

Trans Mountain Expansion Project – Swift Creek (BC-32) Watercourse Crossing Compliance Verification Activity Report

Date	July 27, 2020		Time on site	12:35 pm	Time off site	3:00 pm	
DFO attendees	William Brewis	(WB), Biologis	st; and				
	Evan Henders	on (EH), Biolog	gist.				
IAMC attendees	M.W. (Whisper	ring Pines/Clint	ton First Nation),	, IAMC Indigen	ous Monitor		
	T.F. (Simpcw F	First Nation), IA	MC Indigenous	Monitor			
On-site contracto	or/equipment	Role					
I.M.		Trans Mountain Representative					
S.C.		Triton Crew Lead					
J.H.		Triton Crew Member					
R.H. Project Indigenous Monitor (Simpcw Resource Group)					ce Group)		
Spawning deterre	nt mats	A truck with multiple rolls of spawning deterrent mats was taken onsite so that the mats could be manually installed. Each mat roll is 48 " x 50 ' formed by a square mesh 2" x 2". No other machinery was onsite, and no vehicles entered the watercourse or came close to the bank.					

IAMC Indigenous Monitor Observations and Comments

During the site visit:

TF: Noted that there are typically higher waters experienced with storm events later in the year (before December), which could have the potential to dislodge the anchored spawning deterrent mats.

In response, DFO (WB) asked SC about the timeline for spawning deterrent removal. SC said that the spawning deterrent mats will be removed prior to freeze up, and that removal is anticipated to occur in late October 2020.

TF and WB discussed positioning of the spawning deterrent mats relative to the construction activities at the time of the isolated crossing – spawning deterrent mats are to be placed upstream of the actual crossing in a temporary work area.

MW asked about previous projects in comparison with Swift creek, noting that Swift Creek is a large installation.

MW asked SC for details of the disinfection protocol that the construction team installing spawning deterrents adhered to before arriving at site. SC confirmed that the spawning deterrent mats arrive new and clean from the manufacturer, waders are disinfected by use of a 10:1 solution of quaternary ammonium compounds (QACs), and other forms of Personal Protective Equipment are cleaned separately prior to working in a new watercourse.

TF raised a concern about the possibility that Chinook could get under the "seams" of the spawning deterrent mats where one roll meets the other. SC responded that the rolls are placed with a 6" overlap to adjacent rolls, and that the cobble anchors used are primarily placed along these areas of overlap to prevent gaps being formed and to keep the mats flat against the streambed. TF noted that the mats were held down by medium size rocks covering an overlap. Based on TF's experience with large Chinook salmon, TF was concerned that this covering may not be sufficient, particularly given that Chinook can dig quite deep to get to suitable spawning substrate and their tails are strong and can move rock.



TF met with the Project IM (RH from SRG) and discussed the crossing and the site visit.

MW requested that Triton show their log book for the monitoring of spawning deterrent mats and describe the monitoring program (e.g., who does it? how often? what does it entail?). These monitoring and maintenance events will be conducted on an ongoing basis once while the mats are in stream. JH provided MW with a copy of the site-specific mitigation/spawning survey form" that Triton will be using every 3 weeks, at a minimum.

During the debrief to the CVA:

