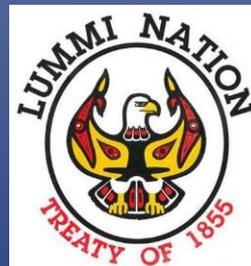


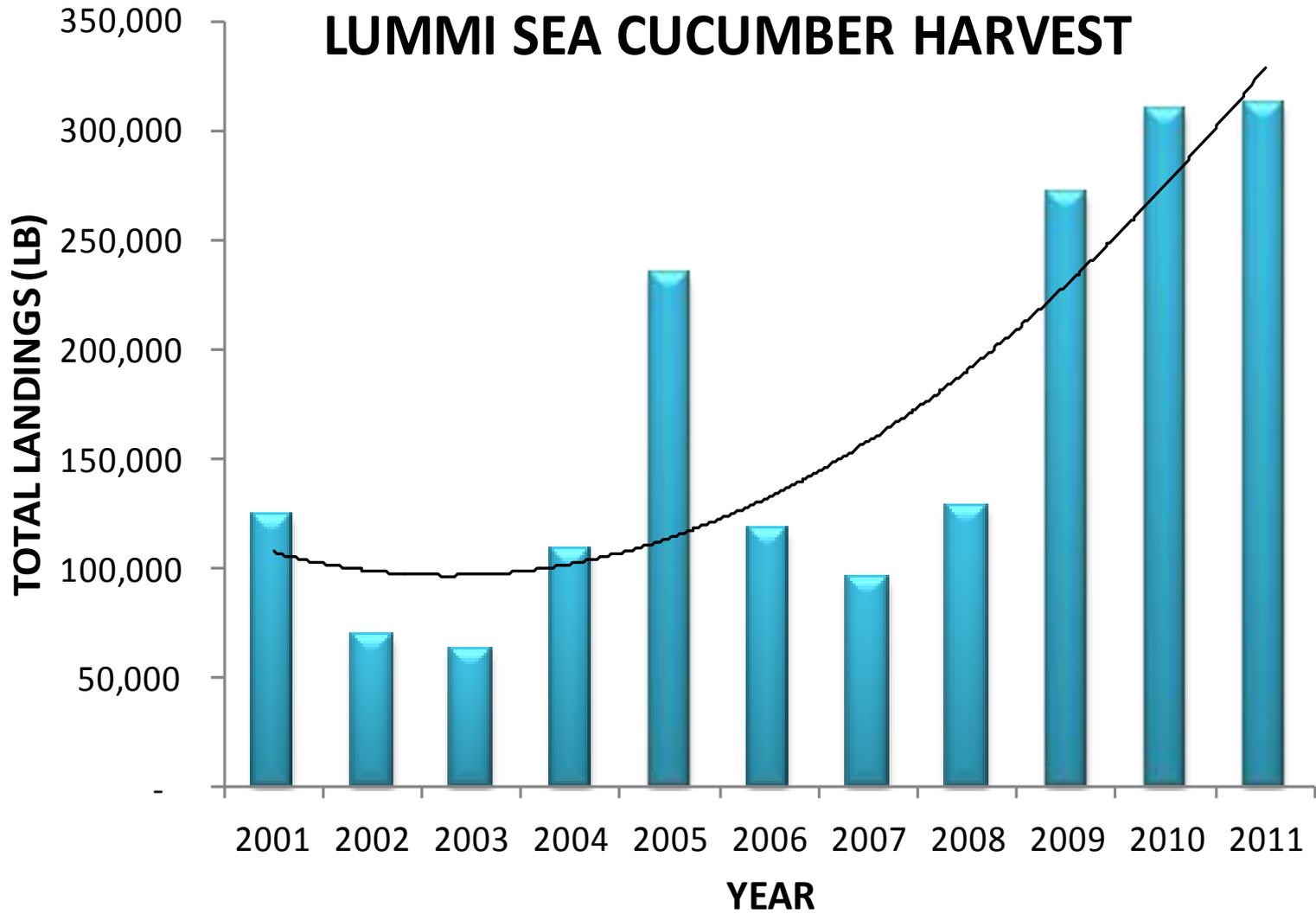
DEVELOPMENT OF A DIVING SAFETY PROGRAM FOR LUMMI COMMERCIAL HARVEST DIVERS



Karl W. Mueller
Lummi Natural Resources Department



LUMMI SEA CUCUMBER HARVEST



Lummi commercial harvest diving demographics (2012/2013)

- 11 – 15 vessels
- 29 – 36 divers
- 12 – 16 hose tenders
- Est. dives/year: 9,000+
- Most participants: 55 in 2012
- Age: 19 – 52 years
- Predominantly male

LFNRC requests recommendations on improving commercial harvest diver safety



Taking inventory – Part I

- Assign a Diving Safety Officer (DSO)
- Review past incidents
- Dive safety refresher training
- Train law enforcement personnel
- Fleet inspection
- Safety equipment

