USER SPREADSHI	EET INTRODUCTION				DOBB											
VERSION: 2.1 (2020)																
Companion [†] User Spreadsh	eet to:															
National Marine Fish	eries Service (NMFS): 201	8 Revisio	n to: Tecl	hnical Gui	dance For A	ssessing th	e Effects	of								
	on Marine Mammal Heari															
	shold Shifts (Version 2.0)															
2018 Revised Technical Guidan																
*For more information on	the optional methodology provid	lad within t	hic Hear Spr	ondeboot co	o Annondiy D	of Tochnical G	uidanaa (201	(0)							—	
Tor more information on	the optional methodology provid	ica wiaiiii t	ina oaei opi	causileet, se	e Appendix D	7 Technical Ci	nuance (201	0,							-	 -
DISCLAIMER: NMFS has p	rovided this spreadsheet as an o	optional too	ol to provide	estimated ef	fect distances	(i.e., isopleths)	where PTS	onset	'							
	ed. Results provided by this spre help evaluate the effects of a pre															
various statutes. Input val	ues are the responsibility of the i	ndividual u	iser.	ie mammai n	earing and mar	te illialings req	uired by NO	AA S								
NOTE: The Use Consideration	ol provides a means to estimates distance		during the Tools	-11-0141	- DTC	e atala										-
	noi provides a means to estimates distant ments associated with a Marine Mammal															
	ndent management decisions made in th	e context of the	ne proposed act	tivity and compr	ehensive effects ar	nalysis, and are										
beyond the scope of the Technic	al Guidance.				——											-
INSTRUCTIONS																-
STEP 1: Determine what	spreadsheet is appropriate for ac	tivity					ļ						·····			
HOW TO DETERMINE WHICH	I AB I U USE							\vdash								
	IPULSIVE or IMPULSIVE? (If it is uncle				onsult NOAA)											
	MPULSIVE (e.g., drilling, vibratory pile dr SIVE (e.g., explosives, impact pile drivin					 										-
	nd source STATIONARY or MOBILE? ONARY: Go to Question 3	1			——	+										 -
	E: Go to Question 4															
3) Is the NON-IMPULSIVE, STA	ATIONARY source CONTINUOUS or IN	NTERMITTEN	NT+?		—	 										 -
a) CONT	INUOUS: Use Tab A*			RED												
	is vibratory pile driving: Use Tab A.1 MITTENT: Use Tab B			BRICK YELLOW	<u> </u>		 									1
	stinction between continuous and intermi	ttent sound so	ources is that in		ds have a more reg	jular (predictable)	pattern of burst	s of sounds	and silent pe	eriods (i.e., o	luty cycle), v	hich continu	uous sounds	do not.		
4) Is the NON-IMPULSIVE, MO	BILE source CONTINUOUS or INTER!	MITTENT?														-
a) CONT	INUOUS: Use Tab C ("safe distance" me	ethodology fro					BLUE									
b) INTER	MITTENT: Use Tab D ("safe distance" r	methodology f	rom Sivle et al.	2014)			ORANGE									-
	urce STATIONARY or MOBILE?															1
a) STATI	ONARY: Use Tab E* is impact pile driving: Use Tab E.1					GREEN EVRGRN										-
	E: Use Tab F ("safe distance" methodole	ogy from Sivle	e et al. 2014)			PURPLE										
STEP 2: Within the appropriate	tab. fill-in:		SAGE CELLS	l	specific to the acti	ivity	 	 -							+	-
a) Please	provide information used to support valu	es in provided	d in sage boxes	(e.g., surrogate												
b) If inform	mation is unavailable to fill-out one or mor	re of the sage	boxes, please	consult NMFS		 									+	-
STEP 3: Estimated PTS isopleth	s (meter) will be provided in:			SKY BLUE CE	ELLS	by marine mamm	nal hearing grou	1b								
CTED 4. When uping this enrous	sheet to estimate marine mammal takes	plana proje	do o oony of oo	moleted teh use	d to optimate is only	otho				<u> </u>						
STEF 4. When using this spread	asheet to estimate manne manimal takes	, piease provid	ue a copy or cor	Inpleted tab use	u to estimate isopie	3015										-
A COLUMN TIONS OF A D	DITIONAL INFORMATION													ı		
ASSUMPTIONS & AD	DITIONAL INFORMATION															-
Marine mammals remain station																
2) Currently, recovery between in	termittent sounds is not considered rega	rdless of time	between sound	ds (i.e., all soun	as within the accur	nulation period are	counted)								-	-
	g Factor Adjustments (WFA) for Broa	dband Source	ces:													
	Example Supporting Sources Breitzke et al. 2008;			Ma	arine Mammal	Hearing Grou	ар									+
Seismic airguns 1 kHz	Tashmukhambetov et al. 2008; Tolstoy et al. 2009				nency (LF) cet sency (MF) ce										ı	
Impact pile driving 2 kHz	Blackwell 2005; Reinhall and Dahl			toothed w	hales, beaked w	hales, bottleno	se whales									
Nammers Vibratory pile driving	2011			porpoises,	quency (HF) co Kogia, river dolp	phins, cephalor	hynchid,	-								
hammers				Phocid pi	chus anaiger & L. innipeds (PW):	true seals		<u> </u>								
Drill vessels/platforms 2 kHz	Greene 1987; Blackwell et al. 2004; Blackwell and Greene 2006			Otariid pi	innipeds (OW)	sea lions and	fur scals	<u></u>							\vdash	
* NMFS acknowledges default W	FAs are likely conservative	+ +					\vdash								$\overline{}$	+
Literature Cited Blackwell, S.B. 2005. Underwate	r Measurements of Pile Driving Sounds	during the Por	rt MacKenzie D	ock Modification	ns, 13-16 August 2	004. Juneau, Alas	ka: Federal Hiç	hway Admir	nistration.							
Blackwell, S.B., C.R. Greene, Jr.	, and W.J. Richardson. 2004. Drilling an							E								Ł
of the Acoustical Society of Ame	rica 116: 3199-3211.															
Blackwell, S.B., and C.R. Green, Journal of the Acoustical Society	Jr. 2006. Sounds from an oil production of America 119: 182-196.	island in the l	Beaufort Sea in	summer: Char	acteristics and con-	tribution of vessels	š.								=	=
	ggar, W. Jokat, and B. Werner. 2008 Br	oad-band calii	bration of marin	e seismic sour	ces used hv R/V Pi	olarstern for acade	mic research									1
in polar regions. Geophysical Jou	urnal International 174: 505-524.			Godin												
Dahl, P.H., D.R. Dall'Osto, and D	D.M. Farrell. 2015. The underwater sound	d field from vib	oratory pile drivi	ng. Journal of th	ne Acoustical Socie	sty of America 137	: 3544–3554.									_
Madsen, P.T. 2005. Marine mam	mals and noise: Problems with root mea	n square sour	nd pressure leve	els for transient	s. Journal of the Ac	coustical Society o	America 117:	3952–3957.								
Greene, R. 1987. Characteristics	of oil industry dredge and drilling sound	s in the Beauf	fort Sea. Journa	al of the Acousti	cal Society of Ame	rica 82: 1315-132-	4.									
Reinhall, P.G., and P.H. Dahl. 20	11. Underwater Mach wave radiation fro	m impact pile	driving: Theory	and observation	n. Journal of the A	coustical Society of	f America 130:	1209-1216								<u> </u>
Sivle, L.D., P.H. Kvadsheim, and	M.A. Ainslie. 2014. Potential for populat	ion-level distu	rbance by activ	e sonar in herri	ng. ICES Journal o	Marine Science	72: 558-567.									<u> </u>
Tashmukhambetov, A.M., G.E. le	oup, J.W. loup, N.A. Sidorovskaia, and J	J. Newcomb.	. 2008. Three-d	imensional seis	mic array characte	rization study: Exp	periment and									
modeling. Journal of the Acoustic	cal Society of America 123:4094–4108.															
