SECTION 30

CONTRACT DIVING OPERATIONS

30.A GENERAL

30.A.01 All contract diving operations shall be performed in accordance with this manual. Any failure to meet the requirements of this Section will be cause for rejection or cessation of operations. Unless otherwise delegated in this section, requests for variance to the requirements of this section must be submitted in writing to and approved by the HQUSACE Safety and Occupational Health Office.

30.A.02 The USACE Command, at their discretion, may elect to implement and enforce more conservative diving requirements than stated herein, but under no circumstances will the operational requirements be less than specified in this Section.

30.A.03 Diving shall not be used as a work method if the work objective can be more safely and efficiently accomplished by another means (e.g., using remote controlled television systems in lieu of divers).

30.A.04 Surface-supplied air (SSA) shall be used whenever possible in accordance with the practical constraints of diving operations. All working dives requiring communications between the divers and topside to direct crane load movements, etc., shall be performed in SSA mode. A tender/diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces.

30.A.05 Live boating will not be used without prior specific acceptance by the District Diving Coordinator (DDC).

30.A.06 Training documentation shall be in compliance with 29 CFR 1910.410 and shall show that the dive team members have successfully completed training to the appropriate level (e.g., SSA divers certificate, surface supplied mixed-gas diver certificate). Such training shall:

a. Be from a commercial diving school within a particular State, military school, Federal school (e.g., USACE), or an Association of Commercial Diving Educators (ACDE) accredited school, or

b. Meet the requirements contained in ANSI/ACDE-01.

30.A.07 Any employed diver/team member may substitute a training certificate with a valid "Association of Diving Contractors (ADC) Commercial Diver Certification Card" for the appropriate training level.

30.A.08 Contractors shall provide evidence that each dive team member has training and experience consistent with the performance requirements of the scope of work. As a minimum, each team member shall have at least 1 year of commercial experience in the applicable position; divers shall have completed at least four (4) working dives with similar decompression techniques as in the contract, using the particular diving techniques and equipment to be used under the contract. Divers shall demonstrate that at least one (1) of the four (4) qualification dives was performed in the last 6 months prior to the contract award date.

30.A.09 Each dive team member shall have current certification in CPR, first aid, and use of emergency oxygen systems. Evidence of this will be a photocopy of the certificates.

30.A.10 The Contractor shall submit certification, signed by a licensed physician, stating that each diver has been medically examined within the previous 12 months and has been determined fit and approved to dive. The dive medical examination will be repeated every 12 months with verification submitted to the DDC.

30.A.11 Divers will wait at least 12 hours before flying after any dive: this interval should be extended to 24 hours following multiple days of repetitive dives.

30.A.12 Contract diving operations will be monitored and/or inspected by USACE employees who are certified as divers, diving supervisors, or diving inspectors through USACE sponsored training courses; however, use of trained monitors/inspectors with

other credentials will be considered on a case-by-case basis and approved in writing by the DDC.

30.A.13 When diving at altitudes of 1000 ft (304.8 m) or more of elevation above sea level, Contractors shall use appropriate high altitude decompression tables that compensate for the increased elevation.

30.A.14 The following submittals are required for all diving operations. Additional submittals may be required depending on the scope of the diving operation. All submittals will be made to the Contracting Officer and will be reviewed and found acceptable by the DDC prior to start of diving operations.

a. Contractor's Safe Practices Manual. **> See 30.A.16**

b. Dive Operations Plan(s). **> See 30.A.17**

c. AHA. **> See 30.A.18**

d. Emergency Management Plan. **> See 30.A.19**

e. Dive Personnel Qualifications. **> See 30.A.06, 07 & 08**

30.A.15 A diving operations plan, AHA, and emergency management plan will be developed for each separate diving operation. These documents will be submitted to the DDC and the Safety and Occupational Health Office Diving Safety Representative for review and found acceptable prior to commencement of diving operations and be at the diving location at all times. Each of these documents will become a part of the project file. Penetration diving, contaminated environment diving, dives outside the no decompression limits, and in areas where differential pressure entrapment hazards exist, will be specifically addressed in each document when they are anticipated as part of the diving operation.