Contributing factors in past incidents

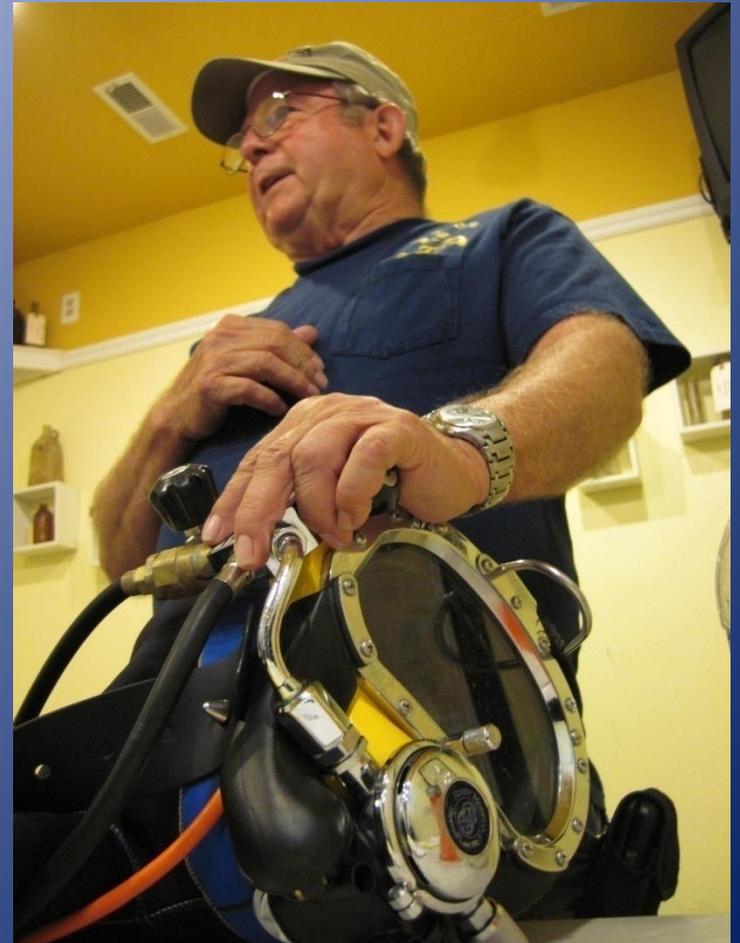
- Inadequately trained personnel
- Equipment malfunction or damage
- Topside error – operator or hose tender
- Diver exceeding limits



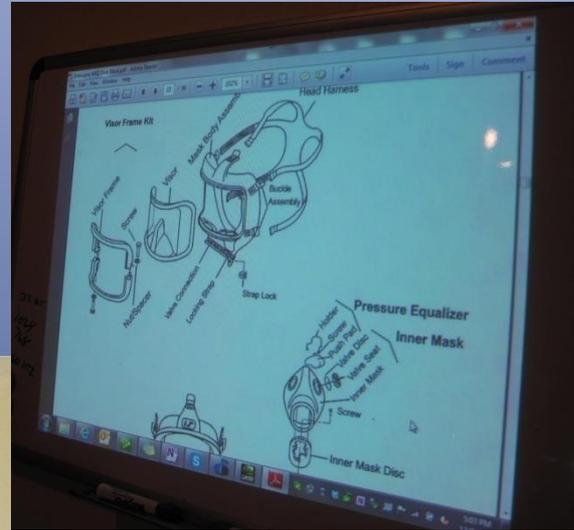
2012 dive safety refresher training



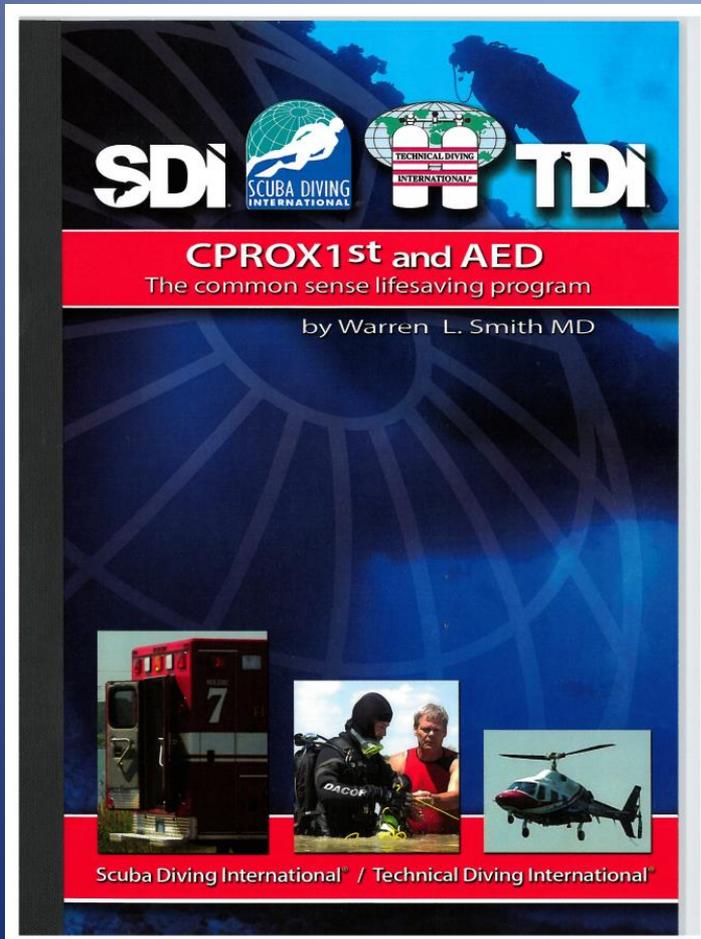
Refresher component no. 1: Classroom overview



