Application for a Hunt Permit under the Marine Mammal Protection Act and Regulations Governing the Taking of Eastern North Pacific (ENP) Gray Whales (*Eschrichtius robustus*) by the Makah Indian Tribe Off the Coast of Washington State



Submitted by the Makah Indian Tribe

March 3, 2025

Table of Contents

Cover Statement and Signature of Makah Tribal Chairman Greene	4
Application for Hunt Permit	5
I. Governing Federal Regulations	5
II. Summary of Initial Hunt Permit	5
III. Scope and Duration of the Initial Hunt Permit	6
A. Proposed Duration of the Permit	6
B. Number of Whales to be Subjected to Taking	6
C. Summary Table with Season and Area Information	7
IV. The Proposed Method of Taking is Humane	8
A. Introduction and Executive Summary	8
B. Historical Makah Whaling Methods	10
C. Survey of Modern Whaling Methods	12
1. Rifle	12
a. Research and training on targeting brainstem and cervical vertebrae	13
b. Whale hunts using rifles as the primary kill weapon	13
c. Ballistics of rifles used in whale hunts	14
d. Use of a rifle in the Makah hunt	15
2. Explosives	15
a. Harpoon cannon	16
b. Bomb lance	16
c. Consideration of using explosives in the Makah hunt	17
D. Survey of Whale Euthanasia Methods	18
1. Chemicals	18
2. Explosives	20
3. Rifle	20
E. The Makah Hunt Is Humane	22
1. Training and certification for Makah whaling teams	22
2. Makah hunt plan	24
3. Expert review of Makah hunt plan and training program	26
4. Time to death during recent Makah hunts	26

5. Adaptive management	27
F. Conclusion	28
V. The Proposed Taking is Consistent with the Waiver Regulations	28
VI. The Currently Enacted Makah Whaling Ordinance	29
VII. The Certification Process for Identified Roles on the Whaling Team and the Tribal Hunt	
Observer	29
VIII. Additional Hunt Permit Conditions Proposed by the Tribe	29
IX. Modifications to the Waiver Regulations	35
Literature Cited	36
Attachment 1. Makah Whaling Ordinance (50A) (and Resolution No. 014-25)	41
Attachment 2. Whaling Team Certification Guidelines	90
Attachment 3. Whaling Training Program and Certification Procedures (and Safety	
Requirements Appendix)	96
Attachment 4. Guidelines for Approaching Gray Whales during Whaling Training and Making	g
Training Harpoon Throws	.107

Table of Figures

Figure 1. Figure of minke whale from Knudsen et al. (1999)	13
Figure 2. Schematic drawing of a bomb lance from Scammon (1874)	
Figure 3. Photo of a gray whale surfacing	23
Figure 4. Map of biologically sensitive areas listed in Table 2	

Tables

Table 1. Hunt Permit Duration and Number of Whales Subject to Taking	7
Table 2. List of biologically sensitive sites and associated periods of concern	33



MAKAH TRIBE

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March 3, 2025

The Makah Indian Tribe (Tribe) secured the right of hunting whales in the 1855 Treaty of Neah Bay. The Tribe's whaling right – the only express whaling right in the hundreds of treaties between Indian tribes and the United States – reflects the extraordinary importance through time of whales and whaling to the Makah people and provides a perpetual means for Makahs to meet their subsistence, cultural, and spiritual needs.

Notwithstanding the Tribe's express whaling right under the Treaty, a federal court held that the National Marine Fisheries Service (NMFS) must waive the moratorium on taking marine mammals under the Marine Mammal Protection Act (MMPA) before the Tribe may conduct ceremonial and subsistence hunts of gray whales. *Anderson v. Evans*, 371 F.3d 475 (9th Cir. 2004). On June 18, 2024, NMFS published a decision waiving the moratorium and promulgating regulations that allow the Tribe to conduct a hunt of up to 25 Eastern North Pacific (ENP) gray whales over a 10-year period. 89 Fed. Reg. 51600 (June 18, 2024); 50 C.F.R. §§ 216.110-119. The waiver decision marked completion of the first step in an administrative process that began when the Tribe submitted its request for a waiver in February 2005.

In addition to a waiver, the *Anderson* court required the Tribe to obtain a permit under the MMPA before exercising its treaty whaling right. *Anderson*, 371 F.3d at 501-02; 16 U.S.C. § 1374. The 2024 waiver regulations, *inter alia*, govern the issuance and duration of hunt permits, 50 C.F.R. § 216.113, and establish requirements for management of the hunt, *id.* § 216.114.

The Makah Tribal Council has authorized the application for a hunt permit contained in this document and requests that it be approved in a timely manner by the Regional Administrator of NMFS for the West Coast Region. As demonstrated herein, the Tribe believes the application is consistent with the requirements and purposes of the MMPA and waiver regulations.

Issuance of the permit is necessary for the United States to fulfill its fiduciary obligations to the Tribe under the Treaty of Neah Bay. Further, in making a decision on the permit application, NMFS must harmonize the MMPA and the Treaty, giving effect to both. *Swinomish Indian Tribal Cmty. v. BNSF Ry. Co.*, 951 F.3d 1142, 1156 (9th Cir. 2020); *see also Anderson*, 371 F.3d at 501 n.26 ("Unlike other persons applying for a permit or waiver under the MMPA, the Tribe may urge a treaty right to be considered in the NMFS's review of [the Tribe's] application").

MAKAH TRIBAL COUNCIL

Timothy J. Greene, Sr., Chairman

APPLICATION FOR HUNT PERMIT

I. Governing Federal Regulations.

The waiver regulations set forth the required contents of the Makah Indian Tribe's application for a hunt permit. To begin the process for an initial hunt permit, the Tribe must submit information and statements on the following eight items to the Regional Administrator of the West Coast Region of NMFS:

- (1) The proposed duration of the permit;
- (2) The maximum number of gray whales to be subjected to hunting or training approaches, struck, landed, and subjected to unsuccessful strike attempts;
- (3) A demonstration that the proposed method of taking is humane;
- (4) A demonstration that the proposed taking is consistent with this subpart;
- (5) A copy of the currently enacted Makah Indian Tribal ordinance governing whaling by Makah Indian Tribal members;
- (6) A description of the certification process for whaling captains, riflemen, harpooners, Tribal hunt observers, and safety officers, including any guidelines or manuals used by the Tribe to certify such persons;
- (7) Any additional hunt permit conditions proposed by the Tribe and a justification for the proposed conditions; and
- (8) Any modification to this subpart sought by the Tribe and a justification for the proposed modification.

50 C.F.R. § 216.113(a)(1)(i)-(viii).1

Before issuing the initial hunt permit, the Regional Administrator must make eight specified determinations, including the following three determinations that correlate specifically to information that the Tribe must submit in the application:

- (1) The authorized manner of hunting is humane;
- (2) The Makah Indian Tribe has enacted a Tribal ordinance governing hunting that is consistent with this subpart; and
- (3) The Makah Indian Tribe has in place certification procedures for whaling captains, riflemen, harpooners, Tribal hunt observers, and safety officers and a process to ensure compliance with those procedures.

Id. § 216.113(b)(6)(i)-(iii).

II. Summary of Initial Hunt Permit.

The Tribe seeks an initial hunt permit that authorizes hunts in two summer/fall hunt seasons, 2025 and 2027, and would be in effect from July 1, 2025 through October 31, 2027. The

¹ Applications for subsequent hunt permits require submission of additional information and statements. 50 C.F.R. § 216.113(a)(2).

permit would authorize up to two (2) strikes and one (1) landed gray whale per summer/fall hunt season, and a number of approaches and unsuccessful strike attempts (including training harpoon throws) consistent with the waiver regulations. Throughout, the application demonstrates the consistency of the Tribe's proposed taking with the waiver regulations. The Tribe comprehensively explains why its method of hunting is consistent with the MMPA's requirement that the method of taking be "humane" as defined in the statute. 16 U.S.C. §§ 1362(4), 1374(b)(2)(B). Attached to the Application are the current Makah Whaling Ordinance (50A) and approved certification procedures for all members of a whaling team and Tribal hunt observers. In addition to the numerous restrictions on the Tribe's exercise of the treaty whaling right contained in the waiver regulations, the Tribe proposes time and area conditions to avoid disturbing hauled-out pinnipeds, nesting seabirds, and rafted sea otters in identified biologically sensitive sites. Finally, for purposes of this initial hunt permit, the Tribe is not proposing any modifications to the waiver regulations.

III. Scope and Duration of the Initial Hunt Permit.

A. Proposed Duration of the Permit.

The Tribe seeks an initial hunt permit that would be in effect from July 1, 2025 through October 31, 2027. This permit duration will allow the Tribe to conduct hunts during two summer/fall hunt seasons: from July 1 to October 31, 2025; and from July 1 to October 31, 2027. 50 C.F.R. § 216.114(a). The proposed duration of 28 months is consistent with the requirement of the waiver regulations that the initial hunt permit not exceed three years (36 months). *Id.* § 216.113(b)(4). The Tribe does not seek authorization to take gray whales outside of the eight (8) total months constituting two summer/fall hunt seasons identified above. Accordingly, no hunts, training approaches, or training harpoon throws would be conducted in 2026 under the initial permit.

B. Number of Whales to be Subjected to Taking.

For each summer/fall hunt season, the permit would allow up to two (2) gray whales to be struck and one (1) to be landed, for a total of up to four (4) whales struck and two (2) landed, consistent with the limit in the waiver regulations for the number of gray whales that may be struck and landed in a summer/fall hunt season. *Id.* § 216.114(c)(3), (5).

For each summer/fall hunt season, the permit would allow up to 142 gray whales to be approached (whether during a hunt or as part of training) for a total of 284 approached whales. *Id.* § 216.114(c)(1); *see also id.* § 216.114(b) (training period). This limit on approached whales reflects the regulatory presumption that from June through November, 100% of the gray whales in the hunt area are Pacific Coast Feeding Group (PCFG) whales. *Id.* § 216.114(d)(2).

For each summer/fall hunt season, the permit would allow up to 12 gray whales to be subject to unsuccessful strike attempts (including training harpoon throws), for a total of 24 whales either unsuccessfully struck or subject to a training harpoon throw. *Id.* § 216.114(c)(2). This limit on unsuccessful strike attempts (including training harpoon throws) reflects the regulatory

presumption that from June through November, 100% of the gray whales in the hunt area are PCFG whales. *Id.* § 216.114(d)(2).

