UPPER COLUMBIA RIVER

General Site Health and Safety Plan for the Remedial Investigation and Feasibility Study

Prepared for

Teck American Incorporated

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
Consultants	Integral Consulting Inc. and Parametrix Inc.
CPR	cardiopulmonary resuscitation
CRZ	contaminant reduction zone
EPA	U.S. Environmental Protection Agency
HAZWOPER	hazardous waste operations and emergency response
HDPE	high density polyethylene
HSP	health and safety plan
IDLH	immediately dangerous to life and health
Integral	Integral Consulting Inc.
Lake Roosevelt	Franklin D. Roosevelt Lake
M	molar
mg/kg	milligram per kilogram
OSHA	Occupational Safety and Health Administration
Parametrix	Parametrix, Inc.
PEL	permissible exposure limit
PFD	personal floatation device
PPE	personal protective equipment
PRG	preliminary remediation goal
RI/FS	remedial investigation and feasibility study
RM	river mile
SHSP	site health and safety plan
SLRA	screening level risk assessment
STEL	short-term exposure limit
TCM	Teck Cominco Metals
Teck	Teck American Incorporated
UCR	Upper Columbia River
USGS	U.S. Geological Survey
WADOSH	Washington Department of Occupation Safety and Health
WISHA	Washington Industrial Safety and Health Act

SITE HEALTH AND SAFETY PLAN APPROVAL

This general site health and safety plan (SHSP) has been reviewed and approved by Teck American Incorporated's (Teck's) Technical Team, Integral Consulting Inc. and Parametrix, Inc. (Consultants), for the Upper Columbia River (UCR) site (Site) remedial investigation and feasibility study (RI/FS) for general health and safety procedures at the Site.

Integral Project Manager	Date 8/27/09
Integral Corporate Health and Safety Officer	Date 8/26/09
Parametrix Project Manager	Date 8/31/09
Parametrix Corporate Health and Safety Officer	Date 8/31/09

SITE HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT

This general SHSP is approved by the Consultants for use at the Site. This general SHSP is the minimum health and safety standard for the Site and will be strictly enforced for Consultants personnel and other subcontracted personnel where applicable. Subcontracted personnel may request to adopt the general SHSP in lieu of a subcontractor-specific SHSP, but must obtain prior written approval by the contracting Consultants and provide written concurrence from the subcontractor that the subcontractor will assume direct responsibility and liability for administering the plan for its employees.

I have reviewed this general SHSP dated August 25, 2009, for the Site RI/FS fieldwork. I have had an opportunity to ask any questions I may have and have been provided with satisfactory responses. I understand the purpose of the plan, and I consent to adhere to its policies, procedures, and guidelines.

Employee signature	Company	Date
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1 INTRODUCTION

This general Site health and safety plan (SHSP) provides background information on the Site and general health and safety provisions to protect workers from potential hazards during field activities in support of the Site remedial investigation and feasibility study (RI/FS). The Site is located wholly within Washington State and includes approximately 150 river miles (RMs)[1] of the Columbia River extending from the U.S.-Canadian border to the Grand Coulee Dam in the north-central portion of Washington (see the general Site map in Attachment 1). The Site includes Franklin D. Roosevelt Lake (Lake Roosevelt), a large reservoir maintained behind the Grand Coulee Dam. Because the RI/FS is an iterative process, detailed information regarding all field activities that may or will be conducted is currently not available. Preliminary identification of field activities may include, but are not necessarily limited to, the following:

- Sediment sampling
- Surface water sampling
- Aquatic tissue sampling.

Because site-specific sampling locations, media, and other detailed information are determined for each proposed field activity, safety procedures specific to that field activity will be documented as an addendum to this general SHSP. Each SHSP addendum will be included as an attachment to the field sampling program documentation prepared for the proposed field activity. Each SHSP addendum will provide the scope of work, detailed field site maps, additional Site information, hospital route maps, air monitoring requirements, requirements for personal protective equipment (PPE), work zone delineations, and key emergency contact information. Each SHSP addendum will be prepared and followed by the Consultant or subcontractor contracted to perform the specific fieldwork for the RI/FS. At a minimum, provisions outlined within the field contractor's addendum must be consistent with those outlined in this SHSP.

The policy of the Consultants is to provide a safe and healthful work environment. No aspect of the work is more important than protecting the health and safety of all workers.

The Consultants cannot guarantee the health or safety of any person entering the Site. Because of the potentially hazardous nature of the Site (e.g., remote location of Site, swift moving water, etc.) and the activities occurring thereon, it is not possible to discover,

[1] There is a discrepancy in river mile designations by the U.S. Geological Survey (USGS) and by the U.S. Environmental Protection Agency (EPA). USGS river miles increase from RM 680 to RM 682 over a less than 1 river mile segment when transitioning between the Inchelium and Rice USGS quadrants, whereas USEPA (2006a) increases from RM 680 to RM 681 over the same segment. To remain consistent with international borders, the USGS river mile designations are used herein.

evaluate, and provide protection for all possible hazards that may be encountered. It is each person's responsibility to watch for potential hazards and to let others know as soon as possible if potential hazards are identified. Strict adherence to the health and safety guidelines set forth herein should reduce, but not eliminate, the potential for injury and illness at the Site. The health and safety guidelines in this plan were prepared specifically for the Site and should not be used on any other site without prior evaluation by trained health and safety personnel.