Refresher component no. 2: Trouble-shooting gear in the field



Refresher component no. 3: First Aid/CPR/O₂ administration



Refresher component no. 4: Hose tender/topside skills



Refresher component no. 5: Underwater skills



Refresher component no. 6: Diving incident/accident management



Law enforcement officers trained in Public Safety Diver methods and SSA techniques



Fleet-wide vessel/equipment inspections and air quality testing



Dive fleet outfitted with emergency oxygen administration kits



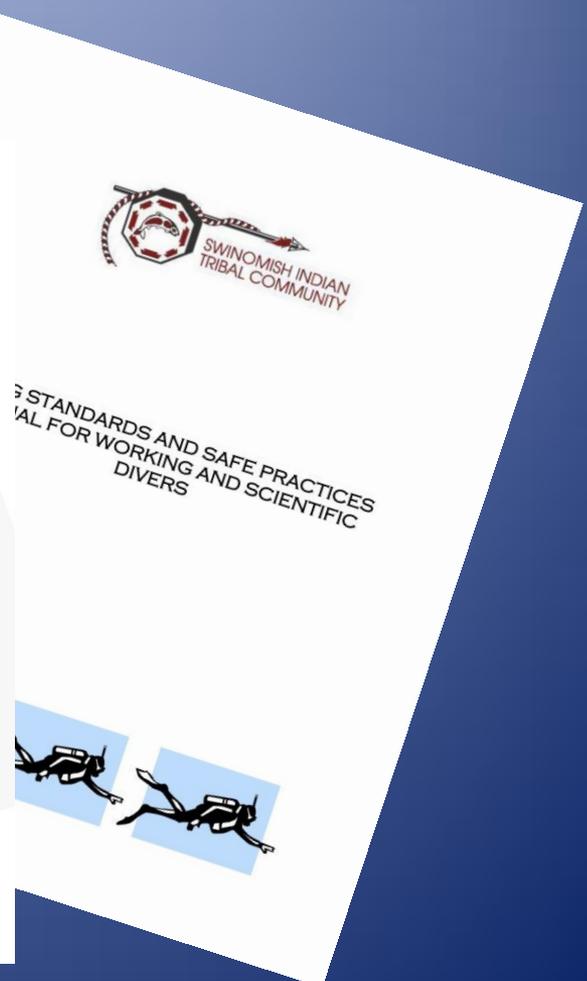
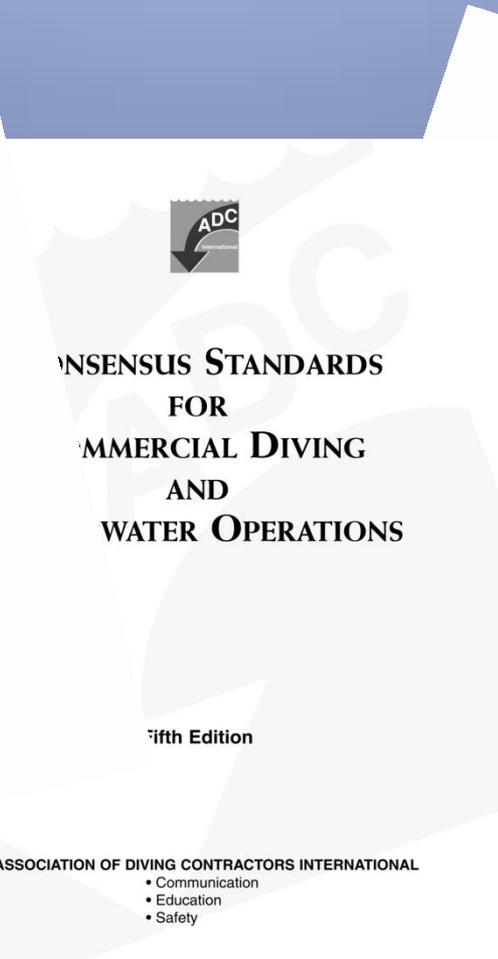
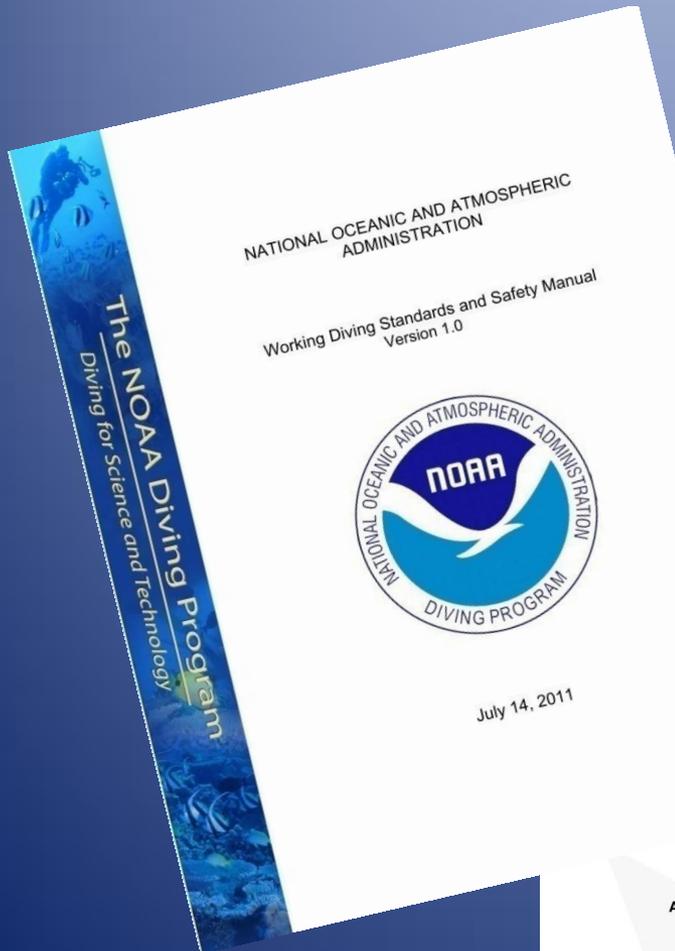
Taking inventory – Part II