C. Summary Table with Season and Area Information.

The information described above regarding the duration of the initial hunt permit and the number of whales that would be subjected to taking under the permit is summarized in Table 1, below. For clarity, the table also includes information on the time and area in which the authorized taking may occur.²

Hunt Permit Parameter	Dates / Number / Area	Citation to Waiver Regulations (50 C.F.R. §)	
Duration	28 months (July 1, 2025 – October 31, 2027)	216.113(a)(1)(i) 7) 216.113(b)(4)	
Effective date	July 1, 2025	216.113(b)(4) 216.119(a)	
Hunt area	U&A west of Bonilla-Tatoosh Line	216.113(b)(5)(iii)	
Hunt season (summer/fall)	July 1 – October 31, 2025 and July 1 – October 31, 2027	216.113(b)(5)(iv) 216.114(a)	
Struck whales	4 (2 per summer/fall hunt season)	216.113(a)(1)(ii) 216.114(c)(3)	
Landed whales	2 (1 per summer/fall hunt season)	216.113(a)(1)(ii) 216.114(c)(5)	
Approaches (hunting or training)	284 (142 per summer/fall hunt season)	216.113(a)(1)(ii) 216.114(b) 216.114(c)(1)	
Unsuccessful strike attempts (including training harpoon throws)	24 (12 per summer/fall hunt season)	216.113(a)(1)(ii) 216.114(c)(2)	
Training area (for training approaches and training harpoon throws only)	U&A west of Bonilla-Tatoosh Line	216.113(b)(5)(iii)	
Training approaches period	July 1 – October 31, 2025 and July 1 – October 31, 2027	216.113(b)(5)(iv) 216.114(b)	

Table 1. Hunt Permit Duration and Number of Whales Subject to Taking

 $^{^{2}}$ Time and area limits to avoid disturbance of hauled-out pinnipeds, nesting seabirds and rafted sea otters are not included in Table 1, but are described in detail in Section VIII, below.

Hunt Permit Parameter	Dates / Number / Area	Citation to Waiver Regulations (50 C.F.R. §)
Training harpoon throws period	July 1 – October 31, 2025 and July 1 – October 31, 2027	216.113(b)(5)(iv) 216.114(b) 216.114(c)(2)

IV. The Proposed Method of Taking is Humane.

A. Introduction and Executive Summary.

Pursuant to the waiver regulations, the Tribe's application for a hunt permit must include a "demonstration that the proposed method of taking is humane[.]" 50 C.F.R. § 216.113(a)(1)(iii); 16 U.S.C. § 1374(b)(2)(B). Before issuing a permit, the Regional Administrator must determine that "[t]he authorized manner of hunting is humane[.]" 50 C.F.R. § 216.113(b)(6)(i). This requirement implements Section 104 of the Marine Mammal Protection Act (MMPA) which authorizes the Secretary of Commerce to issue a permit for the taking of marine mammals, provided that the permit specifies the manner of taking and the Secretary determines that the manner of taking is humane. 16 U.S.C. § 1374(b)(2)(B). In the context of the taking of a marine mammal, the term humane means the "method of taking which involves the least possible degree of pain and suffering practicable to the mammal involved." 16 U.S.C. § 1362(4); *see also* 50 C.F.R. § 216.3. In practice, the humaneness of a taking is typically evaluated based on the length of time between the initial strike and the death of the whale ("time to death") and avoidance of struck and lost whales.

Providing for the welfare of a hunted whale by hastening its time to death, ensuring that each struck whale is landed for use by the Makah Tribal community, and maintaining the safety of the whaling crew are mutually reinforcing objectives that will guide the Makah Tribe's training and hunting methods as it resumes whaling under the right secured by the 1855 Treaty of Neah Bay. The Tribe has adapted its historic whaling techniques and customs and incorporated modern equipment and scientific knowledge of whale behavior and anatomy to develop a hunt plan that will ensure to the extent practicable that all struck whales will be killed swiftly, thereby minimizing a hunted whale's pain and suffering, while maintaining connectivity of the hunt to Makah history and culture.

In the Tribe's first whale hunt in decades in 1999, a Makah whaling team successfully killed a gray whale in just eight minutes following the initial harpoon strike. The 1999 Makah whaling team accomplished this relatively rapid time to death through a hunt plan that blended traditional Makah hunting methods – including rigorous physical and spiritual training, approaching the whale from a canoe, and initially striking the whale with a harpoon to attach a float – with a modern kill weapon and motorized support vessels. The 1999 hunt demonstrated that Makah whaling techniques with deep cultural meaning can achieve the objective of a safe, efficient, and humane hunt.

The Tribe developed its hunt plan through research into whaling methods used around the world, experimentation, and analysis by experts in large animal veterinary science, ballistics and whale biology. The Makah hunt plan under the waiver involves an initial approach and harpoon strike from a traditional canoe and then killing the whale with a high-powered rifle fired from a motorized chase boat. The Tribe's hunt plan utilizes equipment that is readily obtainable and techniques demonstrated to be effective in striking, killing, and securing a gray whale in the waters of the Pacific Ocean near the Makah Reservation. Practical considerations also necessarily informed the Tribe's development of its hunt plan. Gray whales do not float when dead, therefore it is essential that a whaling team first attach multiple floats using harpoons before killing the whale. As the Tribe demonstrated in its 1999 hunt, a bullet fired from a highcaliber rifle targeting the brainstem and cervical spine will kill a gray whale quickly and result in minimal loss of meat and blubber. The rifle is also more reasonable and safer to obtain, store, transport, and train with than explosive devices utilized in other modern whale hunts. Accordingly, the Makah hunt plan optimizes the likelihood of regularly and repeatably achieving a quick time to death, the least possible degree of pain and suffering practicable, and a safe and secure landing of a hunted gray whale following a successful initial strike.

Furthermore, over time the Makah Tribe and Makah whalers will continue to adapt and incorporate new information learned through whaling into their training and hunting methods and strive to improve the safety, efficiency, and humaneness of the hunt. In addition to the Tribe's ongoing internal evaluation and adaptive management, Makah whale hunting methods will also be reviewed by a panel of experts after eight whales have been struck to evaluate the humaneness of the hunt, which analysis will be factored into adaptive hunt planning. 50 C.F.R. § 216.118(b)(2).

Other modern methods of taking whales do not compare favorably with the rifle-based hunt plan developed and demonstrated to be effective by the Tribe. As discussed in detail below, other methods are either impractical due to cost, availability, or logistics; fail to accomplish the Tribe's purpose of conducting a hunt for ceremonial and subsistence purposes; or are not clearly an improvement over the Tribe's hunt plan. The Makah hunt authorized under the waiver is a limited subsistence hunt in which a maximum of three whales would be landed in a given year; it is not a commercial hunt where industrial equipment such as a harpoon cannon mounted on a large motorized vessel is the preferred whaling method. The Makah hunt plan will utilize a highcaliber rifle which can be obtained, with highly effective ammunition, at a reasonable cost in the United States. In contrast, modern hunts that use explosive devices to take whales must either rely on an imported, expensive, and heavily regulated penthrite grenade, or on black powder which is less chemically stable and riskier to use than penthrite. Even if the required explosives could be obtained by the Tribe, there is not clear evidence that these explosives-based methods would achieve shorter time to death or a lower struck-and-lost rate than the Tribe's high caliber rifle-based hunt plan.

While the Tribe closely reviewed studies regarding euthanasia of stranded whales and summarizes such information below, euthanasia methods are not practicable and therefore of limited usefulness for comparison with the Tribe's hunt plan. Whereas stranded whales are already secured, immobile, and located on land, the Tribe's hunt will involve a free-swimming gray whale in the open ocean environment. Chemical-based methods of euthanizing a whale are unworkable as hunt methods because of the impracticability of delivering an appropriate dosage and sequence of chemicals to a very large, free-swimming wild animal from a vessel on the water. Further, utilizing chemicals to kill a whale would have the effect of rendering the meat and possibly blubber inedible, which would defeat the purpose of the Tribe's hunt. Strapping explosives to a free-swimming whale is also clearly impracticable.

The Tribe notes that the MMPA's humaneness standard is a colonizing paradigm that is foreign to Makah ways of knowing and whaling traditions. For centuries, Makahs have maintained and enforced a rigorous system of cultural, spiritual, and physical training standards and practices that govern Makah whaling. Incidentally, these standards and practices may be said to share some overlapping objectives with 'humaneness' under the MMPA, including efficiency and respect for the whale. The Tribe recognizes that the humaneness determination is a requisite for securing a hunt permit under the MMPA and waiver regulations, and thus conducted and herein presents a thorough analysis applying a Western scientific lens to evaluate 'humaneness.'

The Makah hunt plan of utilizing a high-powered rifle after securing the whale with one or more lines attached by harpoons has been favorably reviewed by whaling experts and, in practice, has achieved the death of a hunted gray whale in just eight minutes. No other practicable methods are clearly more effective at achieving a shorter time to death and therefore causing the least possible degree of pain and suffering practicable while minimizing the chance of losing a struck whale. Thus, the Tribe's hunt plan satisfies the MMPA's requirement that the method of taking authorized by a permit be "humane." ³

B. Historical Makah Whaling Methods.

The Makah Tribe has hunted whales for at least 1,500 years (Renker 2018). Hunting was conducted from large, cedar dug-out canoes made to be 4.5 stretches of the builder's arms (approximately 30 feet) in length (Waterman 1920). The canoe was typically manned by eight

³ This section of the Application focuses on analyzing and demonstrating the humaneness of the Tribe's hunt plan to swiftly strike and kill a whale for cultural and subsistence use. Additional 'take' of gray whales may result from approaches, training harpoon throws, and/or unsuccessful harpoon strike attempts. However, those activities would not cause pain and suffering, would result only in temporary behavioral effects (if any), or are accounted for in analyzing the humaneness of the hunt plan, and thus are not further analyzed.

Approaches would not involve contact with nor any pain or suffering by the whale and therefore do not implicate the "humane" taking requirement of the MMPA or the waiver regulations. Training harpoon throws would make contact with a whale but by definition would not penetrate the skin. Through the design of the training harpoon and its optional use in training activities, training harpoon throws are unlikely to cause any pain or suffering by the whale, and any behavioral effects would be temporary. Unsuccessful harpoon strike attempts – *e.g.*, when a harpoon is thrown at a whale and either misses the whale or makes contact such as glancing off the whale, but does not penetrate the skin – may occur and are similarly unlikely to cause any pain or suffering. As noted by Weller (2019) and Scordino (2019), the impacts on the behavior of gray whales from approaches, training harpoon throws, and unsuccessful harpoon strike attempts will be similar to or less than the effects of research activities on gray whales and will result in either no behavioral response or a short-term behavioral response.