A copy of this general SHSP and each appropriate addendum must be in the custody of the field crew during field activities. All individuals performing fieldwork must read, understand, and comply with this general SHSP and its addenda before undertaking field activities. Once the information has been read and understood, the individual must sign the Site Health and Safety Acknowledgment Form provided as part of the general plan and associated addenda. The signed form will become part of the project file for the Consultant contracting the particular field activity. A copy of the form will also be provided to Teck.

If an external safety audit is conducted during Site fieldwork (e.g., Washington Industrial Safety and Health Act [WISHA] audit), all associated forms will be become part of the project file and a copy of each form will be provided to Teck.

Field activity-specific addenda may be modified at any time based on the judgment of the field contractor's Site safety officer in consultation with the contracting Consultant's corporate health and safety officer and project manager or designee. Any modification will be presented to the onsite team as soon as possible during a safety briefing or other appropriate opportunity and will be recorded in the field notebook.

1.1 ORGANIZATION

This general SHSP provides background Site information and general health and safety provisions to protect workers from potential hazards during field activities. The information includes general safety guidelines for physical hazards, a chemical hazard evaluation, health and safety training requirements, general PPE requirements, emergency planning, general decontamination procedures, vehicle and boating safety, spill containment, and shipping instructions.

Task-specific safety procedures are presented in addenda to this general SHSP. In addition, the addenda provide detailed field site and hospital location maps, air monitoring requirements, specific PPE requirements, work zone definitions, and key emergency contact information.

1.2 SITE BACKGROUND

Concerns regarding historical releases of ferrous granules by Teck Cominco Metals Limited (TCM) into the Columbia River near Trail, British Columbia, have triggered RI/FS activities for the Site. Ferrous granules, a metal-containing by-product, were discharged into the river at Trail from the early 1930s until 1995. Although the discharges occurred north of the U.S.-Canadian border, the Site addressed by the RI/FS is located wholly within Washington State (see general Site map in Attachment 1). Investigations north of the U.S.-Canadian border are being conducted separately, in accordance with Canadian laws and standards. General information on the Site is presented below.

- Owners/tenants – Varies (generally public and tribal lands)
- Current Site use – Varies (generally recreational use on publicly available shoreline)
- Hazardous waste site – No
- Industrial waste site – No
- Topography – Varies
- Site access – Varies (generally public and tribal lands with multiple recreational access points)
- Site activity – Not applicable
- Nearest drinking water/sanitary facilities – Varies
- Nearest telephone – Varies. Cell phone coverage is available at some locations. Some tribal participating parties have high-powered radios in areas that do not have cell phone coverage; these may be available for the field teams to use with prior consent. Satellite phones may be necessary at some locations. Each day at the site safety meeting communications will be discussed, arranged, and verified.

Specific Site information relevant to each field task is presented in addenda to this general SHSP.

1.3 REGULATORY FRAMEWORK

WISHA covers workplace health and safety regulations within the state of Washington, with a few exceptions. The Washington Department of Occupational Safety and Health (WADOSH) administers WISHA. WISHA is the state equivalent of the federal government's Occupational Safety and Health Act administered by the Occupational Safety and Heath Administration (OSHA). This general SHSP follows both WISHA (Chapter 49.17 Revised Code of Washington) and federal OSHA Hazardous Waste

Operations and Emergency Response (HAZWOPER) (29 CFR 1910.120) regulations. OSHA and WISHA regulatory notices are included as Attachment 2.

1.4 PROJECT MANAGER AND OTHER KEY CONTACTS

The names and telephone numbers for the project manager and other key contacts are listed below.

	Name	Work Telephone	Cell Phone
Project Manager (Integral)	Jennifer Sampson	(206) 957-0351	(360) 286-7552
Corporate Health and Safety Officer (Integral)	Eron Dodak	(503) 284-5545 ext. 14	(503) 407-2933
Project Manager (Parametrix)	David Mayfield	(425) 458-6276	(206) 245-0390
Corporate Health and Safety Manager (Parametrix)	Sheila McConnell, CIH	(425) 452-8655	(425) 681-7516
Client Contact	Kris McCaig	(509) 459-4451	(509) 434-8542
Client Contact (Project Coordinator)	Marko Adzic	(509) 892-2585	(509) 991-0842

Notes: CIH = Certified Industrial Hygienist

1.5 DEFINITIONS

Contamination reduction zone: Area between the exclusion and support zones that provides a transition between contaminated and clean zones

Exclusion zone: Any area of the Site where hazardous substances are present, or are reasonably suspected to be present, and pose an exposure hazard to personnel