- MW noted that there were no COVID-19 related questions for the CVA team, other than the Self-Declaration form provided by Trans Mountain in advance of the site visit, but that physical distancing was in place.
- MW raised a concern about the potential for photo-degradation of the plastic spawning deterrent mats while instream, under direct sunlight and current flow. Although DFO is aware of the production of dissolved organic carbon (and potential leachates depending on the type of plastic used) through the photochemical dissolution of microplastics when present in surface waters, photochemical dissolution of larger plastics held on the streambed over an approximate 3-month duration is not anticipated to occur at a level of concern to downstream ecology.
- TF restated a concern about the potential entry of Chinook under the spawning deterrent mats at the point of overlap between adjacent rolls. DFO is of the view that integrity of the overlap between spawning deterrent mat rolls will become evident through ongoing monitoring and maintenance visits by Triton.
- MW's main concern, as an Indigenous Monitor, is the process in which any environmental mitigation that could possibly affect a public resource gets approved and implemented. Noting that a public study or paper that is peered reviewed in a credible journal is a scientific standard. MW said that the spawning deterrent matts are possibly effective at stopping local spawning, but that MW is unaware of any information on continued use of this practice or possible ill side effects such as damage or other injuries induced from challenging the fence, also the possible impact on other species or at risk species.
- MV was also noted that the mitigation spawning survey form could be revised to be less subjective and have more "measurables" in the spawning or mat repair comments section.
- Although the IAMC monitoring team did not enter the water during the site visit, TF raised the importance of having Swift Water training for wading through turbulent water to for personal and crew safety.
- The site visit was conducted during installation of the spawning deterrent mats. TF stated an interest in seeing the completed installation given potential concerns for Chinook getting underneath the mats. DFO suggested that information and photos may be available from the Project hired Indigenous Monitor from Simpcw Resource Group, who DFO understands will be conducting frequent monitoring and spawning survey visits to the spawning deterrent mats at the crossing.

Time	Inspection Activity
10:00 am – 11:00 am	Pre-CVA meeting between DFO and IAMC Indigenous Monitors (IMs)
(Tim Hortons parking lot,	
Valemount, BC)	
11:30 am – 12:00 pm	Meeting between DFO, IAMC IMs, Trans Mountain, and their contractors
(Yellowhead Motel parking lot,	for installation of the spawning deterrent mats, Triton.
Valemount, BC)	



Time	Inspection Activity					
	 IM provided a safety orientation for DFO and IAMC IMs. 					
12:35 pm – 1:05 pm	DFO, IAMC IMs, Triton and Trans Mountain drove to the Swift Creek					
(Swift Creek BC-32 crossing)	crossing site in separate vehicles.					
	 WB asked Triton for the dimensions of the spawning deterrent mat rolls (information provided above). TF and WB discussed the planned placement of the spawning deterrent mats relative to the crossing (upstream from the area that will be isolated, in what will be a temporary work area). 					
1:05 pm – 3:00 pm (Swift Creek BC-32 crossing)	 that will be isolated, in what will be a temporary work area). DFO and IAMC IMs observed Triton as they began installing the spawning deterrent mats immediately upstream of the Swift Creek crossing. Triton held the spawning deterrent mat rolls at the upstream end while allowing them to unfurl in a downstream direction by the action of the current. Triton used large cobbles, taken from the channel margins, to anchor the upstream end of the mats, then gradually moved downstream to anchor the margins of the mat along its length. Cobbles were used to keep the mats flat against the seabed, and were positioned over the 6" overlap between two adjacent mats. WB asked SC what will happen to the cobbles used for anchoring the spawning deterrent mats when the mats are removed. SC responded that the cobble will be taken off in place while the mats are removed, then will be returned to the channel margins where they were originally taken from. WB met with the Project IM (RH from SRG) and discussed the crossing and the purpose of the site visit. TF met with the Project IM (RH from SRG) and discussed the crossing and the site visit. 					
	 maintenance. SC responded that the team would be returning for surveys and maintenance in early August 2020. 					
	 WB asked SC about the anticipated timing for removal of spawning deterrent mats at the Swift Creek crossing. SC said that most spawning deterrents were to be removed in late October or early November, and that the removal at Swift Creek is currently scheduled for the end of October 2020 (around October 20). 					



Time	Inspection Activity
	DFO and IAMC IMs ended their site visit. Triton and the Indigenous
	Monitor from SRG continued the installation of spawning deterrent mats.
3:15 – 4:15 pm	DFO and IAMC IMs held a debrief meeting to discuss the observations
(Yellowhead Motel parking lot,	and topics described in this report.
Valemount, BC)	



Measures specified within the Swift Creek Fisheries Act Authorization Conditions:

