Environmental Engineering and Consulting
Remediation and Management Services

SITE-SPECIFIC HEALTH AND SAFETY PLAN

FOR

IDENTIFICATION AND CONFIRMATION OF SOILS REQUIRING LONG TERM MANAGEMENT

FOR

VALMONT BUTTE SITE
BOULDER, COLORADO

May 23, 2009

Prepared For:

City of Boulder
1720 13th Street
Boulder, Colorado 80306

Prepared By:

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PLAN ACCEPTANCE FORM

All CRI personnel, with their signature below, acknowledge they have been informed of the identified contamination at the Valmont Butte Site and that they have been instructed with regard to necessary health and safety for this project. CRI and CRI contractor personnel also acknowledge that they have read and understand the health and safety plan, herein.

Name (Print)	Signature/Date/Company

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SUMMARY OF SITE SPECIFIC HEALTH AND SAFETY PLAN
FOR
VALMONT BUTTE - IDENTIFICATION AND CONFIRMATION OF SOILS REQUIRING LONG TERM MANAGEMENT

KEY PERSONNEL

Project Director:	Paul Casey - Casey Resources, Inc. (CRI)
Client Project Manager:	Mr. Bill Boyes - City of Boulder
Project Manager:	Terry McGowan – CRI
Site Field Manager:	Dave Phillips - CRI
Corporate Safety Officer:	Terry McGowan - CRI
Site Safety Officer:	Dave Phillips – CRI

WORK ACTIVITIES

The purpose of the project is to screen the surface soil on the Property to identify any areas that may exhibit radiation levels and/or heavy metal concentrations above selected action levels. The field activities include:

- The areas outside of the tailings impoundment areas will be gridded and staked in a square grid pattern (grid size will vary from 50 feet to 200 feet based on radiation and/or heavy metal findings from previous studies);
- An initial radiation screening will be performed by traversing the center of the gridded area with radiation detection equipment;
- After the initial surface radiation screening is complete, areas of concern that need further characterization (both areal and depth extents) will have soil samples taken for laboratory analysis (samples will be taken from 0 to 24 inch depths as necessary);
- Initial heavy metals screening will be performed by taking soil samples (five samples per grid) from the top 6 inches of soil and performing X-ray Fluorescence (XRF) analysis of these samples and at specific intervals, confirmatory laboratory analysis; and
- After initial surface radiation screening is complete areas of concern that need further characterization (both areal and depth extents) will have soil samples taken for XRF analysis and laboratory confirmatory analysis as prescribed (samples will be taken from 6 to 24 inch depths as necessary)

Some structures remain at the Property and previous investigations indicated that all asbestos containing material, hazardous materials, and non-hazardous materials have been removed from

these structures. However, for confirmation purposes, the mill and associated buildings on the Property will be inspected to assess whether any impacted materials remain within these structures.

HAZARD EVALUATION

- Toxic Hazards – Potential of elevated metal concentration is surface soil, specifically lead concentration.
- Biological Hazards – Potential of poisonous snakes, biting insects, birds and rodents in buildings and insects carrying infectious diseases.
- Heat and cold stress – Specifically heat stress.
- Radiological Hazard – Potential of low level radiation.
- Physical Hazards – Unsafe buildings, confined spaces, steep slopes, uneven ground and holes (slips, trips, and falls).

WORK ZONES (CONTROL)

Work zone site control is not anticipated. If contamination is identified during work activities and contamination levels are deemed sufficiently high as to require a PPE upgrade, the site work area will be delineated into three contiguous zones:

1) Exclusion Zone (contaminated area)
2) Contamination Reduction Zone (CRZ)
3) Support Zone

Access to the Property will be controlled. Visitors will not be allowed onsite unless approved by the City of Boulder.

AIR MONITORING REQUIREMENTS

Air monitoring is not anticipated to be necessary during completion of the soil sampling and screening.

PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) will be worn to protect field personnel from known or suspected biological, atmospheric, soil, or water-borne contamination. The levels of personal protection to be employed for work tasks have been selected based upon known or anticipated concentrations of contaminants, which may be encountered, their chemical properties, toxicity, exposure routes, and contaminant matrix. All site workers and other authorized personnel performing work at this Site in support of the work will wear the following prescribed task-specific PPE.

Modified level D PPE for field work:

- Leather work boots
- Heavy material pants with legs sufficiently long to cover the boots
- Long sleeved work shirt
- The pants will be taped over the boots in such a manner as to limit entry of ticks, fleas, etc
- Insect spray containing DEET shall be sprayed, at a minimum, on the pant cuff area and the shirt sleeve cuff area

RESPIRATORY PROTECTION REQUIREMENTS

No respiratory protection equipment is required for this project.

DECONTAMINATION

Decontamination of equipment and vehicles is required per the Revised Work Plan and Section 7.0 herein.

EMERGENCY – HOSPITAL LOCATION

Boulder Community Hospital
4747 Arapahoe Avenue
Boulder, CO 80303

A map to the hospital is shown in Figure 1 herein.

Driving directions to the clinic are as follows:

- When leaving the Site, travel 1 mile south on North 63rd Street
- Turn right on Arapahoe Avenue and travel west
- Hospital is 1.5 miles on the right side of Arapahoe Avenue

Total Drive time estimated at 4 minutes

1.0 INTRODUCTION

This health and safety plan (hereafter referred to as "Plan" or "HSP") has been prepared for work activities at the Valmont Butte property as outlined in the Revised Work Plan for Identification and Confirmation of Soils Requiring Long Term Management dated May 13, 2009. The Valmont Butte property ("Property" or "Site") is located approximately four miles east of Boulder, Colorado and east of the intersection of Valmont Road and North 63rd Street (Figure 1).

1.1 PURPOSE AND SCOPE

This HSP describes the health and safety requirements for Casey Resources, Inc. (CRI) personnel involved in soil sampling and other work activities at the Site. This Plan is based on current pertinent State and Federal regulations as well as safety considerations proven effective through past experiences.

Because it is not feasible to identify all possible hazards or all necessary precautions in a dynamic operation of this nature, this document addresses those fundamental issues of known, anticipated, or potential concern. It is the responsibility of all field team members to evaluate the work conditions and, if in doubt about the safety of an operation, request assistance. This document will be updated and revised as necessary, or addendums added, to account for provisions to handle unknown or unanticipated conditions encountered during the execution of remedial operations.

Throughout this document the acronym CSO applies to the CRI Corporate Safety Officer and SSO applies to the Site Safety Officer.

1.2 APPLICABILITY

1.2.1 Project Management Team

Compliance with this Plan is required for all CRI personnel. As such, all field personnel are required to be familiar with its details and implications, and to formally review the plan prior to implementation of fieldwork. As evidence of this, all field personnel are required to sign a "Plan Acceptance Form" for this Plan prior to working in areas of the site where contaminants could be encountered.

1.2.2 Other Contractors

CRI personnel may employ independent contractors to provide equipment and/or services on site. Subcontractors performing work activities under contract with CRI shall also be familiar with this HSP, its details and implications, and to formally review the plan prior to implementation of fieldwork. As evidence of this, all field personnel are required to sign the "Plan Acceptance Form" prior to working in areas of the Site where contaminants and other hazards could be encountered.

Subcontractors are responsible for complying with the terms and conditions of their contract and with their own corporate HSP for any hazards specific to their work. Subcontractors are solely responsible for supervising their employees and maintaining safe working conditions at the work site.