HAZWOPER: Hazardous Waste Operations and Emergency Response standard, as described in 29 CFR Part 1910.120

OSHA: Occupational Safety and Health Administration

Support zone: Any area of the Site, so designated, that is outside the exclusion and contamination reduction zones

WISHA: Washington Industrial Safety and Health Act, as described in Chapter 49.17 Revised Code of Washington

2 GENERAL SAFETY GUIDELINES FOR PHYSICAL HAZARDS

All work will be done using the buddy system. Depending upon the time of year and the location of work, snakes, cougars (mountain lions), and insects or other animals, may be possible hazards. Drowning and hypothermia are always concerns when working around the water, so it is required that personnel with the potential for falling in must wear personal flotation devices (PFDs).

Table 2-1 presents physical hazards that may be present during field activities at the Site. Task-specific hazards are presented in addenda to this plan.

Table 2-1. Possible Physical Hazards and Proposed Safety Procedures

Possible Hazard	Proposed Safety Procedure
Uneven terrain/tripping, slippery walking surfaces	Use caution; wear properly fitting shoes or boots with good gripping capacity and ankle support; keep work area orderly
Heat stress	Follow heat stress information (Attachment 3); potential for heat stress will depend on season
Cold/hypothermia	Keep warm and dry, bring changes of clothes; do not work in extreme conditions without proper equipment and training; follow cold stress information (Attachment 3); potential for cold/hypothermia will depend on season
Material handling	Lift properly; seek assistance if necessary; do not overfill coolers or boxes
Noise	Wear ear protection when working around heavy equipment and other noise sources
Adverse weather	Seek shelter during electrical storms; work in adverse weather conditions only with proper training, clothing and equipment
Drowning	Wear PFD at all times when working over water. Inspect PFDs prior to use and do not use defective PFDs. Keep sampling equipment on boats organized at all times. Boats are required to be equipped with a throwable life ring, fire extinguisher, and warning horn, and each field member will be briefed on their storage location and use.
Work in remote areas	Use buddy system; carry radio and/or cellular phone; bring sufficient equipment in case of accident or injury (first aid kit, shelter if appropriate)
Plant/animal hazards	Know local hazards and take appropriate precautions (see Table 2-2)

Table 2-2 presents potential wildlife hazards that could be encountered during field activities.

Table 2-2. Potential Wildlife and Plant Hazards

Wildlife/Plant	Location	Potential Hazard	Means of Defense
Black Bear	Selkirk Mountains	Attack	If you come in contact with a black bear, stay calm and avoid eye contact. Try to stay upwind and identify yourself as a human being by standing up, talking, and waving your hands above your head. If you cannot safely move away from the bear and the animal does not flee, try to scare it away by clapping your hands or yelling. If the bear attacks, fight back aggressively. As a last resort if the attack continues, protect yourself by curling into a ball or lie on the ground on your stomach playing dead.
Grizzly Bear/ Brown Bear	Selkirk Mountains and border of Canada	Attack	If you are attacked by a grizzly bear, play dead. Lie flat on your stomach or curl up in a ball with your hands behind your head. Remain motionless as long as possible. Do not run.
Cougar	Everywhere	Attack	If you come in contact with a cougar, stop, stand tall, and don't run. Try to appear larger than the cougar. Never take your eyes off the animal or turn your back. If the animal displays aggressive behavior, shout, waive your arms, and throw rocks. If the cougar attacks, fight back aggressively and stay on your feet.
Moose	Everywhere	Between mother/calf	If you come in contact with a moose, step back. Look for the nearest tree, fence, or building or other obstruction to hide behind. It's usually a good idea to run from a moose because it usually won't chase you far. If a moose knocks you down, curl up in a ball, protect your head with your arms and hands, and hold still. Don't move or try to get up until the moose moves a safe distance away.
Bees/Wasps	Everywhere	Allergic reaction	Avoiding wearing bright colors or scents. Use an appropriate insect repellent. Wear long-sleeved shirt, hat, and gloves. Employees must notify supervisor if they have allergies to bee/wasp stings prior to engaging in field activities. Employees with allergies may be required to carry an appropriate antidote kit.
Ticks	Everywhere	Disease transmission	Use an appropriate insect repellant. Wear long sleeved clothing and ankle length boots and try to avoid excessive contact with tall brush or grass. Personnel should change clothes and inspect their skin and scalps for ticks after every day of field work. If individuals discover a tick embedded in their skin, it should be removed as soon as possible. Grasp the tick with a blunt pair of tweezers as close to the skin as possible and remove it using slow even pressure. Do not break off head or release fluids from the tick. Gently scrub the area with soap and water after removal. Note the date of the bite and watch for symptoms such as fever, chills, aches, and rashes for a month after the bite. If these symptoms occur, consult a doctor.
Rattlesnakes	Found East of Cascades	Bites	Wear ankle high leather boots, long sleeved shirts, and long pants. Do not reach into burrows or dens, under rocks, or logs. Walk heavily through brush. Back away if a snake is encountered. Take snake bite kit with a complete set of instructions. In case of a snake bite, seek prompt medical assistance. The injured employee should rest while awaiting (or being transported to) medical assistance.
Mosquitoes	Everywhere	West Nile Virus	Use an insect repellent containing N, N-diethyl-m-toluamide (DEET). Wear long-sleeved shirts, pants, and hat; spray clothing with insect repellent containing DEET. Avoid handling dead animals. The risk of getting West Nile Virus is very low. Symptoms include fever, headache, neck stiffness, stupor, disorientation, tremors, convulsions, muscle weakness, paralysis, and body aches. If you develop any of these symptoms, contact your health care provider.
Poison Ivy	Primarily along riverbanks	Allergic reaction	Poison ivy generally has three green leaves on each stem. The color and appearance can vary throughout the year. Avoid contact with all parts of the plant. Contact with the oily resins on the plant may cause a skin rash. The rash usually appears within 24-48 hours and can last for weeks. If poison ivy is contacted, remove the affected clothing and wash the skin with soap and water to remove the oil resins as soon as possible.