30.A.16 Safe practices manual. Contractors shall develop and maintain a safe practices manual that encompasses the Contractor's entire diving program. The safe practices manual shall be available at all times to the Government representative and all

dive team members at each diving location. The safe practices manual shall include, as a minimum, the following:

a. Safety procedures and checklists;

b. Assignments and responsibilities of dive team members;

c. Equipment certifications, procedures, and inspection checklists;

d. Emergency procedures for fire, equipment failure, adverse weather conditions, and medical illness or injury;

e. Requirements for inspections;

f. A complete copy of OSHA, 29 CFR 1910, Subpart T, and the Contractor's proposed method of complying with each of its pertinent parts;

g. U.S. Navy Standard Air Decompression Table;

h. A sample of the diving log sheets to be used under the contract;

i. A sample of the repetitive dive worksheets or equivalent (dive profile method) to be used under the contract;

j. U.S. Navy Table of No-Decompression Limits and Repetitive Group Designation for No-Decompression Air Dives;

k. U.S. Navy Residual Nitrogen Timetables for Repetitive Air Dives;

l. An outline of the medical qualifications required for divers to be employed under the contract. As a minimum, each diver shall meet the certification requirements specified in 29 CFR 1910, Subpart T; and

m. An outline of administrative and recordkeeping procedures.

30.A.17 Dive Operations Plan. As a minimum the plan will contain the following:

a. Name of Contractor (and diving subcontractor if applicable);

b. Contract number;

c. Date of dive plan submission;

d. Name of diving supervisor preparing the dive plan;

e. Names and duties of dive team members, including diving supervisor;

f. List of diving equipment to be used;

g. Type of diving platform to be used;

h. Detailed description of the mission;

i. Date(s), time(s), duration, and location of operation;

j. Diving mode used (SCUBA, SSA, and snorkeling) including a description of the backup air supply, as required;

k. Nature of work to be performed by the divers, including tools used and materials to be handled or installed;

l. Surface and underwater conditions, to include visibility, temperature, currents, etc. Thermal protection will be considered as appropriate;

m. Maximum single dive bottom time for the planned depth of dive for each diver. Altitude adjustments to dive tables will be calculated for dives made at altitudes of 1000 ft (304.8 m) or more above sea level. **> See Appendix O**;

n. Name of each person directly involved in topside assistance/support to the dive team (i.e., crane operator, lock operator, etc.);

o. Means of direct communication between the dive site and the Contractor's project office, the contracting officer, and the lockmaster/USACE project manager;

NOTE: The dive plan will include the following statement: **"If for any reason the dive plan is altered in mission, depth, personnel, or equipment, the DDC will be contacted in order to review and accept the alteration prior to actual operation."**

30.A.18 AHA. An AHA represents the dive team's best effort to anticipate and mitigate or prevent the adverse effects of equipment failure, extreme weather/environmental conditions, or other hazardous/unexpected situations. Each AHA will be job specific and address each phase of work, to include the hazards associated with flying after diving. Lockout/tagout procedures and procedures for dealing with differential pressures will be included if appropriate. Some dives may be sufficiently complex to warrant several separate analyses. The AHA will be covered in detail at the pre-dive conference. If safe clearance procedures are required for the diving operation, the diving supervisor will walk through the clearances to assure they are in place and redundant where possible prior to the commencement of the diving operation. A copy of any clearances/permits to be issued to deal with identified hazards will be attached to the AHA.