The CRI personnel are not obligated to, but, may stop a subcontractor's operation, which presents an imminent hazard to CRI personnel, the general public, the client, or the subject property. CRI personnel are not responsible for developing, implementing or enforcing any other site-specific health and safety program. As such, this HSP covers only CRI personnel.

1.3 KEY PERSONNEL/RESPONSIBILITIES

1.3.1 Project Director

The Project Director (PD) has a project oversight and quality assurance review responsibility. The PD will provide periodic site inspections of the CRI operation to evaluate performance and compliance with the scope-of-work, and associated requirements such as the Health & Safety Plan described herein.

1.3.2 Client Project Manager

The Client Project Manager for the City of Boulder is Mr. Bill Boyes. He will be CRI's direct contact with the City of Boulder. His primary responsibilities concerning this HSP are:

- Providing access to the Site for CRI and CRI contract personnel;
- Provide progress reports to the City of Boulder as necessary;
- Discuss any City of Boulder issues regarding the field work to the CRI Project Manager;
- Discuss any new project developments that CRI should be aware; and
- Communicate with the Northern Arapaho archaeology monitor regarding Site activities.

1.3.3 Project Manager

The Project Manager (PM) is responsible for the implementation of the HSP on this project. The PM coordinates health and safety activities during the project by seeking advice and support as required to implement the Plan. Responsibilities include:

- Reviews and approves the HSP;
- Obtains necessary/specified monitoring and protective equipment;

- Monitors safety performance of all project personnel for compliance with the project HSP;

- Requires correction of unsafe work practices or conditions and documents these corrections;

- Issues stop work orders when site conditions are considered to be unsafe and hazardous to personnel;

- Makes necessary revisions or updates to HSP.

1.3.4 Site Safety Officer

The Site Safety Officer's (SSO) primary responsibility is to oversee team compliance with the HSP. The SSO:

- Implements the project HSP and informs the PM of any additions or modifications that may be appropriate;

- Verifies that assigned personnel have current Fit-For-Duty medical and training authorizations;

- Determines that equipment is used properly and is calibrated in accordance with manufacturer's instructions or other standards, and that results are properly recorded and filed;

- Provides ongoing review of the protection level needs as project work is performed, and informs the PM and field personnel of the need to upgrade/downgrade protection levels as appropriate;

- Corrects any unsafe or potentially unsafe working conditions, or stops work in emergencies until such conditions are correct;

- Responsible for the completion, and transmittal to the PM, of an accident report form after any accident or incident on site;

- Conducts site safety briefings prior to the initiation of each field project/task, or at other times as necessary;

- Establishes site communications network and maintains a log of site activities;

- Coordinates emergency care, evacuation, and rescue as required.

1.3.5 Project Field Staff

The field staff includes CRI and subcontract personnel who will complete the work activities and who will be exposed to the potential physical and chemical hazards of the Site. Each member of the staff:

- Signs the Plan Acceptance Form, thereby indicating that he/she has read, understands, and will abide by the project HSP;
- Takes all reasonable precautions to prevent injury to himself/herself and to his/her fellow employees;
- Reports any deviations from the anticipated conditions described in the HSP and reports any accidents and/or unsafe conditions to the SSO for action; and
- Properly decontaminates field equipment prior to leaving the site.

2.0 SITE HISTORY AND PROJECT DESCRIPTION

2.1 SITE HISTORY

The Property is located southeast of the intersection of Valmont Road and North 63rd Street approximately 4 miles east of downtown Boulder, Colorado. The Mill Property occupies an area of approximately 101 acres.

Historically there was a processing plant located on the western end of the Property for the milling of fluorspar and gold ores. The waste rock slurry, or tailings, from the processing plant were deposited in two tailings impoundments located on the east side of the Property and referred to as the primary and secondary tailings impoundments.

In 1971, Allied Chemical Corporation (Allied Chemical) obtained a modification to its Radioactive Materials License issued by the Colorado Department of Health (currently the Colorado Department of Public Health and Environment ["CDPHE"]). This modification allowed for the transportation and burial on the Property of up to 1,500 cubic yards of radium-226 contaminated demolition debris from a construction project in the City. This material was disposed in a 90-foot diameter pit located west of the primary tailings impoundment (Boulder City-County Health Department, 1976).

Tusco Corporation (Tusco) purchased the Property in 1977. From approximately 1977 to 1985, Hendricks Mining Company (Hendricks) leased the Property from Tusco for processing gold ore. Tailings from the gold ore processing were deposited on top of the fluorspar tailings in the primary impoundment and consisted predominantly of silica sand. According to CDPHE, after milling operations ceased, Tusco placed approximately one to two feet of clean soil on the tailings impoundments and seeded the area.

The Property was purchased by Valmont Butte Corporation in 1994. Valmont Butte Corporation proposed to remediate the Property through capping the primary and secondary tailings impoundments with clean fill and to attach covenant restrictions to the Property to protect the remediation cap. Valmont Butte Corporation continued to place fill material over the tailings and completed excavation of impacted soil from around the Property based on radiation surveys conducted by CDPHE in 1998 and 1999.

In October 1999, CDPHE and the then current land owner entered into an "*Agreement and Declaration of Covenants*" to ensure protection of public health and the environment through maintenance of the tailings impoundments and inert cap cover and through other covenant restrictions.

2.2 CONTAMINANTS OF CONCERN

Based on Site history and previous studies completed at the Site, the "contaminants of concern" include potential areas of elevated radiation and heavy metal concentrations in surface soils. These "contaminants of concern" resulted from burial of radium-226 contaminated demolition debris and processing of fluorspar and gold ores.

2.3 PROJECT DESCRIPTION

The purpose of the project is to screen the surface soil on the Property to identify all areas that may exhibit radiation levels and/or heavy metal concentrations above selected action levels. These data will be used in the development of a Voluntary Cleanup Plan (VCUP) to remediate the Property. To accomplish the sampling program, the following tasks will be performed:

- The areas outside of the tailings impoundment areas will be gridded and staked in a square grid pattern (grid size will vary from 50 feet to 200 feet based on radiation and/or heavy metal findings from previous studies);

- An initial radiation screening will be performed by traversing the center of the gridded area with radiation detection equipment;

- After the initial surface radiation screening is complete, areas of concern that need further characterization (both areal and depth extents) will have soil samples taken for laboratory analysis (samples will be taken from 0 to 24 inch depths as necessary);

- Initial heavy metals screening will be performed by taking soil samples (five samples per grid) from the top 6 inches of soil and performing X-ray Fluorescence (XRF) analysis of these samples and at specific intervals, confirmatory laboratory analysis; and

- After initial surface radiation screening is complete areas of concern that need further characterization (both areal and depth extents) will have soil samples taken for XRF analysis and laboratory confirmatory analysis as prescribed (samples will be taken from 6 to 24 inch depths as necessary)

Some structures remain at the Property and previous investigations indicated that all asbestos containing material, hazardous materials, and non-hazardous materials have been removed from these structures. However, for confirmation purposes, the mill and associated buildings on the Property will be inspected to assess whether any impacted materials remain within these structures.

3.0 TASK SAFETY AND HAZARD ASSESSMENT

3.1 CHEMICAL HAZARDS

The City completed a removal of chemicals from the Property in 2006. Hazards associated with stored chemicals are not anticipated.