3 CHEMICAL HAZARD EVALUATION

Prior investigations conducted by state and federal agencies have identified constituents including inorganic chemicals (e.g., cadmium, copper, lead, mercury, zinc, and other metals/metalloids), as well as organic compounds such as dioxins, furans, and polychlorinated biphenyls (PCBs) within environmental media of the Site (USEPA 2004).

3.1 SEDIMENT CHEMICALS

As part of a screening level risk assessment for sediment exposure from limited recreational use at 15 popular beaches along Lake Roosevelt and the UCR (USEPA 2006b), EPA compared the maximum concentrations of all constituents for which EPA tested (including arsenic, lead, pesticides, and PCBs) against generic residential preliminary remediation goals (PRGs) developed by EPA Region 9 (Smucker 2004). Region 9 PRGs combine current human health toxicity values with standard exposure factors to estimate contaminant concentrations in environmental media (e.g., soil, air, and water) and are considered by EPA to be health protective of human exposures (including sensitive groups), over a lifetime. When used as a screening goal, the Region 9 values are intended to provide health protection without knowledge of the specific exposure conditions at a Site. Region 9 residential PRGs are more conservative (i.e., lower) than the corresponding Region 9 industrial PRGs, which apply to outdoor worker exposure scenarios.

Based on EPA's comparison to residential PRGs, maximum concentrations of seven constituents (antimony, arsenic, copper, iron, lead, manganese, and uranium) exceeded the residential PRG for at least one of the beaches sampled. Of these, only arsenic, with a maximum concentration of 74.4 milligrams per kilogram (mg/kg), exceeds the Region 9 industrial PRG.[2] The industrial PRG value for arsenic accounts for both ingestion and dermal exposures by an outdoor worker. For arsenic, the default industrial PRG is based on a cancer endpoint. For the short-term field worker exposures anticipated during RI/FS sampling activities, Region 9's industrial PRG for arsenic based on a noncancer endpoint is expected to be sufficiently health protective of technical team field workers. The noncancer industrial PRG for arsenic is 260 mg/kg, greater than the reported maximum for arsenic in beach sediment at the Site.

[2] Note: The maximum Site concentration of iron in beach sediments, 2.66E+5 mg/kg, exceeds the "max" screening value reported by Region 9, but is lower than the calculated risk-based concentration for iron, 3.1E+05 mg/kg. For those inorganic and semivolatile chemicals that are considerably less toxic, Region 9 specifies values at the "max" or "ceiling" limit when the calculated risk-based concentration exceeds 10 percent of the soil sample by weight. Iron is not expected to pose a health concern to field workers collecting beach/depositional area samples from the Site.

Because Region 9 PRGs will no longer continue to be updated, Region 10 currently recommends use of Region 6 human health medium-specific screening levels rather than Region 9 PRGs. The Region 6 (USEPA 2007) noncancer industrial soil screening level for arsenic (280 mg/kg) is comparable to the Region 9 industrial PRG and well above the maximum arsenic concentration of 74.4 mg/kg. Further, the maximum arsenic concentration is also well below EPA's soil screening level for inhalation of arsenic in fugitive dusts, 770 mg/kg (USEPA 2002). Based on comparison to these screening values, none of the beach sediment chemicals is expected to pose a threat to technical team field personnel during sampling activities.

3.2 SURFACE WATER CHEMICALS

Surface water data for metals and metalloids collected (between 1951 and 2005) from the Lake Roosevelt stations (Northport, Grand Coulee, and tributary mouths to Lake Roosevelt) were screened against EPA Region 6 human health medium-specific screening levels for tap water (USEPA 2007). The monitoring data from 1951 to 2005 had exceedances of total concentrations of five chemicals (arsenic, cadmium, lead, mercury, and phosphorus), which were only slightly higher than the tap water screening levels.