30.A.19 Emergency management plan. An emergency management plan will be prepared for each dive. The minimum content of the plan will be as follows:

a. Location and phone number of nearest operational recompression chamber if not located at the dive site;

b. Location and phone number(s) of nearest hospital(s);

c. Location and phone number of nearest USCG Rescue Coordination Center, where appropriate;

d. Description of an emergency victim transport plan including phone numbers of appropriate emergency transport services;

e. Procedures and phone numbers or other means of communications to activate emergency services at the facility where the work is being performed;

f. Procedure to deal with entrapped or fouled diver including fouled umbilical (suction and entanglement/debris);

g. Actions upon loss of vital support equipment;

h. Actions upon loss of gas supply;

i. Action upon loss of communication;

j. Lost diver plan;

k. Injured diver plan;

l. Actions upon discovery of fire;

m. Diver blow up/over rapid ascent to surface;

n. Diver loss of consciousness; and

o. Injury/illness of member of surface crew with diver in the water.

30.A.20 Prior to each dive, and at the scene of the dive, a Pre-Dive Conference shall be held with all members of the dive team and a representative of the Contractor with sufficient authority to implement any requirements made by the USACE diving inspector or coordinator.

30.A.21 Prior to each dive, the entire dive team will be briefed in detail on the following (as a minimum):

a. Description of mission and location, including drawings and/or photographs pertinent to the mission and equipment and materials that are to be installed as part of the mission;

b. Description of diving apparatus/equipment and craft to be used;

c. Maximum working depth with estimated bottom times and water temperatures;

d. Names and duties of personnel on the team (when possible, incorporate at least one person on the dive that has previously performed the same or similar mission);

e. Discussion of AHA; and

f. Emergency procedures.

30.A.22 Upon completion of each diving operation or at the conclusion of each day, a dive team debriefing shall be conducted by the contractor dive supervisor. At the debriefing divers are advised of the location of the nearest recompression chamber (if not located on site) and cautioned on the limitations of their post dive activities including repetitive dives and flying.

30.A.23 If for any reason the dive mission is altered, the Contracting Officer shall be contacted by the dive inspector or the dive supervisor and a revised dive plan will be reviewed and accepted by the DDC prior to continuing the operation. This review may be conducted electronically and confirmed in writing after completion of the dive operation.

30.A.24 All diving activities shall be conducted with full knowledge and close coordination with the Contracting Officer and the local Government representative such as the lockmaster/project manager, etc. Divers shall not enter the water or move from prescribed location without the authorization of the contracting officer and the local Government representative.

30.A.25 For each diver and dive, the following dive log information, as a minimum, shall be recorded and maintained at the dive location:

a. Full name,

b. Date and location of dive,

c. Maximum depth and bottom time,

d. Surface interval between dives,

e. Breathing medium and type of equipment used,

f. Group classification at the beginning and end of each interval,

g. Water and ambient air temperature,

h. Depth(s) and duration(s) of any decompression stops, and

i. Date and time of last previous dive.

30.A.26 For each dive in which decompression sickness and/or pulmonary barotraumas is suspected or symptoms are evident, the following information shall be recorded and maintained:

a. Descriptions of signs and symptoms (including depth and time of onset);

b. Description and results of treatment; and

c. Name, address, and phone number of attending physician.

30.A.27 Prior to the dive, the contractor shall assure, as a minimum, the following pre-dive checks are performed:

a. Breathing air tanks contain significant air supply to perform the required work (i.e., standby air tanks are on site and full to the capacity). A pressure reading shall be taken to ensure that no less than 90% of tank capacity of breathing air is contained;

b. All diving equipment shall be checked for proper function prior to diver entry;

c. All necessary safety equipment specified herein is on site and functioning properly;

d. Lockout/tagout procedures are followed;

e. When applicable, crane signals are reviewed and radio communication with the crane operator is functioning properly;

f. When applicable, welding or cutting procedures are clearly reviewed, the proper welder polarity is set, and precautions have been taken to ensure that electrocution will not occur;

g. When applicable, blasting procedures are clearly reviewed and precautions have been taken to ensure unplanned/ unscheduled blasts will not occur; and

h. A pre-dive briefing shall be given that includes, but is not limited to, the accident management plan, AHA, equipment checklist, diving logs, diving conditions, and diving procedures.