3.1.1 Fire Hazards

Combustibility

Combustibility is the ability of a material to act as a fuel, that is, to burn. Materials that can be easily ignited and sustain a flame are considered to be combustible, while those that do not are called noncombustible. Three elements are required for combustion to occur: fuel, oxygen, and heat. The concentration of the fuel and oxygen must be high enough to allow ignition and maintain the burning process. Combustion is a chemical reaction that requires heat to proceed:

heat
fuel + oxygen ---------- products

Heat is supplied by the ignition source and is maintained by the combustion, or it must be supplied from an external source. Most fires can be extinguished by removing one of these components. For example, water applied to a fire removes the heat, thereby extinguishing the fire. When a material by itself generates enough heat to self-ignite and combust, spontaneous combustion occurs, either as a fire or explosion.

Flammability

Flammability is the ability of a material (liquid or gas) to generate a sufficient concentration of combustible vapors under normal conditions to be ignited and produce a flame. It is necessary to have a proper fuel-to-air (oxygen) ratio (% fuel in air) to allow combustion. There is a range of fuel concentrations in air for each material where it can be ignited and maintain combustion. This is called the Flammable Range. The lowest concentration of fuel in this range is the Lower Flammable Limit (LFL). Concentrations less than the LFL are not flammable because there is too little fuel - that is, the mixture is too "lean". The highest ratio that is flammable is the Upper Flammable Limit (UFL). Concentrations greater than the UFL are not flammable because there is too much fuel displacing the oxygen (or too little oxygen). This mixture is too "rich". Fuel concentrations between the LFL and the UFL are optimum for starting and sustaining fire.

A flammable material is considered highly combustible if it can burn at ambient temperatures. But a combustible material is not necessarily flammable, because it may not be easily ignited or the ignition maintained.

Gas or Vapor Explosions

A gas or vapor explosion is very rapid, violent release of energy. If combustion is extremely rapid large amounts of kinetic energy, heat, and gaseous products are released. The major factor contributing to the explosion is the confinement of a flammable material. When vapors or gases cannot freely dissipate, they enter the combustion reaction more rapidly. Confinement also increases the energy associated with these molecules, which enhances the explosive process. Poorly ventilated buildings, sewers, drums, and bulk liquid containers are examples of places where potentially explosive atmospheres may exist.

Explosive gases/vapors exhibit an explosive range, which is the same as the flammable range. The upper explosive limit (UEL) and lower explosive limit (LEL) are the UFL and LFL, but in confined areas.

3.1.2 Explosive Hazards

Explosives

An explosive is a substance that undergoes a very rapid chemical transformation producing large amounts of gases and heat. The gases produced (for example nitrogen, oxygen, carbon monoxide, carbon dioxide, and steam) due to the heat produced, rapidly expand at velocities exceeding the speed of sound. This creates both a shockwave (high pressure wave front) and noise.

Types of Explosive Hazards

a. High or detonating: Chemical transformation occurs very rapidly with detonation rates as high as 4 miles per second. The rapidly expanding gas produces a shock wave, which may be followed by combustion.

b. Primary high explosive: Detonating wave produced in an extremely short period of time. May be detonated by shock, heat, or friction.

c. Secondary high explosive: Generally needs a booster to cause them to detonate. Relatively insensitive to shock, heat, or friction.

d. Low or deflagrating: Rate of deflagration up to 1000 feet per second. Generally combustion followed by a shock wave.

3.1.3 Toxic Hazards

Sampling results from the site indicate that the primary toxic hazards are from lead and arsenic. During the history of the Site and its operation, petroleum hydrocarbons were used on Site. However, there are no reports of spills and no evidence of any contamination by petroleum hydrocarbons was reported in any of the previous site assessments.

3.1.4 Toxicology of Suspected Contaminants

Lead exposure can cause weakness, lassitude, insomnia, eye and facial pallor, anorexia, weight loss, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremors, wrist and ankle paralysis, encephalopathy, kidney disease, eye irritation, and hypotension. Affected organs: eyes, gastrointestinal tract, central nervous system, kidneys, blood, and is a reproductive hazard. Instead of dose-based toxicity criteria, potential risk associated with lead exposure is assessed by means of blood lead levels. Blood lead levels increase due to the amount and duration of exposure. Lead will be eliminated from the blood without continued exposure. The half-life of lead in the blood is approximately 30 days.

Arsenic exposure can cause ulceration of the nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyper-pigmentation of the skin, and is a potential occupational carcinogen. Affected organs are the liver, kidneys, skin, lung and lymphatic cancer.

Since this sampling project is expected to be a short term activity, and the primary mechanisms for exposure are dermal contact with lead/arsenic contaminated soil and only limited potential of inhalation of lead/arsenic contaminated dust, washing hands and showers after work should adequately protect the worker from excessive exposure (lead/arsenic toxicity).

3.1.5 Chemical Exposure

Preventing exposure to toxic chemicals is a primary concern at sites where hazardous chemicals have been used, stored, or spilled. Chemical substances in gaseous, liquid, or solid form can enter the body by inhalation, skin absorption, ingestion, or through a puncture wound (injection). A contaminant can cause damage at the point of contact or can act systemically in a different part of the body. Chemical exposures may result in acute or chronic effects. Although various chemicals have been used in ore processing during the history of the Site, no know chemicals are present at the Site. However, caution should be taken, especially when performing the building inspections, to avoid any exposure to unknown substances encountered.

Acute and Chronic Effects

"Acute" effects produce symptoms during or shortly after exposure to a sufficiently high concentration of the contaminant. The concentration causing the effects varies from chemical to chemical.

"Chronic" effects result from exposure to relatively low concentrations of a contaminant over a long period of time and may not become apparent for years. Chronic effects vary by chemical, duration of exposure and number of exposures. The same chemical compound may produce acute effects that are completely different from those resulting from chronic exposure.

Toxic effects from chronic and acute exposures can be temporary and reversible, or they can be permanent resulting in death. Some chemicals cause obvious symptoms such as burning, coughing, nausea, watery eyes, or rashes. Others can cause health damage without any warning signs (this is a main concern of chronic exposures to low concentrations). Health effects such as cancer or respiratory disease may not be detectable or apparent for several years or even decades after exposure. In addition, some toxic chemicals may be colorless or odorless, may dull the sense of smell, or may not produce any immediate or obvious physiological sensations. Thus, a worker's senses are not always an effective warning signal of potential toxic exposure.

The effects of exposure not only depend on the chemical, its concentration, route of entry, and duration of exposure, but may also be influenced by personal factors such as the individual's smoking habits and alcohol consumption.

Inhalation

A major concern at sites with suspected contamination is chemical exposure by inhalation since the lungs are extremely vulnerable to chemical agents. In addition, substances can pass through lung tissue into the bloodstream and on to other susceptible areas of the body. Since some toxic chemicals are not detectable by human senses, their toxic effects may not produce any immediate symptoms. Respiratory protection is therefore extremely important if there is a possibility that the work site atmosphere may contain such hazardous substances.