The Region 6 tap water screening levels (USEPA 2007) are highly conservative relative to the types of exposures that workers could experience at the Site during sampling activities. The screening levels assume chronic, lifetime exposure to the water as a residential drinking water source. A worker's exposure to chemicals in surface water during sampling activities would be limited to incidental ingestion. Based on this information, none of the surface water chemicals is expected to pose a threat to field personnel during sampling activities.

3.3 CHEMICAL PROPERTIES

Table 3-1 summarizes the historical maximum detected concentrations for antimony, arsenic, copper, iron, lead, manganese, and uranium in beach sediments of the Site. In addition, the table lists the properties of sample preservatives that may be used at the Site (i.e., nitric acid and hydrochloric acid). Health and safety related information including chemical properties and OSHA's permissible exposure limit (PEL), short-term exposure limit (STEL), and immediately dangerous to life and health (IDLH) level, for these and other chemicals that may be present during field activities are also summarized.

Table 3-1. Chemical-Specific Information

Chemical of Concern	Maximum Concentration[a]	Matrix	OSHA PEL	OSHA STEL (mg/m^3)	IDLH	Odor Threshold[b]	Carcinogen or Other Hazard
Acetone	Concentrated	Decon.	250 ppm	----	2,500 ppm	Fragrant, mint-like odor	F
Antimony	62.5 mg/kg	Sed.	0.5 mg/m^3	----	50 mg/m^3	----	
Arsenic (inorganic)	74.4 mg/kg	Sed.	0.01 mg/m^3	----	5 mg/m^3	Odorless	Ca, P
Copper	3,290 mg/kg	Sed.	1 mg/m^3	----	100 mg/m^3	Odorless	
Hydrochloric acid	Concentrated	Pres., decon.	5 ppm (ceiling)	----	50 ppm	Pungent irritating odor	P, R, Cor
Iron[c]	266,000 mg/kg	Sed.	5 mg/m^3	----	2,500 mg/m^3	----	
Lead	2,760 mg/kg	Sed.	0.05 mg/m^3	----	100 mg/m^3	Odorless	SCa, P
Manganese	4,920 mg/kg	Sed.	1 mg/m^3	5 (ceiling)	500 mg/m^3	----	
Nitric acid	Concentrated	Pres., decon.	2 ppm	4 ppm	25 ppm	Acrid, suffocating odor	P, R, Cor
Uranium	127 mg/kg	Sed.	0.05 mg/m^3	----	10 mg/m^3	----	Ca

Notes:

----	=	none established
Ca	=	carcinogen
Cor	=	corrosive
GW	=	groundwater
IDLH	=	immediately dangerous to life and health
IP(eV)	=	ionization potential
mg/kg	=	milligrams per kilogram
mg/m^3	=	milligrams per cubic meter
P	=	poison
Pres.	=	preservative
Decon.	=	decontamination
F	=	flammable
PEL	=	permissible exposure limit
ppm	=	parts per million
Pres.	=	preservative
R	=	reactive
SCa	=	suspected carcinogen
STEL	=	short-term exposure limit
Sed.	=	sediment

[a] Maximum concentrations reported for metals are based on EPA's 2005 beach sediment sampling results

[b] Source: NIOSH pocket guide to chemical hazards (NIOSH 2004)

[c] OSHA exposure limits are for iron (Fe) present as oxide dust and fume

3.4 CHEMICAL CHARACTERISTICS AND EXPOSURE ROUTES

Tables 3-2 and 3-3 summarize the potential chemical exposure routes at the Site and chemical characteristics. Material safety data sheets for preservatives and decontamination chemicals are provided in Attachment 4.

Table 3-2. Potential Chemical Exposure Routes at the Site

Potential Chemical Exposure Routes at the Site	Likely	Possible	Unlikely
Inhalation		A	S, N, H
Ingestion			S, N, H, A
Skin absorption		S, N, H, A	
Skin contact		S, N, H, A	
Eye contact		S, N, H, A	

Note:
A = acetone; Stand upwind in a well ventilated area and use Barrier® (LLDPE) gloves and safety goggles when handling acetone. Keep acetone away from ignition sources at all times.
S = Site chemicals
N = nitric acid; Nitric acid is corrosive and reactive. Care should be taken to avoid skin contact. Wear neoprene gloves and safety goggles when handling nitric acid (do not overfill bottles). Keep an eye wash bottle and water nearby when using acids.
H = hydrochloric acid; Hydrochloric acid is corrosive and reactive. Care should be taken to avoid skin contact. Wear neoprene gloves and safety goggles when handling hydrochloric acid (do not overfill bottles). Keep an eye wash bottle and water nearby when using acids.

Table 3-3. Chemical Characteristics

	Yes	No
Corrosive	N, H	S, A
Ignitable	A	S, N, H
Reactive	N, H	S, A
Volatile	A	S, N, H
Radioactive		S, N, H, A
Explosive		S, N, H, A
Biological agent		S, N, H, A
Particulates or fibers		S, N, H, A

Note:

A = acetone; Stand upwind in a well ventilated area and use Barrier® (LLDPE) gloves and safety goggles when handling acetone. Keep acetone away from ignition sources at all times.

