BERNARD HARBOUR TECHNICAL MEMO

DATE December 20, 2017 **PROJECT No.** 1776921_023_TM_RevA

TO Matthew Pickard
Sabina Gold & Silver Corp.

CC Merle Keefe, Dionne Filiatrault, Jen Range

FROM Cam Stevens and Ashley Eckford **EMAIL** cestevens@golder.com

2017 BERNARD HARBOUR REMEDIATION SITE INSPECTION

1.0 INTRODUCTION

The purpose of this memo is to provide Sabina Gold & Silver Corp. (Sabina) with a summary of the habitat remediation study and community involvement program that took place July 24 to 28, 2017, at Nulahugyuk Creek, Bernard Harbour. The work was conducted as part of the development of the Final Fish Offsetting Plan for a *Fisheries Act* authorization for Sabina's Back River Project, and was supported through funding from Sabina, with logistical and personnel support provided by the Kugluktuk Hunters and Trappers Organization (HTO). Fisheries and Oceans Canada (DFO) also participated in the 2017 study.

In 2016, Golder Associates Ltd. (Golder) technicians and HTO staff, including local students and other community members, worked together in the field sharing traditional and scientific knowledge towards a common goal of improving migration conditions for Arctic Char at problem areas in Nulahugyuk Creek (Golder 2016). The remediation (i.e., habitat enhancement) approach was based, in part, on the low-flow channel concept, where a low-flow channel is the 'narrowing' or diversion of flows within a creek bed. This was done by relocating boulders from the assumed thalweg to adjacent areas as a boundary to concentrate flows within the creek bed and to create an unobstructed path for fish. Where needed, weirs above the low-flow channel were also constructed to augment flows and increase water depths in the channel (i.e., as flow deflectors), and weirs below the low-flow channel were constructed to direct fish to the channel versus shallow boulder gardens where stranding may occur (i.e., as fish deflectors). The implementation of this concept at Bernard Harbour was initially adapted and tested in a pilot study in 2012 (Golder 2013). In 2016, habitat conditions were improved at 13 problem areas (i.e., Sites) by modifying substrate to create low-flow channels and weirs (Golder 2016).

Although the integrity of remediation structures over the long-term is unknown, the expectation is that the annual effects of spring freshet flows and ice scouring on the integrity of the remediation structures are minimal given the small size of Nulahugyuk Creek and the fact that flows on the creek are dispersed over a relatively wide streambed (Sabina 2017). The main objectives of the study were to describe summer flow conditions (velocity and depth) and the structural integrity of the 13 Sites (low-flow channels and weirs) previously constructed in Nulahugyuk Creek. Creek discharge was collected to supplement baseline data for the Fish Offsetting Plan, and the low-flow channels and weirs previously constructed in 2012 (i.e., pilot projects; Golder 2013) were also visually inspected. Integrity evaluations were performed by inspecting the remediation structures to determine whether boulders and cobble had been disturbed or displaced. Displaced structures were either repaired or recommended for further remediation in future site visits. The study was conducted from July 25 to 27, 2017.

This memo includes the following sections (with supplemental photos provided in Appendix A):

- Nulahugyuk Creek Flows
- Low-Flow Channel Inspections
- Summary of Remediation Repairs
- Recommendations
- Community Involvement
- Health and Safety

2.0 NULAHUGYUK CREEK FLOWS

Discharge measurements were collected approximately 500 m upstream from the mouth of Nulahugyuk Creek (UTM 590514 7627609) using a Swoffer velocity meter. Flows of 0.057 m^3/s were recorded on July 25, and flows of 0.087 m^3/s were recorded on July 26. Rainfall on July 25 likely resulted in the increased flow measurement on July 26. Amanda Dumond (HTO Manager) noted that spring arrived earlier than normal in 2017 and that conditions during the field program resembled autumn-like conditions, an observation that is reflected in the flow data for Nulahugyuk Creek. On average, the measured flow in Nulahugyuk Creek in 2017 was 64% lower than that recorded in 2016 and 80.3% lower than 2015 (Table 1). Although the observerd low flows may provide an opportunity to identify Sites where additional remediation might improve fish passage, creek discharge in summer 2017 may have been well below the threshold where channels can effectively provide suitable conditions for fish passage (Table 2).

