
5. Identify a point-of-contact to provide pertinent information of destination, expected time-in, and methods of notifying the field team.
6. Notify the group office to place you on travel status when leaving Los Alamos County.
7. Ensure you have a working cell phone.

4.2 Placing Samplers in the Rio Grande

Sampler:

1. All safety and health procedures should be in place and employed per Attachment 1.
2. Locate several potential sites within each reach that contain similar habitats—slow moving waters (0.2 to 3 ft/s), pools, sediment-dominated bottoms, and snag debris (overhanging grasses, weeds, trees, logs, etc.). Crawfish prefer shallow muddy waters.
3. Bait the traps with fresh fish cut into pieces. (Note: the fish may be frozen.) Place the bait in the center of the trap.

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4. Attach a rope to the trap and tie to a tree branch or rebar inserted on shore at each site. Place sampler in river. Use chest waders (with belt) to place traps, as appropriate.
5. Fill in the sampling location and other data listed in Attachment 2 including the global positioning system site coordinates.

4.3 Collecting and Processing Samplers from the Rio Grande

Sampler:

1. Check traps after 1 or 2 days. Place into a 5-gal. bucket and wash thoroughly, making sure all samples are free of mud. (Note: use arm-length gloves because crawfish may pinch.)
2. Number of individual crawfish needed for analysis is as follows: one per TAL analysis into Ziploc bag, one per PCB analysis into a 500-mL amber glass jar, and five (+) per radionuclide analysis into a Ziploc bag. Cool all samples to 4 degrees C.

4.4 Maintaining Custody of Samples

Sampler:

1. Document chain of custody for all samples used to demonstrate compliance. All information as to location, date, habitat, depth of water should be recorded on the COC.
2. Verify the possession and handling of samples is traceable at all times. Note: A sample is considered in custody if it is one of the following:
 - In one's physical possession;
 - In one's view after being in one's physical possession;
 - In one's physical possession and then locked up so that no one can tamper with it; or
 - Kept in a secure area where access is restricted to authorized and accountable personnel only.
A secured area is defined as an area that is locked (e.g., a room, cooler, vehicle, or refrigerator).
3. Use a custody seal to secure the area or the sample container if the area cannot be secured.

4.5 Transferring Custody of Samples

Sampler:

1. Complete the "relinquished by/received by" and "date" sections of the form whenever samples are transferred into the custody of another person or organization.

Note: These sections of the form must provide a complete history of custody of the samples from collection to transfer to the analytical laboratory.

Analytical Laboratory:

1. Transfer samples with chain of custody to the analytical laboratory for analysis. Requested analysis should include radionuclides, TAL, and PCB congeners.

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4.6 Broken Chain-of-Custody

FTL:

1. Document the failure by initiating a deficiency report in accordance with P322-4, *Laboratory Performance Feedback and Improvement Process* whenever there is a break in the chain of custody of a sample.
2. Document the occurrence, evaluate the potential impact (if any) on the samples, and propose a fix to prevent recurrence.
3. Use a custody seal to secure the area or the sample container if the area cannot be secured.

4.7 Emergency Actions to Take in the Event of Control Failure

FTL:

1. Perform first aid, as appropriate.
2. See that the injured person is taken to Occupational Medicine (only if immediate medical attention is not required) or to the nearest hospital for all injuries.
3. Notify the individual's supervisor and group office as soon as possible.

4.8 Records Management

FTL:

1. Submit the following records generated by this procedure to the Principal Investigator:
 - Completed Chain-of-Custody form.
 - Sampling location information.

Principal Investigator:

1. Maintain and submit records and/or documents generated to the Records Processing Facility according to ADESH-AP-006 Records Management Plan, Records Transmittal and Retrieval Process.

5.0 ATTACHMENTS

Attachment 1: *Hazard Review for Crawfish Sampling*

Attachment 2: *Physical Characterization/Water Quality Field Data Sheets*

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ATTACHMENT 1 – HAZARD REVIEW FOR CRAWFISH SAMPLING

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Hazard Review for Crawfish Sampling			Records Use only 
Work Tasks/Steps	Hazards, Concerns, and Potential Accidents; Likelihood/Severity	Controls, Preventive Measures (e.g., safety equipment, administrative controls, etc.)	Hazard Level (from IMP 300-00-00, Hazard Grading Matrix)
Preparatory Activities <ul style="list-style-type: none"> • Travel to sampling sites in the field 	Vehicular traffic Various field and outdoor hazards such as seasonal heat and cold extremes, wind, sun exposure, lightning, insects, reptiles, slips, falls, brush.	At least two people should be involved in all field trips. Train to "General Field Safety for all Employees." Wear seat belts and obey all traffic signs. Communication equipment is required. Wear personal protective equipment (PPE): eye protection, toe protection, long pants, long-sleeve shirt, sun and insect protection.	Low
<ul style="list-style-type: none"> • Monitoring river flows and collecting river data 	Falling into river from bank.	Snake leggings are recommended and carry a snake bite kit on all field trips. Adhere to the two-person rule. Know how to swim. Use safety pole. Take a shower after exposure.	
Placing Samplers in the Rio Grande	Various field and outdoor hazards such as seasonal heat and cold extremes, wind, sun exposure, lightning, insects, reptiles, slips, falls, brush.	Wear PPE: eye protection, toe protection, long pants, long-sleeve shirt, sun and insect protection. Snake leggings are recommended and a snake bite kit should be carried on all field trips. Carry first-aid kit into field.	Low