30.A.28 Copies of the dive logs shall be submitted to the DDC after completion of the dive operation.

30.B SCUBA DIVING OPERATIONS

30.B.01 SCUBA diving operations shall not be conducted:

a. At depths greater than 100 ft (30.4 m);

b. On dives outside the no-decompression limits unless a dual lock, multi-place, recompression chamber (capable of recompressing diver at the surface to a depth equivalent to 165 ft (50.3 m) of sea water) is available at the dive location and is immediately available for use, a diving physician or trained chamber operator in communication with a diving physician is present, and the chamber is of sufficient size to accommodate the patient as well as the chamber tender;

c. Against currents exceeding one knot;

d. In enclosed or physically confining spaces,

e. Using closed circuit or semi-closed circuit SCUBA; or

f. In visibility less than 3 ft (0.9 m) unless line tended with diver/surface two-way voice communications.

30.B.02 Contractor SCUBA teams shall be manned in accordance with the criteria established in Appendix O. A standby diver will be dressed out and readily available when a diver is in the water (the

standby diver may remove his or her head gear after it is tested for proper operation)

30.B.03 Specific operational requirements for SCUBA operations are as follows:

a. Each SCUBA diver shall be equipped with a bailout bottle with a minimum of 30 ft^3 (0.85 m^3) of air and separate regulator. An octopus is not considered to be an alternate air source.

b. Each diver shall be equipped with a buoyancy compensation device (BCD) capable of maintaining the diver at the surface in a face-up position.

c. Each SCUBA diver shall be equipped with a submersible cylinder pressure gauge capable of being monitored by the diver during the dive.

d. Each SCUBA diver shall be equipped with a weight belt or assembly capable of quick release.

e. Each SCUBA diver shall be equipped with a depth gauge and knife.

f. SCUBA air cylinders shall comply with the following requirements:

(1) Air cylinders of seamless steel or aluminum that meet DOT 3AA and DOT 3AL specifications are approved for used on USACE projects;

(2) Each cylinder used on USACE projects must have identification symbols stamped into the shoulder of the tank; and

(3) SCUBA tanks used on USACE projects must be visually inspected internally at least annually and hydrostatically tested at least once every 5 years in accordance with DOT and the CGA regulations; test dates will be stamped into the shoulder of each tank.

g. A timekeeping device shall be used for recording diving times for all SCUBA diving operations. When two-way voice communications are not used, each dive supervisor and diver shall have a timekeeping device. When two-way voice communications are used, the dive supervisor, at a minimum shall have a timekeeping device.

h. Each tethered SCUBA diver shall wear a safety harness with a positive buckling device, attachment point for the safety line, and a lifting point to distribute the pull force of the line over the diver's body while maintaining the body in a heads-up vertical position when unconscious or inert.

30.C SURFACE-SUPPLIED AIR OPERATIONS

30.C.01 SSA operations shall not be conducted at depths greater than 190 ft (57.9 m), except that dives with bottom times of 30 minutes or less may be conducted to depth of 220 ft (67 m). Exceptional exposure dives, as defined by the US Navy Diving Manual, shall not be conducted except in emergency lifesaving situations.

30.C.02 SSA equipment components shall be a type specifically designed to be used in diving support systems.

30.C.03 Dual lock, multi-place, recompression chambers shall be available and ready for used at the dive location for any dive outside the no-decompression limits or deeper than 100 ft (30.4 m). A diving physician or a trained chamber operator in communication with a diving physician shall be in attendance with the chamber. A minimum of 4 hours of oxygen shall be available for chamber operations.