Testimony at the Administrative Law Judge (ALJ) hearing supports the conclusion that any effect that these activities may have would be minimal and temporary. The Recommended Decision issued by Judge Jordan agreed with and accepted this testimony: "non-lethal activities such as training approaches and training harpoon throws may cause temporary behavioral changes in the targeted whales" (ALJ Recommended Decision, 2021 at 18, available at: <u>https://www.fisheries.noaa.gov/s3/2021-09/recommended-decision-19nmfs0001.pdf</u>, last accessed Feb. 20, 2025).

hunters and each member of the hunting party had a specific role during the hunt (Waterman, 1920). Most harpoon tips were made with a mussel shell blade and the harpoon barbs were made from elk antler (Waterman 1920). A lanyard of very strong rope was connected to the harpoon head; the lanyard was made of sinew and cherry bark (Waterman 1920). The harpoon shaft, used to deliver the harpoon head, was 15-18 feet in length and made of yew wood (Swan 1870; Waterman 1920). The harpoon shaft was normally built in three sections that were lashed together rather than a single piece of wood. The hunters also carried lances, called *butu yak* by the Tribe, that were 4-5 feet in length with a bone point (Waterman 1920). Scammon (1874) described the lance as having a mussel shell blade.

The canoe typically approached the whale from the whale's left side (Waterman 1920), and the harpooner thrust the harpoon deeply into the thoracic cavity on the first strike to greatly injure the whale, making it easier to kill, and to have the harpoon holdfast to the whale (Waterman 1920). After the whale was harpooned, the hunters would attach a length of line and a seal skin float to slow the whale from the drag; the buoyancy of the float also helped prevent the whale from diving (Waterman 1920). The crew would sometimes recruit other canoes to help in the hunt once a whale was harpooned (Waterman 1920). Either the original canoe, or a support canoe, would then approach the whale and harpoon it again and attach another seal skin float. This process was repeated until the whale had slowed sufficiently to allow a close approach for the harpooner to drive a lance into the whale (Waterman, 1920). A lance strike to the heart, lung, or retia mirabile would have caused severe blood loss and quick death of the whale (Williams et al. 2015). The time to death varied from being relatively quick – if the harpooner was able to drive the harpoon down into the heart or lungs on the first harpoon strike – to many hours (Waterman 1920; Webb 1988). In addition to often resulting in a slow death, this approach put whaling crews at risk of attack from the injured whale (Waterman 1920; Ingling 1999a).

Makah hunters started incorporating new whaling technology after contact with Europeans (Webb 1988; Renker 2018). Steel replaced mussel shell for the blades of harpoons and lances and toggling harpoon heads replaced antler barbs. Modern woven textile ropes replaced hand-made ropes. And, Makah whaling canoes were sometimes towed to the whaling grounds by schooners rather than being paddled or sailed by the whaling crew (Webb 1988; Renker 2018).

Makah whaling customs, spiritual practices, and traditional knowledge are centrally aimed at achieving a successful hunt by optimizing safety and effectiveness and ensuring that the sanctity of the hunt is upheld (Pascua 1991; Renker 2018). Physical and spiritual preparation of Makah whalers is paramount. During the 2019 ALJ hearing, Makah tribal members testified to the profound relationship between the Makah people and whales that are hunted and, accordingly, the extensive physical and spiritual training that Makah whalers undertake.⁴ A former Tribal chairman who trained with the successful whaling crew in 1999, explained, "[w]e don't just go kill a whale. ... We go ask for the whale's life, that it surrenders its life to us. [W]ith that is a whole series of ceremonies." While the particulars of such ceremonies are confidential cultural practices, another 1999 whaling crew trainee described how "in cold streams early in the mornings we go and bathe and pray, scrub with brush to heighten your senses. It's to ground

⁴ Declarations and testimonies of Makah tribal member witnesses are available at: <u>https://www.uscg.mil/Resources/Administrative-Law-Judges/Decisions/ALJ-Decisions-2016/NOAA-Formal-Rulemaking-Makah-Tribe/</u>, last accessed Feb. 19, 2025. yourself in nature [Y]ou're preparing yourself spiritually. You're not the biggest animal on the earth." Whaling also requires "intense" physical training: "We trained often 7 days a week ... [W]e paddled, we were on the water almost every single day." A Makah language and culture instructor explained that the "whaling crews that were training" were following "the traditional way that we went about things ... called '*hi*·*dasubač*' and it is to do things in an all-around way; spiritually, mentally, physically, emotionally getting yourself ready ... for taking a whale." In a traditional Makah song, "the whale is looking for someone who is prepared to take its life, and it will live in a different form. It will be honored by our people, and comes to our village. So there's a big process for that." Makah customs and traditions practiced by whalers and their families enhance holistic preparedness, which in turn correlates with efficacy and speed, as well as reverence for the hunt.

While 'humaneness' is a Western cultural construct, Makah customs embody deep respect for and recognition of the sacrifice of a whale's life to sustain the Makah people, as well as the risk to whalers that is inherent to hunting one of the world's largest creatures from a canoe on the open ocean. The wellbeing of the whaling crew goes hand in hand with a swift death of the whale. The female partner of the harpooner in the successful 1999 hunt testified to her role and responsibilities, which had been handed down through time in her family: "[I]t was my role to lay still while the men were out on the hunt, because it was our belief that the woman becomes one with the whale, and so ... if I'm moving around, the whale would move around, and it would be dangerous for the crew." She explained, "We prayed a lot, and I fasted while the hunt was occurring, avoiding all food and drink On the day of the successful hunt, I had to wait until there was absolute confirmation the whale was dead before I could get up." This form of communion between Makahs and hunted whales is not readily understood or verifiable through Western scientific methods, but such customary practices demonstrate Makah reverence for the whales they hunt and the emphasis that Makah traditional knowledge places on swiftly ending the life of a hunted whale, ensuring the safety of the whaling crew, and bringing the hunted whale to shore for the Makah people.

- C. Survey of Modern Whaling Methods.
 - 1. Rifle.

Rifles are used as the primary kill weapon for hunts of gray whales in Russia (Sidorov et al. 2024) and for minke whale hunts in east Greenland, and as a secondary kill weapon for minke whale hunts in Norway, Greenland, Iceland, and Japan (NAMMCO 2010). In all hunts careful consideration is given to the selection of the rifle and ammunition. Hunts typically require the use of blunt tipped, monolithic solid bullets or full metal jacketed rounded bullets as research has found that they have deeper penetration than soft-tipped or pointed-tipped bullets (Ingling 1999b; NAMMCO 2001; Boys et al. 2024). The selection of rifle caliber is also important because the size and weight of a bullet influences its momentum, which in turn affects how deeply it penetrates into the whale's flesh (Hollerman et al. 1990; Ingling 1999b). In all rifle-based hunts, shots are aimed at the brainstem and cervical vertebrae of the whale to quickly kill or render the whale insensible (Knudsen et al. 1999; NAMMCO 2010, 2015a; Daoust and Ortenburger 2015).

a. Research and training on targeting brainstem and cervical vertebrae.

Norway has conducted research on the position of a minke whale's brain and the landmarks on the body to help riflemen accurately aim at the brainstem and cervical vertebrae (Knudsen et al. 1999; Øen et al. 2007). Norway developed a training program for their hunters based on this research and encouraged riflemen to aim an equal distance behind the eye as the eye is behind the blowhole on the anterior-posterior axis of the whale, and between the eye and blowhole on the dorsal-ventral axis (Figure 1) (Knudsen et al. 1999). The training program and advice on targeting certain landmarks on the body of the whale were adopted by other whale-hunting nations.



<u>Figure 1.</u> Figure of minke whale from Knudsen et al. (1999). Viewed laterally the brain is situated in the median plane between the eye and the dorsal surface. When projected on a horizontal line the caudal part of the brain (a), lies as far behind the eye (b), as the blowhole (c) lies in front of the eye.

b. Whale hunts using rifles as the primary kill weapon.

In east Greenland, aboriginal subsistence whalers conduct a collective minke whale hunt which requires that at least five boats participate and exclusively utilizes rifles and hand-thrown harpoons (NAMMCO 2010). The hunters attempt to drive minke whales into shallow water by firing bullets into the water near the whales. The hunters also shoot the whales with .30-06 caliber rifles and larger rifles with full-metal jacketed bullets to wound the whales. The hunters then harpoon the whale once it has sufficiently slowed from the wounds. Once the whale is harpooned the hunters switch to using larger caliber rifles, such as a .375 caliber, with round-nosed, solid bullets to fire at the brainstem and cervical vertebrae of the whale and kill it. The Greenlandic rifle hunt has longer time to death and higher stuck and lost rates than in the hunts with a harpoon cannon (*see* Section III.B.1, below); the logistics of the hunt, including the region where the hunt occurs, preclude the use of harpoon cannons. The average time to death using rifles as the kill weapon in the Greenlandic hunt ranged from 23 to 34 minutes and had a 0% instantaneous death rate during 2007-2014 (NAMMCO 2015a). By contrast, the Makah hunt

plan will utilize a larger .50 caliber rifle with shots aimed at the brainstem and cervical vertebrae that are intended to cause instantaneous insensibility and minimize time to death.

The gray whale hunt in Chukotka, Russia is not as well documented as hunts in countries participating in the North Atlantic Marine Mammal Commission (NAMMCO). A description of the Chukotka hunts, which includes a limited number of bowhead whales, is provided on the International Whaling Commission (IWC) website.⁵ Hunting occurs with a group of small vessels powered by outboard engines. The team of hunters approaches a gray whale and makes an initial strike with a hand-thrown harpoon attached to a long control line for monitoring the movements of the whale. After a whale is struck with the control line harpoon, the whale is harpooned with multiple additional harpoons with shorter lines intended to help slow and fatigue the whale and prevent it from sinking. Hunted whales are typically harpooned seven to nine times. After the whale is secured, it is shot using either a rifle or a darting gun. The rifle used for the Chukotkan hunt is generally a 7.62 mm caliber. Russia reported that the mean number of strikes on a hunted whale in 2023, the most recent year for which data is available, was 9 harpoon strikes, 55 rifle shots, and 1 darting gun. Time to death varied from 1 to 210 minutes with a median value of 30 minutes during the 2023 whaling season when 124 gray whales were landed; the time to death values for 2023 were similar to previous years (Sidorov et al. 2024).

The Makah Tribe travelled to Russia and conducted a cultural exchange with Chukotka Natives in 2005. During that exchange Makah whalers and the Tribe's marine mammal biologist were able to observe gray whale hunts. Observations by the Tribe's biologist clarify specifics on the methodology of the Chukotkan gray whale hunt. First, what is referred to as a darting gun in the Chukotkan hunt is the instrument described as a bomb lance in Alaskan bowhead whale hunts. The Tribe's biologist was not able to ascertain whether black powder or penthrite was used as the charge for the grenade in the bomb lance, i.e. darting gun. Second, the biologist observed during the Chukotkan hunt that rifle shots were aimed at the brainstem and cervical vertebrae. Ingling (1999b) found that bullets shot from a .30-06 caliber (similar to a 7.62 mm which is the caliber of the primary rifle reported for the Chukotkan hunt) into a trough of water had a penetration distance of 47 inches which is equivalent to a flesh penetration of 26 inches. This penetration depth is just sufficient to reach the brainstem of a 37-foot gray whale⁶ and as such would require a very accurate shot to sufficiently damage the brainstem of the whale and cause immediate insensibility.

c. Ballistics of rifles used in whale hunts.