Tolstoy, M., J. Diebold, L. Doerm Langseth four-string seismic sou	ann, S. Nooner, S.C. Webb, D.R. Bohne rces. Geochemistry Geophysics Geosys	enstiehl, T.J. C	Crone, and R.C.	. Holmes. 2009	. Broadband calibra	ation of the R/V Ma	arcus G.								\equiv	1
J	, , , , , , , , , , , , , , , , , , , ,	-														-
Technical questions or sugge	stion on User Spreadsheet: Please co	ntact Amy S	cholik-Schlom	ner (amy.schol	ik@noaa.gov)											
						odically but will are	regult is a year	ion number	change)						-	+ ==
Updated	change results in the need to recalculate Change	an isopieth; d	owier non-SubSt		may be made perio	acany but will not	result III à vers	on number	спанде)							
Original Version Version 1.0 1.1	Sheet A, error with formula for phocid	pinniped		Date posted Aug. 22, 2016		<u> </u>	\vdash	\vdash								 \vdash
	Commence de la O.O. marile et O. de de co	Technical G	uidance	July 2018												
1.1 2.0	Corresponds to 2.0 version of Reviseo (2018). Added sheet specific to vibrate	ory pile driving	g and		<u> </u>										'	
	(2018). Added sheet specific to vibrate explosives and added capabilities to of	ory pile driving calculate peak	g and													
	(2018). Added sheet specific to vibrate	ory pile driving calculate peak ulsive source	g and s	March 2020												

A: STATIONARY SOURCE: I	Non-Impulsive Con	tinuous						
VERSION 2.1: 2020	ton-impulsive, con	tilluous		I				
KEY								
	Action Proponent Provided	I Information						
	NMFS Provided Information							
	Resultant Isopleth							
STEP 1: GENERAL PROJECT INFORMATION	N							
PROJECT TITLE								
PROJECT/SOURCE INFORMATION								
Please include any assumptions								
PROJECT CONTACT								
STEP 2: WEIGHTING FACTOR ADJUSTMEN	т	Specify if relying on source- specific WFA, alternative weighting/dB adjustment, or if using default value.						
Weighting Factor Adjustment (kHz) [¥]								
*Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab		† If a user relies on alternation default), they may override				ırce-specific		
		However, they must provide				1.		
STEP 3: SOURCE-SPECIFIC INFORMATION								
Source Level (L _{rms})								
Duration of Sound Production (hours) within 24-h period								
Duration of Sound Production (seconds)	0		NOTE: The User Spre	eadsheet tool provides a	a means to estimate	es distances		
10 Log (duration of sound production)	#NUM!			echnical Guidance's PT				
Propagation loss				nts associated with a M				
				ndangered Species Act ment decisions made in			1	-
				s analysis, and are bey				
			and the User Spreads					
RESULTANT ISOPLETHS		Law Est	Mid Eng	High Escares	Dha-!-!	Oteniid		
	Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds		
	SEL _{cum} Threshold PTS Isopleth to threshold	199	168	173	201	219		
	(meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!		
WEIGHTING FUNCTION CALCULATIONS								
	Weighting Function	Low-Frequency	Mid-Frequency	High-Frequency	Phocid	Otariid		
	Parameters	Cetaceans	Cetaceans	Cetaceans	Pinnipeds	Pinnipeds	 	
	a b	1 2	1.6	1.8	2	2		
	f ₁	0.2	8.8	12	1.9	0.94		
	f ₂	19	110	140	30	25		
	C	0.13	1.2	1.36	0.75	0.64		
	Adjustment (-dB)†	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!		
(£ \2a							
$W(f) = C + 10\log_{10} \left\{ \frac{(f/f)}{[1 + (f/f_1)^2]^a} \right\}$	$\frac{J_1}{[1+(f/f_2)^2]^b}$							
	<u>I</u>	t.		I .	I.			1

A.1: Vibratory Pile Drivin	g (STATIONARY S	OURCE: Non-Im	pulsive, Co	ntinuous)				
VERSION 2.1: 2020								
KEY	Action Proponent Provided In	formation						
	NMFS Provided Information (1							
	Resultant Isopleth	,						
STEP 1: GENERAL PROJECT INFORMA	TION							
PROJECT TITLE								
PROJECT/SOURCE INFORMATION								
Please include any assumptions								
PROJECT CONTACT								
	I							
		Specify if relying on source- specific WFA, alternative						
		weighting/dB adjustment, or						1
STEP 2: WEIGHTING FACTOR ADJUST	MENT	if using default value						
Weighting Factor Adjustment (kHz)*								
5g . 2222j (12)								
*Broadband: 95% frequency contour percentile								
(kHz) OR Narrowband: frequency (kHz); For								
appropriate default WFA: See INTRODUCTION tab		† If a user relies on alternative	e weighting/dB adjustm	nent rather than relying	upon the WFA (sour	ce-specific		
		or default), they may over	ride the Adjustment (dB) (row 48), and en	ter the new value	directly.		
		However, they must provi	de additional suppor	and documentation	supporting this mo	dification.		
STEP 3: SOURCE-SPECIFIC INFORMAT	ION							
Sound Pressure Level (L _{rms}), specified at "x" meters (Cell B30)								
at X meters (Cen B30)								
Number of piles within 24-h period								
Duration to drive a single pile								
(minutes)								
Duration of Sound Production within	0							
24-h period (seconds) 10 Log (duration of sound production)	#NUM!		NOTE: The User Spre	adsheet tool provides a	means to estimate	s distances associa	ted	
Transmission loss				dance's PTS onset thre				
Distance of sound pressure level								
measurement (meters)				ed with a Marine Mamr				
				Act (ESA) consultation context of the proposed				
				cope of the Technical G			,,	
RESULTANT ISOPLETHS								
	Hearing Group	Low-Frequency	Mid-Frequency	High-Frequency	Phocid	Otariid		
		Cetaceans 199	Cetaceans 198	Cetaceans 173	Pinnipeds 201	Pinnipeds 219		
	SEL _{cum} Threshold PTS Isopleth to threshold	199	190	1/3	201	219		
	(meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!		
	,,							
WEIGHTING FUNCTION CALCULATION	•							
WEIGHTING FUNCTION CALCULATION	3							
	Weighting Function	Low-Frequency	Mid-Frequency	High-Frequency	Phocid	Otariid		
	Parameters	Cetaceans	Cetaceans	Cetaceans	Pinnipeds	Pinnipeds		
	a b	1 2	1.6 2	1.8	2	2		
	f ₁	0.2	8.8	12	1.9	0.94		
	f ₂	19	110	140	30	25		
	C	0.13	1.2	1.36	0.75	0.64		
	Adjustment (-dB)†	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!		
((01.0)20							
$W(f) = C + 10\log_{10} \left\{ \frac{0}{[1 + (f/f_1)]} \right\}$	$(f/f_1)^{2a}$							
$[1+(f/f_1)]$	$(1 + (f/f_2)^2)^b$							
(1 0 71								

	Non-Impulsive, Int	ermittent						
VERSION 2.1: 2020								
KEY								
	Action Proponent Provided In NMFS Provided Information (
	Resultant Isopleth	rechnical Guidance)						
	ntountaint loopiotii							
STEP 1: GENERAL PROJECT INFORMATIO	NI .							
STEP 1: GENERAL PROJECT INFORMATIO	N .							
PROJECT TITLE								
PROJECT/SOURCE INFORMATION								
Please include any assumptions								
PROJECT CONTACT								
		Specify if relying on source-						
		specific WFA, alternative						
STEP 2: WEIGHTING FACTOR ADJUSTMEN	ıτ	weighting/dB adjustment, or if using default value						
5.2. TEIGHTHO FACTOR ADJUSTMEN		J						
Weighting Factor Adjustment (kHz) [¥]								
*Broadband: 95% frequency contour percentile								
(kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab		4 M	intelaction / ID		45 - 10/50 /			
eppropriate detault W.F.A.: See INTRODUCTION tab		† If a user relies on alternative or default), they may override	the Adjustment (dB) (row	64), and enter the new	value directly.	респс		
		However, they must provide a	additional support and docu	mentation supporting th	is modification.			
eten 2. colince encorro inconstruction								
STEP 3: SOURCE-SPECIFIC INFORMATION NOTE: Choose either B1 OR B2 method to		ed to fill in sage hoves fo	r hoth)					
B1: METHOD USING RMS SPL SOURCE LE		ou to iii iii ougo boxoo io	· bouny					
Source Level (L _{rms})								
Activity Duration (hours) within 24-h period								
Pulse duration (seconds)								
1/Repetition rate (seconds)								
Duty cycle	#DIV/0!		NOTE: The User Spreads	sheet tool provides a me	ans to estimates dis	tances associated		
Duration of Sound Production (seconds)	#DIV/0!		with the Technical Guidar					
10 Log (duration of sound production)	#DIV/0!		requirements associated			 A) authorization or a 		
Propagation loss							n	
Time between onset of successive pulses.			Endangered Species Act			nt management		
^Time between onset of successive pulses.			Endangered Species Act decisions made in the cor and are beyond the scope	ntext of the proposed act	ivity and compreher	nt management		
*Time between onset of successive pulses. RESULTANT ISOPLETHS			decisions made in the cor	ntext of the proposed act	ivity and compreher	nt management		
·	Hearing Group	Low-Frequency	decisions made in the cor and are beyond the scope Mid-Frequency	ntext of the proposed act of the Technical Guidan High-Frequency	ivity and compreher nce and the User Sp Phocid	nt management nsive effects analysis preadsheet tool. Otariid		
·	Hearing Group	Low-Frequency Cetaceans	decisions made in the cor and are beyond the scope	ntext of the proposed act of the Technical Guidan	ivity and compreher nce and the User Sp	nt management nsive effects analysis preadsheet tool.		