Schedule						
2.2.2 Spawning	deterrent ma	ts must be instal	led by July 31	and prior to the a	rrival of adult Ch	inook spawners so as to
minimize direct	mortality of in	cubating eggs a	nd larvae that i	may be present d	uring constructio	n. Spawning deterrent
mats must be r	emoved follow	ing the fall spaw	ning season a	nd prior to freeze	-up.	
Discussed/	⊠ Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🛛
observed:	□ No	identified:	⊠ No	unresolved:	□ No	
2.2.3 All instrea	im constructio	n works at the S	wift Creek cros	sing, with the exc	ception of the ins	tallation of spawning
deterrent mats,	must only be	carried out betw	een December	r 31, 2020 and Fe	bruary 28, 2021.	
Discussed/	⊠ Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🗆
observed:	□ No	identified:	⊠ No	unresolved:	□ No	
Comments						
- Triton antic	ipates that t	he installation	of spawning	g deterrents wi	ill be complete	ed on July 28 th or 29 th ,
2020.						
- DFO and IAMC IMs witnessed the installation of spawning deterrents mats by Triton crew.						
- No other construction activities were taking place.						
Action Items						
None.						

Installation of Spawning Deterrent Mats							
2.2.4 The placement of spawning deterrent mats is to be conducted by hand, using clean material (e.g., snow matting and anchoring material) that is free of debris or contaminants. Any gear that has been in contact with other waterbodies must be disinfected as appropriate to prevent the spread of disease, prior to entry into Swift Creek.							
Discussed/	⊠ Yes	lssue(s)	□ Yes	Issue(s)	□ Yes	Not applicable 🗆	
observed:	□ No	identified:	🛛 No	unresolved:	🗆 No		
2.2.5 Spawning	g deterrent ma	ts must be instal	lled in a manne	er that does not in	npede the migrat	ion of fish.	
Discussed/	⊠ Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🗆	
observed:	□ No	identified:	🛛 No	unresolved:	□ No		
2.2.6 Spawning deterrent mats must only be placed over suitable spawning habitat located immediately upstream of the location of the proposed watercourse crossing (as identified in Figure 1 of the Application) and are not to exceed a total area of 400 m^2							
Discussed/	⊠ Yes	Issue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🗆	
observed:	□ No	identified:	🛛 No	unresolved:	□ No		
Comments							
- The mats were visually inspected by DFO and IAMC IMs and found to be clean and free of debris.							
- The rock anchors used to secure the spawning deterrent mats instream are native instream rocks.							
- The mats v	vere installe	d flat against i	the stream b	oed.			
The meta ware cheened to be installed in an areas unstream of the pressing as shown by the							

- The mats were observed to be installed in an areas upstream of the crossing, as shown by the red-bordered area in Figure 1 of the application for authorization.



Action Items

DFO (WB and EH) requested that Trans Mountain/Triton provide confirmation of the area and location of spawning deterrents (e.g., a georeferenced map and photographs) once the installation of spawning deterrent mats was complete. Trans Mountain (IE) said that this will be provided.

Monitoring/Reporting	ng Specific to In	stallation o	f Spawning D	eterrent Mats	;
3.3 A QEP must, at a free	quency of at least or	nce every 3 we	eks inspect, main	ntain (e.g., re-pos	itioning mats if altered
due to flow conditions or	sedimentation), and	if necessary re	epair or replace th	ne spawning dete	errent mats so as to avoid
impacts to fish and fish h	abitat resulting from	the improper ii	nstallation or impi	roper maintenan	ce of the mats.
	Issue(s)	□ Yes	Issue(s)	□ Yes	Not applicable 🛛
observed: 🗆 No	identified:	🛛 No	unresolved:	🗆 No	
3.4 During the year in wh survey at the crossing to number of potential and a	ich the spawning de document the numb active redds	eterrent mats ar per, location, an	e installed, the P d behaviour of ac	roponent must co dult spawners, as	onduct a fall spawning s well as the location and
Discussed/ 🛛 Yes	Issue(s)	□ Yes	lssue(s)	□ Yes	Not applicable
observed: 🛛 No	identified:	⊠ No	unresolved:	🗆 No	
3.5 Following removal of 2021, detailing the result described in the Applicat	the spawning deterr s of the effectivenes on.	ent mats, the F s monitoring as	Proponent must s ssociated with ins	ubmit a report to tallation of the sp	DFO by January 31, pawning deterrent mats as
Discussed/ 🛛 Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🗆
observed: 🗆 No	identified:	⊠ No	unresolved:	🗆 No	
Comments			•		•
- Triton (SC and JH) and maintenance of	confirmed that eithe spawning det	ither they or terrent mats.	RH (SRG) woi	uld be back or	nsite for monitoring
- SC discussed plans	s with DFO and I	AMC IMs for	spawning surv	veys (approxir	nate frequency: once
every couple of week	(s).				
- Triton confirmed that they understood the reporting requirement for the results of the effectiveness					
monitoring associated with installation of the spawning deterrent mats as described in the					
Application.					
Action Items					
None.					