Direct Contact

The skin and eyes also represent important routes of exposure. Some chemicals directly affect the skin, while others may pass through the skin into the bloodstream where they can be transported to other vulnerable organs. Skin absorption is enhanced by abrasions, cuts, heat, and moisture. The eye is particularly vulnerable because airborne chemicals can dissolve in its moist surface and be carried to the rest of the body through capillaries located very close to the surface of the eye. Protection against skin and eye contact may be provided by:

- Wearing protective equipment.
- Avoiding the use of contact lenses in contaminated atmospheres because they may trap chemicals against the eye surface.
- Keeping hands away from the face.
- Minimizing contact with liquid and solid chemicals.

Ingestion

Ingestion is the least significant route of exposure at a site, since deliberate ingestion of chemicals is unlikely. Inadvertent ingestion can occur, however, as a result of personal habits such as chewing gum or tobacco, drinking, eating, smoking cigarettes, and applying cosmetics. These practices may provide a route of entry for chemicals.

3.2 PHYSICAL HAZARDS

Physical hazards associated with collecting soil samples and radiation surveys pose the greatest potential for injury at this site. Physical hazards can be posed by:

- Heat and Cold Stress;
- Biological Hazards
- Sunburn
- Unseen Obstacles and Holes
- Radiological Hazards
- Entry into Confined Spaces

Injuries that may result from these physical hazards can range from sunburn and skin irritation from plants to snake bites and heat stroke. Injuries resulting from physical hazards can be avoided through the adoption of safe work practices and employing caution when working in the field.

All field personnel shall be conscious of their work environment and should notify the SSO or other appropriate supervisory personnel of any unsafe conditions. The SSO will ensure that all site workers are informed of any physical hazards related to the site. Field personnel should also familiarize themselves with other contractor's safety procedures.

Each of the above mentioned physical hazards are discussed below:

3.2.1 Heat and Cold Stress

Heat Stress

Wearing personal protective equipment (PPE) puts site workers at considerable risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness (heat stroke) or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker.

The combination of high temperatures plus protective clothing can easily result in heat stress to personnel. There are four main types of heat stress related problems.

Heat Rash - caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat, as well as being a nuisance.

Heat Cramps - caused by profuse perspiration with inadequate fluid intake and chemical replacement. Signs: muscle spasms and pain in the extremities and abdomen.

Heat Exhaustion - caused by increased stress on various organs to meet increased demands to cool the body. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness, and lassitude.

Heat Stroke - the most severe form of heat stress. Body must be cooled immediately to prevent severe injury and/or death. Signs: red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma. Medical help must be obtained immediately.

The following parameters will be measured to monitor the worker wearing semi-permeable or impermeable clothing when the temperature in the work area is above 70^{o}F (21^{o}C):

- Heart Rate: Count the radial pulse during a 30-second period as early as possible in the rest period.

  If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.

  If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

  Oral Temperature: Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).

  If oral temperature exceeds 99.6^{o}F (37.6^{o}C) shorten the next work cycle by one-third without changing the rest period.

  If oral temperature exceeds 99.6^{o}F (37.6^{o}C) at the beginning of the next rest period, shorten the following work cycle by one-third.

  Do not permit a worker to wear a semi-permeable or impermeable garment when his/her oral temperature exceeds 100.6^{o}F (38.1^{o}C).

- Body water loss, if possible: Measure weight on a scale accurate to 0.25 lb. at the beginning and end of each work day to see if enough fluids are being taken to prevent dehydration. Weight should be taken while employee wears similar clothing. The body water loss should not exceed 1.5 percent total body weight loss in a workday.

The frequency of monitoring will be determined by the SSO depending on the air temperature adjusted to solar radiation and the level of physical activity.

Proper training and preventative measures can help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat injuries. The following steps will be taken to avoid heat stress:

- Adjusting work/rest schedules, including work slowdowns as needed.
- Rotating workers between alternate job functions to minimize stress or overexertion at one task.
- Providing shelter or shaded areas for rest periods.
- Supplying sufficient water or dilute drinks to maintain workers' body fluids at normal levels.
- Training workers to recognize and treat heat stress.

Cold Stress

Exposure to cold working conditions can result in cold stress (hypothermia) and/or cold injury (frostbite) to hands, feet, and head. Internal body temperature is maintained by a complicated system of sweating, shivering, dilation, and constriction of the skin's blood vessels. When the body is first challenged by cold, it conserves heat by curtailing blood supply to the skin. If this heat conservation measure is not adequate, involuntary muscle response (shivering) is initiated to increase body heat. If both measures fail to generate enough heat, a series of harmful effects can occur.

Hypothermia can result when the core body temperature drops bellow 96.8^{o}F (36 ^{o}C). Lower body temperatures will very likely result in dizziness, drowsiness, disorientation, slurred speech, or loss of consciousness, with possible fatal consequences. Pain in the extremities may be the first sign of danger to cold stress. Shivering develops when the body temperature has fallen to 95^{o}F (35^{o}C). Hypothermia can be brought on by exposure to cold air, immersion in cold water, or a combination of both. Wind chill factor, the cooling power of moving air, is a critical factor in cold stress.

Workers must wear adequate insulating clothing if work is performed in Wind Chill temperatures below 40^{o}F (4^{o}C). At Wind Chill temperatures of 35.6^{o}F (2^{o}C) workers whose clothes become wet should be immediately provided with a change of clothing and, if necessary, treated for hypothermia. Treatment includes warming the victim with skin-to-skin contact, or by providing warm blankets or other coverings, and drinking warm liquids. Skin exposure should not be permitted at Wind Chill temperatures of -25^{o}F (-32^{o}C) or below.

3.2.2 Biological Hazards

Workers will be apprised of the potential biological hazards in the area such as snakes, insects, and animals that could pose hazards to their health and safety. Awareness and avoidance of these potential hazards along with personnel protective equipment where necessary will be discussed and observed in field operations.

- Snakes are known to inhabit the Site and personnel should be vigilant for their presence. If the presence of a snake is detected keep a safe distance and avoid the area.

- Prairie dogs are prevalent on the Site and carry fleas. These fleas may carry diseases such as the plague. Therefore, Site work personnel should avoid coming into contact with any known area that prairie dogs have been. In addition, insect spray containing DEET should be used on the surface of cloths and exposed skin (see Section 6.1.4 for Modified level D PPE requirements).

- Other animals including rabbits and deer are in the area and may also be infected with fleas.

- Birds and rodents may also inhabit the buildings on the Site. Care should be taken when inspecting buildings so as not to come into contact with these animals or their droppings as they may carry diseases.

3.2.3 Sunburn

Because this work will be performed in an outside area with little natural shade, workers will be encouraged to use sunscreen and wear long sleeves and hats. Sunscreen will be provided at the Site.

3.2.4 Unseen Obstacles and Holes

Although some portions of the Site have been graded and are free from ground foliage, the majority of the Site is uneven ground with some ground cover. In addition, there are significant areas inhabited by prairie dogs and therefore, numerous prairie dog holes. Field workers will avoid prairie dog holes and in general use caution when walking and working in areas where the terrain is uneven and/or obscured by groundcover.

3.3 Radiological Hazards

There are areas of the Site that exhibit elevated levels of radiation due to the processing of fluorspar ore. As part of this project, a radiation survey will be completed under the direction of a certified health physicist.

3.4 Confined Spaces

In order to fully inspect the interiors of the buildings and any other structures on the Site, it may be necessary to enter into confined spaces. No confined spaces will be entered without being reviewed by the SSO and if required entry will meet all the practices and procedures outlined in 29 CRF 1910.146 Permit-required Confined Spaces.