Table 1: Summer Flow Comparison in Nulahugyuk Creek from 2015 to 2017

Flow	July 2015[1]			July 2016[1]			July 2017	
	22	23	24	20	22	24	25	26
Wetted Width (m)	12.00	12.00	12.00	12.45	12.45	12.45	5.80	5.10
Mean Depth (m)	0.277	0.256	0.241	0.204	0.204	0.229	0.111	0.116
Discharge (m^3/s)	0.415	0.420	0.290	0.214	0.214	0.171	0.057	0.087
Mean Discharge (m^3/s)	*0.375*			*0.200*			*0.072*	

[1] Sabina (2017)

Table 2: Habitat Variables Measured at the 2016 Low-Flow Channels

Site ID	Structure	Date	Mean Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)
1	Low-flow Channel	26-July-17	2.94	0.09	0.34
2	Low-flow Channel A	26-July-17	2.63	0.10	0.52
	Low-flow Channel B	26-July-17	2.28	0.06	0.27
3	Low-flow Channel	26-July-17	3.40	0.08	0.35
4	Low-flow Channel A	26-July-17	2.23	0.10	0.47
	Low-flow Channel B	26-July-17	2.70	0.10	0.24
5	Low-flow Channel	26-July-17	2.00	0.11	0.16
6	Low-flow Channel	25-July-17	3.43	0.11	0.25
7	Low-flow Channel A	25-July-17	2.65	0.09	0.16
	Low-flow Channel B	25-July-17	2.58	0.13	0.12

Table 2: Habitat Variables Measured at the 2016 Low-Flow Channels

Site ID	Structure	Date	Mean Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)
8	Low-flow Channel	25-July-17	2.08	0.13	0.29
9	Low-flow Channel	25-July-17	2.14	0.09	0.15
10	Low-flow Channel A	25-July-17	3.25	0.07	0.13
	Low-flow Channel B	25-July-17	3.40	0.07	0.21
	Low-flow Channel C	25-July-17	2.45	0.07	0.13
11	Low-flow Channel	26-July-17	3.90	0.13	0.37
12	Low-flow Channel A	26-July-17	3.33	0.12	0.32
	Low-flow Channel B	26-July-17	1.15	0.18	0.29
13	Low-flow Channel	25-July-17	3.13	0.21	0.17

3.0 REMEDIATION SITE INSPECTIONS

3.1 Observations

Each low-flow channel and weir constructed during the 2016 remediation program was inspected to determine if any of the structures had been disturbed or displaced. Structures requiring minimal remediation were repaired during the 2017 field program, time permitting. If more extensive remediation was required, detailed notes were collected and photos were taken to aid remediation planning for future site visits (see Appendix A for photos). Most (77%) of the 30 structures within the 13 Sites were deemend intact. Only 2.4% of the total length of remediation structures (10.0 m of 482.6 m) was visibly disturbed, where boulders and cobble were displaced (Table 3). Five directional weirs and three low-flow channels within eight sites were identified as having been disturbed where displayed cobble and boulder ranged from 2 to 25% for a remediation structure. The potential effects of disturbance on the function of each Site in providing fish passage was deemed negligible to low. At the time of the inspection flow conditions were likely too low to allow for the passage of fish through most of the creek, and some of the low-flow channels.