An important consideration for use of a rifle as the method of taking in whale hunts is the characteristics of the rifle and bullet. The penetrating ability of a bullet is dependent on a number of factors (Hollerman et al. 1990; Ingling 1999b; Hampton et al. 2014). The first factor is the muzzle velocity (Hollerman et al. 1990). Muzzle velocity is affected by a number of parameters including grains of powder in the bullet, weight of the bullet, shape of the bullet, and caliber (diameter) of the bullet (Hollerman et al. 1990; Ingling 1995). The faster a bullet travels, the

⁵ Description of the Aboriginal Subsistence Hunt in Chukotka, Russian Federation, 2024, available at: <u>https://iwc.int/management-and-conservation/whaling/aboriginal/russian-</u>

federation#:~:text=There%20is%20only%20one%20method, last accessed September 24, 2024.

⁶ Makah Fisheries Management unpublished data.

more energy it has to transfer into the flesh it hits (Hollerman et al. 1990). The second factor is the size of the bullet. Larger, heavier bullets shot from high caliber rifles hit targets with more force and momentum than a lighter bullet when fired at the same velocity, which allows greater penetration (Ingling 1999b; Hampton et al. 2014; Boys et al. 2024). The third factor is bullet shape. Blunt nosed bullets are generally more stable and less likely to tumble inside flesh than a longer pointed bullet (Hollerman et al. 1990; Ingling 1999b; Hampton et al. 2014). One component of a bullet's shape that has a large influence on penetration is sectional density, which is the ratio of a projectile's mass to its cross-sectional area (Hampton et al. 2014). The last characteristic of importance is the composition of the bullet (Hollerman et al. 1990). Maximum penetration is achieved by a solid, non-deforming or full-metal jacketed bullets; the IWC and most national stranding guidelines require the use of solid, non-deforming or full-metal jacketed bullets for whale euthanasia (International Whaling Commision 2012; International Whaling Commission 2014; Daoust and Ortenburger 2015; Barco et al. 2016; Boys et al. 2024; DCCEEW 2024).

It is important to note that the damage a bullet causes in the flesh of a whale extends beyond the path of the bullet and is not the same in all body tissues. A bullet traveling through flesh produces two pathways of damage: the crushing of tissues in the bullet's path (the permanent cavity) and the stretching of tissue adjacent to the path of the bullet (the temporary cavity) (Hollerman et al. 1990). The temporary cavity increases the width of damage in the body caused by a bullet (Hollerman et al. 1990). The effect of a temporary cavity on body tissues depends on the elasticity of the tissues (Hollerman et al. 1990). The total area damaged by a passing bullet is also influenced by fragments of bone being pushed through the flesh after being impacted by the projectile (Hampton et al. 2014; Boys et al. 2024).

d. Use of a rifle in the Makah hunt.

The Makah Tribe's planned use of a large caliber rifle as the kill weapon rather than a traditional lance is to optimize the humaneness of the hunt under typical hunt conditions (Ingling 1999a). The Makah hunt will utilize a large caliber rifle to ensure that the bullet has sufficient momentum and energy to reach and destroy the brainstem or cervical vertebrae to cause immediate insensibility of a whale (Ingling 1999a). Testing by Ingling (1999b) demonstrated that rifles of .50 caliber or greater shooting a blunt nosed solid bullet had sufficient momentum and energy to travel through 72 inches of flesh. Makah riflemen will use a .50 caliber rifle paired with Woodleigh (or comparable) bullets that were demonstrated to penetrate more than 240 inches of water (133 inch flesh equivalent) during trials (Ingling 1999b). The Woodleigh bullets are constructed with optimal sectional density (ratio of a projectiles mass to its cross-sectional area) to improve tissue penetration and bullet stability which improves the likelihood that the bullet will follow a straight path through the flesh of the whale (Hampton et al. 2014).

2. Explosives.

While explosive devices are utilized by some communities for hunting whales, it must be noted that there would be several serious drawbacks to utilizing explosives for the Makah gray whale hunt. First, unlike some other whale species, gray whales sink once dead (Scammon 1874). As such, deployment of multiple harpoons and lines is necessary to ensure that a dead

whale can be successfully retrieved after it begins sinking. As a result, a bomb lance cannot be used in a gray whale hunt as both the initial striking weapon and as the killing weapon because the single harpoon deployment may not hold fast while the whale is being retrieved. Second, explosive devices require a whaling crew to handle either penthrite or black powder grenades while approaching a whale, which presents a major safety risk to the crew (Ingling 1995; Alaska Eskimo Whaling Commission 2004). Third, penthrite, while more chemically stable than black powder, is difficult and expensive to obtain and requires permitting through the federal government to purchase and possess (DeMarban 2012; Alaska Eskimo Whaling Commission 2018). Fourth, the gun or cannon used to deliver the explosive must often be mounted on a vessel of sufficient size, precluding use of the traditional Makah canoe and eliminating the training and ritual preparation associated with whaling from a canoe. Fifth, gray whales are often very close to shore in areas that may not be approachable by a vessel of sufficient size to mount a harpoon cannon. And sixth, use of explosive techniques creates a risk of blast damage to the whale, which could cause waste of meat and blubber. Altogether, explosives are an impracticable method of taking for purposes of Makah gray whale hunting.

a. Harpoon cannon

The most common method for modern whaling uses a harpoon cannon to kill the whale (NAMMCO 2015a). A harpoon cannon is mounted to the deck of a vessel and shoots a large harpoon head loaded with a penthrite grenade targeted at the thorax of the whale. The harpoon cannon comes in three sizes: 50 mm, 70 mm, and 90 mm. A larger cannon (and larger charge of penthrite) is typically used for larger whales like fin whales, and a smaller cannon for smaller whales like minke whales. Once in the whale to a set depth (65-75 cm for minke whale) the grenade is ignited and explodes causing a shock wave to reverberate through the body that usually causes immediate death (Knudsen and Øen 2003; Øen 2015). The line attached to the harpoon head can be hauled to retrieve the whale to the whaling vessel. Typically, whales that do not die on the first shot from the harpoon cannon are shot again with the cannon. For minke whale hunts in Norway, Greenland, Iceland, and Japan, a rifle is often used as a secondary weapon to kill a whale that does not die from the exploding harpoon head (Knudsen and Øen 2003; NAMMCO 2015a). Use of a harpoon cannon for whaling frequently results in a short time to death for the whale as measured from when the whale is first struck until it is dead (Knudsen and Øen 2003). Time to death for whaling using harpoon cannons is rarely more than 10 minutes for those whales that do not die instantaneously (Øen et al. 2007; NAMMCO 2015a; Øen 2015). The instantaneous death rate of whales killed by the first shot of a harpoon cannon is variable by species, year, and country in which the hunt took place; in recent years the instantaneous death rate in hunts involving a harpoon cannon has ranged from about 20% to 80% (NAMMCO 2015a).

b. Bomb lance.

Inupiat and Siberian Yupik Eskimos living in the Arctic villages along the north slope of Alaska use another explosive technology known as a bomb lance⁷ for killing the bowhead whales they hunt (*see* Figure 2). The bomb lance is similar to the harpoon cannon in that it uses a grenade to kill the whale, but the bomb lance is thrown by hand rather than shot from a deck-

⁷ Other terms for a bomb lance include shoulder gun and darting gun.

mounted cannon (Øen 1995). The bomb lance is mounted on a harpoon that is thrown into the whale, engaging a push pin that causes a propellant to shoot the grenade deep inside the whale where it explodes (Øen 1995). Like the harpoon cannon, the bomb lance can cause instantaneous death of a whale (Øen 1995). However, in many cases it takes multiple deployments of penthrite grenades to kill a whale. The reported time to death ranged from 38 to 90 minutes during bowhead whale hunts by the Inuit in Nunavut, Canada using a bomb lance following the use of a cold harpoon (Williams et al. 2015), *i.e.*, one that is not loaded with a grenade. No information on time to death in the Alaskan bowhead hunt is publicly available. Both black powder and penthrite grenades have been used in the bomb lance. The penthrite grenade is more chemically stable and thus safer than black powder and has more power per weight, making it a better choice (Ingling 1995; Alaska Eskimo Whaling Commission 2004; NAMMCO 2015b). However, penthrite is also much more expensive, not manufactured in the United States, and difficult to import. (DeMarban 2012).

c. Consideration of using explosives in the Makah hunt.

It would be impracticable for Makahs to use a bomb lance to hunt gray whales. First, as noted above, when gray whales die they sink (Scammon 1874), while bowhead whales generally float (Bockstoce 1986). Thus, unlike for bowhead whale hunts, Makah whalers (like Chukotkan whalers) would not be able to use the bomb lance as both the initial striking weapon and the kill weapon, thus negating the primary benefit of a weapon having the potential for an instantaneous kill. Second, bomb lances are dangerous to operate. They occasionally malfunction due to bending of the push rod, propellants that fail to push the grenade deep enough into the whale (Williams et al. 2015), or even damage to the grenade (Ingling 1995, 1999a; Alaska Eskimo Whaling Commission 2004). Malfunction of the grenade or bomb lance can cause serious safety risks for the crew and bystanders (Ingling 1995, 1999a; Alaska Eskimo Whaling Commission 2004). There have been instances where grenades in bomb lances have detonated prematurely causing injuries and death to hunters (Ingling 1999a). There have also been close calls where many people could have been seriously injured during the handling of grenades that were damaged or that malfunctioned (Ingling 1999a). Third, the penthrite grenades used for both the bomb lance and harpoon cannon are very difficult and expensive to obtain and require permitting through the federal government to purchase and possess (DeMarban 2012; Alaska Eskimo Whaling Commission 2018). Alaska Native hunters currently purchase penthrite grenades manufactured in Norway (Alaska Eskimo Whaling Commission 2018) because there are no suppliers in the United States (J.C. George pers. comm.). Each grenade costs approximately \$1,000 as of 2018,⁸ which has no doubt subsequently increased, and shipping costs are substantial as well. The challenge of acquiring permits to import and transport the grenades, in addition to their high cost, makes it uncertain that the Alaska Eskimo Whaling Commission (AEWC) will be able to continue using bomb lances with penthrite grenades for whaling (Alaska Eskimo Whaling Commission 2018).

There is no clear benefit to safety, efficiency, and humaneness from using a bomb lance as compared to a large caliber rifle in the Makah hunt given that the average observed time to death of bowhead whales in Nunavut hunts in Canada (Williams et al. 2015) was longer than the observed time to death of the gray whale in the 1999 Makah hunt, especially noting the risks of

⁸ Cost is according to <u>https://www.aewc-alaska.org/weapons-improvement-program</u>, last accessed June 26, 2024.

using the weapon, high cost of purchasing and transporting penthrite, and difficulty of obtaining penthrite grenades.