·	Hearing Group		decisions made in the cor and are beyond the scope Mid-Frequency	ntext of the proposed act of the Technical Guidan High-Frequency	ivity and compreher nce and the User Sp Phocid	nt management nsive effects analysis preadsheet tool. Otariid		
·		Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans	htext of the proposed act of the Technical Guidai High-Frequency Cetaceans	ivity and compreher nce and the User Sp Phocid Pinnipeds 201	nt management nsive effects analysis preadsheet tool. Otariid Pinnipeds 219		
·	SEL _{cum} Threshold	Cetaceans	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans	ntext of the proposed act e of the Technical Guidal High-Frequency Cetaceans	ivity and compreher nce and the User Sp Phocid Pinnipeds	nt management nsive effects analysis preadsheet tool. Otariid Pinnipeds		
RESULTANT ISOPLETHS	SEL _{cum} Threshold PIS Isopleth to threshold (meters)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans	htext of the proposed act of the Technical Guidai High-Frequency Cetaceans	ivity and compreher nce and the User Sp Phocid Pinnipeds 201	nt management nsive effects analysis preadsheet tool. Otariid Pinnipeds 219		
RESULTANT ISOPLETHS B2: ALTERNATIVE METHOD (SINGLE PING	SEL _{cum} Threshold PIS Isopleth to threshold (meters)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans	htext of the proposed act of the Technical Guidai High-Frequency Cetaceans	ivity and compreher nce and the User Sp Phocid Pinnipeds 201	nt management nsive effects analysis preadsheet tool. Otariid Pinnipeds 219		
RESULTANT ISOPLETHS B2: ALTERNATIVE METHOD (SINGLE PING Source Level (LEp., angle pingbotus) within 24-h	SEL _{cum} Threshold PIS Isopleth to threshold (meters)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM!	tiest of the proposed acts of the Technical Guidal High-Frequency Cetaceans 173 #NUM!	ivity and comprehence and the User Sp Phocid Pinnipeds 201 #NUM!	nt management in management management in sie effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM!		
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E.p., single pingloutes) Activity Duration (hours) within 24-h period	SEL _{cum} Threshold PIS Isopleth to threshold (meters)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM!	Litext of the proposed acts of the Technical Guidal High-Frequency Cetaceans 173 #NUM!	ivity and comprehence and the User Sp Phocid Pinnipeds 201 #NUM!	nt management sieve effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM!		
RESULTANT ISOPLETHS B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L_p, ingle pingipute) Activity Duration (hours) within 24-h period Number pulses in 1-h period	SEL _{cum} Threshold PIS Isopleth to threshold (meters) PULSE EQUIVALENT)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM!	widy and comprehence and the User Spince and the User Spince Phocid Pinnipeds 201 #NUM!	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM!		
RESULTANT ISOPLETHS B2: ALTERNATIVE METHOD (SINGLE PING Source Level (LEp. single pingipulse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM!	Litext of the proposed acts of the Technical Guidal High-Frequency Cetaceans 173 #NUM! sheet tool provides a mence's PTS onset threshwith a Marine Marmal F	ivity and comprehence and the User Sp Phocid Pinnipeds 201 #NUM! ans to estimates dis- bidds. Mitigation and a	nt management sieve effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM!		
RESULTANT ISOPLETHS B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L_p, ingle pingipute) Activity Duration (hours) within 24-h period Number pulses in 1-h period	SEL _{cum} Threshold PIS Isopleth to threshold (meters) PULSE EQUIVALENT)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! where tool provides a mence's PTS onset threshwith a Marine Marine Marine IEEE (ESA) consultation or pr	ivity and comprehenace and the User Sp Phocid Pinnipeds 201 #NUM! ans to estimates dis- bids. Mitigation and a biroscettion Act (MMP brintiare independer	nt management his management his management his management occurred to the control of the contro	n	
RESULTANT ISOPLETHS B22 ALTERNATIVE METHOD (SINGLE PING Source Level (L _{E,P.} , single pingipulse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT)	Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spread with the Technical Guida requirements associated. Endangered Species Act	High-Frequency Cetaceans 173 #NUM! sheet tool provides a me nce's PTS onset thresh with a Marine Mammal F (ESA) consultation or pr netext of the proposed act	wildy and comprehenate and the User Sp Phocid Pinnipeds 201 #NUM! and to estimates disolds. Mitigation and and the Market Sp Protection Act (MMP) Protection Act (MMP) Protection and comprehenate and comprehenate sixty and comprehenate sixty and comprehenate sixty and comprehenate and the User Sp Protection Act (MMP)	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a ri management siske effects analysis effects analysis	n	
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E., single pingloute) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses)	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT)	Cetaceans 199 #NUM!	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated in the cor and are beyond the scop	High-Frequency Cetaceans 173 #NUM! sheet tool provides a me noc's PTS onset thresh with a Marine Mammal F (ESA) consultation or pe text of the proposed act of the Technical Guida	ivity and comprehenoce and the User Sp Phocid Pinnipeds 201 #NUM! ans to estimates dis bids. Mitigation and in Protection Act (MMP smit are independentivity and comprehenoce and the User Sp	nt management sive effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a nt management sive effects analysis preedsheet tool.	n	
RESULTANT ISOPLETHS B22 ALTERNATIVE METHOD (SINGLE PING Source Level (L _{E,P.} , single pingipulse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT)	Cetaceans 199 #NUM! Low-Frequency	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spread with the Technical Guida with the Technical Guida requirements associated Endangered Species Act decisions made in the cor and are beyond the scop	High-Frequency Cetaceans 173 #NUM! sheet tool provides a me nce's PTS onset thresh with a Marine Mammal F (ESA) consultation or pr text of the proposed act of the Technical Guide High-Frequency	ivity and comprehenate and the User Sp Phocid Pinnipeds 201 #NUM! and to estimates discipled with the User Sp protection Act (MMP) print are independed ivity and comprehenate and the User Sp Phocid	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a run management siske effects analysis preadsheet tool.	n	
RESULTANT ISOPLETHS B22 ALTERNATIVE METHOD (SINGLE PING Source Level (L _{E,P.} , single pingipulse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss	SEL _{cum} Threshold PIS Isopleth to threshold (meters) (meters) 0 #NUM! Hearing Group	Cetaceans 199 #NUM! Low-Frequency Cetaceans	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated Endangered Species Act decisions made in the cor and are beyond the scop	High-Frequency Cetaceans 173 #NUM! sheet tool provides a mence's PTS onset threshwith a Marine Mammal F (ESA) consultation of the Technical Guide High-Frequency Cetaceans	wildy and comprehence and the User Sp Phocid Pinnipeds 201 #NUM! ans to estimates dis olds. Mitigation and orrotection Act (MMP ermit are independent independent and the User SP Phocid Pinnipeds	nt management siske effects analysis readsheet tool. Otariid Pinnipeds #NUM! #NUM! tances associated monitoring A) authorization or a not management siske effects analysis preadsheet tool. Otariid Pinnipeds	n	
RESULTANT ISOPLETHS B22 ALTERNATIVE METHOD (SINGLE PING Source Level (L _{E,P.} , single pingipulse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSEECUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold	Cetaceans 199 #NUM! Low-Frequency Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated in Endangered Species Act decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198	High-Frequency Cetaceans 173 #NUM! sheet tool provides a me noe's PTS onset thresh with a Marine Marmal F (ESA) consultation or pr text of the proposed act of the Technical Guide High-Frequency Cetaceans 173	ivity and comprehenate and the User Sp Phocid Pinnipeds 201 #NUM! and to estimate disciplinate of the User Sp indicated of the User Sp indicated of the User Sp indicated of the User Sp Phocid Pinnipeds 201	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a ranagement siske effects analysis preadsheet tool. Otariid Pinnipeds 219	n	
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RESULTANT ISOPLETHS B22 ALTERNATIVE METHOD (SINGLE PING Source Level (L _{E,P.} , single pingipulse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss	SEL _{cum} Threshold PIS Isopleth to threshold (meters) PULSE EQUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PIS Isopleth to threshold	Cetaceans 199 #NUM! Low-Frequency Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated in Endangered Species Act decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198	High-Frequency Cetaceans 173 #NUM! sheet tool provides a me noe's PTS onset thresh with a Marine Marmal F (ESA) consultation or pr text of the proposed act of the Technical Guide High-Frequency Cetaceans 173	ivity and comprehenate and the User Sp Phocid Pinnipeds 201 #NUM! and to estimate disciplinate of the User Sp indicated of the User Sp indicated of the User Sp indicated of the User Sp Phocid Pinnipeds 201	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a ranagement siske effects analysis preadsheet tool. Otariid Pinnipeds 219	n	