Table 3: Structure Integrity Assessment of 2016 Remediation Sites, July 25 and 26, 2017

Site	Structure	Length of Structure (m)	Percent Displaced (%)	Repaired	Further Remediation Recommended	Photos (Appendix A)
1	Low-flow Channel	76	0	No	Yes	4
	Directional Weir A	6.5	5	Yes	No	1, 2
	Directional Weir B	9.5	0	No	No	3
2	Low-flow Channel A	22	0	No	No	5
	Low-flow Channel B	8	0	No	No	6
	Directional Weir	7.6	0	No	No	7
	Augmentation Weir	9	0	No	No	8
3	Low-flow Channel	9	25	No	Yes	9
	Directional Weir	9.3	0	No	Yes	10
4	Low-flow Channel A	22	0	No	No	11
	Low-flow Channel B	14	0	No	No	12
	Directional Weir	7.8	0	No	No	13

Table 3: Structure Integrity Assessment of 2016 Remediation Sites, July 25 and 26, 2017

Site	Structure	Length of Structure (m)	Percent Displaced (%)	Repaired	Further Remediation Recommended	Photos (Appendix A)
5	Low-flow Channel	22	0	No	No	14
	Directional Weir	6.1	20	Yes	No	15, 16
6	Low-flow Channel	30	0	No	No	17, 18
7	Low-flow Channel A	20	0	No	No	19
	Low-flow Channel B	16	0	No	No	20
	Directional Weir	14	0	No	No	21
8	Low-flow Channel	22	10	No	Yes	22, 23
9	Low-flow Channel	22	0	No	No	24, 25
	Directional Weir	5.6	5	Yes	No	26
10	Low-flow Channel A	16	0	No	No	27
	Low-flow Channel B	9	0	No	No	28
	Low-flow Channel C	18	0	No	No	29
	Directional Weir	5	2	Yes	No	30
11	Low-flow Channel	34	10	No	Yes	31, 32
12	Low-flow Channel A	20	0	No	No	33
	Low-flow Channel B	3	0	No	No	34
	Directional Weir	9.2	2	Yes	No	35, 36
13	Low-flow Channel	10	0	No	No	37, 38

The structural integrity of the 2012 pilot project structures was qualitiatively assessed. Only a high-level visual inspection was conducted (Table 4) with photos taken of each structure (Appendix A). Although there are some recommendations for future remediation (where necessary), all pilot projects were deemed functioning channels that facilitate fish passage. Minor repairs are recommended for Projects 1, 2, 3, and 5.

Table 4: Structure Integrity Assessment of 2012 Pilot Projects, July 27, 2017

Project	Structure	Displacement	Further Remediation Required	Photos (Appendix A)
1	Low-flow Channel A	Low	Yes	39
	Low-flow Channel B	Negligible	Yes	41, 42
	Directional Weir	Low	Yes	40
2	Low-flow Channel A	Nil	No	43
	Low-flow Channel B	Low	Yes	43
	Directional Weir	Low	Yes	44
3	Low-flow Channel A	Nil	No	45
	Low-flow Channel B	Nil	No	45
	Directional Weir	Moderate	Yes	46
4	Low-flow Channel	Nil	No	47, 48

Table 4: Structure Integrity Assessment of 2012 Pilot Projects, July 27, 2017

Project	Structure	Displacement	Further Remediation Required	Photos (Appendix A)
5	Low-flow Channel A	Nil	No	49
	Low-flow Channel B	Nil	No	49
	Low-flow Channel C	Nil	No	50
	Directional Weir A	Low	Yes	51
	Directional Weir B	Nil	No	52

3.2 Completed Repairs

Damaged and displaced weirs were repaired during the 2017 field program; however, some of the damaged low-flow channels could not be repaired because of time constraints and will require attention during future site visits. Requiring minimal effort, the crew repaired five directional weirs (all associated with Sites constructed in 2016) during the 2017 field program. Cobble and boulders displaced from high spring flows were repositioned into the weir structures to increase their effectiveness at either directing flows or fish into the low-flow channels. A detailed description of all repairs are summarized in Table 5. No further remediation is required for these structures.

