Appendix A

Project Location Worksheet

Applicant Name:	
Stream Name:	**Watershed Name:**

FISH HABITAT SUITABILITY CLASSIFICATION

Operation Standard:
Check appropriate box(es).

- ☐ Water Quality Zone
- ☐ Low
- ☐ Moderate-Low
- ☐ Moderate-Moderate
- ☐ Lake Tributary
- ☐ Moderate-High
- ☐ High (Chinook Production)
- ☐ High (Areas of Special Consideration)

Restoration Standard:
Check appropriate box(es).

- ☐ Water Quality Zone
- ☐ Low
- ☐ Moderate-Low
- ☐ Moderate-Moderate
- ☐ Lake Tributary
- ☐ Moderate-High
- ☐ High (Chinook Production)
- ☐ High (Areas of Special Consideration)

Prior development designation: ◯ Yes ◯ No

Duration of proposed works: _____ year(s)

Watershed sensitivity classification: ◯ Category A ◯ Category B

DISCHARGE STANDARD

Design: _____ mg/L ◯ ml/L ◯

Action: _____ mg/L ◯ ml/L ◯

Compliance: _____ mg/L ◯ ml/L ◯

Propose to withdraw water: ◯ Yes ◯ No

All intakes will incorporate intake screens as per the Guidebook: ◯ Yes ◯ No

Propose to use existing Ford: ◯ Yes ◯ No

PROJECT LOCATION DESCRIPTION

Attach a map showing proposed location of placer mine.

ADDITIONAL INFORMATION (OPTIONAL):

Appendix B

Riparian Zone / Bank Modification Design Worksheet

Riparian Zones are applicable to original (unmodified channels), previously reclaimed channels and Permanent Diversion Channels.

Applicant Name:	
Stream Name:	

VEGETATION CLEARING (Within the Riparian Zone)			
Habitat Suitability Classification:		**Designated Riparian Zone:**	_____ metres
Proposed duration of vegetation clearing:	_____ year(s)	**Minimum vegetation setback from stream:**	_____ metres
Total length of proposed vegetation clearing:	_____ metres	**Proposed vegetation setback from stream:** (Cannot be less than the minimum setback)	_____ metres
Width of proposed vegetation clearing:	_____ metres		

BANK MODIFICATION (Subsurface works within the Riparian Zone)			
Habitat Suitability Classification:		**Designated Riparian Zone:**	_____ metres
Proposed duration of bank modification:	_____ year(s)	**Minimum setback distance from stream:**	_____ metres
Total length of proposed bank modification:	_____ metres	**Proposed setback distance from stream:** (Cannot be less than the minimum setback)	_____ metres
Width of proposed bank modification: (Within the Riparian Zone)	_____ metres		
Propose to construct a new Ford(s):	◯ Yes ◯ No	**Are existing Ford(s) present?**	◯ Yes ◯ No

REQUIRED RECLAMATION WORKS (from workbook tables)		
	Vegetation Clearing Requirement	**Bank Modification Requirement**
Grading		
Surface		
Vegetation		

ADDITIONAL INFORMATION (OPTIONAL):

Appendix B

Riparian Zone / Bank Modification Design Worksheet

Applicant Name:	
Stream Name:	

Use the template below to draw a schematic of the proposed works using the symbols below.

Natural Channel Start

Site Length (m):

North Arrow

Flow Direction

Natural Channel End

USE THE FOLLOWING SYMBOLS TO INDICATE PROPOSED WORKS ON MAP.

Riparian Clearing	■	**Bank Modification and Clearing**	xxxxxxx	**Previously Reclaimed Area**	|| || || ||	**New Fords**	N
Riparian Boundary	- - - - -	**Stream Bank**	———	**Undisturbed Vegetation**	▭	**Existing Fords**	E

ADDITIONAL INFORMATION (OPTIONAL):

Appendix C

Original Channel and Site Parameters Worksheet

Applicant Name:	
Stream Name:	

CHANNEL CHARACTERISTICS				Guidebook Reference Section
Channel morphology:	◯ Straight	◯ Meandering	◯ Braided	2.2.2
Channel floodplain type:	◯ None	◯ Narrow	◯ Wide	2.2.3

FLOODPLAIN MEASUREMENTS (Note all measurements must be in metres.) — Guidebook Reference Section

Valley length: _____ metres — 2.2.4

Floodplain width: — 2.2.5

Measurement	Width	
1		metres
2		metres
3		metres
4		metres
5		metres
6		metres
Total: (add 1 through 6)	0.00	metres
Average width: (Total divided by 6)	0.00	metres

STREAM CHANNEL PARAMETERS — Guidebook Reference Section

Change in streambed elevation: _____ metres — 2.2.6

Original channel gradient: _____ % — 2.2.7

Flow velocity estimate: _____ m/sec — 2.2.8

Original channel length: _____ metres — 2.2.9

Original channel width and depth: — 2.2.10

Measurement	Width	
1		metres
2		metres
3		metres
4		metres
5		metres
6		metres
Total: (add 1 through 6)	0.00	metres
Average width: (Total divided by 6)	0.00	metres

Measurement	Depth	
1		metres
2		metres
3		metres
4		metres
5		metres
6		metres
Total: (add 1 through 6)	0.00	metres
Average depth: (Total divided by 6)	0.00	metres

Appendix C

Original Channel and Site Parameters Worksheet

Applicant Name:	
Stream Name:	