RESULTANT ISOPLETHS B22 ALTERNATIVE METHOD (SINGLE PING Source Level (L _{E,P.} , single pingipulse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss	SEL _{cum} Threshold PIS Isopleth to threshold (meters) PULSE EQUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PIS Isopleth to threshold	Cetaceans 199 #NUM! Low-Frequency Cetaceans 199	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated in Endangered Species Act decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198	High-Frequency Cetaceans 173 #NUM! sheet tool provides a me noe's PTS onset thresh with a Marine Marmal F (ESA) consultation or pr text of the proposed act of the Technical Guide High-Frequency Cetaceans 173	ivity and comprehenate and the User Sp Phocid Pinnipeds 201 #NUM! and to estimate disciplinate of the User Sp indicated on the User Sp phocid Pinnipeds and to estimate disciplinate of the User Sp Phocid Pinnipeds 201	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a ranagement siske effects analysis preadsheet tool. Otariid Pinnipeds 219	n	
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E.p., single pingloutes) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss RESULTANT ISOPLETHS	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PTS Isopleth to threshold (meters)	Cetaceans 199 #NUM! Low-Frequency Cetaceans 199 #NUM!	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated fendiangered Species Act decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! which is the proposed action of the Technical Guidal High-Frequency Cetaceans 173 #NUM!	ivity and comprehenace and the User Sp Phocid Pinnipeds 201 #NUM! and to estimates dis bids. Mitigation and a rotection Act (MMP smit are independer ivity and compreher unce and the User S Phocid Pinnipeds 201 #NUM!	nt management siste effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring (A) authorization or a nt management siste effects analysis preadsheet tool. Otariid Pinnipeds 219 #NUM!	n	
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E.p., single pingloutes) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss RESULTANT ISOPLETHS	SEL _{cum} Threshold PIS Isopleth to threshold (meters) PULSE EQUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PIS Isopleth to threshold (meters) Weighting Function	Cetaceans 199 #NUM! Low-Frequency Cetaceans 199 #NUM!	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated continuements associated decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! sheet tool provides a mence's PTS onset threshwith a Marine Marmal Fulles of the Technical Guida High-Frequency Cetaceans 173 #NUM! High-Frequency Cetaceans 173 #NUM!	willy and comprehence and the User Sp Phocid Pinnipeds 201 #NUM! ans to estimates dis olds. Mitigation and o'retection Act (MMP ermit are independent and the User Sp Phocid Pinnipeds 201 #NUM!	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a nt management siske effects analysis preadsheet tool. Otariid Pinnipeds 219 #NUM!	n	
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B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E.p., single pingloutes) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss RESULTANT ISOPLETHS	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PTS Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂	Cetaceans 199 #NUM! Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated requirements associated decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! white tool provides a mence's PTS onset threshold for some threshold for the proposed active of the Technical Guidal for the proposed active of the pr	ivity and comprehenace and the User Sp Phocid Pinnipeds 201 #NUM! and to estimates dis bids. Mitigation and in rotation an	nt management siste effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoria or an tranagement tool. Otariid Pinnipeds A) authorization or an tranagement tool. Otariid Pinnipeds 219 #NUM!	n	
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E., insigh pinghputus) Activity Duration (hours) within 24-h period Number of pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss RESULTANT ISOPLETHS WEIGHTING FUNCTION CALCULATIONS	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PTS Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂ C Adjustment (-dB)†	Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 1 9 0.2 19 0.13	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated Endangered Species Act decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198 #NUM! Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! sheet tool provides a mence's PTS onset threshwith a Marine Marnial (ESA) (ESA) consultation or petitest of the Proposed acte of the Technical Guida High-Frequency Cetaceans 173 #NUM! High-Frequency Cetaceans 173 #NUM!	Phocid Pinnipeds ans to estimates dis dids. Mitigation and of Processing and the User Signature of the User S	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a random readsheet tool. Otariid Pinnipeds 219 #NUM! Otariid Pinnipeds 219 #NUM!	n	
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E., insigh pinghputus) Activity Duration (hours) within 24-h period Number of pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss RESULTANT ISOPLETHS WEIGHTING FUNCTION CALCULATIONS	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PTS Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂ C Adjustment (-dB)†	Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 1 9 0.2 19 0.13	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated Endangered Species Act decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198 #NUM! Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! sheet tool provides a mence's PTS onset threshwith a Marine Marnial (ESA) (ESA) consultation or petitest of the Proposed acte of the Technical Guida High-Frequency Cetaceans 173 #NUM! High-Frequency Cetaceans 173 #NUM!	Phocid Pinnipeds ans to estimates dis dids. Mitigation and of Processing and the User Signature of the User S	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a random readsheet tool. Otariid Pinnipeds 219 #NUM! Otariid Pinnipeds 219 #NUM!	n	
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (L.E.p., single pingloutes) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss RESULTANT ISOPLETHS	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PTS Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂ C Adjustment (-dB)†	Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 1 9 0.2 19 0.13	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated Endangered Species Act decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198 #NUM! Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! sheet tool provides a mence's PTS onset threshwith a Marine Marnial (ESA) (ESA) consultation or petitest of the Proposed acte of the Technical Guida High-Frequency Cetaceans 173 #NUM! High-Frequency Cetaceans 173 #NUM!	Phocid Pinnipeds ans to estimates dis dids. Mitigation and of Processing and the User Signature of the User S	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a random readsheet tool. Otariid Pinnipeds 219 #NUM! Otariid Pinnipeds 219 #NUM!	n	
B2: ALTERNATIVE METHOD (SINGLE PING Source Level (Lep., angle ping-putse) Activity Duration (hours) within 24-h period Number pulses in 1-h period Number of pulses in 24-h 10 Log (number of pulses) Propagation loss RESULTANT ISOPLETHS	SEL _{cum} Threshold PTS Isopleth to threshold (meters) PULSE ECUIVALENT) 0 #NUM! Hearing Group SEL _{cum} Threshold PTS Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂ C Adjustment (-dB)†	Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 199 #NUM! Low-Frequency Cetaceans 1 9 0.2 19 0.13	decisions made in the cor and are beyond the scope Mid-Frequency Cetaceans 198 #NUM! NOTE: The User Spreads with the Technical Guida requirements associated Endangered Species Act decisions made in the cor and are beyond the scop Mid-Frequency Cetaceans 198 #NUM! Mid-Frequency Cetaceans 198 #NUM!	High-Frequency Cetaceans 173 #NUM! sheet tool provides a mence's PTS onset threshwith a Marine Marnial (ESA) (ESA) consultation or petitest of the Proposed acte of the Technical Guida High-Frequency Cetaceans 173 #NUM! High-Frequency Cetaceans 173 #NUM!	Phocid Pinnipeds ans to estimates dis dids. Mitigation and of Processing and the User Signature of the User S	nt management siske effects analysis readsheet tool. Otariid Pinnipeds 219 #NUM! tances associated monitoring A) authorization or a random readsheet tool. Otariid Pinnipeds 219 #NUM! Otariid Pinnipeds 219 #NUM!	n	

C: MOBILE SOURCE: No	n-Impulsive, Contin	uous ("SAFE D	ISTANCE" M	ETHODOLO	GY)			
VERSION 2.1: 2020								
KEY	Action Proponent Provided In	farmation						
	NMFS Provided Information (1							
	Resultant Isopleth	ecinical Guidance)						
STEP 1: GENERAL PROJECT INFORMA	TION							
STEP 1. GENERAL PROJECT INFORMA	TION							
PROJECT TITLE								
PROJECT TITLE								
PROJECT/SOURCE INFORMATION								
							7	į.
Please include any assumptions								
PROJECT CONTACT								
		Specify if relying on source-						
		specific WFA, alternative						
STEP 2: WEIGHTING FACTOR ADJUSTM	MENT	weighting/dB adjustment, or if using default value						
T. E. HEIGHTING FACTOR ADJUSTIN		J						
Weighting Factor Adjustment (kHz) [¥]								
*Broadband: 95% frequency contour percentile								
(kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION								
tab		† If a user relies on alternation				rce-specific		
		or default), they may overrid However, they must provide						
		Tiowever, they must provide	additional support and	documentation support	ing this modification			
STEP 3: SOURCE-SPECIFIC INFORMATI	ION [‡]							
Source Level (L _{rms})			NOTE: The User Sprea	adsheet tool provides a	means to estimates	distances associat	ted	
Source Velocity (meters/second)			with the Technical Guid	dance's PTS onset thres	sholds. Mitigation a	nd monitoring		
Duty cycle	1		requirements associate	ed with a Marine Mamm	nal Protection Act (I	MMPA) authorizatio	n or an	
Source Factor	1		Endangered Species A	ct (ESA) consultation of	r permit are indeper	ndent management		
‡Methodology assumes propagation loss of 20								
log R; Activity duration (time) independent			decisions made in the	context of the proposed	activity and compr	ehensive effects an	alysis,	
DECLII TANT ICODI ETHE			and are beyond the sco	ppe of the Technical Gu	idance and the Use	r Spreadsheet tool.		