Table 5: Remediation Structure Repairs Completed July 25 and 26, 2017

Site	Structure	Percent Displaced	Repairs	Photos (Appendix A)
1	Directional Weir A	5	A few small boulders were out of place from the directional weir constructed to guide fish into the low-flow channel. They were easily placed back into the weir.	Pre-repair – 1 Post-repair – 2
5	Directional Weir	20	Displaced boulders in the directional weir resulted in a gap large enough to allow fish to travel up the left downstream bank where they would become trapped further upstream. The boulders were replaced once again blocking access to the shallow area.	Pre-repair – 15 Post-repair – 16
9	Directional Weir	5	Several boulders were displaced in the directional weir which blocks access to the shallow left downstream bank. The boulders were easily moved back into place.	Post-repair – 26
10	Directional Weir	2	A few small boulders were displaced from the weir but easily replaced to block access along the shallow left downstream bank. During construction in 2016 the weirs susceptibility to displacement was noted due to a lack of large boulders in the area.	Pre-repair – 30
12	Directional Weir	2	A few boulders were displaced in the directional weir but easily replaced to once again block access to the shallow right downstream bank and direct fish passage into the low-flow channel.	Pre-repair – 35 Post-repair – 36

The photos below are examples of the pre- and post-remediation efforts of displaced directional weirs that were repaired during the field program. At Site 12, (Photos 1 and 2; Photos 35 and 36 in Appendix A) boulders were displaced from a directional weir that blocked access to the shallow right downstream bank and directed fish passage towards the low-flow channel. Repair efforts repositioned the boulders and strengthened the weir to restore its function. A similar repair was completed at Site 1 where boulders were displaced from a directional weir (Photos 3 and 4; Photos 1 and 2 in Appendix A). The boulders were repositioned into the weir to better direct fish passage into the low-flow channel and away from the shallow right downstream bank.

Photo 1: Upstream View of the Directional Weir at Site 12, Pre-Remediation, 26 July 2017

Photo 2: Upstream View of the Directional Weir at Site 12, Post-Remediation, 26 July 2017

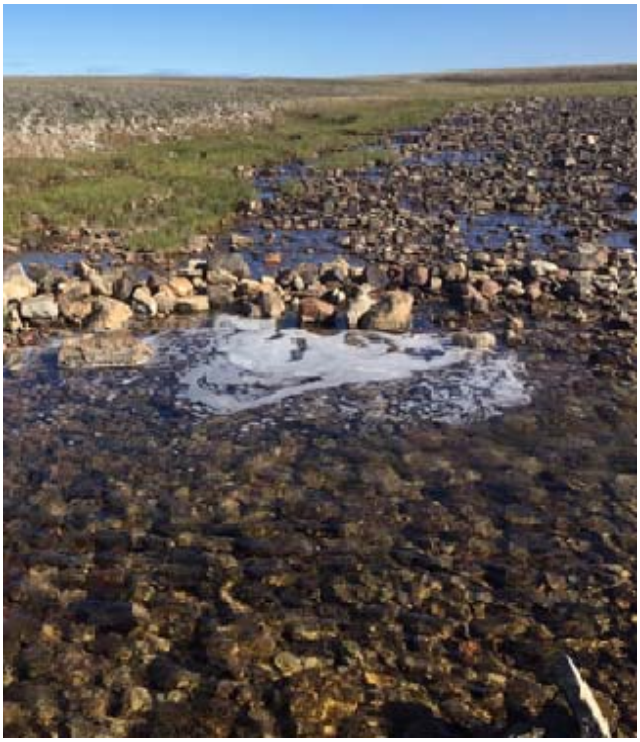

Photo 3: Upstream View of the Directional Weir A at Site 1, Pre-Remediation, 26 July 2017

Photo 4: Upstream View of the Directional Weir A at Site 1, Post-Remediation, 26 July 2017

3.3 Recommended Repairs and Improvements

A summary of recommended repairs for displaced sections that could not be addressed are listed in Table 6. An example of a low-flow channel requiring remediation is Site 8 (Photo 5; Photo 23 in Appendix A). Although some boulders were intentionally placed in the channel during construction as refugia for migrating fish, spring flows displaced more boulders into the thalweg. At low water levels (as shown in Photo 6), navigating the channel may be difficult for migrating fish if the channel is not repaired. An example of a site requiring the construction of a new directional weir is Site 11. A directional weir constructed from the left downstream bank to the mouth of the low-flow channel is recommended to direct fish passage into the low-flow channel and away from the shallow left downstream bank where stranding may occur (Photo 6; Photo 32 in Appendix A).