Figure 2. Schematic drawing of a bomb lance from Scammon (1874).

D. Survey of Whale Euthanasia Methods.

Each year many whales around the world either wash ashore live or have severe injuries due to entanglement, and the most humane action that can be taken is euthanasia (International Whaling Commision 2012; International Whaling Commission 2014; Daoust and Ortenburger 2015; Barco et al. 2016; DCCEEW 2024). A number of methods have been developed for euthanizing whales. For comprehensiveness of the Tribe's demonstration of hunt humaneness and as a potential point of comparison, this section reviews the most common methods of whale euthanasia.⁹

However, the conditions and circumstances of stranded or entangled whales are markedly distinguishable from that of a Makah gray whale hunt. Most notably, stranded or entangled whales are already essentially 'secured' for purposes of administering a method of euthanasia, whereas hunted whales are free-swimming and must be secured by whalers in the course of a successful hunt. The dynamic conditions of the open ocean and a whale's physical activity render administration of euthanasia methods impracticable for Makah whaling.

1. Chemicals.

Lethal injection is the only approach for chemical euthanasia that is currently accepted for use on all sizes and species of cetaceans by the United States, Canada, and the IWC (International Whaling Commision 2012; Daoust and Ortenburger 2015; Barco et al. 2016), and the approach is generally considered the most humane for beached cetaceans (Barco et al. 2016). Sedatives are typically provided prior to euthanasia drugs to minimize pain of the dying whale. Chemical euthanasia can be administered by a variety of pathways although it is recommended that euthanasia drugs are applied intracardiac (Daoust and Ortenburger 2015). Drugs applied intramuscularly have a number of potential challenges including: 1) maximum volume administered in a single injection should not exceed 10 ml to ensure rapid absorption; 2) a large

⁹ Exsanguination (i.e., bleeding out by severing major blood vessels) is a rarely used method of euthanizing stranded whales that requires heavy sedation to be humane and is not further examined in this analysis (Daoust and Ortenburger 2015; Barco et al. 2016).

volume of chemicals is necessary to kill a whale and thus many injections are required to administer a suitable volume of euthanasia chemicals; 3) large cetaceans have a thick blubber layer that is hard to penetrate; and 4) any error of administration to the blubber instead of the muscle will make the drug ineffective. Barco et al. (2016) recommends a number of combinations of drugs to administer for euthanasia, although they also note that no sedatives or euthanasia drugs are labeled for use in marine mammals. Currently the correct dosage of sedatives and euthanasia agents for large cetaceans is not known, and the dosage used for euthanasia of whales is generally determined by an educated guess from a qualified veterinarian (Daoust and Ortenburger 2015). A trained veterinarian is essential for estimating the correct dosages and for having the appropriate knowledge of physiological response to the administered drugs, both of which are necessary for monitoring whether the plan for euthanasia is proceeding as intended (Daoust & Ortenburger, 2015).

Time to death of chemically euthanized whales is not widely reported (Boys et al. 2021). Three humpback whales euthanized in Australia were reported to have an average time to death of 29 minutes and 30 seconds (range 2-66 minutes) following intracardiac injection of pentobarbitone sodium in one case and pentobarbitone sodium and potassium chloride for the other two cases (DCCEEW 2024). Each of these whales were sedated prior to administration of the lethal injection; whales were treated for a range of 30-90 minutes prior to lethal injection (DCCEEW 2024).

There are a number of hazards involved in chemical euthanasia that make the method impracticable for Makah hunt purposes. First, most euthanasia drugs and sedatives used during euthanasia have high risk of eco-toxicology and can cause secondary toxicosis (Daoust and Ortenburger 2015; Barco et al. 2016). As a result, most rendering plants will not dispose of chemically euthanized cetaceans and it is recommended that they are buried where they are not biologically available (Daoust and Ortenburger 2015; Barco et al. 2016). Accordingly, a chemically killed gray whale would be unsafe for human consumption, defeating a core purpose of the Makah hunt. Second, the euthanasia drugs have to be administered in high volumes or in super-saturated solutions, which presents risks for the humans delivering the drug. Third, the requisite large volumes of chemicals and recommendations for intracardiac injection necessitates use of large diameter needles of 1.0 to 1.8 meters of length (Daoust and Ortenburger 2015; Barco et al. 2016). Often the needles are damaged in the process of attempting to administer the drug and it is recommended that multiple needles be available. Fourth, there is risk of potential spray back during injections that could result in euthanasia drugs contaminating the local environment or making contact with the person(s) administering the drugs (DCCEEW 2024). Fifth, while there are euthanasia drugs that pose less eco-toxicological risk, such as potassium chloride (Harms et al. 2014), their use requires heavy sedation to make the whale insensitive to pain from the cardiac arrest triggered by the drugs (Daoust and Ortenburger 2015; Barco et al. 2016; DCCEEW 2024). Lastly, it is important to note generally that sedation of large whales is difficult and dangerous to achieve (Barco et al. 2016).

As noted above, the logistics of attempting to chemically euthanize a free-swimming whale at sea would be prohibitively complex and hazardous as compared with that of a whale stranded on land. The IWC (2012) concluded that chemical euthanasia is an option for entangled whales at sea, but a literature review on the subject yielded no references to case studies of attempts to

use chemicals for euthanasia at sea. One of the biggest challenges of administering euthanasia at sea is the delivery of the drugs. Moore et al. (2010, 2013) and van der Hoop et al. (2014) report on attempts to use sedatives on entangled right whales to make it easier to conduct disentanglement. The authors found that sedatives could be administered intramuscularly using a remote darting system; however, the sedatives were found to be slow at taking effect. As noted by Daoust and Ortenburger (2015), it is best to administer euthanasia drugs intracardiac. It is unclear if a remote darting system that delivers dosages intramuscularly would be effective for delivering euthanasia drugs. Furthermore, there would be a very high risk of environmental contamination through spilled chemicals and lost needles when attempting remote application. Accordingly, chemical euthanasia is an impracticable method of taking for purposes of the Makah gray whale hunt.

2. Explosives.

Explosives have been used to effectively euthanize large whales (Daoust and Ortenburger 2015; Barco et al. 2016). IWC (2012) discusses the potential to use a bomb lance or harpoon cannon to deliver explosives inside a whale for euthanasia, as is done in some modern hunts to kill a free-swimming whale (*see* Section III.2, above). In at least one case, a harpoon cannon has been used to euthanize an entangled minke whale (Knudsen and Øen 2003). However, in almost all cases bomb lances and harpoon cannons are not used in stranding response because they are not available to the stranding response team for the reasons detailed above; even if they were, it is extremely unlikely the team would have sufficient training to safely and effectively use such devices for euthanasia (Barco et al. 2016).

Coughran et al. (2012) have used an elaborate system of stacking explosives on the head of humpback whales to induce blast trauma downward into the cranium of the whale. This method produced a very quick time to death (DCCEEW 2024). However, it required considerable time and equipment to properly strap the explosives to the head of the whale, sandbag the explosives in place, and stabilize the beached (and thus immobilized) whale. Furthermore, this approach requires access and permitting to utilize explosives as well as expertise in deployment that generally is not available for stranding response teams. As such, the technique for using explosives to euthanize a whale, which could only be implemented on an immobile whale on land, is an impracticable method of taking for purposes of the Makah gray whale hunt.

3. Rifle.

Rifle shots are used for euthanasia of whales and other cetaceans in a number of countries and can cause rapid death of euthanized whales when applied correctly (Hampton et al. 2014; Daoust and Ortenburger 2015; Barco et al. 2016; DCCEEW 2024). While the conditions and circumstances of stranded or entangled whales distinguish use of a rifle for euthanasia purposes from use of a rifle for whaling purposes, in both circumstances important considerations for use of a rifle include knowledge of shot location based on skull and central nervous system morphology, availability of an appropriate rifle and ammunition, and expertise in marksmanship.

To be considered humane for euthanasia purposes, a rifle shot must sufficiently damage the brainstem or cervical vertebrae to cause immediate insensibility and death of the whale

(Hampton et al. 2014; Daoust and Ortenburger 2015; Barco et al. 2016; Harms and McLellan 2016). A rifle shot can kill a whale if it hits a variety of organs including the heart or lungs (Harms and McLellan 2016), but this type of severe injury is not likely to cause immediate insensibility and thus does not meet standards for humaneness in euthanasia (Boys et al. 2024). As with whaling, guidance focuses on identifying landmarks on the bodies of small cetaceans and minke whales (a smaller-sized cetacean species) so rifle operators can accurately target the brainstem and cervical vertebrae. Rifle operators are instructed to shoot stranded small cetaceans using an aim point described as 40–100mm caudal to the blowhole, at a 45-degree angle towards the middle of an imaginary line connecting the anterior edges of two flipper (Hampton et al. 2014; Boys et al. 2024). Greer et al. (2001) provides a general recommendation for aiming rifle shots just above the mid-point of a line between the eye and ear when horizontal to the whale. Greer et al. (2001) further stated that a shot from a horizontal position is ideal because the skull is closest to the body surface. As described above (see Section III.A), Norway has developed training for its hunters to identify the location of a minke whale's brain based on external landmarks (Knudsen et al. 1999; Øen et al. 2007). In some large cetaceans it is much more difficult for a rifle operator to aim at the brainstem given the lack of documentation of landmarks on the body to accurately aim at the brainstem (Greer et al. 2001; Daoust and Ortenburger 2015; Barco et al. 2016).

As with whaling, selection of a rifle and ammunition for euthanizing a whale must consider the size of the whale (Boys et al. 2024). Standard hunting rifles around .30 caliber have proven more than capable of euthanizing whales up to six meters (Hampton et al. 2014). Some authors have expressed concern about euthanizing whales larger than six meters with a rifle. Greer et al. (2001) stated that for a projectile to be effective for euthanasia of large cetaceans, it must be able to penetrate 1.2 meters of blubber, muscle and bone, and still maintain enough kinetic energy to destroy the brain and cause immediate unconsciousness and death. Rifles greater than a .460 caliber utilizing blunt-tipped, solid bullets have been demonstrated to have sufficient power to penetrate at least 1.3 meters of flesh (Ingling 1999b), but such large caliber firearms are rarely available to stranding response teams (Daoust and Ortenburger 2015).

Some concerns about the use of rifles to euthanize whales appear to be a misinterpretation of the literature. For example, Barco et al. (2016) stated in their report, "[b]allistics is considered inappropriate for the humane destruction of these animals and information from the International Whaling Commission workshops on whale killing methods indicated that firearms cannot guarantee a rapid or humane death in animals larger than 7 meters (International Whaling Commission 2006)." However, the cited report does not refer to the use of firearms on whales larger than seven meters. Barco et al. (2016) also cites to (International Whaling Commission, 2012) for the same conclusion that whales larger than seven meters should not be euthanized with firearms. The 2012 IWC report does refer to the use of a rifle for a whale over or under seven meters, but the conclusion is specific to humpback whales. It is important to note that IWC (2012) provides no size limitation for the use of a firearm for the euthanasia of gray whales or minke whales. Rather, it includes a disclaimer that the firearm should be used by a qualified individual with appropriate caliber and ammunition. Subsequent publications cite to Barco et al. (2016) as evidence that a rifle cannot be used on larger

whales. However, Hampton et al. only state that a rifle is effective for whales up to six meters and further note that testing should be done on larger whales to determine efficacy.