RESULTANT ISOPLETHS		Low-Frequency	Mid-Frequency	High-Frequency	Phocid	Otariid	1	
	Hearing Group	Cetaceans	Cetaceans	Cetaceans	Pinnipeds	Pinnipeds	ļ	
	SEL _{cum} Threshold	199	198	173	201	219		
			.50	.,,	_01	_10		
	PTS Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!		
	,,							
WEIGHTING FUNCTION CALCULATIONS								
WEIGHTING FUNCTION CALCULATIONS								
	Weighting Function	Low-Frequency	Mid-Frequency	High-Frequency	Phocid	Otariid	t	
	Parameters	Cetaceans	Cetaceans	Cetaceans	Pinnipeds	Pinnipeds	.	
	a b	1 2	1.6	1.8	2	2	1	
	f ₁	0.2	8.8	12	1.9	0.94		
	f ₂	19	110	140	30	25	†	
	C	0.13	1.2	1.36	0.75	0.64	İ	
	Adjustment (-dB)†	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!		
$W(f) = C + 10\log \int_{-\infty}^{\infty} ($	$(f/f_1)^{2a}$							
$W(f) = C + 10\log_{10} \left\{ \frac{(1 + (f/f_1))}{[1 + (f/f_1)]} \right\}$	2] a [$1+(f/f_{2})^{2}$] b [
(- " 01/	2 /							

D. MOBILE COURCE, No.	n Impulaiva Interm	Hont ("CAEE D	CTANCE"	METHODOL	OCV)			
D: MOBILE SOURCE: Not VERSION 2.1: 2020	n-impuisive, interm	Ittent ("SAFE D	STANCE	METHODOL	OGY)	ı		
KEY								
NET	Action Proponent Provided In	formation						
	NMFS Provided Information (1							
	Resultant Isopleth	,						
STEP 1: GENERAL PROJECT INFORMAT	TION							
PROJECT TITLE								
. 1100201 11122								
PROJECT/SOURCE INFORMATION								
Please include any assumptions								
PROJECT CONTACT								
		Specify if relying on source- specific WFA, alternative						
		weighting/dB adjustment, or						
STEP 2: WEIGHTING FACTOR ADJUSTM	ENT	if using default value						
Weighting Factor Adjustment (kHz)*								
g dotor Adjustment (K12)								
*Broadband: 95% frequency contour percentile								
(kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION								
tab		† If a user relies on alternative				rce-specific		
		or default), they may override However, they must provide	the Adjustment (dB)	(row 63), and enter the	new value directly.			
		voror, moy must provide		suppor	g uno modification			
STEP 3: SOURCE-SPECIFIC INFORMATION		danal da dill da anno bassas	fb-4b)					
NOTE: Choose either D1 OR D2 method of D1: METHOD USING RMS SPL SOURCE		lired to fill in sage boxes	for both)					
Source Level (L _{rms})								
Source Velocity (meters/second)								
Pulse Duration (seconds)								
1/Repetition rate* (seconds)								
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Duty Cycle	#DIV/0!		the Technical Guida	nce's PTS onset thresh	olds. Mitigation and	monitoring requirem	ents	
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E: STATIONARY SOURCE: VERSION 2.1: 2020	impuisive, intermitt	ent						
KEY								
	Action Proponent Provided Inf							
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	recontant toopietii							
STEP 1: GENERAL PROJECT INFORMATIO	N .							
PROJECT TITLE								
PROJECT/SOURCE INFORMATION								
Please include any assumptions								
PROJECT CONTACT								
		Specify if relying on source-						
		specific WFA, alternative weighting/dB adjustment, or						
STEP 2: WEIGHTING FACTOR ADJUSTMEN	т	if using default value						
Weighting Factor Adjustment (kHz)*			1					
,			1					
			<u> </u>					-
Broadband: 95% frequency contour percentile								
(kHz); For appropriate default WFA: See		- H	a maiabela - 195 - 11				1	
IN I RODUC I ION TBD		† If a user relies on alternativ or default), they may overri	e weighting/dB adjus de the Adjustment	tment rather than relying (dB) (row 72), and en	ng upon the WFA (so ter the new value o	ource-specific lirectly.		
		However, they must provid	e additional suppor	t and documentation s	supporting this mo	dification.		\vdash
STEP 3: SOURCE-SPECIFIC INFORMATION								
NOTE: Choose either E1 OR E2 method to c	alculate isopleths (not required	to fill in sage boxes for b	oth)					
E1: METHOD TO CALCULATE PK AND SEL,	tum (USING RMS SPL SOURCE L	.EVEL)		PK				
Source Level (L _{rms})				Source Level (L _{p,0}	pk)			
Activity Duration (hours) within 24-h period								
Pulse Duration [∆] (seconds)		<u> </u>						L
1/Repetition rate* (seconds)								
	#DIV/0!	ļ	NOTE: TI			ton distance	intend with	
Duty cycle Duration of Sound Production (seconds)	#DIV/0!			preadsheet tool provide ance's PTS onset threst				
10 Log (duration of sound production)	#DIV/0!			Marine Mammal Protecti				
Propagation loss								
	(EN OEN) based on Madage 200			consultation or permit a				
Window that makes up 90% of total cumulative en	ergy (5%-95%) based on Madsen 200	05	context of the propo	sed activity and compre	ehensive effects and			
^b Window that makes up 90% of total cumulative end Time between onset of successive pulses.			ontext of the propo of the Technical Gu	sed activity and compre uidance and the User S	ehensive effects ana preadsheet tool.			
^b Window that makes up 90% of total cumulative end Time between onset of successive pulses.	ergy (5%-95%) based on Madsen 200 *Impulsive sounds have dual metric	thresholds (SELcum & PK). N	context of the propo of the Technical Gu Metric producing larg	sed activity and compression and the User S est isopleth should be u	ehensive effects and preadsheet tool. used.	llysis, and are beyon		
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Window that makes up 99% of total cumulative entrine between onset of successive pulses. **RESULTANT ISOPLETHS** **NA*: PK source level is ≤ to the threshold for hat marine mammal hearing group. **22: ALTERNATIVE METHOD TO CALCULA**	*Impulsive sounds have dual metric Hearing Group SEL_om Threshold PTS SEL_om Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters)	thresholds (SELoum & PK), It Low-Frequency Cetaceans 183 #NUM! 219	context of the propo of the Technical Su lettic producing larg Mid-Frequency Cetaceans	sed activity and comprisions of the User S visions and the User S visions and the User S visions are selected as the User S visions and the User S visions are selected as the User S visions and the User S visions are selected as visions are selec	ehensive effects and preadsheet tool. Phocid Pinnipeds 185 #NUM! 218	Otariid Pinnipeds 203 #NUM!		
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E.1: IMPACT PILE DRIVING VERSION 2.1: 2020	(STATIONARY SOU	RCE: Impulsive	, Intermitte	ent)				-
VERSION 2.1: 2020 KEY								
	Action Proponent Provided In NMFS Provided Information (1							
	Resultant Isopleth							
STEP 1: GENERAL PROJECT INFORMATION								
STEP 1: GENERAL PROJECT INFORMATION								
PROJECT TITLE								
PROJECT/SOURCE INFORMATION								
Please include any assumptions								
PROJECT CONTACT								
		Specify if relying on source- specific WFA, alternative						
		specific WFA, alternative weighting/dB adjustment, or if using default value						
STEP 2: WEIGHTING FACTOR ADJUSTMENT		if using default value						
Weighting Factor Adjustment (kHz)*								
			<u> </u>	1				
* Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See								
(kHz); For appropriate default WFA: See INTRODUCTION tab		† If a user relies on alternat						
		or default), they may overric However, they must provide	e me adjustment (d additional support a	B) (row 75), and enter t ind documentation supp	orting this modifica	ition.		
			 	1				
STEP 3: SOURCE-SPECIFIC INFORMATION			L					
NOTE: Choose either E1-1 OR E.1-2 method t E.1-1: METHOD TO CALCULATE PK AND SEI	to calculate isopleths (not requi L _{cum} (USING RMS SPL SOURCE		for both)					
SEL _{cum}				PK L _{p,0-pk} specified at				
Sound Pressure Level (L _{rms}), specified at "x" meters (Cell B35)				"x" meters (Cell				
V/			-	G29)				
Number of piles per day			1	Distance of L _{p,0-pk} measurement				
Strike (nulse) Duration A (no. 11)			-	(meters)		#NUM!		
Strike (pulse) Duration [∆] (seconds) Number of strikes per pile				L _{p,0-pk} Source leve		#INUM!		