Monitoring during Construction Works							
3.1 A Qualified Environmental Professional (QEP) must be present on site during the carrying on of all in-or near-water construction works, and is to monitor the works on an on-going basis to ensure that the standards and measures to avoid and mitigate impacts to fish and fish habitat are effective, and that unauthorized impacts to fish and fish habitat are avoided.							
Discussed/	Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable \Box	
observed:	No	identified:	🖾 No	unresolved:	□ No		
3.2 An Indigenous Monitor, hired by the Proponent, must be present on site to monitor the carrying on of all in- or near- water construction works on an on-going basis, and given the opportunity to acquire Indigenous Knowledge (e.g., from local Indigenous communities) and to provide Indigenous Knowledge, as appropriate, in relation to the Proponent's carrying on of the construction works.							



Discussed/ observed:	⊠ Yes □ No	Issue(s) identified:	□ Yes ⊠ No	lssue(s) unresolved:	□ Yes □ No	Not applicable	
3.6 The Proponent must monitor the implementation of avoidance and mitigation measures referred to in Condition 2 of this Authorization and submit weekly reports to DFO for the duration of the construction works (i.e., works related to pipeline installation bank armouring and riparian vegetation clearing)							
Discussed/	🗆 Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🖂	
observed:	🛛 No	identified:	🗆 No	unresolved:	□ No		
Comments							
 -Qualified Environmental Professionals were onsite at the time conducting the instream work (SC and JH). -The project-hired Indigenous Monitor (RH) was onsite at 2.30 pm following their earlier safety orientation at the Valemount Camp, and spoke to DFO about the authorization. -Work had not progressed beyond a week, so a weekly monitoring report was not available at the time of the site visit. 							
Action Items							
None.							

Site Isolation and Fish Salvage Measures							
Swift Creek Fi	isheries Ac	t Authorizatio	n Conditions	5			
2.2.8 Prior to the	excavation of	of the instream tr	ench for the p	ipeline, work area	is must be isolate	ed from flowing water, but	
the downstream	flow of the w	atercourse must	be maintained	at all times.			
Discussed/ [🗆 Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🖂	
observed:	⊠ No	identified:	□ No	unresolved:	□ No		
2.2.10 Isolated an Following isolatio limit fish mortality	reas must be on, any ice th y and sedime	e de-watered gra at is present mu intation, and to a	dually to preve st be carefully llow fish salva	ent sediment re-so removed prior to ge to occur.	uspension and ba or during the sta	ank destabilization. ged water withdrawal to	
Discussed/ [□ Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🖂	
observed:	⊠ No	identified:	□ No	unresolved:	□ No		
2.2.11 Fish must Environmental Pr collection permit. Creek.	2.2.11 Fish must be salvaged from the isolated work area and fish salvage is to be conducted by a Qualified Environmental Professional (QEP) (e.g., a Registered Professional Biologist) under the authority of a scientific fish collection permit. Salvaged fish are to be released at a suitable location outside of the work area and within Swift Creek						
Discussed/ [□ Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🛛	
observed:	🛛 No	identified:	□ No	unresolved:	□ No		
2.2.12 If site isolation methods used to prevent fish from entering the work areas are breached during construction works, works must stop immediately and must not re-commence until site isolation is re-established and additional fish salvages are undertaken to ensure fish are not within the work area.							
Discussed/ [□ Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🛛	
observed:	⊠ No	identified:	□ No	unresolved:	□ No		
Trans Mountain Pipeline Environmental Protection Plan Commitments							
21. Clean fish sa using in any wate	lvage equipn ercourse to p	nent (e.g., wader revent the sprea	s, boots, nets) d of pathogen) of soil, and disin s (e.g., whirling d	fect with 100 mg isease) and/or in	/L chlorine bleach before vasive plant species.	