30.C.04 Dive jobs that require surface decompression as an integral part of the dive operation shall have a trained and qualified person, who is not acting as a working or standby diver or supervisor, operating the recompression chamber at all times. In dive operations where the chamber is required for emergency, first aid, or used for other unexpected recompression events, the diving supervisor may serve as the chamber operator so long as he is

specifically trained and qualified in hyperbaric chamber operations. If used for the latter purpose, all diving shall be suspended during the chamber operations. Divers completing a recompression dive will remain within 30 minutes drive time from a fully operable and staffed recompression chamber for a minimum of 2 hours after completing the recompression dive.

30.C.05 A bell shall be used for dives with an in-water decompression time greater than 120 minutes, unless heavy gear is worn or diving is conducted in physically confining spaces.

30.C.06 Minimum specific operational requirements for SSA diving operations are as follows:

a. Each diver shall be continuously tendered while in the water, with one diver per tender, regardless of depth;

b. An underwater tender/diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces;

c. Each diving operation shall have a primary breathing air supply sufficient to support divers for the duration of the planned dive, including decompression;

d. A SSA standby diver will be dressed out and readily available when a diver is in the water (the standby diver may remove his or her head gear after it is tested for proper operation);

e. Each diver must have a reserve breathing supply available that can be turned on immediately by the diver in the event of loss of air. The reserve breathing air supply shall be of sufficient capacity to safely terminate the dive in the event of loss of primary air but no less than 30 ft^3 (0.85 m^3).

f. Each dive location shall have a reserve breathing air supply integral or in-line with the primary air source sufficient to safely terminate the dive and recover the diver(s) in the event of loss of the primary air supply.

g. For dives deeper than 100 ft (30.4 m) or outside the no-decompression limits and using heavy gear, an extra air hose supplying breathing air to the diver shall be available to the standby diver. An in-water support stage shall be provided to divers in water when using heavy gear, regardless of depth; and

h. Electronic communication systems with an external speaker shall be incorporated in all SSA diving operations so the entire dive team can monitor communications. All dives shall be terminated if voice communications are lost.

30.D MIXED-GAS DIVING OPERATIONS

30.D.01 Mixed-gas diving shall be conducted only when a recompression chamber is ready for use at the dive location and either:

a. A bell is used at depths greater than 220 ft (67 m) or when the dive involves in-water decompression time of greater than 120 minutes (except when heavy gear is worn or when diving in physically confining spaces), or

b. A closed bell is used at depths greater than 300 ft (91.4 m), except when diving is conducted in physically confining spaces.

30.D.02 A separate dive team member shall tend each diver in the water.

30.D.03 A standby diver shall be dressed out and readily available while a diver is in the water. (The standby diver may remove his or her headgear after it is tested for proper operation.)

30.D.04 Each diving operation shall have a primary breathing gas supply sufficient to support divers for the duration of the planned dive, including decompression.

30.D.05 Each diving operation shall have a reserve breathing gas supply integral or in-line with the primary air source sufficient to safely recover the diver(s) in the event of failure of the primary breathing gas supply.

30.D.06 When heavy gear is worn:

a. An extra breathing gas hose capable of supplying breathing gas to the diver in the water shall be available to the standby diver, and

b. An in-water stage shall be provided to divers in the water.

30.D.07 An in-water stage shall be provided for divers without access to a bell for dives deeper than 100 ft (30.4 m) or outside the no-decompression limits.

30.D.08 When a closed bell is used, one dive team member in the bell shall be available and tend the diver in the water.

30.E EQUIPMENT REQUIREMENTS

30.E.01 Equipment modifications, repairs, tests, calibrations, or maintenance shall be recorded by means of a tagging or logging system, and include the date and nature of work performed and the name of the individual performing the work.

30.E.02 Air compressor systems used to supply air to SSA divers shall be equipped with a volume tank with a check valve on the inlet side, a pressure gauge, a relief valve, and a drain valve.

30.E.03 Compressors shall be of sufficient capacity to overcome any line loss or other losses and deliver a minimum 4.5 cfm (2.1 L/s) (actual) to each diver at the maximum diving depth.