Duration of Sound Production (seconds)	0							
10 Log (duration of sound production)	#NUM!			preadsheet tool provide			ociated	
Transmission loss Distance of sound pressure level			with the Technical	Guidance's PTS onset	hresholds. Mitigati	on and monitoring		
measurement (meters)								
married and the second and the secon	(FN/ OFN/) hazard Madasa 200				mmal Protection A			
^a Window that makes up 90% of total cumulative energy	rgy (5%-95%) based on Madsen 200	5	an Endangered Sp decisions made in	ecies Act (ESA) consul the context of the propo	tation or permit are sed activity and co	independent mana mprehensive effects	gement s analysis,	
			an Endangered Sp decisions made in and are beyond the	ecies Act (ESA) consul the context of the propo e scope of the Technics	tation or permit are used activity and co I Guidance and the	independent mana mprehensive effects	gement s analysis,	
^a Window that makes up 90% of total cumulative energy and the second sec	rgy (5%-95%) based on Madsen 200 *Impulsive sounds have dual metric	thresholds (SELcum & PK).	an Endangered Sp decisions made in and are beyond the Metric producing lar	ecies Act (ESA) consul the context of the propo e scope of the Technics gest isopleth should be	tation or permit are used activity and co I Guidance and the used.	independent mana mprehensive effect: User Spreadsheet	gement s analysis,	
			an Endangered Sp decisions made in and are beyond the	ecies Act (ESA) consul the context of the propo e scope of the Technics	tation or permit are used activity and co I Guidance and the	independent mana mprehensive effects	gement s analysis,	
	*Impulsive sounds have dual metric Hearing Group	thresholds (SELcum & PK). Low-Frequency Cetaceans	an Endangered Sp decisions made in and are beyond the Metric producing lan Mid-Frequency Cetaceans	ecies Act (ESA) consul the context of the propo- scope of the Technica gest isopleth should be High-Frequency Cetaceans	tation or permit are used activity and co I Guidance and the used. Phocid Pinnipeds	independent mana, mprehensive effect: User Spreadsheet Otariid Pinnipeds	gement s analysis,	
	"Impulsive sounds have dual metric Hearing Group SEL _{cum} Threshold	thresholds (SELcum & PK).	an Endangered Sp decisions made in and are beyond the Metric producing lan Mid-Frequency	ecies Act (ESA) consul the context of the propo e scope of the Technical gest isopleth should be High-Frequency	tation or permit are used activity and co I Guidance and the used. Phocid	independent mana mprehensive effect: User Spreadsheet Otariid	gement s analysis,	
	*Impulsive sounds have dual metric Hearing Group	thresholds (SELcum & PK). Low-Frequency Cetaceans	an Endangered Sp decisions made in and are beyond the Metric producing lan Mid-Frequency Cetaceans	ecies Act (ESA) consul the context of the propo- scope of the Technica gest isopleth should be High-Frequency Cetaceans	tation or permit are used activity and co I Guidance and the used. Phocid Pinnipeds	independent mana, mprehensive effect: User Spreadsheet Otariid Pinnipeds	gement s analysis,	
RESULTANT ISOPLETHS*	*Impulsive sounds have dual metric Hearing Group SEL_cum Threshold PTS isopleth to threshold	thresholds (SELcum & PK). Low-Frequency Cetaceans	an Endangered Sp decisions made in and are beyond the Metric producing lar Mid-Frequency Cetaceans	ecles Act (ESA) consulthe context of the propose a scope of the Technical gest isopleth should be High-Frequency Cetaceans	tation or permit are used activity and co i Guidance and the used. Phocid Pinnipeds	independent mana mprehensive effect: User Spreadsheet Otariid Pinnipeds	gement s analysis,	
	"Impulsive sounds have dual metric Hearing Group SEL_con Threshold PTS isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold	thresholds (SELcum & PK). Low-Frequency Cetaceans 183 #NUM! 219	an Endangered Sp decisions made in and are beyond the Metric producing lai Mid-Frequency Cetaceans 160 #NUM!	ecies Act (ESA) consulte context of the proposed to the proposed of the proposed to the technical section of the proposed to t	tation or permit are seed activity and co I Guidance and the used. Phocid Pinnipeds 185 #NUM!	independent mana imprehensive effect: User Spreadsheet User Spreadsheet Otariid Pinnipeds 203 #NUM!	gement s analysis,	
RESULTANT ISOPLETHS* *NA*: PK source level is _ to the threshold for	"impulsive sounds have dual metric Hearing Group SEL _{com} Threshold PTS topleth to threshold (meters) PK Threshold	thresholds (SELcum & PK). Low-Frequency Cetaceans 183 #NUM!	an Endangered Sp decisions made in and are beyond the Metric producing la Mid-Frequency Cetaceans 160 #NUM!	ecles Act (ESA) consult the context of the propulation is scope of the Technics gest isopleth should be High-Frequency Cetaceans	tation or permit are seed activity and co I Guidance and the used. Phocid Pinnipeds 185 #NUM!	independent mana mprehensive effect: User Spreadsheet Otariid Pinnipeds 203 #NUM!	gement s analysis,	
RESULTANT ISOPLETHS* *NA*: PK source level is _ to the threshold for that marine mammal hearing group. E4-2: ALTERNATIVE METHOD TO CALCULA	"Impulsive sounds have dual metric Hearing Group SEL _{com} Threshold PTS isopieth to threshold (meters) PK Threshold PTS PK Isopieth to threshold (meters)	thresholds (SELcum & PK). Low-Frequency Cetaceans 183 #NUM! 219	an Endangered Sp decisions made in and are beyond the Metric producing lai Mid-Frequency Cetaceans 160 #NUM!	ecies Act (ESA) consulte context of the proposed to the proposed of the proposed to the technical section of the proposed to t	tation or permit are seed activity and co I Guidance and the used. Phocid Pinnipeds 185 #NUM!	independent mana imprehensive effect: User Spreadsheet User Spreadsheet Otariid Pinnipeds 203 #NUM!	gement s analysis,	
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RESULTANT ISOPLETHS* "MA": PK source level is _to the threshold for that marine mammal hearing group. E4-2: ALTERNATIVE METHOD TO CALGULA Unweighted SEL-om (in measured distance) = SELss + 10 Log (# strikes)	**Providence sounds have dual metric Hearing Group SEL_com Threshold PTS Isopleth to threshold (meters) PK Threshold PTS PK Spoleth to threshold (meters)	thresholds (SELcum & PK). Low-Frequency Cetaceans 183 #NUM! 219 #NUM!	an Endangered Sp decisions made in and are beyond the Metric producing lai Mid-Frequency Cetaceans 160 #NUM!	ecies Act (ESA) consulte context of the proposed to the proposed of the proposed to the technical section of the proposed to t	tation or permit are seed activity and co I Guidance and the used. Phocid Pinnipeds 185 #NUM!	independent mana imprehensive effect: User Spreadsheet User Spreadsheet Otariid Pinnipeds 203 #NUM!	gement s analysis,	
RESULTANT ISOPLETHS* "MA": PK source level is _: to the threshold for that marine mammal hearing group. E1-2: ALTERNATIVE METHOD TO CALCULA Unweighted SELem (a measured distance) = SELes + 10 Log (# strikes)	**Providence sounds have dual metric Hearing Group SEL_com Threshold PTS Isopleth to threshold (meters) PK Threshold PTS PK Spoleth to threshold (meters)	thresholds (SELcum & PK). Low-Frequency Cetaceans 183 #NUM! 219 #NUM!	an Endangered Sp decisions made in and are beyond the Metric producing lai Mid-Frequency Cetaceans 160 #NUM!	cicles Ard (ESA) consultine to the context of the context of the the context of the the context of the the context of the special spec	tation or permit are seed activity and co I Guidance and the used. Phocid Pinnipeds 185 #NUM!	independent mana imprehensive effect: User Spreadsheet User Spreadsheet Otariid Pinnipeds 203 #NUM!	gement s analysis,	
RESULTANT ISOPLETHS* "MA": PK source level is _to the threshold for that marine mammal hearing group. E4-2: ALTERNATIVE METHOD TO CALGULA Unweighted SEL-om (in measured distance) = SELss + 10 Log (# strikes)	**Providence sounds have dual metric Hearing Group SEL_com Threshold PTS Isopleth to threshold (meters) PK Threshold PTS PK Spoleth to threshold (meters)	thresholds (SELcum & PK). Low-Frequency Cetaceans 183 #NUM! 219 #NUM!	an Endangered Sp decisions made in and are beyond the Metric producing lai Mid-Frequency Cetaceans 160 #NUM!	cicles Act (ESA) consultant context of the context	tation or permit are seed activity and co I Guidance and the used. Phocid Pinnipeds 185 #NUM!	independent mana imprehensive effect: User Spreadsheet User Spreadsheet Otariid Pinnipeds 203 #NUM!	gement s analysis,	