Table 6: Recommendations for 2016 Remediation Sites

Site	Structure	Recommended Repairs and Improvements	Photos (Appendix A)
1	Low-flow Channel	Upon inspection, the low-flow channel at Site 1 was intact (Photo 4, Appendix A) but it is recommended that the left downstream bank of the channel near the weir be fortified with rocks and small boulders to enhance its effectiveness.	3, 4
3	Low-flow Channel	The displaced boulders in the centre of the channel should be removed, and the banks of the low-flow channels should be reinforced where needed.	9
	Directional Weir	The directional weir is intact and stable (Photo 10, Appendix A), but future activities could extend it to the left downstream bank to ensure fish cannot migrate up the shallow left bank of the creek.	10
8	Low-flow Channel	Boulders were intentionally left in the low-flow channel at Site 8 during 2016 construction as refugia for migrating fish. Upon inspection, some boulders appeared to be displaced (Photo 23, Appendix A) which could provide challenges to upstream migrating fish at low water levels. It was recommended that some small boulders be removed from the low-flow channel.	22, 23
11	Low-flow Channel	The left downstream bank of the low-flow channel underwent some displacement. There is potential for upstream migrating fish to access the shallow left side of the creek. The construction of a weir from the bottom end of the low-flow channel to the left downstream bank of the creek would direct fish passage into the channel and block access to the shallow area where stranding may occur (Photo 32, Appendix A).	32

Photo 5: Low-flow Channel (Upstream View) at Site 8 Requires Removal of Displaced Boulders, 26 July 2017

Photo 6: Upstream View of Proposed Directional Weir Location at Site 11, 26 July 2017

A summary of recommended repairs for the 2012 project structures that were not addressed during the 2017 field program are listed in Table 7. Three low-flow channels and four directional weirs require additional remediation. An example of a low-flow channel requiring remediation is Project 1 (Photo 7; Photo 41 in Appendix A). Water levels during the assessment were so low that approximately two meters of the upstream section of the low-flow channel was dry. This dry section disconnects passage from suitable habitat downstream and upstream, making navigation a challenge for migrating fish if not repaired.

An example of a directional weir requiring repair is Project 3. A directional weir constructed from the right downstream bank to the mouth of the low-flow channel was blown out from high spring flows (Photo 8; Photo 46 in Appendix A). Without the weir in place, fish may travel up the right downstream bank at higher water levels and get stranded in the shallow boulder garden. It is recommended that the weir be rebuilt with larger boulders and secured to block access to the shallow area upstream and direct fish passage into the low-flow channel.

Table 7: Recommendations for 2012 Pilot Projects

Project	Structure	Recommended Repairs and Improvements	Photos (Appendix A)
1	Low-flow Channel A	The left downstream bank of the low-flow channel could use fortification with boulders. The flow is sufficient for fish passage but the channel could be more defined.	39
	Low-flow Channel B	The upstream section of the low-flow channel does not have sufficient flow for fish passage. The channel should be cleared of rocks in the blocked section to allow fish passage.	41, 42
	Directional Weir	A large section of the directional weir was displaced, creating an opening to allow fish to travel up the shallow right downstream bank of the creek where stranding may occur. This is recommended as a high priority remediation for the future.	40
2	Low-flow Channel B	The low-flow channel could be cleared of boulders as passage for fish could be difficult in low-flow.	43
	Directional Weir	The directional weir could benefit from fortification with boulders to the banks edge and to the low-flow channel.	44
3	Directional Weir	The directional weir was blown out from high spring flow and needs repair. Fish may get trapped up the shallow right downstream bank in higher water levels.	46
5	Directional Weir A	The directional weir could use fortifying to ensure fish cannot access the shallow right downstream bank where stranding may occur.	51