For the reasons discussed here and in Section III.A above, use of a large caliber rifle employing appropriate ammunition by riflemen adequately trained on gray whale anatomy and marksmanship is a practicable method of taking for purposes of the Makah hunt.

E. The Makah Hunt Is Humane.

The Makah Tribe has developed a hunt plan that ensures its gray whale hunt is humane by updating its training program and utilizing appropriate modern technologies, while preserving and honoring the traditional practices of Makah whalers where practical. The hunt plan for this permit application builds off the plan presented in Ingling (1999a), with improvements that further enhance the effectiveness and safety of the hunt. The Makah hunt plan has been favorably reviewed by experts and will be adaptively managed by the Tribe for ongoing optimization.

1. Training and certification for Makah whaling teams.

The Makah Tribe has expended considerable effort to update the training program and certification procedures for Makah whaling teams. In the 1990s, the training program prepared the whalers well for the hunts in 1999 and 2000 but did not include a certification process to document that team members are adequately trained for their roles. Furthermore, in the 1990s the specific training on where a rifleman should aim to hit the brainstem or cervical vertebrae was conducted in one-on-one sessions between prospective riflemen and Dr. Allen Ingling, the Tribe's expert on large whale hunting methods, which made it very difficult to replicate for subsequent hunts. The Tribe has since developed a comprehensive training program with extensive presentation materials and hands-on curriculum to ensure that future hunts are safe, efficient, and humane.

One important step in developing the revised training program was to conduct research on the landmarks on a gray whale's body that a rifleman should use to aim at the brainstem and cervical vertebrae of the whale. The first step was to review other existing training programs for whalers worldwide to determine if they could be adapted for Makah hunt training. Knudsen et al. (1999) identified using the blowhole and eye as landmarks for lining up a shot for a rifleman to aim at the brainstem of a minke whale (see Figure 1). Specifically, riflemen were trained to aim an equal distance behind the eye as the eye is behind the blowhole and halfway between the eye and blowhole on the dorsal-ventral axis. The Tribe's marine mammal biologist tested the Knudsen et al. (1999) approach on a dead, beached 37-foot gray whale and found that using the landmarks identified for a minke whale allowed an accurate prediction of the location of the brainstem of the gray whale. The Tribe's marine mammal biologist also took measurements of the effective area for a rifleman to target and found that on the 37-foot gray whale the effective target area was approximately 13 inches long by 8 inches high. Additionally, a shot from a large caliber rifle slightly outside the target area could still damage the target area sufficiently to render the whale insensible due to the temporary cavity and the secondary damage caused by pieces of the skull shattering and being pushed into the brain (Hollerman et al. 1990; Hampton et al. 2014).

Studying photos of the beached whale both before and after flensing, the Tribe's marine mammal biologist noted that gray whales have a raised ridge at the posterior edge of the cranium that can be used as an additional landmark on the body to help Makah hunters aim at a whale's brainstem and cervical vertebrae. This is important because the eye of a gray whale is typically not visible while it is swimming. The posterior edge of the cranium can be seen as the raised portion of the head that is followed posteriorly by a slight saddle before the profile of the whale's body rises along the back of the whale (Figure 3); the posterior edge of the cranium is more visible in whales of poor and fair body condition than in those of good body condition (Bradford et al. 2012; Akmajian et al. 2021).



<u>Figure 3.</u> This photo is of a gray whale in good body condition surfacing with its head visible. The posterior edge of the cranium is the area of the hump at the back of the head prior to the lower saddle identified with the white arrow before the height of the body increases along the whale's back.

All members of the whaling team will be certified for their respective role in the hunt by participating in training and, depending on the assigned role, demonstrating the requisite skill or knowledge to obtain certification (Makah Tribal Council 2025b, 2025c). Members of the whaling team and alternates will be encouraged to train for multiple roles to encourage breadth of knowledge, redundancy, and depth on the team.

The whaling captain has many responsibilities for ensuring that the whaling team is prepared, including overall leadership and control of the team. Certification criteria for the captain that are germane to a safe, efficient, and humane hunt include ensuring that all of the whaling equipment to be used in a hunt is in good working order, the whaling team has had the appropriate physical and spiritual training to undertake a safe and efficient hunt, the team has sufficient knowledge to safely navigate whaling vessels in the hunt area, and the captain must have a written plan for the landing, butchering, and distribution of edible and inedible whale products.

Harpooners must complete training on the anatomy of gray whales to help aim harpoon strikes for maximum effectiveness. Harpooners must demonstrate proficiency during field training in the use of a harpoon, both on land and on the water. Harpooners must demonstrate knowledge about the assembly and maintenance of harpoons and the safe deployment of the harpoon line after a whale is harpooned. Harpooners must also complete trainings with Makah Fisheries Management to observe the surfacing and breathing patterns of gray whales. Training and certification requirements for harpooners will enhance the likelihood that harpoon throws result in successful harpoon strikes. The safety officer communicates with the rifleman on when the high-powered rifle can be safely fired at the whale. The safety officer must complete a seminar on firearm safety, train with the rifleman and chase boat skipper on communicating on the water and approaching whales to set up safe rifle shots, and pass a test on where to aim a shot to hit the brainstem or cervical vertebrae of a harpooned whale, which will allow the safety officer to help the rifleman optimize the effectiveness of the rifle shots.

The rifleman's chief focus will be to fire an accurate shot at the brainstem or cervical vertebrae of the whale with the intent to cause immediate insensibility and death. A rifleman must: 1) complete training on the anatomy of gray whales, 2) demonstrate knowledge on how to accurately aim at the brainstem and cervical vertebrae of the whale, 3) complete hands-on training with Makah Fisheries Management to visualize effective kill shots for whales on the water and skeletons in the Makah Museum, 4) attend a seminar with Makah Law and Order on firearm safety on land and on the water, and 5) demonstrate a high level of proficiency in all drills and simulations of the hunt including accuracy of firing a qualifying rifle.

The Tribe's training program and certification procedures for whaling teams built upon and substantially improved the training program utilized in the 1990s. These improvements should increase the safety of the hunt, reduce the time to death, and improve the efficiency and humaneness of the hunt.

2. Makah hunt plan.

Makah whale hunts will be conducted by a whaling team in a minimum of two vessels under the supervision, leadership and control of the whaling captain. One will be a traditional whaling canoe manned by members of the whaling team, including the harpooner and an adequate number of paddlers. The second will be a motorized chase boat manned by a skipper, rifleman, safety officer, and, at the captain's discretion, an additional team member who can serve as a diver. Other than the skipper, any of the whaling team members aboard the chase boat could also serve as a secondary harpooner. The Tribal hunt observer will either be aboard the chase boat or a separate additional vessel. If the chase boat does not have sufficient capability to tow a gray whale to shore, an additional support boat will be on call and available to promptly meet the whaling expedition (Makah Tribal Council 2025a).

Using the canoe as the primary pursuit vessel allows the Tribe to hunt consistent with historical practice and to maintain important aspects of traditional training and teamwork that heighten skills, unify the crew, and provide social benefits to the community (Swan 1870; Waterman 1920; Ingling 1999a; Baggio et al. 2016; Renker 2018). Furthermore, using a canoe with paddles is beneficial because a canoe is virtually silent in the water. This will allow a close approach without detection by a targeted whale whereas outboard motors emit sound at a frequency that is very similar to the vocal range of gray whales (Dahlheim et al. 1984) such that whales can hear the approach of a motor boat from a much greater distance. Harpoons and attached lines and floats will utilize technological advancements as compared to the historic hunt, including metal toggle heads, modern synthetic ropes, and polyform buoys (Ingling 1999a). The use of modern technologies with the harpoon head, rope, and buoys helps to reduce the

probability of a whale being struck and lost. The likelihood of a struck and lost whale is further reduced by the use of additional harpoons to secure the whale.

During a hunt, a whaling team will endeavor to approach near the head of the targeted whale, most likely from the whale's left side (Waterman 1920). The harpooner will stand in the bow of the canoe and either drive or throw the harpoon into the whale. The harpooner will attempt to drive a harpoon deep into the thoracic region of the whale with the objective of damaging the lungs, heart, or retia mirabile of the whale. A harpoon strike to a vital organ will significantly reduce the whale's ability to evade the chase boat and may reduce the time to death of the whale, though a large caliber rifle will be the primary kill weapon.

After the whale is harpooned, the whaling team will either deploy a large polyform buoy on the end of the line attached to the harpoon or hold onto the line from the canoe. The line from the initial harpoon strike will serve both as a means of holding fast to the whale to prevent it from being lost and provide a control line to coordinate subsequent efforts to kill the whale. The drag from the polyform buoy or the canoe has the added benefit of tiring the whale and making subsequent approaches easier (Scammon 1874). Additional harpoon strikes may be made on the struck whale from either the canoe or the chase boat. Members of the 1999 hunt expressed concern that the harpoons would pull out as they retrieved the whale killed in that hunt, and the hunt plan has been subsequently adapted so that the whale is harpooned multiple times prior to killing.

The motorized chase boat will quickly pursue a struck gray whale. When no more harpoons are to be deployed, the skipper will position the chase boat such that when the whale surfaces there will be a clear line of sight to the whale and, if the chase boat is within 500 yards of shore, the rifleman is not firing towards shore. The safety officer will have the responsibility of notifying the rifleman when it is and is not safe to fire the rifle. These conditions are specified in the Safety Requirements Appendix to the Whaling Training Program and Certification Procedures (Beattie 2001; Graves et al. 2004; Makah Tribal Council 2025c). When the safety officer has authorized the rifleman to shoot, the rifleman will aim accurately and endeavor to shoot the whale's brainstem or cervical vertebrae. To achieve this, the rifleman will use the landmark of the posterior of the cranium and aim down the body to a point they visualize to be halfway between the blowhole and eye of the whale on a dorsal-ventral axis. If the rifleman shoots in a position that was expected to kill the whale but does not, they will fire additional rounds slightly above and below the unsuccessful shot and then slightly anterior and posterior if above and below did not kill the whale, following the suggestion of Daoust and Ortenburger (2015). If necessary, the skipper, safety officer, and rifleman will quickly repeat these steps until the whale is shot in the brainstem or cervical vertebrae and dies.