S = Site chemicals

N = nitric acid; Nitric acid is corrosive and reactive. Care should be taken to avoid skin contact. Wear neoprene gloves and safety goggles when handling nitric acid (do not overfill bottles). Keep an eye wash bottle and water nearby when using acids.

H = hydrochloric acid; Hydrochloric acid is corrosive and reactive. Care should be taken to avoid skin contact. Wear neoprene gloves and safety goggles when handling hydrochloric acid (do not overfill bottles). Keep an eye wash bottle and water nearby when using acids.

4 PERSONAL PROTECTIVE EQUIPMENT AND SAFETY EQUIPMENT

The PPE and safety equipment required for each task are presented in each SHSP addendum to this plan. Protection level D or modified D (MD) PPE is anticipated for all Site fieldwork (Table 4-1).

Personal floatation devices (PFDs) will be worn by personnel working close enough the water to potentially fall in.

Table 4-1. General Levels of Protection and Personal Protective Equipment

Protection Level	Personal Protective Equipment
Level D	Long pants and shirt or work coveralls, safety glasses or goggles (as appropriate), and nitrile, neoprene, or LLDPE gloves (as appropriate). Hard hat and hearing protection as needed.
Level MD	Same as Level D with modification (M) of addition of life vest and/or rain gear.

5 AIR MONITORING

Air monitoring is not expected to be necessary for any of the Site activities. If air monitoring is required for a future task, it will be presented in the addenda to this plan.

6 HEALTH AND SAFETY TRAINING AND HOSPITAL INFORMATION

6.1 HEALTH AND SAFETY TRAINING

Although this is not a hazardous waste site, state and federal laws establish training requirements for workers at uncontrolled hazardous waste sites (including areas where accumulations of hazardous waste create a threat to the health and safety of an individual, the environment, or both).

6.1.1 Training and Medical Monitoring Requirements

Consultant and subcontractor personnel who work with hazardous chemicals (e.g., decontamination acids or solvents) are required to complete the training requirements in Table 6-1 prior to working at the Site.

Table 6-1. Training and Medical Requirements

Task	General Safety Training	HAZWOPER Training[a]	First Aid/ CPR[b]	Medical Monitoring
Field Supervisor			X	
Field Scientists	X[c]	X[d]	X	
Subcontractors	X[c]	X[d]		

[a] Annual refresher courses are required to maintain certification.

[b] At least one member of each team of two or more people and all supervisors onsite must be first aid/CPR trained.

[c] All staff will receive a detailed briefing on site-specific health and safety issues prior to each field sampling event. This briefing will include, but not limited to, discussions on physical hazards, boat safety, safe handling of decontamination chemicals and preservatives, and spill containment.

[d] The Site is not a hazardous waste site; however, Teck field staff will have HAZWOPER training, but it is not required for oversight activities.

6.1.2 Medical Monitoring

OSHA requires medical monitoring for personnel potentially exposed to chemical hazards in concentrations in excess of the PEL for more than 30 days per year[3] and for personnel who must use respiratory protection for more than 30 days per year. The Consultants require medical monitoring for all employees potentially exposed to chemical hazards. Medical monitoring is not anticipated to be necessary for work activities at the Site.

[3] Days may or may not be consecutive.

Will the Consultant and subcontractor[4] personnel working at this Site be enrolled in a medical monitoring program? Yes _____ No X

6.2 SITE SAFETY MEETINGS

Site safety meetings must be held before new tasks begin or when new staff enter the Site. Site safety meetings should be held at a minimum of once a week and should be held daily on large projects (the frequency of site safety meetings will be stipulated in each SHSP addendum). Tailgate safety meetings should occur every morning during review of the day's work plan, communications, emergency information, weather, covering specific hazards which may be encountered that day and any other pertinent topics. Additional meetings will be held at any time health and safety concerns are raised by any of the personnel. Attendance and topics covered are to be documented in the field log book.

6.3 EMERGENCY PLANNING

A list of area hospitals is presented in Table 6-2. A general hospital location map is presented in Attachment 1. Detailed emergency planning information for each task is provided in addenda to this plan. The emergency response (E911) coordinator for the appropriate county(s) will be notified of where and when the field work will be conducted. Contact information for the E911 coordinators is presented in the addenda to this plan. A satellite phone may be necessary for areas that do not have cell phone coverage.

Table 6-2. Washington State Hospital Information

Facility Name	Hours of Operation	Phone Number	Address	City
Coulee Community Hospital	24 hour emergency	509-633-1753	411 Fortuyn Road	Grand Coulee
Ferry County Memorial Hospital	24 hour emergency	509-775-3333	36 Klondike Road	Republic
Lincoln Hospital	24 hour emergency	509-725-7101	10 Nichols Street	Davenport
St Joseph's Hospital	24 hour emergency	509-935-8211	500 East Webster Street	Chewelah
Mount Carmel Hospital	24 hour emergency	509-684-2561	982 East Columbia Street	Colville

[4] Medical surveillance is not required because this is not a hazardous waste site. If medical surveillance is required for future tasks, the requirements will be presented in addenda to this plan.