- Review existing (former) standards
- Update or develop new standards
- Utilize a Diving Control Board (DCB)
- Update medical requirements and introduce drug screening
- Record keeping, including incident reports
- Communications

Review of former standards

- Adapted from OSHA
- No review or updates since mid-1990s
- Minimal training requirements
- Little accountability for diving safety
- Physical exam required but no drug screen

Diving standards development: Choices, choices, choices



Wanted:

- Criteria for fitness to participate for all crew members
- Training requirements, certifications, and qualifications that better reflected reality of commercial harvest diving
- Pre- and post-dive checklists for safe operations and use of equipment

Wanted:

- Recommended protocols that also reflected reality of commercial harvest diving
- Guidance for dive accident management
- Formalized incident reporting system

Wanted:

- Review process
 - DSO, DCB, and LFNRC
 - Dive community involvement
 - Increased accountability
- Formalized record keeping system to better track participation in dive fisheries
- Safety manual

Regulatory authority for implementation of diving standards

- Sovereign people subject to own laws
- Enforced by Lummi
- Commission oversight
- No State or Federal agency can unilaterally regulate Lummi fishers

TITLE 10 LUMMI NATION CODE OF LAWS NATURAL RESOURCES CODE

Chapter 10.01 Title and Purpose

10.01.010 Title

This title shall be known as the Natural Resources Code of the Lummi Nation.

10.01.020 Natural Resources Treaty Rights

The natural resources harvest rights reserved to the Tribes in the Point Elliott Treaty of 1855 to the signatory tribal parties are reserved to the Lummi Nation to the extent that it is a successor to those tribes. The exercise of the treaty reserved right by a citizen of the Lummi Nation is a privilege extended to that citizen by the Lummi Nation subject to the conditions established by the Council. The Council may suspend the natural resources ~~treaty~~ harvest rights for habitual violators of its provisions. The Council as a last resort may, upon recommendation of the Court, or Petition of Commission members, suspend or revoke all privileges of enrollment.

10.01.030 Jurisdiction

All citizens of the Lummi Nation exercising the Lummi Nation's Natural Resources Treaty Rights are subject to the jurisdiction of the laws of the Lummi Nation governing activities during the exercise of these rights, including acts prohibited in this Title and prohibited criminal acts contained in Title 5 of the Lummi Code of Laws. Citizens are exercising these rights while en route to or from off reservation areas where the rights are to be exercised and while in off reservation areas with the intent to exercise these rights.

10.01.040 Lummi Fisheries and Natural Resources Commission

The LIBC, as the governing body of the Lummi Nation under the Constitution and By-laws of April 10, 1970, under the authority of Article VI, Sec. 1-P, of the Constitution and By-laws, hereby establishes a subordinate organization to be known as the Lummi Fisheries and Natural Resources Commission to implement the objectives of this title

through recommendations for Council action.

10.01.050 Purpose

This title is to establish the institutional framework to govern and regulate fishing, hunting and other natural resources related activities under the jurisdiction of the Lummi Nation in accordance with cultural tradition and the best available scientific information. The title is also to protect the environment required to sustain high levels of production of those resources to ensure maximum sustainable harvest from the fish, game and other natural resources in conformity with the accepted standards of international law and specifically as reserved and secured to the Lummi Nation by the Treaty of Point Elliott, January 22, 1855, and upheld United States vs. Washington 496 F. 2d 620 (9th Cir. 1974). Actions taken under this title to restrict the activities of citizens of the Lummi Nation shall not constitute a waiver of the rights and obligations of the Lummi Nation, or recognition of the authority of any State of Federal executive agency to unilaterally regulate the activities of citizens of the Lummi Nation in their usual and accustomed fishing and hunting grounds and stations.