4.0 WORK ZONES

In order to minimize the physical transport of the contaminated material from the work site to unaffected (clean) areas due to site activities, and also reduce the possibility of exposure of support personnel to the contaminants present, the following control procedures will be implemented. Due to the level of contamination, defined work zone configuration is not anticipated. However, to preclude transport of any significant amount of contaminated material from the Site, decontamination procedures will be adhered to as described in Section 7.0 of this HSP.

4.1 SITE ACCESS

The site field manager will control access during site activities. Work zones will be designated as described below and control points will be established to regulate access to the work area. Visitors to the site will be required to sign in a visitors log and will receive a general safety briefing prior to entering the work areas.

4.2 DESIGNATION OF WORK ZONES

If contamination is identified during construction activities, the site work area will be delineated into three contiguous zones if contamination levels are deemed sufficiently high as to require PPE:

1) Exclusion Zone
2) Contamination Reduction Zone (CRZ)
3) Support Zone

The exact size and location of each zone will be determined by the Site Safety & Health Officer (SSO) in the field, based on the level of contamination suspected to be present and the field conditions.

4.2.1 Exclusion Zone

The Exclusion Zone will be innermost of the three concentric areas and will encompass the contaminated work zone. All persons entering the Exclusion Zone will be required to wear the prescribed level of Personal Protective Equipment (PPE). At a minimum, the Exclusion Zone will include areas within 10 feet of all excavation, trenching, sampling, and testing material.

4.2.2 Contamination Reduction Zone (CRZ)

The CRZ will act as a buffer in which the decontamination of personnel and equipment used in the Exclusion Zone will be performed. Separate areas for decontamination of the personnel and the heavy equipment will be set up. All disposable items used in the Exclusion Zone will be stored in a designated location of the CRZ, pending their final disposal.

4.2.3 Support Zone

The Support Zone will include any areas not designated as the Exclusion Zone or the CRZ. Support equipment such as office and decontamination trailers (if used), back-up instruments, and general safety equipment will be kept in this zone.

5.0 AIR MONITORING REQUIREMENTS AND ACTION LEVELS

Air monitoring is not anticipated to be necessary during this sampling and characterization project. However, if it becomes necessary, the following will apply.

5.1 FIELD INSTRUMENTS

Air monitoring shall be conducted using a photoionization detector (PID) during all sampling and drilling activities. The PID is a portable air-monitoring device that is capable of detecting a wide range of VOC concentrations in air. Since the PID does not distinguish between volatile chemicals, an additional air-monitoring device called a Draeger pump can be used to identify which contaminants exist in the air. The Draeger pump is a small hand held manual pump that holds glass tubes that can identify certain compounds. The tubes have a calibration scale etched on the side that measures the amount of contaminant present. If the concentrations exceed the action levels listed in Table 1, respiratory equipment will be worn.

5.2 CALIBRATION REQUIREMENTS

The PID shall be calibrated at the beginning of each workday by measuring a standard gas (Isobutylene) of a known concentration and adjusting the meter as necessary. The Draeger pump requires an initial volume calibration before being used for sampling.

5.3 AIR MONITORING SCHEDULE

If necessary, at the beginning of each workday, a background measurement will be taken and used as a calculating value. The background reading will consist of measuring the ambient air quality in an assumed uncontaminated area, the value will then be subtracted from all other measurements taken that day in order to find the representative values.

6.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) will be worn to protect field personnel from known or suspected biological, atmospheric, soil, or water-borne contamination. The levels of personal protection to be employed for work tasks have been selected based upon known or anticipated concentrations of contaminants, which may be encountered, their chemical properties, toxicity, exposure routes, and contaminant matrix. All site workers and other authorized personnel performing work at this site in support of this sampling and characterization project will wear the prescribed task-specific PPE.

All authorized visitors will not be required to wear special PPE unless specified otherwise in this Health and Safety Plan or when instructed by the SSO.

6.1 PPE FOR DIFFERENT LEVELS

The following general levels of protection and associated PPE ensemble are required for specific levels of contamination. For this project, Modified Level D is anticipated.

6.1.1 Level B

Level B should be used when the highest level of respiratory protection is required. Level A protection consists of a fully encapsulating suit and SCBA and is not anticipated to be required. Level B PPE will consist of the following:

- Supplied air respirator (airline respirator with escape bottle) or self-contained breathing apparatus (SCBA) approved by the National Institute for Occupational Safety and Health (NIOSH). Respirators shall be positive-pressure, demand-type.
- Chemical-resistant clothing (overalls and long-sleeved jacket; hooded, one- or two-piece chemical splash suit; disposable chemical-resistant, one-piece suits).
- Work clothes
- Gloves (outer), chemical-resistant, Neoprene
- Gloves (inner), chemical-resistant, latex
- Boots (outer), chemical-resistant (disposable)
- Hardhat (face shield)

6.1.2 Level C

Level C protection should only be worn when all of the criteria for air-purifying respiratory protection are satisfied, and the potential for dermal absorption or damage is limited or nonexistent. Level C PPE will include:

- Full-face, air-purifying, canister-equipped respirator (MSHA/NIOSH approved) with appropriate canister.
- Chemical-resistant clothing (coveralls; hooded, two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls).
- Gloves (inner), chemical-resistant, Neoprene
- Gloves (outer), chemical-resistant, skin-tight latex
- Boots (inner), chemical-resistant, steel toe and shank
- Hardhat

6.1.3 Level D

Level D PPE consists basically of a work uniform to be worn in areas with no skin or respiratory hazards. Level D ensemble will include:

- Overalls
- Gloves
- Boots/shoes, chemical-resistant, steel toe and shank
- Safety glasses
- Hardhat

6.1.4 Modified Level D

Modified level D PPE for field work in conjunction with this sampling and characterization project shall be as follows;

- Leather work boots
- Heavy material pants with legs sufficiently long to cover the boots
- Long sleeved work shirt

- The pants will be taped over the boots in such a manner as to limit entry of ticks, fleas, etc

- Insect spray containing DEET shall be sprayed ,at a minimum, on the pant cuff area and the shirt sleeve cuff area

6.2 PPE DEVIATION/MODIFICATION

Protection levels may be upgraded, downgraded, or modified as deemed necessary by the SSO or site supervisor, based upon work task or site-specific, safety-related factors such as:

- When noise levels exceed 85 dBA, hearing protection is required.

- Change in work tasks within a work area/exclusion zone, or work that begins on a different portion of the site.

- Change of season/weather.

- When temperature extremes or individual medical considerations (i.e., heat stress, medication, etc.) limit the effectiveness of PPE.

- Contaminants other than those previously identified are encountered.

- Change in ambient levels of contaminants.

- Change in workspace that affects the degree of contact with contaminants.

6.3 LIMITATIONS OF PPE

PPE ensembles designated for use during work tasks have been selected to provide protection against contaminants at known or anticipated concentrations in soil or water matrices. However, no protective garment, glove, or boot is chemical-proof, nor will it afford protection against all chemical types. Permeation of a given chemical through PPE is a complex process governed by contaminant concentrations, environmental conditions, physical condition of the protective garment, and the resistance of a garment to a specific contaminant; chemical permeation may continue even if a garment is resistant to a specific contaminant; chemical permeation may continue even after the source of contamination has been removed from the garment.