30.E.04 Air compressor intakes shall be located away from areas containing exhaust or other contaminants. Compressors shall be designed specifically for their intended use and shall be equipped with an approved regulator, suitable in-line air purifying sorbent beds and filters inserted into the supply line to assure breathing air quality. Oil lubricated compressors shall be equipped with high-temperature, equipment failure, and carbon monoxide continuous monitoring alarm systems. All alarm systems shall be so designed that the dive supervisor will be made aware of the hazardous conditions. All systems will be calibrated daily or before use if not used daily. A record of the results of the testing shall be

maintained. (Alarms shall be of a type specifically designed for use in line with oil-lubricated compressors.)

30.E.05 Air compressor systems, both high pressure (SCUBA) and low pressure (surface supplied) will be tested by an accredited testing laboratory for air purity on a six-month basis by means of sampling at the connection to the distribution system. Purchased air will also be tested and certified.

a. A copy of the certificate of analysis showing the breathing air meets the minimum acceptable criteria shall be provided to the designated authority.

b. Air purity standards are as follows:

(1) Air shall not contain a level of carbon monoxide greater than 20 ppm:

(2) Air shall not contain a level of carbon dioxide greater than 1,000 ppm;

(3) Air shall not contain a level of oil mist greater than 5 milligrams per cubic meter (mg/m^3);

(4) Air shall not contain a level of hydrocarbons other than methane greater than 25 ppm; and

(5) Air shall not contain a noxious or pronounced odor.

30.E.06 Breathing supply hoses.

a. Breathing air supply hoses shall meet the specifications listed in SAE 100-R-3, have a working pressure of the total breathing gas system, and have a rated bursting pressure at least four times the working pressure.

b. Breathing air supply hoses shall have connectors made of corrosion resistant materials and have a working pressure at least equal to the working pressure of the hose to which they are attached: connectors must not be able to become accidentally disengaged.

c. Umbilicals shall be marked in 10 ft (3 m) increments to 100 ft (30.5 m) (beginning at the divers end) and in 50 ft (15.2 m) increments thereafter.

d. Umbilicals shall have a nominal breaking strength of 2650 lb (1202 kg) and shall be made of kink resistant materials.

e. A safety line of at least 3/8 in (0.9 cm) synthetic material shall be included as an integral part of each umbilical.

f. Hoses must be tested at least annually to 1.5 times the working pressure.

g. When hoses are not in use, their open ends must be closed by taping or other means.

30.E.07 SSA and mixed-gas helmets and masks shall have a non-return valve at the attachment between the helmet or mask and hose which will close readily and also have an exhaust valve; helmets and masks shall have a minimum ventilation rate capacity of 4.5 cfm (2.1 L/s) (actual) at the depth at which they are operated. The use of Jack Brown masks is prohibited unless it incorporates electronic communication and a means of incorporating a diver carried bailout system.

30.E.08 SSA and mixed-gas helmets and masks must be capable of supporting a reserve breathing supply which can be immediately turned on by the diver in event of loss of air.

30.E.09 SSA and mixed-gas helmets and masks must be capable of supporting a two-way, diver-surface communication system.

30.E.10 Weights and harnesses. Unless heavy gear is worn, each diver shall wear a safety harness with a positive buckling device, attachment point for the safety line, and a lifting point to distribute the pull force of the line over the diver's body while maintaining the body in a heads-up vertical position when unconscious or inert.

30.E.11 The following emergency and first-aid equipment shall be located at all dive sites:

a. A first-aid kit meeting the requirements of Section 3;

b. An oxygen resuscitation system capable of delivering oxygen for a minimum of 30 minutes; and

c. A stokes litter or backboard, with attached floatation device.

30.E.12 International alpha code and recreational dive flags with a minimum dimension of 23 in (58.4 cm) will be displayed a minimum of 3 ft (0.9 m) above the working surface at the dive location during diving operations.