10.01.060 Enforcement

Officers of the Natural Resources Enforcement Patrol are authorized to make arrests, issue citations, inspect gear and equipment, confiscate gear and equipment and file complaints in the Court on behalf of the Lummi Nation when provisions of this title are violated.

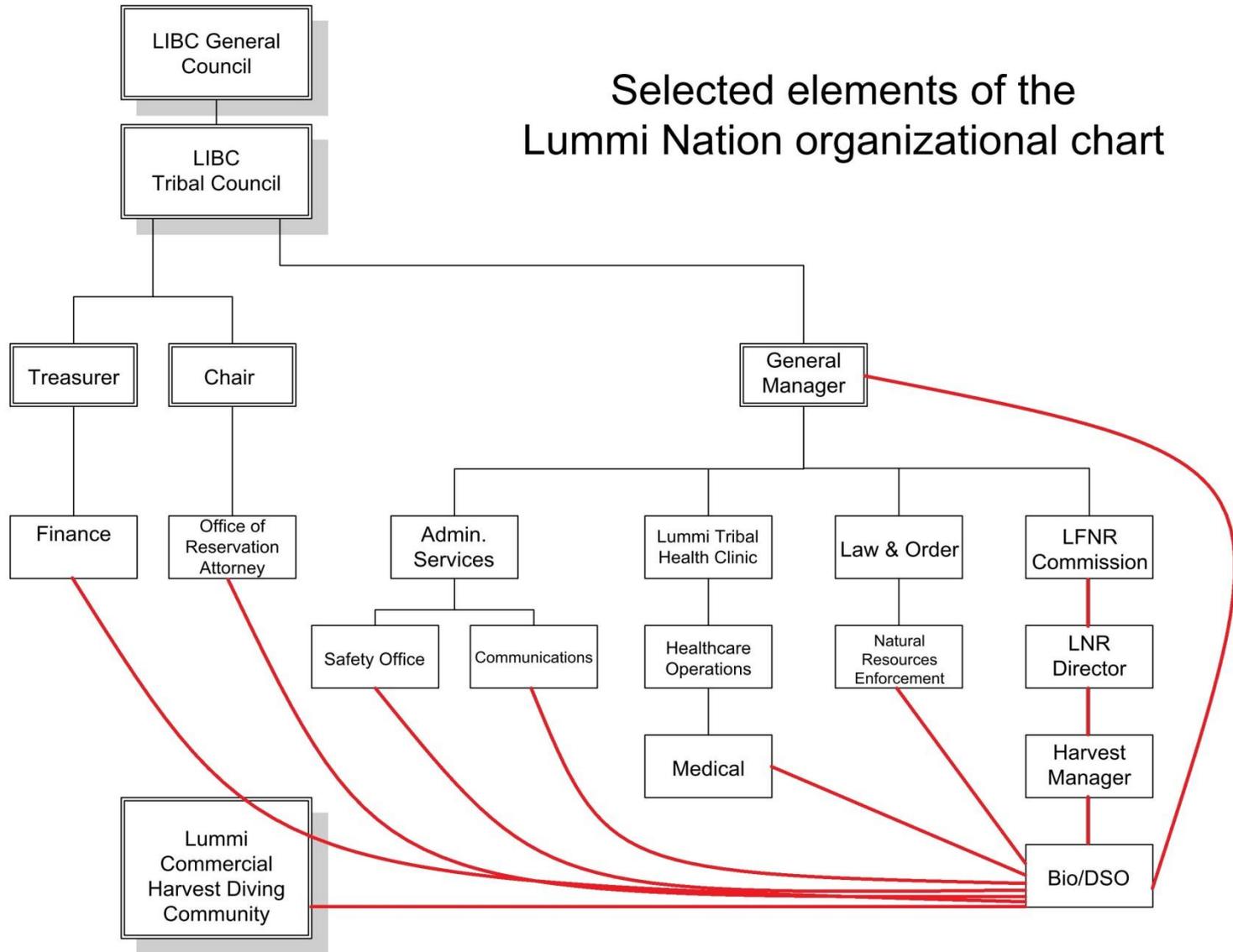
Chapter 10.02 Definitions

As used in this Title the following words shall have the meaning set out in this chapter.

10.02.010 Bond

Bond as referred to in this Title shall mean: a) Cash or money order paid to the LIBC, b) A surety bond naming the LIBC as the obligee and expiring no later than 90 days after the license period, c) An irrevocable standby