Photo 7: Low-Flow Channel B (Upstream View) at Project 1 where Improvements are Recommended, 27 July 2017

Photo 8: Blown out Directional Weir (Upstream View) at 2012 Project 3, 27 July 2017

4.0 COMMUNITY INVOLVEMENT

The successful execution of the study would not be possible without the logistical support and participation from HTO staff and members of the community. Six staff provided by the HTO included Perry Klengenberg (Wildlife Monitor and Boat Operator), Richard Akana (Boat Operator), Jonathon Niptanatiak (Wildlife Monitor and Boat

Mate), Cathy Anablak (Boat Mate), Kyle Algona (Senior Field Assistant), and Amber Adjun (Junior Field Assistant). Local participants helped assess the low-flow channels and weirs for structural damage and collect habitat information (Photo 9). Local knowledge shared during the program contributed important information to the monitoring of Nulahugyuk Creek. The presence of Wildlife Monitors was also a critical asset to the team given the high level of bear activity observed in the area in previous years. Equipment imperative to the field program, including, ATV's, boats, tents, generators, food, and supplies, were provided by the Kugluktuk HTO.

Photo 9: Local Participant Cathy Anablak Assisting with the Assessment at Site 10, 25 July 2017

5.0 HEALTH AND SAFETY

The Health and Safety Plan developed for this program was successful in providing the crew with the resources required to mitigate risk and maintain communication with emergency contacts throughout the program. Hazards identified during the execution of the field tasks included, but were not limited to:

- general challenges associated with remote work
- adverse weather conditions
- slips, trips, falls, and foot hazards
- bear encounters
- boat and ATV travel
- effective communication

Both structured and casual daily health and safety discussions served to maintain communication, and identify new hazards. The crew always worked together and did not leave camp without the Wildlife Monitor. A SPOT satellite messenger device was available in case of emergency and daily check-ins provided office staff with project updates.

6.0 SUMMARY

The field study at Nulahugyuk Creek was deemed successful in meeting baseline data collection and community engagement objectives. The study confirmed that the 2016 remediation Sites were structurally intact and have the potential to provide suitable conditions for fish passage. Some followup is recommended to maintain the remediation structures as part of future inspection and monitoring efforts at Nulahugyuk Creek.

7.0 CLOSURE

We trust the above meets your needs, should you have any questions please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES LTD.

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AE/CES/GC/JR

REFERENCES

Golder (Golder Associates Ltd.) 2013. 2012 Field Report: Stream Restoration and Community Stewardship of Arctic Char at Nulahugyuk (Bernard Harbour). Submitted to Environment Canada. Golder Project #10-1373-0075: 23 p. + app.

Golder. 2016. Nulahugyuk Creek Habitat Remediation Report. Report prepared for Sabina Gold & Silver Corp. Golder Project Doc 009 1545534.4000: 41 p + appendices.

Sabina (Sabina Gold & Silver Corp.). 2017. Final Environmental Impact Statement Addendum. Submitted to Nunavut Impact Review Board. February 2017.

APPENDIX A

Remediation Site Photographs

Photo 1: Upstream view of Directional Weir A pre-repair at Site 1. 26 July 2017.

Photo 2: Upstream view of Directional Weir A post-repair at Site 1. 26 July 2017.

Photo 3: Upstream view of Directional Weir B at Site 1. 26 July 2017.

Photo 4: Upstream view of Low-flow Channel at Site 1. 26 July 2017.

Photo 5: Upstream view of Low-flow Channel A at Site 2. 26 July 2017.

Photo 6: Upstream view of Low-flow Channel B at Site 2. 26 July 2017.

Photo 7: Upstream view of Directional Weir at Site 2. 26 July 2017.

Photo 8: Downstream view of Augmentation Weir at Site 2. 26 July 2017.

Photo 9: Upstream view of Low-flow Channel at Site 3. 26 July 2017.