Table 6-2. Washington State Hospital Information

Facility Name	Hours of Operation	Phone Number	Address	City
Deer Park Hospital	24 hour emergency	509-276-5061	East 1015 'D' Street	Deer Park
Deaconess Medical Center-Spokane	24 hour emergency	509-473-7178	800 West Fifth Avenue	Spokane
Holy Family Hospital	Dependent on case	509-482-0111	North 5633 Lidgerwood Avenue	Spokane
Sacred Heart Medical Center	24 hour emergency	509-474-3131	West 101 Eighth Avenue	Spokane
Veterans Affairs Medical Center	7:30 am-4:00 pm	509-434-7032	North 4815 Assembly Street	Spokane

7 WORK ZONES

Work zones are specific to each task and are presented in each SHSP addendum to this plan.

8 DECONTAMINATION

To prevent the distribution of contaminants outside the exclusion zone—any area of the Site where hazardous substances are present, or are reasonably suspected to be present, and pose an exposure hazard to personnel—and to prevent the cross-contamination of samples, the following procedures will be used to decontaminate sampling equipment. In addition, personal hygiene guidelines should be followed to prevent personnel from coming into contact with contaminants during work at the Site or after leaving the Site.

The procedures presented in this section are generalized. Any task-specific deviations are discussed in addenda to this plan.

8.1 GENERAL DECONTAMINATION PROCEDURES

After sampling is completed, the exclusion zone will be used as the contaminant reduction zone (CRZ) for decontamination activities.

To minimize or prevent personal exposure to hazardous materials, all personnel working in the exclusion zone and CRZ will comply with the following decontamination procedures:

- Sampling and decontamination gloves will be removed and placed in a garbage sack for proper disposal at a solid waste landfill.

Personnel will routinely wash hands and face prior to eating, using chewable tobacco products, or engaging in other hand-to-mouth activities. Items required for decontamination activities at the Site include the following:

- Buckets or tubs
- Potable or river water
- Deionized water
- Scrub brushes
- Liquinox® or Alconox® detergent
- Nitric acid (specially purified for low metals content)
- Acetone (pesticide-residue grade).

All non-disposable components of the sampling equipment (e.g., stainless steel spoons and bowls) that contact environmental media from the study Site (e.g., sediment, fish tissue, surface water) will be decontaminated using the following steps:

1. Potable or river water rinse
2. Alconox® or Liquinox® detergent wash
3. Tap water or river water rinse
4. Deionized water rinse
5. 1 Molar (M) nitric acid (metal-free) rinse
6. Deionized water rinse
7. Pesticide-residue grade acetone rinse
8. Air dry
9. Deionized water rinse.

Appropriate PPE will be worn during decontamination activities. Nitric and hydrochloric acids are corrosive and reactive so care should be taken to avoid skin contact. Wear neoprene gloves and safety goggles when using nitric and hydrochloric acid. Keep an eye wash bottle and water nearby when using acids. Stand upwind in a well ventilated area and wear Barrier® (LLDPE) gloves and safety goggles when using acetone. Keep acetone away from ignition sources at all times.

The small amounts of decontamination wastewaters (i.e., detergent wash and rinse waters) that are generated will be transferred to appropriate containers and disposed of in accordance with applicable regulations. These will not be poured on the ground or poured or allowed to run into the river unless otherwise specified within an addendum.

8.2 PERSONAL HYGIENE

The following personal hygiene practices will be used at the Site to reduce exposure to chemicals.

- Long hair will be secured away from the face so that it does not interfere with any activities.
- All personnel leaving potentially contaminated areas will wash their hands, forearms, and faces in the CRZ prior to entering any clean areas or eating areas.
- No person will eat, drink, or chew gum or tobacco in the exclusion or contaminant reduction zones (as defined in the addenda to this plan). Drink containers and drinking of replacement fluids for heat stress control will be permitted only outside of these areas. Smoking is prohibited in all areas of the Site because of the potential for contaminating samples and for health and safety reasons.
- Appropriate gloves will be worn when collecting or handling samples and during decontamination activities.