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RESULTANT ISOPLETHS* "MA": PK source level is _to the threshold for that marine marmal hearing group. 51-2: ALTERNATIVE METHOD TO CALCULATIONS SEL_source level is _to the threshold for that marine marmal hearing group. SEL_source level is _to the threshold for that marine marmal hearing group. RESULTANT ISOPLETHS* "MA": PK source level is _to the threshold for that marine marmal hearing group. WEIGHTING FUNCTION CALCULATIONS	**Produsive sounds have dual metric Hearing Group SEL_con Threshold PTS Isopleth to threshold (meters) PK Threshold DTS Kisopleth to threshold (meters) FF AND SEL_con (SINGLE ST #NUM! **Produsive sounds have dual metric Hearing Group SEL_con Threshold PTS Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b f1 f2 C Adjustment (-dB)†	Phresholds (SELoum & PK) Low-Frequency STATE SELOUM & PK) ISS SHUM! Phresholds (SELoum & PK) Phresholds (SELoum & PK) Cetaceans ISS SHUM! 219 SHUM! Low-Frequency Cetaceans ISS SHUM! 219 SHUM! 219 JOHN SHUM! 219 JOHN SHUM!	an Endangened Sp docisions made a beyond the docisions made as beyond the Meric producing las Meric producing las Meric producing las NUM! 214 #NUM! Metric producing las NUM! 214 #NUM! Metric producing las NUM! Mid-Frequency Cetaceans 185 #NUM! Nid-Frequency Cetaceans 185 #NUM! 230 #NUM!	ecies Act (ESA) consulted to the proper scope of the Technical gest isopteth should be High-Frequency Cetaceans 155 #NUM! 202 #NUM! PK L_paps specified at "x" meters (Cell GS2) Distanced L_paps measurement (meters) L_naps Source leve #High-Frequency Cetaceans 155 #NUM! 155 #NUM! 202 #NUM! #High-Frequency Cetaceans 155 #NUM! 202 #NUM! 203 #NUM! 204 #NUM! 205 #NUM! 206 #NUM! 207 #NUM! 208 #NUM! 209 #NUM! 201 #NUM! 201 #NUM!	used. Phocid Pinnipeds 185 8NUMI 218 8NUMI 218 4NUMI 218 9NUMI 218 218 9NUMI 218 3NUMI 218 3NUMI 218 3NUMI 218 3NUMI 218 3NUMI 218 3NUMI	independent mania prophenative efficient (Liber Spreadsheet Uper Spreadshe	gement s analysis,	
RESULTANT ISOPLETHS* "NA": PK source level is _ to the threshold for that marine married hearing group. Ed-2: ALTERNATIVE MISTHOD TO CALCULA Unweighted SELeon (a mastered distance) = SELeon + 10 Log (a strikes) SELeon SELeon + 10 Log (a strikes) Section Section + 10 Log (a strikes) Number of strikes per pile Number of strikes per pile Number of piles per day Transmission loss Distance of single strike SELeon (LEp, single some) RESULTANT ISOPLETHS* "RESULTANT ISOPLETHS"	**Produsive sounds have dual metric Hearing Group SEL_con Threshold PTS Isopleth to threshold (meters) PK Threshold DTS Kisopleth to threshold (meters) FF AND SEL_con (SINGLE ST #NUM! **Produsive sounds have dual metric Hearing Group SEL_con Threshold PTS Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b f1 f2 C Adjustment (-dB)†	Phresholds (SELoum & PK) Low-Frequency STATE SELOUM & PK) ISS SHUM! Phresholds (SELoum & PK) Phresholds (SELoum & PK) Cetaceans ISS SHUM! 219 SHUM! Low-Frequency Cetaceans ISS SHUM! 219 SHUM! 219 JOHN SHUM! 219 JOHN SHUM!	an Endangened Sp docisions made a beyond the docisions made as beyond the Meric producing las Meric producing las Meric producing las NUM! 214 #NUM! Metric producing las NUM! 214 #NUM! Metric producing las NUM! Mid-Frequency Cetaceans 185 #NUM! Nid-Frequency Cetaceans 185 #NUM! 230 #NUM!	ecies Act (ESA) consulted to the proper scope of the Technical gest isopteth should be High-Frequency Cetaceans 155 #NUM! 202 #NUM! PK L_paps specified at "x" meters (Cell GS2) Distanced L_paps measurement (meters) L_naps Source leve #High-Frequency Cetaceans 155 #NUM! 155 #NUM! 202 #NUM! #High-Frequency Cetaceans 155 #NUM! 202 #NUM! 203 #NUM! 204 #NUM! 205 #NUM! 206 #NUM! 207 #NUM! 208 #NUM! 209 #NUM! 201 #NUM! 201 #NUM!	used. Phocid Pinnipeds 185 8NUMI 218 8NUMI 218 4NUMI 218 9NUMI 218 218 9NUMI 218 3NUMI 218 3NUMI 218 3NUMI 218 3NUMI 218 3NUMI 218 3NUMI	independent mania prophenative efficient (Liber Spreadsheet Uper Spreadshe	gement s analysis,	

F: MOBILE SOURCE: Imp	oulsive, Intermittent	("SAFE DISTAI	NCE" METI	IODOLOGY				
VERSION 2.1: 2020								
KEY	Action Proponent Provided In	formation						
	NMFS Provided Information (
	Resultant Isopleth							
STEP 1: GENERAL PROJECT INFORMAT	TION							
PROJECT TITLE								
PROJECT/SOURCE INFORMATION								
Please include any assumptions								
PROJECT CONTACT								
. NOSEO: GONIAG:								
		Specify if relying on source- specific WFA, alternative						
		weighting/dB adjustment, or						
STEP 2: WEIGHTING FACTOR ADJUSTI	IENT	if using default value						
Weighting Factor Adjustment (kHz)*								
				I .				
* Broadband: 95% frequency contour percentile								
(kHz); For appropriate default WFA: See INTRODUCTION tab		† If a user relies on alternative	e weighting/dR adius	tment rather than relvin-	upon the WFA (on	urce-specific		
		or default), they may override	the Adjustment (dB) (row 71), and enter the	new value directly.			
		However, they must provide a	additional support and	documentation suppo	ting this modification	n		
								-
STEP 3: SOURCE-SPECIFIC INFORMATI								
NOTE: Choose either F1 OR F2 method	to calculate isopleths (not req		s for both)					
F1: METHOD [‡] TO CALCULATE PK and S SEL _{com}	SEL _{cum} (USING RMS SPL SOUR	CELLEVEL)		PK				
Source Level (L _{rms})				Source Level (L _{p,0}	pk)			
Source Velocity (meters/second)								
Pulse Duration [∆] (seconds)								
1/Repetition rate^ (seconds)			NOTE: The User Sp	readsheet tool provides	a means to estimate	es distances associa	ated with	
Duty Cycle	#DIV/0!		the Technical Guida	nce's PTS onset thresh	olds. Mitigation and	monitoring requirem	nents	
Source Factor	#DIV/0!		associated with a M	arine Mammal Protection	n Act (MMPA) autho	rization or an Endar	ngered	
‡Methodology assumes propagation loss of 20								
log R; Activity duration (time) independent			opecies Act (ESA) o	consultation or permit a	e independent man	gement decisions r	made in the	
^b Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005			context of the propo	sed activity and compre	hensive affacto acol	vsis, and are house	d the scope	
Time between onset of successive pulses.				dance and the User Sp		, are ocyuni		
DESI II TANT ISODI ETUC:	*Impulsion or to b	throcholds (OF)	lotrio per diredi	ot iconloth -h- ***	od			
RESULTANT ISOPLETHS*	*Impulsive sounds have dual metric					Otavii -		
	Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds		
	SEI Throckeld	102	105	155	105	203		
	SEL _{cum} Threshold	183	185	155	185	203		
	PTS SEL _{cum} Isopleth to	#DIV/01	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
1	PTS SEL _{cum} Isopleth to threshold (meters)	#D(V/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
	, ,							
"NA": PK source level is < to the threshold	PK Threshold	219	230	202	218	232		
for that marine mammal hearing group.								
	PTS PK Isopleth to threshold (meters)	NA	NA	NA	NA	NA		
	(21010)							
F2: ALTERNATIVE METHOD [†] TO CALCU	ILATE PK and SEL _{cum} (SINGLE	SHOT/PULSE EQUIVALE	ENT)	DI/				
SEL _{cum}				PK				-
Source Level (L E.p., single ping/pulse/shot)				Source Level (L _{p,0}	pk)			
Source Velocity (meters/second)								
1/Repetition rate^ (seconds)	#PD //PJ			readsheet tool provides				
Source Factor	#DIV/0!		recrinical Guidance	's PTS onset thresholds	. willigation and mor	moring requirement	o assuciated	
†Methodology assumes propagation loss of 20 log R; Activity duration (time) independent			with a Marine Mami	mal Protection Act (MM	PA) authorization or	an Endangered Spe	ecies Act (ESA)	
Time between onset of successive pulses.			consultation or perm	it are independent mar	agement decisions	made in the context	of the proposed	
			activity and compreh	nensive effects analysis,				
								1
RESULTANT ISOPLETHS*	*Impulsive sounds have dual metric	thresholds (SELcum & PK) N	and the User Spread fetric producing large		ed.			