Selected elements of the Lummi Nation organizational chart



COMMERCIAL HARVEST DIVING STANDARDS



Lummi Natural Resources Department
Lummi Indian Business Council



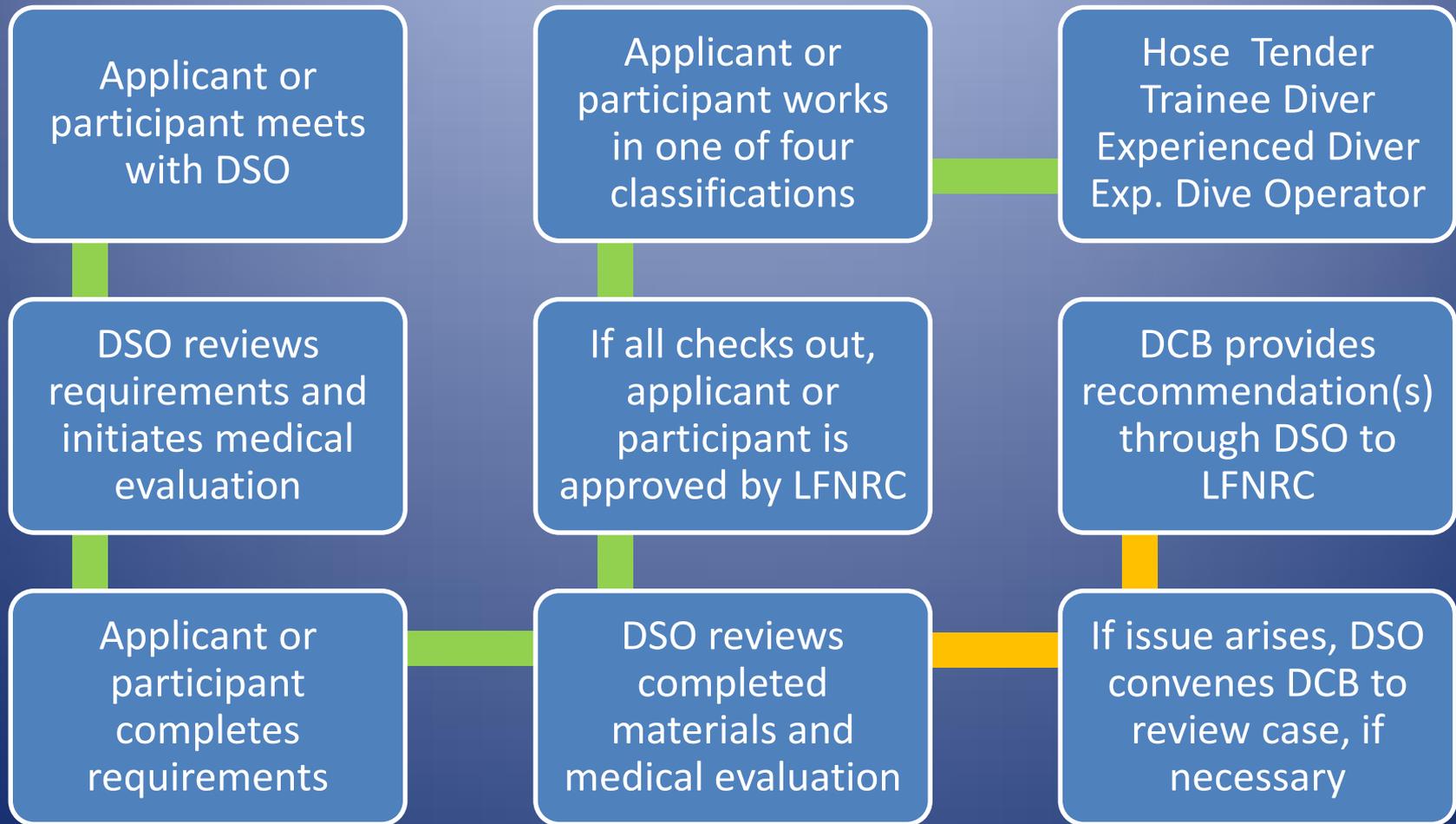
Fitness to participate in dive operations

- Everyone participating required to undergo medical evaluation
- Updated physical requirements for divers
 - Based on ADCI standards
- New physical requirements for hose tenders
 - Based on standard Whatcom County sports physical
- Drug screening for all crew members
 - Conducted by third party but tied in with physicals

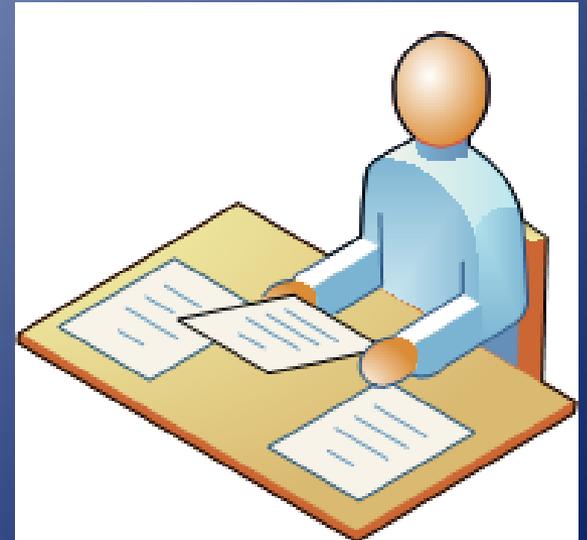
Formal review and approval process

- LFNRC-assigned DSO
 - Administers diving safety program for LNR
 - Assembles dive community, DCB, and LFNRC
 - Non-voting member of DCB
- Formation of DCB
 - Members must have 5+ years of experience
 - Provides Lummi peer review
 - Incidents, breaches of standards, etc.
 - Reviews changes to standards as needed
 - Makes non-binding recommendations to LFNRC