9 VEHICLE AND BOATING SAFETY, SPILL CONTAINMENT, AND SHIPPING INSTRUCTIONS

9.1 VEHICLE SAFETY

The Site vehicle safety program requires the following:

- All vehicles are to be operated in a safe manner and in compliance with statutory traffic regulations and ordinances.
- Operators are to practice defensive driving and drive in a courteous manner.
- Operators are required to have a valid driver's license and liability insurance (per local state laws).
- Seat belts are to be worn by the driver and all passengers.
- No persons are allowed to ride in the back of any trucks or vans, unless equipped with seatbelts.
- Vehicles are to be driven in conformance with local speed limits.
- Personnel who are impaired by fatigue, illness, alcohol, illegal or prescription drugs, or who are otherwise physically unfit, are not allowed to drive.
- Personnel are to avoid using cellular phones or engaging in other distractions while driving.
- All Consultant-owned field vehicles are to be maintained in a safe and clean condition.
- All Consultant-owned field vehicles are to be equipped with the following
  - First-aid kit
  - Fire extinguisher
  - Flares
  - Spare tire and jack
  - Other equipment as required for the project (e.g., tire chains, towing cable, tools, cellular phone or radio, jumper cables).
- Motor vehicle accidents are to be reported to the responsible law enforcement agency, the appropriate Consultant's human resources manager (Integral: Alison Brown [303-404-2944 ext. 11]; Parametrix: Ryan Hemingway 425-458-6202]), as well as the Consultant's corporate health and safety officers (Integral: Eron Dodak [503-284-5545 ext. 14]; Parametrix: Sheila McConnell [425-452-8655]) within 24 hours of the occurrence.
- Employees who have experienced work-related vehicle accidents or citations may be required to complete a defensive driving program.

9.2 BOATING SAFETY

The Site boating safety program requires the following:

Personnel will wear PFDs at all times when working over water. Personnel will inspect the PFDs prior to use and not use defective PFDs.

The boat operator must have training in the safe operation of the boat.

No smoking is allowed on boats or near refueling activities.

Personnel will keep sampling equipment on boats organized at all times.

Boats are required to be equipped with a throwable life ring, fire extinguisher, first aid kit, eyewash bottle and water (if acids are taken on the boat), drinking water (for long trips), alternate propulsion mechanism (e.g., paddles), rope, and warning horn, and each field member will be briefed on their storage location.

All equipment must be used in accordance with the manufacturers' recommendations.

9.3 SPILL CONTAINMENT

Provisions must be made for spill containment at any site where bulk liquids will be handled.

Will the proposed fieldwork include the handling of bulk liquids, oil, or chemicals (other than water)?	Yes	X	No	

If yes, describe spill containment provisions for the Site:	A spill kit containing neoprene and Barrier® LLDPE gloves, safety goggles, sodium bicarbonate, and water will be carried with the field crew if nitric acid or acetone are used for decontamination. Decontamination will be conducted over a tub to catch any spills. All spills will be cleaned up with absorbent pads or neutralized with sodium bicarbonate and disposed of in accordance with applicable regulations.

9.4 SHIPPING INFORMATION

Federal laws and international guidelines place restrictions on what materials may be shipped by passenger and cargo aircraft. In addition, 49 CFR regulates labeling, manifesting, and shipment of all packages containing potentially hazardous materials. In the course of this field investigation, the items shown in Table 9-1 will be shipped to and from the Site.

Table 9-1. Shipping Information

Item	Potentially Hazardous Constituent	Quantity	Packaging	How Shipped
Samples	Metals	Varies by task	Coolers	FedEx, UPS[5], or field vehicle
Decontamination fluid	Acetone	Approximately 1 gallon	Glass bottle in a cooler	FedEx, UPS, or field vehicle
Decontamination fluid	Nitric acid	Approximately 1 gallon	Glass bottle in a cooler	FedEx, UPS, or field vehicle
Preservatives	Nitric and hydrochloric acids	Varies by task	Sample containers in coolers	FedEx, UPS, or field vehicle

A 24-hour emergency response number (on any shipping documents such as a Uniform Hazardous Waste Manifest, Shipper's Declaration of Dangerous Goods, etc.) is required for shipments of all dangerous or hazardous goods. The Consultants do not have a 24-hour emergency contact number for dangerous or hazardous goods shipment. No dangerous or hazardous goods may be shipped by the Consultants. If any hazardous or dangerous goods need to be shipped for the project, they must be shipped directly to the Site by the supplier. Any hazardous or dangerous goods that are not used in the course of the field effort must remain at the Site or be disposed of in accordance with applicable regulations.

[5] United Parcel Service

10 TASK SPECIFIC SAFETY PROCEDURES

Task-specific safety procedures are presented in each SHSP addendum to this plan.

11 REFERENCES

NIOSH. 2004. NIOSH pocket guide to chemical hazards. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Cincinnati, OH.

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USEPA. 2002. Soil screening guidance. Appendix A. Generic SSLs for the residential and commercial/industrial scenarios.
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USEPA. 2004. Draft Upper Columbia River Site RI/FS scoping plan. Prepared by CH2M HILL and Ecology and Environment, Inc. (Contract No. 68-S7-04-01). EPA/630/P-04/068B. August 2004. U.S. Environmental Protection Agency, Region 10, Seattle, WA.

USEPA. 2006a. Phase I Sediment Sampling Data Evaluation - Upper Columbia River Site CERCLA RI/FS. Draft Final. August 2006. U.S. Environmental Protection Agency, Washington, DC.

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