Photo 10: Upstream view of Directional Weir at Site 3. 26 July 2017.

Photo 11: Upstream view of Low-flow Channel A at Site 4. 26 July 2017.

Photo 12: Upstream view of Low-flow Channel B at Site 4. 26 July 2017.

Photo 13: Downstream view of Directional Weir at Site 4. 26 July 2017.

Photo 14: Upstream view of Low-flow Channel at Site 5. 26 July 2017.

Photo 15: Upstream view of Directional Weir pre-repair at Site 5. 26 July 2017.

Photo 16: Upstream view of Directional Weir post-repair at Site 5. 26 July 2017.

Photo 17: Upstream view of Low-flow Channel at Site 6. 25 July 2017.

Photo 18: Downstream view of Low-flow Channel at Site 6. 25 July 2017.

Photo 19: Downstream view of Low-flow Channel A at Site 7. 25 July 2017.

Photo 20: Upstream view of Low-flow Channel B at Site 7. 25 July 2017.

Photo 21: Upstream view of Directional Weir at Site 7. 25 July 2017.

Photo 22: Downstream view of Low-flow Channel at Site 8. 25 July 2017.

Photo 23: Upstream view of Low-flow Channel at Site 8. 25 July 2017.

Photo 24: Downstream view of Low-flow Channel at Site 9. 25 July 2017.

Photo 25: Upstream view of Low-flow Channel at Site 9. 25 July 2017.

Photo 26: Upstream view of Directional Weir at Site 9. 25 July 2017.

Photo 27: Upstream view of Low-flow Channel A at Site 10. 25 July 2017.

Photo 28: Upstream view of Low-flow Channel B at Site 10. 25 July 2017.

Photo 29: Upstream view of Low-flow Channel C at Site 10. 25 July 2017.

Photo 30: Upstream view of Directional Weir at Site 10. 25 July 2017.

Photo 31: Downstream view of Low-flow Channel at Site 11. 26 July 2017.

Photo 32: Upstream view of proposed Directional Weir location at Site 11. 26 July 2017.

Photo 33: Downstream view of Low-flow Channel A at Site 12. 26 July 2017.

Photo 34: Downstream view of Low-flow Channel B at Site 12. 26 July 2017.

Photo 35: Upstream view of Directional Weir pre-repair at Site 12. 26 July 2017.

Photo 36: Upstream view of Directional Weir post-repair at Site 12. 26 July 2017.

Photo 37: Upstream view of Low-flow Channel at Site 13. 25 July 2017.

Photo 38: Downstream view of Low-flow Channel at Site 13. 25 July 2017.

Photo 39: Upstream view of Low-flow Channel A at 2012 Project 1. 27 July 2017.

Photo 40: Downstream view of Directional Weir at 2012 Project 1. 27 July 2017.

Photo 41: Upstream view of Low-flow Channel B pre-repair at 2012 Project 1. 27 July 2017.

Photo 42: Downstream view of Low-flow Channel B post-repair at 2012 Project 1. 27 July 2017.

Photo 43: Downstream view of Low-flow Channels A and B at 2012 Project 2. 27 July 2017.

Photo 44: Downstream view of Directional Weir at 2012 Project 2. 27 July 2017.

Photo 45: Downstream view of Low-flow Channels A and B at 2012 Project 3. 27 July 2017.

Photo 46: Blown out Directional Weir at 2012 Project 3 requiring remediation. 27 July 2017.

Photo 47: Upstream view of Low-flow Channel at 2012 Project 4. 27 July 2017.

Photo 48: Downstream view of Low-flow Channel at 2012 Project 4. 27 July 2017.

Photo 49: Upstream view of Low-flow Channels A and B at 2012 Project 5. 27 July 2017.

Photo 50: Upstream view of Low-flow Channel C at 2012 Project 5. 27 July 2017.

Photo 51: Upstream view of Directional Weir A at 2012 Project 5. 27 July 2017.

Photo 52: Upstream view of Directional Weir B at 2012 Project 5. 27 July 2017.

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