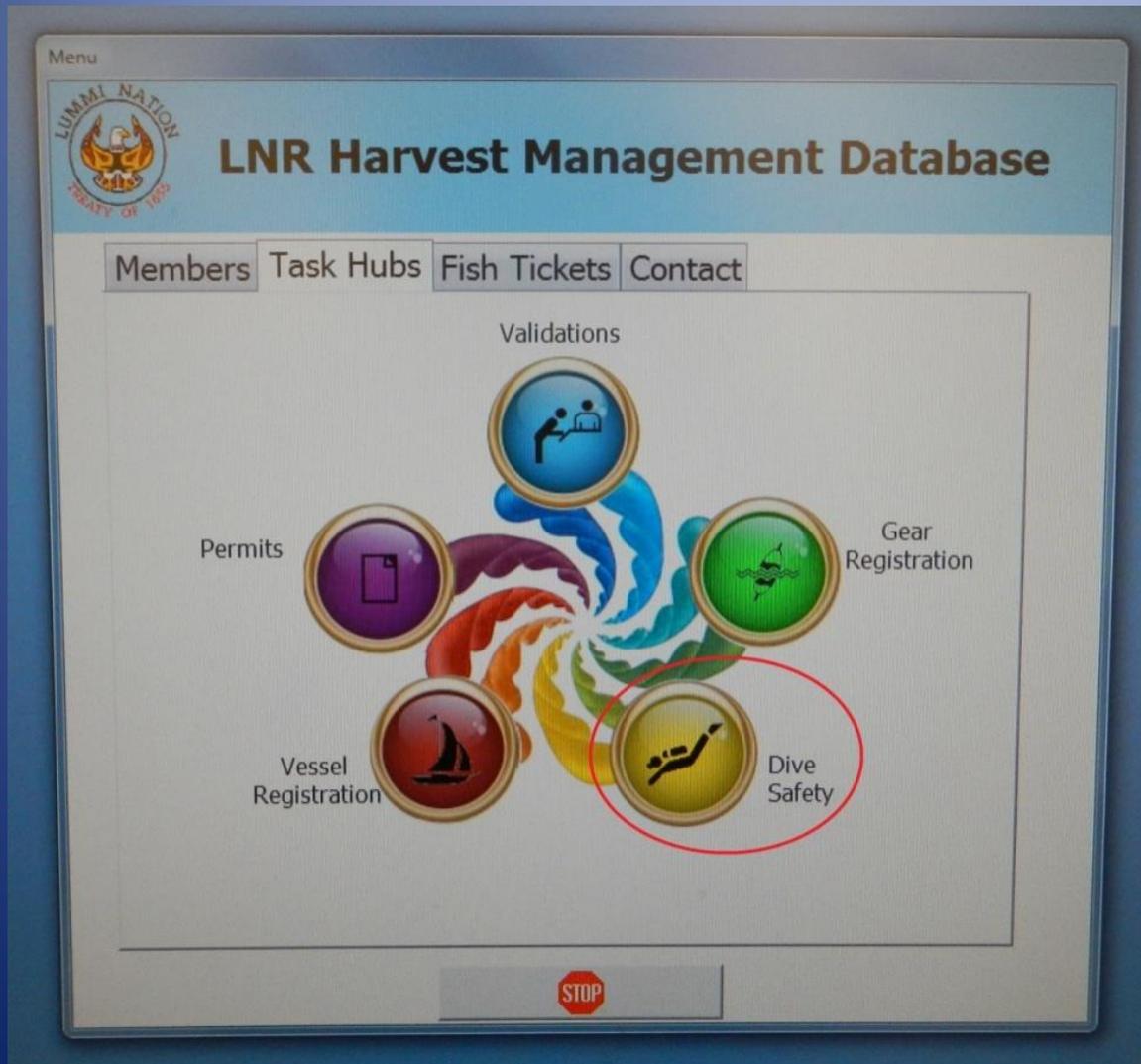
LNR approval/classification process



Record keeping



Record keeping



Improved communications: Print media

SQUOL
TODOL

Community Updates

Diving Safety Training for Commercial Harvest Divers

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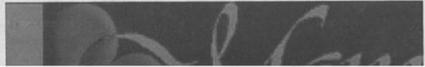
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Last month, the Lummi Fisheries and Natural Resources Commission approved a diving safety refresher training for the Lummi Nation commercial harvest diving community. The mandatory training will take place during the fourth week of May at Edmonds Technical Diving Services' facilities in Hoodspont, Washington (Hood Canal).

Participants will review proper dive helmet fit, operation, and minor field repairs, update their surface-supplied air skills, learn first aid specifically designed for diving operations, including the administration of emergency oxygen, and practice a variety of in-water emergency scenarios.