In order to obtain optimum usage from PPE, the following procedures are to be followed by all site personnel using PPE:

- When using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift.

- Inspect all clothing, gloves, and boots both prior to and during use for:

    - Imperfect seams
    - Non-uniform coatings
    - Tears
    - Poorly functioning closures

- Inspect reusable garments, boots, and gloves both prior to and during use for:

    - Visible signs of chemical permeation
    - Swelling
    - Discoloration
    - Stiffness
    - Brittleness
    - Cracks
    - Any sign of puncture
    - Any sign of abrasion

Reusable gloves, boots, or coveralls exhibiting any of the characteristics listed above will be discarded. PPE used in areas known or suspected to exhibit elevated concentrations of contaminants will not be reused.

6.4 DONNING OF PPE

A routine will be established and followed at the site for donning the PPE. The procedures will be discussed in detail during the site safety meeting before starting the project and briefly during the daily site safety meetings.

Before wearing any level of PPE, it will be checked to ensure that it is in proper condition for the purpose for which it is intended. Also, workers with any minor injuries and/or openings in the skin surface, such as cuts and scratches, will be attended to in order to protect such areas, which may potentially enhance exposure effects. Workers with large cuts, rashes, or other such skin damage will not be allowed to don PPE or perform any field activities at the site.

After wearing the equipment, its fit will be evaluated by either the site supervisor or the SSO before the worker is allowed to enter the Exclusion Zone.

6.5 RESPIRATORY PROTECTION REQUIREMENTS

Levels B and C work involves the use of respirators. The following types of respirators may be required during the field activities:

- Full-face, air-purifying respirator equipped with organic vapor/acid gas/highly toxic particulate-absorbing cartridges (color-coded magenta over yellow).

- Air line (supplied air) respirator operated in the pressure-demand mode and equipped with an escape bottle providing at least a 5-minute supply of air.

- Self-contained breathing apparatus operated in the pressure demand mode.

6.5.1 Air-Purifying Respirators (APRs)

APRs to be maintained on this site will be full-face, chemical cartridge, canister-type respirators. The selection of the type of cartridge will be based on the chemicals present on the site and their potential maximum concentrations in the breathing zone. The cartridges will have the capability to filter particles for use in dusty conditions.

6.5.1.1 Cartridge Change Frequency

Manufacturer's instructions for usage and breakthrough times will be noted. Cartridge changes will be at least daily or more frequently, as prescribed by the manufacturer. The health and safety manager and/or the SSO will approve the manufacturers prescribed frequency for cartridge changes before it is implemented.

6.5.1.2 APR Limitations

APRs are to be used only in conjunction with breathing zone air monitoring. APRs may only be used when the device affords protection from the substances being encountered. If an APR cannot provide protection against all substances present at concentrations exceeding the action level, upgrading of respiratory protection to require SCBAs or airline respirators will be required.

Other limitations, which preclude the use of APRs are:

- Oxygen-deficient atmosphere (less than 19.5 percent oxygen).

- Concentrations of substances, which may be immediately dangerous to life and health (IDLH).

- Entry into confined or unventilated areas, which may contain airborne contaminants that have not been characterized.

- Unknown contaminant concentrations or concentrations which exceed designated maximum use levels.

- Identified substances, which have inadequate warning properties and the unit has no end-of-service life indicator.

6.5.2 Supplied-Air Respirators and SCBAs

Personnel and equipment operators who may be exposed to chemical hazards, which preclude the use of APRs will wear hip-pack airline respirators with 5-minute egress bottles or use an SCBA. Personnel who require Level B protection and high mobility will wear SCBA units.

6.5.2.1 Breathing-Air Quality

29 CFR 1910.134 states that breathing air must meet the specification for Grade D breathing air as described in the Compressed Gas Association Specification G7.-1966. Before operations start and any time their process changes, vendors who supply breathing air will be required to provide a certificate of analysis stating that the air meets this standard.

6.5.3 Fit Testing

Workers will be fit-tested with Test A, and Test B or Test C as given below:

- Test A: Positive and Negative - Pressure sealing check for APRs.
- Test B: Isoamyl Acetate Test (sweet banana smell).
- Test C: Stannic Chemical Test (irritant smoke).

The worker will be responsible for performing Test A before using the APR. Test B or Test C will be performed under the supervision of the site supervisor or SSO. A respirator fit-test record form will be filled out and maintained in the onsite files as documentation of fit testing. The fit-test record form will include information such as name of person wearing the respirator, name of person supervising the fit-test, location, date, time, signatures of personnel involved, details of respirator type, and test(s) performed.

6.5.4 Respirator Maintenance

6.5.4.1 Respirator Inspection Checkout Procedure

Respirators issued to individuals will be cleaned and disinfected at least daily, if used. Where respirators are used by more than one person, the respirator will be cleaned and disinfected after each use. Respirators will be inspected during cleaning and any necessary repairs will be made at that time. Damaged respirators will not be worn. After cleaning, respirators will be placed in clean, plastic bags and stored in a clean location convenient to the work areas. The following representative respirator cleaning procedures will be used:

Daily Cleaning Procedures

Respirator Disassembly. Respirators are taken to a clean location where the cartridges are removed, damaged to prevent accidental reuse, and discarded. For thorough cleaning, the inhalation and exhalation valves, speaking diaphragm, and any hoses are removed.

Cleaning. In most instances, the cleaning and disinfecting solution provided by the manufacturer is used, and is dissolved in warm water in an appropriate tub. Using gloves, the respirator is placed in the tub and swirled for a few moments. A soft brush may be used to facilitate cleaning.

Rinsing. The cleaned and disinfected respirators are rinsed thoroughly in water to remove all traces of detergent and disinfectant. This is very important for preventing dermatitis.

Drying. The respirators may be allowed to air dry on a clean surface. They also may be hung upside-down like drying clothes, but care must be taken not to damage or distort the face piece.

Reassemble and Inspection. The clean, dry respirator face pieces should be reassembled and inspected in an area separate from the disassembly area to avoid contamination. Special emphasis should be given to inspecting the respirators for detergent or soap residue left by inadequate rinsing. This appears most often under the seat of exhalation valve, and can cause valve leakage or sticking.

After routine use in Exclusion Zone:

- The mask may be washed/rinsed with soap and water.
- At a minimum, the mask should be wiped with disinfectant wipes (benzoalkaloid or isopropyl alcohol) and allowed to air dry in a clean area.

6.5.4.2 Respirator Restrictions

Facial Hair

Personnel with facial hair such as a beard or mustache that may interfere with the respirator seal will not be permitted to wear the respirator and hence, work at the site, unless such hair is shaved off.

Corrective Lenses

Normal eyeglasses cannot be worn under full-face respirators because temple bars interfere with the respirator sealing surfaces. Workers requiring corrective lenses will be provided with glasses designed for use with respirators. Contact lenses will not be permitted with any type of respirator.

6.5.5 Respirator Use Prerequisite

All personnel who will be taking part in the site activities of this project will be required to provide evidence at the start of the fieldwork that they have completed the training and health monitoring work requirements of OSHA 29 CFR 1910.120, including a physician's letter stating that the employee is capable of wearing a respirator.

7.0 DECONTAMINATION

When decontamination is deemed necessary by the SSO, the following decontamination procedures will be followed.