ATTACHMENT 1 – HAZARD REVIEW FOR CRAWFISH SAMPLING (CONT.)

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Work Tasks/Steps	Hazards, Concerns, and Potential Accidents; Likelihood/Severity	Controls, Preventive Measures (e.g., safety equipment, administrative controls, etc.)	Hazard Level (from IMP 300-00-00, Hazard Grading Matrix)
Placing Samplers in the Rio Grande (cont.)	<p>River water exposure (human sewage wastes, pathogens, toxic pollutants).</p> <p>Falling in river</p>	<p>Wear full-length arm gloves when placing samplers into river. Chest waders may also be worn. Avoid splashing. Immediately wash with soap and clean water or with ethyl alcohol wipes if exposed to river water. Tetanus, hepatitis, typhoid fever, and polio immunizations must be up to date.</p> <p>Two-person rule. Know how to swim. Use safety pole. Take a shower after exposure.</p>	Low
Collecting and Processing Samplers from the Rio Grande	<p>Various field and outdoor hazards such as seasonal heat and cold extremes, wind, sun exposure, lightning, insects, reptiles, slips, falls, brush.</p> <p>River water exposure (human sewage wastes, pathogens, toxic pollutants).</p> <p>Falling in river</p>	<p>Wear PPE: eye protection, toe protection, long pants, long-sleeve shirt, and sun and insect protection. Snake leggings are recommended and a snake bite kit should be carried on all field trips. Carry first-aid kit into field.</p> <p>Wear full length arm gloves when retrieving and processing samplers. Chest waders may also be worn. Avoid splashing. Immediately wash with soap and clean water or with ethyl alcohol wipes if exposed to river water. Tetanus, hepatitis, typhoid fever, and polio immunizations must be up to date.</p> <p>Two-person rule. Know how to swim. Use safety pole. Take shower after exposure.</p>	

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ATTACHMENT 1 – HAZARD REVIEW FOR CRAWFISH SAMPLING (CONT.)

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Wastes or Residual Materials

None generated.

Emergency Actions to Take in Event of Control Failure

For all injuries, provide first aid and see that injured person is taken to Occupational Medicine (only if immediate medical attention is not required) or the nearest hospital if immediate attention is required. Notify supervisor and group office as soon as possible.



Environment, Safety and Health

Electronic Public Reading Room - Posting of Controlled Procedures

Operations Integration Office Management Approval:

Print Name	Signature	Date
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Derivative Classifier:

OUO
 UCNI
 Unclassified
 Classified

Print Name	Signature	Date
Larry W. Maassen	<i>Larry Maassen</i>	3/4/16

List of Controlled Documents:

Procedure No.	Title/Description
Air Monitoring (ENV)	
ENV-ES-TPP-003	Technical Project Plan for the Neighborhood Environmental Watch Network (NEWNET)
ENV-ES-TPP-007	Technical Project Plan for the Direct Penetrating Radiation Monitoring Network (DPRNET)
Data Validation (ADESH)	
OIO-TP-5161	Routine Validation of Volatile Organic Compound Analytical Data
OIO-TP-5162	Routine Validation of Semivolatile Organic Compound Analytical Data
OIO-TP-5163	Routine Validation of Organochlorine Pesticide and Polychlorinated Biphenyl Analytical Data
OIO-TP-5165	Routine Validation of Metals Analytical Data
General Field Work	
OIO-TP-222	Shipping/Receiving of Environmental Samples by the Sample Management Office (SMO)
OIO-QP-219	Sample Control and Field Documentation
Soil, Foodstuffs, and Biota Sampling (ENV)	
ENV-ES-TPP-002	Technical Project Plan for Biota Dose Assessment
ENV-ES-TP-003	Collection of Soil and Vegetation Samples for the Environmental Surveillance Program
ENV-ES-TP-004	Produce Sampling
ENV-ES-TP-007	Game Animal Sampling
ENV-ES-TP-006	Sampling Soil and Vegetation at Facility Sites
SOP-5247	Collection of Benthic Macroinvertebrates in the Rio Grande
ENV-ES-TP-008	Collection of Crawfish in the Rio Grande
Well Drilling, Construction, Development, Maintenance, and Abandonment	
ENV-RCRA-QP-010	Land Application of Groundwater