Three overlapping class sessions will be offered from May 22 (Tuesday) through May 25 (Friday). These are currently full. Arrangements are being made to add a fourth class session on May 25 (Friday) and May 26 (Saturday). All working divers and dive tenders are reminded that space is limited and are encouraged to contact Karl Mueller at Lummi Natural Resources Department (360-384-2367 or KarlM@lummi-nsn.gov) to confirm their enrollment in one of the four class sessions.



Training Safer Divers

The Lummi Nation organized a dive safety course this spring for 32 tribal divers.

Underwater harvest of sea cucumbers, geoducks and sea urchins is integral to the livelihood of many tribal fishermen, especially in light of declining salmon runs.

"Our *schelangen*, or way of life, depends on the natural resources of the sea," said Lummi Chairman Cliff Cultee. "Crab, prawn and salmon seasons are short, so dive fisheries can be a more stable source of income."

Most tribal divers use a surface supplied air system rather than scuba gear. An umbilical hose connects the diver to an onboard air compressor at the surface.

"The primary reason for using surface supplied air is to maximize divers' bottom times without limiting their air supplies while exerting themselves underwater," said Lummi fisheries management biologist Karl Mueller.

Dive safety is like first-aid training, and should be reviewed regularly. Mueller organized the course at Edmonds Technical Diving Services in Hoodspont, and is planning to hold at least one more this year.

"The participants had a wide range of experience, from veteran divers to those recently certified," he said. "Everyone got something out of the course."

The training included CPR using oxygen and an automatic defibrillator, equipment maintenance and rescue scenarios. Div-



Karl Mueller/Lummi Nation

Recently certified diver Michael Alexander administers oxygen to experienced diver Jason Sieber during an unconscious diver rescue scenario.

ers simulated tugging the umbilical line to communicate during a failure in voice communication, and bringing an unconscious diver to the surface

"In the diver down scenario, they practiced stripping gear efficiently," Mueller said. "The fastest anyone was able to administer oxygen was 20 seconds." – K. Neumeyer

North Sound Blessings



K. Neumeyer (2)

Left: Swinomish tribal member Jimmy Wilbur blesses tribal fishermen with a cedar bough during the Swinomish Tribe's annual Blessing of the Fleet and First Salmon Ceremony. Below: Lummi tribal member Harlan James presents the remains of the first salmon to each of the four directions before it is released into Hale Passage during Lummi's First Salmon Ceremony.

Diving safety video by NWIC student



Monthly meetings



Website with relevant links

LUMMI NATION
TREATY OF 1855

Lummi Natural Resources Harvest Management

LUMMI NATURAL RESOURCES: HARVEST MANAGEMENT: DOCUMENT CENTER:
COMMERCIAL HARVEST DIVING

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LINKS:

- [Diving Accident Articles](#)
- [Diving Equipment Information and Safety Recalls](#)
- [Diving Medicine](#)
- [Diving Safety](#)

Lummi commercial harvest diving community:

Please see links below for documents related to the LNR commercial harvest diving standards. Other documents related to topics such as diving accidents, medicine, and safety, and equipment information and safety recalls can be found through the links at left.

- Regulation 2013-24 Commercial Harvest Diving Standards
- LNR Commercial Harvest Diving Standards (July 2013 version)

[Click Photos for More Detail](#)

The first photo shows a blue diving tank and other equipment on a sandy beach. The second photo shows a diver in a blue tank underwater, near a rocky bottom.

Text alert system

John Doe Diver

From: Karl W. Mueller
Sent: Friday, February 28, 2014 9:57 AM
To: John Doe Diver
Subject: REMINDER: DIVERS MEETING TODAY

DIVERS WILL MEET TODAY, 2 P.M., UPSTAIRS IN THE USUAL CONFERENCE ROOM.

Is it working?

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Bellingham man dies in diving accident on San Juan Island

A crew member of a _____ fishing boat died Thursday morning while diving for sea cucumbers in Griffin Bay on San Juan Island.

According to the San Juan County Sheriff's Department, the 47-year-old Bellingham man, _____, began complaining about having difficulty breathing while ascending from about 70 feet below the surface of the bay, near Dinner Island.

_____ reportedly collapsed while trying to climb back onboard the boat and fell backwards into the water. He had worked as a commercial diver for a bout a year before the fatal accident, Sheriff Rob Nou said.

The sheriff's office received a 9-1-1 call from the two other men onboard the boat at about 10:35 a.m. The man was rescued from the water by fellow crew

Tweet 0

0

COMMENTS

EMAIL STORY

PRINT STORY

Some indications that program is working

- Hose tender and failed voice communications
- Diver goes into afib, uses oxygen
- Reduction in scoff-laws
- Proactive vessels owners
- Divers coming forward with incidents
- Divers seeking referrals to diving physician

Acknowledgements

- Lummi Nation commercial harvest diving community
- Lummi Fisheries and Natural Resources Commission
- Merle Jefferson, Ben Starkhouse, and Craig Dolphin, Lummi Natural Resources Department
- Lummi Nation Police Department
- Dale Haveman, John Tilley, and Diane Cook, Lummi Tribal Health Center
- Julie Jefferson, LIBC Communications Department
- Diving Safety Officers Julie Barber and Nate Schwarck
- Edmonds Technical Diving Services

Thank you