Ensure that washed off soil is disposed of at a location that will prevent the reintroduction of these untreated materials into a watercourse.							
Discussed/ observed:	□ Yes ⊠ No	Issue(s) identified:	□ Yes □ No	lssue(s) unresolved:	□ Yes □ No	Not applicable 🖂	
Comments				1			
-Conditions and commitment are for during the construction of the isolated crossing and do not apply at the time of installation of spawning deterrent mats.							
Action Items							
None.							

Pump Intake Screening							
2.2.9 Water int	akes of any pu	imps are to be d	lesigned and s	creened in accord	dance with the <i>In</i>	terim Code of Practice:	
End-of-pipe fis	h protection so	reens for small	water intakes i	n freshwater.			
Discussed/	□ Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🛛	
observed:	🛛 No	identified:	🗆 No	unresolved:	🗆 No		
Comments				•			
-Condition is	s for during t	he construction	on of the isol	ated crossing	and do not ap	ply at the time of	
installation c	of spawning	deterrent mat	S.				
Action Items	;						
None.							

Water Quality Maintenance and Monitoring									
Swift Creek Fisheries Act Authorization Conditions									
2.2.7 Effective sediment and erosion control measures (e.g., silt fencing) must be in place prior to the start of									
construction works (e.g., land-based preparation activities), as appropriate, such that the release of sediment into Swift									
Creek is avoided to the extent possible. Sediment and erosion control measures are to be upgraded and maintained, as									
appropriate, to mainta	ain their effectiveness	throughout the d	uration of the car	rying on of const	ruction works.				
Discussed/ 🛛 Y	es Issue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🖂				
observed: 🖂 N	o identified:	🗆 No	unresolved:	□ No					
2.2.13 Sediment-laden water from within the isolated work area is to be pumped out into a well-vegetated terrestrial									
area located away from the watercourse, such that there is no risk of sediment re-entering Swift Creek.									
Discussed/ 🛛 Y	es Issue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🖂				
observed: 🛛 🕅 N	o identified:	🗆 No	unresolved:	□ No					
2.2.14 A water quality monitoring program must be conducted during the carrying on of construction works in									
accordance with Trans Mountain's Water Quality Monitoring Management Plan. If levels of turbidity downstream of the									
work area exceed the Canadian Council of Ministers of Environment [CCME] Canadian Water Quality Guidelines for									
the Protection of Aquatic Life [CCME 2016], construction activities must be ceased immediately and corrective action is									
to be taken consistent with subsection 38(6) of the Fisheries Act. Construction must only recommence once turbidity									
levels have returned to background conditions.									
Discussed/	es Issue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🛛				
observed: 🛛 🕅 N	o identified:	□ No	unresolved:	□ No					



Trans Mountain Pipeline Environmental Protection Plan Commitments								
29. Ensure that generators and pumps used for the construction of isolated watercourse crossings and/or trench								
dewatering have secondary containment that can hold a capacity of 125% (minimum) of the fuel tank when								
stationed, operated or refuelled within 100 m of a watercourse.								
Discussed/	🗆 Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🖂		
observed:	⊠ No	identified:	🗆 No	unresolved:	□ No			
31. Ensure backup pumps are in place should a primary pump fail.								
Discussed/	🗆 Yes	lssue(s)	□ Yes	lssue(s)	□ Yes	Not applicable 🖂		
observed:	⊠ No	identified:	🗆 No	unresolved:	□ No			
Comments								
-Conditions are for during the construction of the isolated crossing and do not apply at the time of								
installation of spawning deterrent mats.								
Action Items								
None.								

Additional comments or action items

DFO followed up with Trans Mountain after the site visit and confirmed that the project Indigenous Monitor had a dual role of supporting spawning deterrent installation and monitoring works, undertakings and activities.









Photo 3. View across the right-of-way at the Swift Creek (BC-32) crossing



Photo 4. Spawning deterrent matting in rolls prior to installation in Swift Creek





Photo 5. Installation of a spawning deterrent mat roll upstream of the Swift Creek crossing