The Tribal hunt observer will monitor the hunt, record details of approaches, strikes, and strike attempts, and make every reasonable effort to take photographs of the whales approached, with special emphasis on collecting photographs suitable for photo-identification of all gray whales that are struck with a harpoon. The Tribal hunt observer will also endeavor to record the details of each rifle shot and each dive after the whale is shot. The Tribal hunt observer will examine the whale when it is at the surface for signs that the whale has died, which is a determination that scientific experts agree can be challenging to make with a high level of

confidence (Knudsen 2005). Due to the fact that gray whales typically sink after they die (Scammon 1874; Waterman 1920) and other factors, it may be difficult to determine the precise time of death of the whale. Based on all available information, the Tribal hunt observer will determine when the whale is dead and notify the whaling captain and team.

After the whale is dead, a team member will secure a line to the whale's tail or will dive into the water and attach a line through the lower jaw and upper lip of the whale. The whale will then be towed to shore by the chase boat or additional support boat where the community will gather to conduct spiritual and cultural practices for the whale and teams will butcher the whale and collect data (i.e., length and sex) and samples from the whales.

3. Expert review of Makah hunt plan and training program.

A draft version of the Makah whaling training program and a summary of the 1999 whale hunt was reviewed by the NAMMCO's Expert Group Meeting to Assess Time to Death Data for Large Whale Hunting in 2015. The objective of the meeting was for whaling nations and indigenous whaling communities to present data from their hunts so that experts could evaluate whether the hunts could be improved, primarily in terms of shortening the time to death. The NAMMCO Expert Group consisted of scientists from Norway, Iceland, Denmark (Greenland), Japan, Canada, and the United States. The group endorsed the Makah training program (Makah Tribal Council, 2015) and noted, based on the portion of the training program presented and other planned training activities, that future Makah whale hunts are anticipated to be safe and efficient (NAMMCO 2015a).

4. Time to death during recent Makah gray whale hunts.

As may be expected, there is no precise data and very limited reporting regarding the time to death of whales taken during historic Makah hunts prior to the 1920s.

On May 17, 1999, the Tribe demonstrated how its proposed blend of traditional whaling techniques, modern hunting technologies, and a well-trained team can achieve a swift time to death of a hunted gray whale. At 6:55 a.m., a gray whale surfaced in front of a Makah whaling canoe and was harpooned. At 6:58 a.m., the chase boat approached, and the rifleman fired two shots from a .577 caliber rifle that did not make contact with the whale. At 7:01 a.m., a third shot was fired that hit the head of the whale, stunning it. Soon after the third shot was fired, a harpooner in the chase boat struck the whale with a second harpoon at 7:02 a.m. The whale was killed at 7:03 a.m. with a fourth shot that entered the cranium of the whale, causing it to become immediately motionless and insensible. Immediately after the kill shot, the whale was harpooned a third time, again from the chase boat. The time to death after the initial harpoon strike was eight minutes (Gosho, 1999). Thus, the 1999 Makah whale hunt resulted in a successful and quick taking of a gray whale, and the Tribe intends to emulate and improve upon those methods in future permitted hunts to ensure a swift time to death of hunted whales.

On September 8, 2007, five Makah Tribal members hunted a gray whale without authorization by the Tribe. There were many factors surrounding the hunt that make it difficult to interpret the observed time to death of this whale, including the absence of any trained observers.

The exact time the whale was first struck by a harpoon is unknown. Based on United States Coast Guard (USCG) call logs it appears that the whale was harpooned at approximatley 10 a.m. (Scordino 2007a). The whale was subsequently harpooned three additional times (four harpoons total) and there was visible evidence of 16 bullet wounds (Scordino 2007b). The USCG responded and detained the hunters at 10:44 a.m. The whale was left alive and swimming with its injuries until 7:08 p.m. when the whale died, resulting in an estimated time to death of about nine hours (Scordino 2007b).

The Tribe's marine mammal biologist thoroughly reviewed the unauthorized hunt and the protracted time to death (Scordino 2007a). The location of the visible bullet wounds suggested that the shots were aimed too dorsal and anterior of the brainstem and cervical vertebrae. Scordino (2007a) concluded that the reason for the long time to death (despite being shot at least 16 times) was poor training and lack of knowledge of where to aim the rifle to ensure a quick death. Since 2007, the Tribe has taken extensive measures to update and improve Tribal laws, the training program, and whaling team certification procedures to ensure that all whaling team members are trained and certified to fulfill their respective roles (*see* Section V.A, above) and that future hunts are safe, efficient, and humane.

For future Makah hunts, a number of factors will affect the time to death of a hunted whale. These factors include, but are not limited to, the reaction of the whale to the initial harpoon strike, weather and sea conditions, proximity of the whale to shore and to obstacles for positioning the chase boat, and other vessel activity (including, potentially, protestors intending to interfere with and disrupt the hunt). Chukotkan hunters face many of these same challenges, except for protestors, in the only other current hunt of gray whales. The average time to death of gray whales during Chukotkan hunts in 2023 was 30 minutes (range 1 to 120 minutes) using smaller caliber rifles than will be used in the Makah hunt. Although both hunts must secure the whale with one or more floats initially, the use of a larger caliber rifle in the Makah hunt will help ensure that the bullet will penetrate deeply enough to damage the brainstem or cervical vertebrae and cause immediate insensibility of hunted gray whales. Furthermore, the use of a large caliber rifle will allow a greater margin of error in aiming as compared to a bullet fired from the smaller caliber rifles used in the Chukotkan hunts due to the extra width of the bullet and of the larger temporary cavity the larger caliber bullet will create. The Tribe anticipates and is taking extensive measures to increase the likelihood that the average time to death of gray whales killed during future Makah hunts will be closer to the eight minutes observed in the 1999 Makah hunt as compared with the 30-minute average observed in Chukotkan hunts and that all struck whales are landed. Although a swift time to death is anticipated in the Makah hunt, none of the gray whales hunted by the Tribe will be killed instantaneously because, as discussed above, the whaling team first needs to secure the whale with multiple harpoons prior to using the killing weapon to ensure the whale is not lost.

5. Adaptive management.

The Tribe is committed to conducting its gray whale hunts in a humane manner and will adaptively manage its whaling to achieve safe, efficient, and humane hunts. The Tribe's Whaling Training Program and Certification Procedures states, "As the Tribe resumes whaling, the Whaling Training Program and Certification Procedures will be adaptively managed to incorporate knowledge and expertise gained from training activities and whaling expeditions. This is a living document that the Makah Tribal Council may modify to advance the Tribe's objective of conducting a safe, efficient, and humane hunt." (Makah Tribal Council 2025c). In practice, training and hunting techniques will continuously evolve as the Tribe gains experience from the resumption of regular whaling activities.

After a whale is struck, the Tribe will evaluate all aspects of the hunt. Information gathered will be integrated into the training program, any areas identified for improvement in hunting or training will be addressed, and the training will be updated to increase the probability of success in future hunts. Furthermore, in keeping with customary transfer of knowledge within the Makah community, whaling team members will be encouraged to participate in the training program after they have gained experience in a hunt so that they can pass on their knowledge to other whalers. The humaneness review required under the waiver (*see* 50 C.F.R. § 216.118(b)(2)) after Makah hunters have struck eight gray whales will also inform the Tribe's adaptive management of its training and hunting. The Tribe is committed to evaluating the many variables that may affect each hunt and evolving its gray whale hunting techniques to maximize the safety and efficiency of hunting and minimize the time to death of hunted whales.

F. Conclusion

The Makah Tribe has developed a comprehensive and evidence-based hunt plan that will utilize shooting the brainstem or cervical vertebrae with a high-powered rifle as the method of killing a gray whale. As detailed above, this method of taking gray whales is demonstrably humane and practicable under the conditions and circumstances of a Makah hunt. The Makah hunt plan and take method have been favorably reviewed by whaling experts and enabled Makah whalers to achieve the death of a hunted gray whale in just eight minutes. No other practicable methods of taking are clearly more effective at achieving a shorter time to death and therefore causing the least possible degree of pain and suffering practicable while minimizing the chance of losing a struck whale. Thus, the Makah Tribe's hunt plan satisfies the MMPA's requirement that the method of taking authorized by a permit be "humane."

V. The Proposed Taking is Consistent with the Waiver Regulations.

Pursuant to the waiver regulations, the Tribe's application for a hunt permit must include a "demonstration that the proposed taking is consistent with this subpart[.]" 50 C.F.R. 216.113(a)(1)(iv).

In Section III of the Hunt Permit Application above, the Tribe provides citations to the corresponding waiver regulations to demonstrate consistency of the proposed scope and duration of the initial hunt permit with the governing regulations. Throughout the Application, the Tribe demonstrates that the Application is consistent with the requirements of the waiver regulations and the MMPA, including the humane taking requirement, and therefore should be approved.

VI. The Currently Enacted Makah Whaling Ordinance.

Pursuant to the waiver regulations, the Tribe's application for a hunt permit must include a "copy of the currently enacted Makah Indian Tribal ordinance governing whaling by Makah Indian Tribal members[.]" 50 C.F.R. § 216.113(a)(1)(v).

The Makah Tribal Council adopted a revised Makah Whaling Ordinance (50A) on February 5, 2025. A copy of the Ordinance and the resolution by which it was adopted are attached as *Attachment 1*.

VII. The Certification Process for Identified Roles on the Whaling Team and the Tribal Hunt Observer.

Pursuant to the waiver regulations, the Tribe's application for a hunt permit must include a "description of the certification process for whaling captains, riflemen, harpooners, Tribal hunt observers, and safety officers, including any guidelines or manuals used by the Tribe to certify such persons[.]" 50 C.F.R. § 216.113(a)(1)(vi). Before issuing a hunt permit the Regional Administrator must make a determination that the Tribe "has in place certification procedures for whaling captains, riflemen, harpooners, Tribal hunt observers, and safety officers and a process to ensure compliance with those procedures." *Id.* § 216.113(b)(6)(iii).

The Tribe developed and the Makah Tribal Council approved a whaling training program and certification guidelines and procedures for each of the identified roles on a whaling team. The following components of the training program are attached to the application:

Attachment 2. Whaling Team Certification Guidelines

Attachment 3. Whaling Training Program and Certification Procedures (and Safety Requirements Appendix)

In addition, as explained in Part 5 of the Whaling Training Program document, several provisions of the Makah Whaling Ordinance (*Attachment 1*, Makah Tribal Council 2025c) will ensure compliance with the certification procedures.

Training approaches and training harpoon throws are an optional component of whaling training and are not required for certification. To the extent whaling captains conduct these training activities, they will be guided by a third document in the Tribe's suite of training materials:

Attachment 4. Guidelines for Approaching Gray Whales During Whaling Training and Making Training Harpoon Throws

VIII. Additional Hunt Permit Conditions Proposed by the Tribe.

Pursuant to the waiver regulations, the Tribe's application for a hunt permit may include

"[a]ny additional hunt permit conditions proposed by the Tribe and a justification for the proposed conditions[.]" 50 C.F.R. § 216.113(a)(1)(vii). In this Hunt Permit Application, the Tribe proposes additional conditions limiting the time and area of hunting and training activities in and around identified biologically sensitive sites, which are intended to avoid disturbing hauled-out pinnipeds, nesting seabirds and rafted sea otters in the hunt area.