30.E.13 Hand-held power tools shall be tested and certified to be safe for underwater use; these tools shall be de-energized before being placed into or retrieved from the water and shall not be supplied with power until requested by the diver.

30.F ADVANCED DIVING TECHNOLOGY

30.F.01 The use of one-atmosphere suits (e.g., Newt Suits) requires the specific approval of the USACE Command Diving Coordinator (UDC) prior to the use of such equipment.

30.F.02 The use of "Oxygen Enriched Air" (OEA) such as Nitrox (EANx) breathing mixtures by Contractors requires the prior approval by the DDC/UDC. Decompression tables designed specifically for the OEA mixture being used shall be followed without exception. A dual lock, multi-place, recompression chamber shall be available and ready for use at the dive location. A diving physician, or a trained chamber operator in communication with a diving physician shall be in attendance with the chamber.

30.F.03 Contractors must provide evidence of training and experience with OEA breathing mixtures prior to actual diving operations.

30.F.04 OEA breathing mixture shall be analyzed/tested by the diver to assure proper mix prior to each use.

30.G SCIENTIFIC SNORKELING

30.G.01 Scientific snorkeling will be conducted only with prior acceptance of the Safety and Occupational Health Office Diving Safety Representative and the DDC.

30.G.02 Scientific snorkeling will be allowed only for environmental assessments such as fish surveys, stream surveys, and the like. It will not be used for structural inspections.

30.G.03 A snorkeling team shall be made up of no less than three persons: snorkeler, observer/assistant, and supervisor.

30.G.04 Quality assurance for snorkeling operations will be provided by USACE personnel trained or otherwise qualified as diving inspectors.

30.G.05 Scientific snorkeling will NOT be allowed in waters deeper than 5 ft (1.5 m).

30.G.06 All snorkelers and observers/assistants will be certified as open water divers by a nationally-recognized organization (e.g., Professional Association of Diving Instructors (PADI), National Association of Underwater Instructors (NAUI), etc.).

30.G.07 An observer/assistant will accompany each snorkeler either along the shore or in a boat and be within 50 ft (15.2 m) of the snorkeler at all times. The observer/assistant will be wearing a PFD, equipped with a throw bag and/or ring buoy with at least 70 ft (21.3) of line, and capable of performing a rescue in an emergency.

30.G.08 Tethers will not be used in streams due to entanglement hazards.

30.G.09 Areas of extreme water velocity and turbulence will be avoided especially those immediately upstream from debris jams or bedrock outcrops

30.G.10 Snorkeling will not be done in water where a snorkeler cannot wade across the stream/body of water. Snorkelers will be provided with appropriate thermal protection.

30.G.11 Employees will be determined medically fit prior to snorkeling. The Contractor shall submit certification, signed by a licensed physician, stating that each snorkeler is physically and medically fit to perform snorkeling activities.

30.G.12 The snorkeler, observer/assistant, and supervisor shall be certified in CPR and first aid.

30.G.13 A first-aid kit, including CPR mask and stokes litter or backboard with attached flotation will be available where snorkeling is being performed.

30.G.14 A means of communication capable of contacting emergency services must be available at locations where snorkeling is performed.

30.G.15 Each snorkeler will be equipped with a professional grade diving mask, snorkel, and dive knife.

30.G.16 A snorkeling protocol will be developed and included in the project file. It will contain as a minimum, the following:

a. An AHA for each specific snorkeling mission. Particular detail will be given to currents and other environmental considerations.

b. Records for snorkeling activities will be maintained. These records will include as a minimum: annual physician letter stating fitness to perform snorkeling survey, an AHA, and a snorkeling plan. The latter will be based on the requirements of 30.A16.

30.G.17 Snorkelers will wear snorkeling vests for buoyancy with an integrated emergency inflation device and wear apparel which provides appropriate environmental protection. The apparel must include fins or other appropriate foot protection.