RESULTANT ISOPLETHS*	*Impulsive sounds have dual metric		letric producing large	st isopleth should be us	ed. Phocid	Otariid		
RESULTANT ISOPLETHS*	*Impulsive sounds have dual metric Hearing Group	thresholds (SELcum & PK). N Low-Frequency Cetaceans				Otariid Pinnipeds		
RESULTANT ISOPLETHS*		Low-Frequency	tetric producing large	st isopleth should be us High-Frequency	Phocid			
RESULTANT ISOPLETHS*	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	st isopleth should be us High-Frequency Cetaceans 155	Phocid Pinnipeds 185	Pinnipeds 203		
RESULTANT ISOPLETHS*	Hearing Group SEL _{cum} Threshold	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Pinnipeds		
	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	st isopleth should be us High-Frequency Cetaceans 155	Phocid Pinnipeds 185	Pinnipeds 203		
"NA". PK source level is ≤ to the firreshold	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to threshold (meters) PK Threshold	Low-Frequency Cetaceans 183 #DIV/0! 219	Mid-Frequency Cetaceans 185 #DIV/0!	st isopleth should be us High-Frequency Cetaceans 155 #DIV/0!	Phocid Pinnipeds 185 #DIV/0! 218	203 #DIV/0!		
	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to threshold (meters)	Low-Frequency Cetaceans 183 #DIV/0!	Mid-Frequency Cetaceans 185	st isopleth should be us High-Frequency Cetaceans 155 #DIV/0!	Phocid Pinnipeds 185 #DIV/0!	Pinnipeds 203 #DIV/0!		
"NA". PK source level is ≤ to the firreshold	Hearing Group SEL _{com} Threshold PTS SEL _{com} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold	Low-Frequency Cetaceans 183 #DIV/0! 219	Mid-Frequency Cetaceans 185 #DIV/0!	st isopleth should be us High-Frequency Cetaceans 155 #DIV/0!	Phocid Pinnipeds 185 #DIV/0! 218	203 #DIV/0!		
"NA". PK source level is ≤ to the firreshold	Hearing Group SEL _{com} Threshold PTS SEL _{com} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters)	Low-Frequency Cetaceans 183 #DIV/0! 219	Mid-Frequency Cetaceans 185 #DIV/0!	st isopleth should be us High-Frequency Cetaceans 155 #DIV/0!	Phocid Pinnipeds 185 #DIV/0! 218	203 #DIV/0!		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL_com Threshold PTS SEL_com Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters)	Low-Frequency Cetaceans 183 #DIV/0! 219 NA	Mid-Frequency Cetaceans 185 #DIV/0! 230 NA	at isopieth should be ut High-Frequency Cetaceans 155 #DIV/0! 202 NA	Phocid Pinnipeds 185 #DIV/01 218 NA	Pinnipeds 203 #DIV/0! 232 NA		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters)	Low-Frequency Cetaceans 183 #DIV/0! 219 NA Low-Frequency	Mid-Frequency Cetaceans 185 #DIV/0! 230 NA Mid-Frequency Mid-Frequency	at isopieth should be ut High-Frequency Cetaceans 155 #DIV/0! 202 NA High-Frequency	Phocid Pinnipeds 185 #DIV/0! 218 NA Phocid	Pinnipeds 203 #DIV/0! 232 NA Otariid		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL _{com} Threshold PTS SEL _{com} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters	Low-Frequency Cetaceans 183 #DIV/0! 219 NA	Mid-Frequency Cetaceans NA Mid-Frequency Cetaceans	at isopieth should be ur High-Frequency Cetaceans 155 #DIV/0! 202 NA	Phocid Pinnipeds 185 #DIV/01 218 NA	Pinnipeds 203 #DIV/0! 232 NA		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL _{com} Threshold PTS SEL _{com} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b	Low-Frequency Cetaceans 183 #DIV/0! 219 NA Low-Frequency	Mid-Frequency Cetaceans 185 #DIV/0! 230 NA Mid-Frequency Cetaceans 1.6 2	at isopieth should be ur High-Frequency Cetaceans 155 #DIV/0! 202 NA High-Frequency Cetaceans 1.8 2	Phocid Pinnipeds 185 #DIV/0! 218 NA Phocid Pinnipeds 1 2	Pinnipeds 203 #DIV/0! 232 NA Otariid Pinnipeds 2 2		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL_cum Threshold PTS SEL_cum, Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b f,	Low-Frequency Cetaceans 183 #DIV/0! 219 NA Low-Frequency Cetaceans 1 2 0.2	Mid-Frequency Cetaceans Mid-Frequency Cetaceans 185 #DIV/01 230 NA Mid-Frequency Cetaceans 1.6 2 8.8	at isopleth should be ur High-Frequency Cetaceans 155 #DIV/0! 202 NA High-Frequency Cetaceans 1.8 2	Phocid Pinnipeds 185 #DIV/01 218 NA Phocid Pinnipeds 1 2 1,9	Pinnipeds 203 #DIV/0! 232 NA Otariid Pinnipeds 2 2 0.94		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters b f ₁ f ₂	Low-Frequency Cetaceans 183 #DIV/01 219 NA Low-Frequency Cetaceans 1 2 0.2 19	Mid-Frequency 230 NA Mid-Frequency 230 NA Mid-Frequency 240 NA Mid-Frequency 240 NA Mid-Frequency 240 NA Mid-Frequency 240 NA	with the state of	Phocid Pinnipeds 185 #DIV/01 218 NA Phocid Pinnipeds 1 2 2 1.9 30	Pinnipeds 203 #DIV/01 232 NA Otariid Pinnipeds 2 2 2 0.94 25		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL_cum Threshold PTS SEL_cum, Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b f,	Low-Frequency Cetaceans 183 #DIV/0! 219 NA Low-Frequency Cetaceans 1 2 0.2	Mid-Frequency Cetaceans Mid-Frequency Cetaceans 185 #DIV/01 230 NA Mid-Frequency Cetaceans 1.6 2 8.8	at isopleth should be ur High-Frequency Cetaceans 155 #DIV/0! 202 NA High-Frequency Cetaceans 1.8 2	Phocid Pinnipeds 185 #DIV/01 218 NA Phocid Pinnipeds 1 2 1,9	Pinnipeds 203 #DIV/0! 232 NA Otariid Pinnipeds 2 2 0.94		
"NA": PK source level is ≤ to the threshold for that marine mammal hearing group. WEIGHTING FUNCTION CALCULATIONS	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂ C Adjustment (-dB)†	Low-Frequency Cetaceans 183 #DIVIO! 219 NA Low-Frequency Cetaceans 1 2 0.2 19 0.13	Mid-Frequency Salar Sal	st isopleth should be ur High-Frequency Cetaceans 155 #DIV/0! 202 NA High-Frequency Cetaceans 1.8 2 12 140	Phocid Pinnipeds #DIVIOI 218 NA Phocid Pinnipeds 1 2 1 2 3 0.75	Pinnipeds 203 #DIVIO! 232 NA Otariid Pinnipeds 2 2 0.94 25 0.64		
"NA": PK source level is ≤ to the threshold for that marine mammal hearing group. WEIGHTING FUNCTION CALCULATIONS	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂ C Adjustment (-dB)†	Low-Frequency Cetaceans 183 #DIVIO! 219 NA Low-Frequency Cetaceans 1 2 0.2 19 0.13	Mid-Frequency Salar Sal	st isopleth should be ur High-Frequency Cetaceans 155 #DIV/0! 202 NA High-Frequency Cetaceans 1.8 2 12 140	Phocid Pinnipeds #DIVIOI 218 NA Phocid Pinnipeds 1 2 1 2 3 0.75	Pinnipeds 203 #DIVIO! 232 NA Otariid Pinnipeds 2 2 0.94 25 0.64		
*NA": PK source level is ≤ to the threshold for that marine mammal hearing group.	Hearing Group SEL _{cum} Threshold PTS SEL _{cum} Isopleth to threshold (meters) PK Threshold PTS PK Isopleth to threshold (meters) Weighting Function Parameters a b f ₁ f ₂ C Adjustment (-dB)†	Low-Frequency Cetaceans 183 #DIVIO! 219 NA Low-Frequency Cetaceans 1 2 0.2 19 0.13	Mid-Frequency Salar Sal	st isopleth should be ur High-Frequency Cetaceans 155 #DIV/0! 202 NA High-Frequency Cetaceans 1.8 2 12 140	Phocid Pinnipeds #DIVIOI 218 NA Phocid Pinnipeds 1 2 1 2 3 0.75	Pinnipeds 203 #DIVIO! 232 NA Otariid Pinnipeds 2 2 0.94 25 0.64		