The Tribe is committed to ensuring that whale hunts will not negatively impact hauled out pinnipeds, rafted sea otters, and nesting seabirds in the hunt area, consistent with the Tribe's objective of conducting a safe, efficient, and humane hunt. By implementing time and area restrictions on hunting activities that could disturb or injure pinnipeds hauled out on rocks or islands, the Tribe intends to avoid "take" of these marine mammals as defined by the MMPA from (a) vessel activity and (b) acoustic disruption from firing a large-caliber rifle.¹⁰ The Tribe will also implement measures to avoid take of sea otters in locations where they "raft" at the water's surface in large groups. Finally, because certain rocks and islands in the hunt area are important nesting areas for seabirds, the Tribe will implement seasonal area restrictions intended to avoid disturbing seabirds that are nesting in the hunt area. In addition to avoiding take under the MMPA, these measures are responsive to the interest of the Olympic Coast National Marine Sanctuary in protecting pinnipeds pupping on haulouts and nesting seabirds in the Sanctuary.

The Tribe's strategy to avoid disturbance to pinnipeds, otters, and seabirds begins with the whaling training program and regular information sharing with the whaling team. All whalers will attend a presentation by the Tribe's marine mammal biologist as part of their required training, which will include identification of biologically sensitive sites within the hunt area. The training will identify rocks and islands accessible to hunters where pinnipeds are known to haul out and where seabirds are known to nest. During this permit period, whalers will be trained to stay at least 200 yards from identified biologically sensitive sites during hunt activities, and whaling captains will have to certify that they have knowledge of the hunt area and the location of biologically sensitive sites. A full list of biologically sensitive sites that could be affected by Makah whale hunts and the time of year they will be subject to a buffer by Makah whaling regulations, Tribal whaling permits, and Tribal training permits, is located in Table 1 and depicted in Figure 4, below. Captains will also receive information from the marine mammal biologist about sites where sea otters have commonly or recently been observed rafted in large groups so they can apply the same 200-yard buffer should such rafts be identified during whaling activities. This is a practicable approach for avoiding disturbance to sea otters because their raft sites are ephemeral in nature and not appropriate for fixed buffer locations. Lastly, whalers will be trained to conduct whaling activities at least 200 yards from rocks, islands, and other locations not in the list of biologically sensitive sites if they observe hauled-out pinnipeds or sea otters.

¹⁰ Because pinnipeds and sea otters are not the target of the hunt, the form of "take" that could potentially occur from hunting activities is "harassment." 16 U.S.C. 1362(13), (18) (definitions of "take"). Harassment is further defined in the MMPA's implementing regulations as Level A Harassment ("any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild") and Level B Harassment ("any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild").

In addition to the training program, the biologically sensitive sites to avoid and specified buffers will be identified in and implemented through Tribal whaling permits and Tribal training permits, thereby providing an enforcement mechanism under tribal law.

There will be three limited exceptions to the 200-yard buffer around biologically sensitive sites. First, whalers may access Tatoosh Island to camp, rest, and/or to conduct spiritual or cultural activities. Tatoosh Island is part of the Makah Reservation and holds special significance for traditional subsistence, cultural and spiritual activities. Second, whalers will be allowed to transit through the 200-yard buffer of biologically sensitive sites if, in the discretion of the whaling caption, doing so is necessary for the safety of the whaling team. Third, whalers may move within 200 yards of a biologically sensitive site if it is essential to quickly kill a whale that has been struck with a harpoon before swimming into a buffer zone. The decision of whether to enter the buffer around a biologically sensitive site will be at the discretion of the whaling in the biologically sensitive site without any clear evidence that it will travel out of the area. A second important consideration is the length of time since the first harpoon strike, which reflects the Tribe's commitment to minimizing the time to death of hunted whales.

The Tribe anticipates that the limited exceptions to the 200-yard buffer around biologically sensitive sites will not result in take of marine mammals. Any whaling team accessing Tatoosh Island will most likely land on the east side of the island on the only sandy beach. This site is well away from locations where pinnipeds typically haulout on the island. The training for whalers will also teach techniques for avoiding disturbance of marine mammals in buffer areas if the whaling team must enter a buffer during a hunt or training activities. Last, it is extremely unlikely that a struck whale will enter and remain in a buffer area to necessitate the whaling team entering the buffer area to minimize the time to death of the whale. Collectively, the buffer areas compose a small portion of the hunt area and the waiver substantially restricts the number of whales that may be struck, limiting the Tribe to two strikes in a summer/fall hunt and three strikes in a winter/spring hunt.

The Tribe is adopting a 200-yard buffer distance for this initial hunt permit application based on the use of this distance or lesser distances in similar situations to avoid or minimize disturbance to hauled-out pinnipeds and nesting seabirds. For example, the Flattery Rocks National Wildlife Refuge, which overlaps with the hunt area, requires visitors to stay at least 200 yards from the rocks and islands of the refuge to avoid seabird and marine mammal disturbance.¹¹ NMFS has developed nationwide marine life viewing guidelines for the public which recommend staying at least 50 yards from pinniped haulouts to prevent disturbance.¹² NMFS guidelines specific to the West Coast are more conservative and recommend viewing marine mammals, whether from the water or on land, from a distance of at least 100 yards.¹³ Last, the U.S. Navy instructs its teams doing small boat operations in waters off the Pacific

¹³ West Coast viewing guidelines are available at: <u>https://www.fisheries.noaa.gov/west-coast/marine-life-viewing-guidelines/share-shore-watch-marine-mammals-responsibly</u>, last accessed Feb. 20, 2025).

¹¹ Flattery Rocks National Wildlife Refuge information is available at: <u>https://www.fws.gov/refuge/flattery-rocks</u> (last accessed Feb. 26, 2025).

¹² The current nationwide NMFS viewing guidelines are available at: <u>https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines/guidelines-and-distances</u>, last accessed Feb. 20, 2025).

Northwest coast to stay at least 100 yards from marine mammals to prevent disturbance (National Marine Fisheries Service, 2020, p. 160).

The Tribe's proposed buffer of 200 yards is more conservative than the buffer distances advised by NMFS and utilized by the Navy for avoiding disturbance of pinnipeds. The buffer distance the Tribe plans to use is twice that of the regionally applicable NMFS viewing guidelines and thus provides both room for error and greater assurance that hunting activities will avoid disturbing hauled out pinnipeds. The proposed 200-yard buffer is also greater than the Navy's mitigation measure of a 70-yard buffer around the firing path of a large-caliber weapon to avoid or reduce potential impacts to marine mammals due to noise (National Marine Fisheries Service, 2020, p. 144)

The Tribe's proposed buffer of 200 yards is also more conservative than is suggested by a scientific study on Vancouver Island for preventing disturbance of nesting seabirds. Chatwin et al. (2013) measured boat approach distances for both motorboats and kayaks and recommended a buffer distance of 50 yards around seabird nesting sites to protect birds from disturbance based upon the distances at which disturbances were observed. The Tribe's proposed buffer of 200 yards would provide greater protection for nesting birds to account for the sound production of the rifle.

The Tribe is unaware of any scientific literature on the distance at which vessel traffic or rifle shots cause disturbance of sea otters. Based on the experience of the Tribe's marine mammal biologist maneuvering small vessels in the hunt areas, a 200-yard buffer is likely to be an adequate distance to prevent disturbance of rafted sea otters. Thus, the Tribe will apply the same 200-yard buffer to biologically sensitive sites associated with the presence of rafted otters.

The Tribe will monitor the effectiveness of the 200-yard buffer for preventing disturbance of hauled-out pinnipeds, nesting sea birds, and sea otters during hunts and identify any effects that adherence to the buffer has on the safety and efficiency of the hunts. As new information becomes available in the course of the Tribe's whaling, it may be appropriate to reflect that information in subsequent hunt permit applications.

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			Pinniped period of	Seabird period of
Site	Latitude	Longitude	concern	concern
Tatoosh Island	48° 23.56' N	124° 44.59' W	Year round	1 April - 31 August
Duncan Rock	48° 24.49' N	124° 44.53' W	Year round	
Skagway	48° 22.06' N	124° 44.03' W	Year round	
Wa'atch Point Reef	48° 20.39' N	124° 41.56' W	Year round	
Silversides Island	48° 15.18' N	124° 42.50' W		1 April - 31 August
Father and Son	48° 13.58' N	124° 42.77' W	Year round	
			Year round except	
East Bodelteh	48° 10.57' N	124° 45.15' W	July	
Middle Bodelteh	48° 10.55' N	124° 45.55' W		1 April - 31 August
West Bodelteh Island				
(birds)	48° 10.55' N	124° 45.73' W		1 April - 31 August
West Bodelteh Island	48° 10.75' N	124° 46.27' W	Year round	
Umatilla Reef	48° 11.29' N	124° 47.64' W	Year round	
Ozette Island	48° 09.45' N	124° 45.39' W	Year round	
White Rock	48° 08.26' N	124° 43.93' W		1 April - 31 August

<u>Table 2.</u> List of biologically sensitive sites and associated periods of concern. These sites will be included in the training for Makah whalers about biologically sensitive sites and in Makah whaling regulations, Tribal whaling permits, and Tribal training permits. Note that the Atlas of Seal and Sea Lion Haulout Sites in Washington includes additional sites within the hunt area that are not included in this table (Jeffries et al. 2000). These haulout sites are excluded because they are in very nearshore sites that are treacherous to approach in a boat and because gray whales have not been observed in proximity to the sites (Scordino et al., 2017; Makah Fisheries Management unpublished data).¹⁴ In addition to the very nearshore haulout sites, this list does not include Guano Rock. Guano Rock was used as a seasonal haulout by Steller sea lions in the past (Scordino et al. 2022), but has not been used since 2018 (Makah Fisheries Management unpublished data). The seabird period of concern for time and area closures was informed by nesting data for seabirds in Washington reported in Hanson and Wiles (2015).

Figure 4. Map of biologically sensitive sites listed in Table 2:

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¹⁴ The following sites, previously identified by the Sanctuary, are not listed in Table 2 because, based on the Tribe's extensive familiarity with the hunt area, they cannot safely be approached by the canoe or other vessels used in the hunt and gray whales are not likely to be present: White Rock area, Cape Alava area, and Allen's Bay/Midway area.



IX. Modifications to the Waiver Regulations.

Pursuant to the waiver regulations, the Tribe's application for a hunt permit may include "[a]ny modification to this subpart sought by the Tribe and a justification for the proposed modification." 50 C.F.R. § 216.113(a)(1)(viii). The Tribe does not seek any modification of the waiver regulations in this Hunt Permit Application.

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