7.1 DECONTAMINATION PROCEDURE

Equipment used for sampling will be decontaminated as follows:

- Scrub with laboratory-grade detergent;
- Rinse with potable water;
- Rinse with distilled water; and
- Dried with paper towels and/or air dried.

After decontamination, the sampling equipment will be stored in plastic bags or covered with plastic sheeting.

Wash and rinse water generated during decontamination will be contained in 55-gallon drums or other suitable containers onsite. On completion of the sampling program, the drum contents will be sampled and analyzed by an environmental laboratory for total lead and arsenic. If elevated radiation levels are indicated using the µR meter, the contents will also be analyzed for radionuclides (total uranium, radium 226/228, gross alpha/beta). Based on the laboratory results, the decontamination water could potentially be used for dust control and other onsite uses in restricted areas on the Property. If the laboratory results indicate the decontamination water is not suitable for onsite use, the water will be treated at Arvada Treatment Center or possibly the City of Boulder's wastewater treatment plant assuming the decontamination water meets industrial discharge requirements. Otherwise, alternative treatment options will be identified.

Field vehicles will be inspected and any large quantities of mud removed from the underside of the vehicles and tires. If necessary a decontamination wash area will be constructed and the wash water collected in 55-gallon drums.

Personnel involved with soil sampling will wash hands with soap and water and rinse hands prior to eating and prior to leaving the Site. Wash and rinse water generated during decontamination will be contained in 55-gallon drums or other suitable containers onsite.

8.0 TRAINING REQUIREMENTS

CRI personnel who enter a site where there may be hazardous substance or conditions must be trained to recognize and understand the potential health and safety hazards associated with their task. All CRI personnel team members working in the Exclusion Zone or Contamination Reduction Zone where there is a reasonable possibility for exposure to hazardous substances shall have health and safety training for hazardous waste operations and emergency response and 3 days of supervised onsite field experience per 29 CFR 1910.120. Personnel must also receive 8 hours of annual refresher training. Onsite supervisors or managers must also receive 8 hours of supervisors/managers training in addition to the 40-hour training. Personnel will not be assigned to field activities until they have been trained to a level commensurate with their job function/responsibilities and the degree of anticipated hazards.

Training topics may include:

- Characteristics and potential hazards of contamination potentially present
- Respirator protection and use
- Personal protective clothing
- Medical surveillance
- Personal Hygiene
- Decontamination procedures
- General safety concepts
- Work zone designations
- Environmental monitoring

CRI personnel working in the Support Zone in jobs where there is not a reasonable possibility for exposure to health and safety hazards must receive a site safety briefing from the SSO prior to beginning work.

Onsite safety and health meetings will be conducted as needed for employees by the SSO. Problems related to respiratory protection, inclement weather, heat or cold stress, emergency procedures, or the interpretations of newly available environmental monitoring data might be topics covered during these briefings.

9.0 MEDICAL SURVEILLANCE

All field personnel working onsite where chemical contamination may be present will participate in a medical surveillance program, as required by OSHA 29 CFR 1910.120(f).

All personnel involved in daily work activities which may expose them to hazardous chemicals will have had a pre-task medical examination, i.e., within the previous year, including:

- Resting EKG
- Lung functioning test
- Blood chemistry
- Urine chemistry - complete urinalysis
- Chest X-ray (within last 3 years)
- General medical examination
- Audiometric testing

The purpose of medical examinations is to obtain background blood chemistries and to determine the ability of personnel to wear respirators, if necessary.

Any employee determined to have impaired lungs, liver, or kidney functions will be prohibited from working in contaminated areas.

Supplemental examinations will be performed whenever there is an actual or suspected excessive exposure to contaminants, upon experience of exposure systems, or following injuries or temperature stresses.

An occupational physician will perform all medical examinations.

All personnel are required to provide a certificate of fitness and physical suitability to wear a respirator, if requested.

10.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

Most projects involve heavy construction work including, trenching, excavation, and other activities. Safety precautions will be taken to avoid emergency situations. However, if an emergency does arise, the procedures described in this section will be followed. Also, preparatory steps necessary for responding to an emergency situation are given below and they should be complied with before beginning any work at the site.

10.1 SPECIFIC CONTINGENCY PLANS

Contingency plans for this project will include measures to prevent emergencies or if an emergency occurs, limit the negative impact. Three major aspects of these plans are:

1) Preventative Measures - Measures that should prevent or limit an emergency incident.

2) Response Actions - Specific actions to be taken as a response to an emergency situation.

3) Notification - Response organizations or personnel to be notified in case of an emergency.

10.1.1 Preventative Measures

The following measures will be implemented to prevent or limit an emergency incident:

- Initial training of personnel to include:
    - Location of a copy of this plan immediately accessible on site
    - Route to the nearest emergency medical services
    - Evacuation routes and safe distances from the site during an emergency
    - Location of first aid supplies and equipment
    - Communication procedures for emergencies including emergency contacts, phone numbers, and location of the nearest phone
- Use of prescribed PPE during all on site activities.
- Awareness of the work environment and alertness. Workers should be aware of traffic patterns, special traffic restrictions and controls, and other activities near the work area.
- As a part of general work safety practices, sources of ignition will be kept away from the work area and fire extinguishers will be available near the work site.
- Discontinue operations when inclement/hazardous weather conditions pose a threat to a safe working environment. Some of the items to be considered prior to determining if work should continue, or if special precautions should be taken, are:
    - Potential for heat or cold-related injuries
    - Treacherous weather-related working conditions
    - Limited visibility
    - Potential for electrical storms
    - Biological hazards
- Weekly safety meetings.

10.1.2 Response Actions

Following any and all response actions given below, all appropriate authorities must be immediately notified in accordance with the Notification section (see Table 1 for emergency contact phone numbers).

10.1.2.1 Injury/Fatality in the Exclusion or Decontamination Zone

In the event of an injury in the exclusion or decontamination zone, all site personnel shall exit the exclusion zone and assemble at the decontamination line. The site supervisor or SSO shall be notified immediately; they will evaluate the nature of the injury and the affected person should be decontaminated to the extent practical prior to movement to the support zone. Appropriate first aid will be initiated, and an immediate request will be made for an ambulance (if necessary) and the designated medical facility notified (if required). The first person on the accident scene, unless required for first aid, will call for an ambulance. Upon notification of the accident the SSO shall confirm that the ambulance has been called. No persons will re-enter the exclusion zone until the cause of injury or symptoms is determined. OSHA shall be notified of all injuries in accordance with OSHA regulations, 29 CFR 1910.

10.1.2.2 Injury in the Support Zone

In the event an injury occurs in the support zone, the site supervisor and the Contractor's Site Safety Officer (SSO) must be notified immediately. Appropriate first aid will be administered and, if necessary, the injured person will be sent to the appropriate medical facility. If the injury does not affect the performance of site personnel, operations may continue.

10.1.2.3 Fire/Explosion

In the event of a fire or explosion at the site, use available extinguishing media safely and evacuate the area. Contact the fire department and identify the location of the fire and identify the materials known or suspected of being involved with the fire, and any equipment or structures which may be involved, or may become involved in the fire. Notify the site supervisor.

10.1.2.4 Protective Equipment Failure

If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his/her co-worker (buddy) will immediately leave the exclusion zone. Re-entry to the exclusion zone will not be permitted until the equipment has been repaired or replaced.

10.1.2.5 General Emergency Response

Emergency phone numbers and directions to the nearest medical facility will be posted in conspicuous places at the project. Because of the nature of the project, visitors should always be accompanied by an escort and be equipped with appropriate safety equipment and PPE. This escort will be familiar with emergency situation response and can direct visitors should an emergency situation occur.

All communication and coordination procedures required by the HSP shall be implemented and followed. These procedures should be covered at the initial safety meeting.

10.1.3 Notification

Project policy will be to evacuate personnel from areas involved in emergencies and to summon outside assistance from agencies with personnel trained to deal with the specific emergency. Table 1 presents a list of emergency contacts and their phone numbers that will be readily available to all site supervisors and posted by the telephone(s) closest to ongoing field activities.

For medical treatment beyond on-site first aid, the following facilities should be used depending on the type or severity of the injury or illness.

HOSPITALS:

Boulder Community Hospital
4745 Arapahoe Avenue
Boulder, CO 80303

A map to the hospital is shown in Figure 1.
Driving directions to the clinic are as follows:

- When leaving the Site, travel 1 mile south on North 63rd Street
- Turn right on Arapahoe Avenue and travel west
- Hospital is 1.5 miles on the right side of Arapahoe Avenue

Total Drive time estimated at4 minutes

10.2 EMERGENCY EQUIPMENT

In accordance with the HSP, the SSO and/or their subcontractors will maintain emergency and first aid equipment on site.

10.3 EMERGENCY SIGNALS

Emergency signals will be used as established in HSP. Emergency communication for personnel donning respirators will be the following hand/body signals:

Signal	Translation
Hand clutching throat	Out of air / Can't breathe
Hands on top of head	Need assistance
Thumbs up	OK / I'm all right / I understand

Thumbs down	No / Negative
Grip partner's wrist or both hands around partner's waist	Leave area immediately

10.4 NOTIFICATION OF POTENTIAL HAZARDS

All site workers are required to notify their immediate supervisor, Project Superintendent or Project Manager of any unusual occurrence or potentially dangerous or hazardous situations. It will be the responsibility of Project Manager to notify other appropriate personnel including the SSO.

11.0 GENERAL SAFETY

All activities related to this remediation activity should be coordinated through CRI's Project Manager or designated representative.

TABLE 1

EMERGENCY CONTACT PHONE LIST

NAME	**PHONE NUMBER(S)**
Project Director –Paul L. Casey	Office: 303-940-7800 Cell: 303-916-0794
Project Manager – Terry McGowan	Office: 303-940-7800 Cell: 303-229-5496
Site Field Manager, City of Boulder – Bill Boyes	Office: 303-411-4125 Cell : 303-884-4128
Site Safety Officer – David Phillips	Office: 303-940-7800 Cell: 303-870-6340
Field Oversight – David Phillips	Office: 303-940-7800 Cell: 303-870-6340
Corporate Health & Safety Officer – Terry McGowan	Office: 303-940-7800 Cell: 303-229-5496
Casey Resources, Inc.	Office: 303-940-7800
Police Department	911
Fire Department / Ambulance	911
Utility Notification Center of Colorado	1-800-922-1987
Boulder Community Hospital 4747 Arapahoe Avenue Boulder, CO	720-854-7000
CDPHE – Environmental Release and Incident Reporting Line (For reporting of public threat)	1-877-518-5608
National Response Center	1-800-424-8802
Centers of Disease Control (Emergency Response)	1-770-488-7100
Colorado Poison Control (24-hour information)	1-800-222-1222

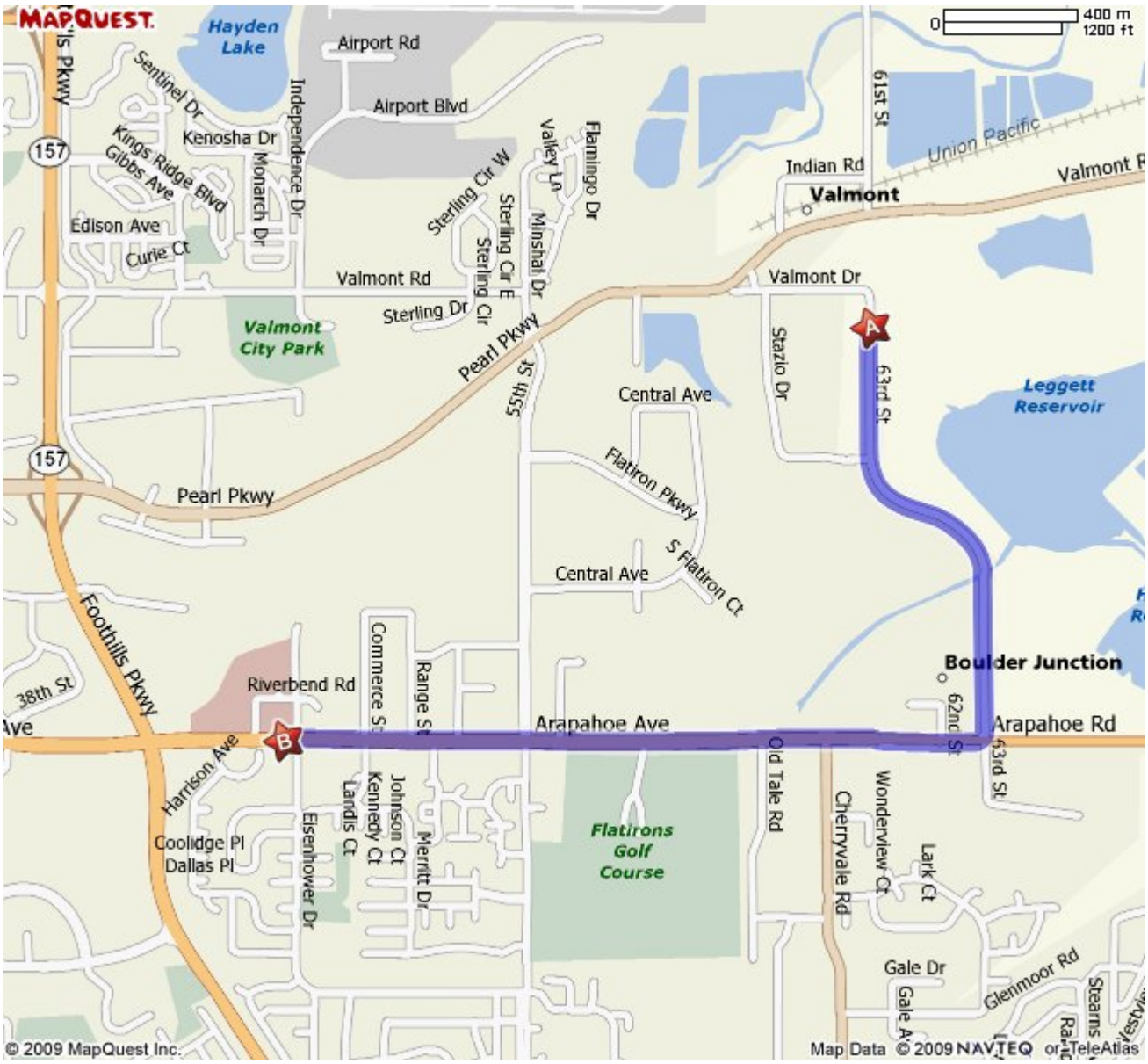

Figure 1 - Route to Boulder Community Hospital