CHANNEL TYPE					Guidebook Reference Section
○ Dune-Ripple	○ Pool-Riffle	○ Plane-Bed	○ Step-pool	○ Cascade	2.2.11

CHANNEL BED MATERIAL	Guidebook Reference Section
Record the most abundant size class:	2.2.12
Record the second most abundant size class:	
Record the third most abundant size class:	

ADDITIONAL INFORMATION (OPTIONAL):

Appendix D1

Severity of Effects Assessment for Seasonal Diversion Channel Worksheet

*Not applicable to **High**, **Moderate-High** and **Moderate-Moderate** habitat suitability.*

Applicant Name:	
Stream Name:	

DESIGN COMPONENT	RANGE	RANGE SCORE	PROJECT SCORE
Diversion Channel Gradient	3.51% to 5.0%	3	
	1.51% to 3.5%	2	
	0 to 1.5%	1	
Length of Diversion Channel	1,000 to 2,000 metres	2	
	< 1,000 metres	1	
Relative Length of Diversion Channel	Shorter than original	1	
	Equal or Longer than original	0	
Permafrost in Diversion Channel	Present	3	
	Absent	0	
Primary Material in Diversion Channel	Silt / Sand	2	
	Gravel / Cobble / Bedrock	1	
Location of Diversion Channel	Perched (valley wall)	4	
	Confined (valley floor)	2	
	Incised (valley floor)	1	
	Total Project Score for Seasonal Diversion Channels		0

Maximum permitted score for Seasonal diversion in Moderate-Low habitat suitability:	**11**
Maximum permitted score for Seasonal diversion in Low habitat suitability:	**13**

ADDITIONAL INFORMATION (OPTIONAL):

Appendix D2

Severity of Effects Assessment for Temporary Diversion Channel Worksheet

*Not applicable to **High** and **Moderate-High** habitat suitability.*

Applicant Name:	
Stream Name:	

DESIGN COMPONENT	RANGE		RANGE SCORE	PROJECT SCORE
Diversion Channel Gradient	3.51% to 5.0% **(Not applicable to Moderate-Moderate habitat suitability.)**		3	
	1.51% to 3.5%		2	
	0 to 1.5%		1	
Length of Diversion Channel	2,000 to 5,000 metres **(Not applicable to Moderate-Moderate habitat suitability.)**		3	
	1,000 to 2,000 metres	Moderate-Moderate	3	
		Moderate-Low	2	
		Low	2	
	500 to 1,000 metres		2	
	< 500 metres		1	
Relative Length of Diversion Channel	Shorter than original		1	
	Equal or Longer than original		0	
Permafrost in Diversion Channel	Present **(Not applicable to Moderate-Moderate habitat suitability.)**		2	
	Absent		0	
Primary Material in Diversion Channel	Silt / Sand		2	
	Gravel / Cobble / Bedrock		1	
	Perched (valley wall) **(Not applicable to Moderate-Moderate habitat suitability.)**		4	
Location of Diversion Channel	Confined (valley floor)		2	
	Incised (valley floor)		1	
Fish Habitat Features (rock islands / boulder groupings only)	Moderate-Moderate (50% of total amount required for permanent channel)		-1	
	Moderate-Low and Low (30% of total amount required for permanent channel)			

Maximum permitted score for Temporary diversion in Moderate-Moderate habitat suitability:	**7**
Maximum permitted score for Temporary diversion in Moderate-Low habitat suitability:	**10**
Maximum permitted score for Temporary diversion in Low habitat suitability:	**12**

Total Project Score for Temporary Diversion Channels	0

Appendix D3

Channel Design Flood Estimate Worksheet

NOTE: *A separate Appendix D3 is required for each Habitat Suitability type.*

Applicant Name:	
Stream Name:	
Habitat Suitability Classification:	

						Guidebook Reference Section
Required flood design interval:						2.3.3
Permanent restoration channel	_____	**Temporary diversion**	_____	**Seasonal diversion**	_____	
Calculated severity of effects assessment score for diversions: (Refer to Appendix D1 or D2 for score)	_____					

UPSTREAM DRAINAGE AREA CALCULATION To determine Upstream Drainage Area Calculation use the topographic map method with map overlay and calculation below or use a computer method such as the online mapping tool for area calculation provided on the Yukon Placer Atlas.		Guidebook Reference Section
Topographic map scale: ○ 1:50,000 ○ 1:250,000		2.3.4
Number of large (solid line) squares: (1cm x 1cm)	_____	
Number of small (solid line) squares: (0.5cm x 0.5cm)	_____	
Area within large (solid line) squares: (Number of large squares multiply by Area Factor 0.25 or 6.25)	_____ km^2	
Area within small (dashed line) squares: (Number of small squares multiply by Area Factor 0.0625 or 1.5625)	_____ km^2	
Total drainage area: (Area within large solid squares ± Area within small solid squares)	_____ km^2	

HYDROLOGIC ZONE		Guidebook Reference Section
Upstream streambed elevation:	_____ metres	2.3.5
Downstream streambed elevation:	_____ metres	
Channel length between up and downstream elevations:	_____ metres	
Average upstream channel gradient:	$\frac{\text{Upstream Elevation (metres)} - \text{Downstream Elevation (metres)}}{\text{Channel Length (metres)}} \times 100\ \% =$ _____ %	
○ Mountain Zone (gradient greater than or equal to 4.5%) ○ Interior Zone (gradient less than 4.5%)		

Appendix D3

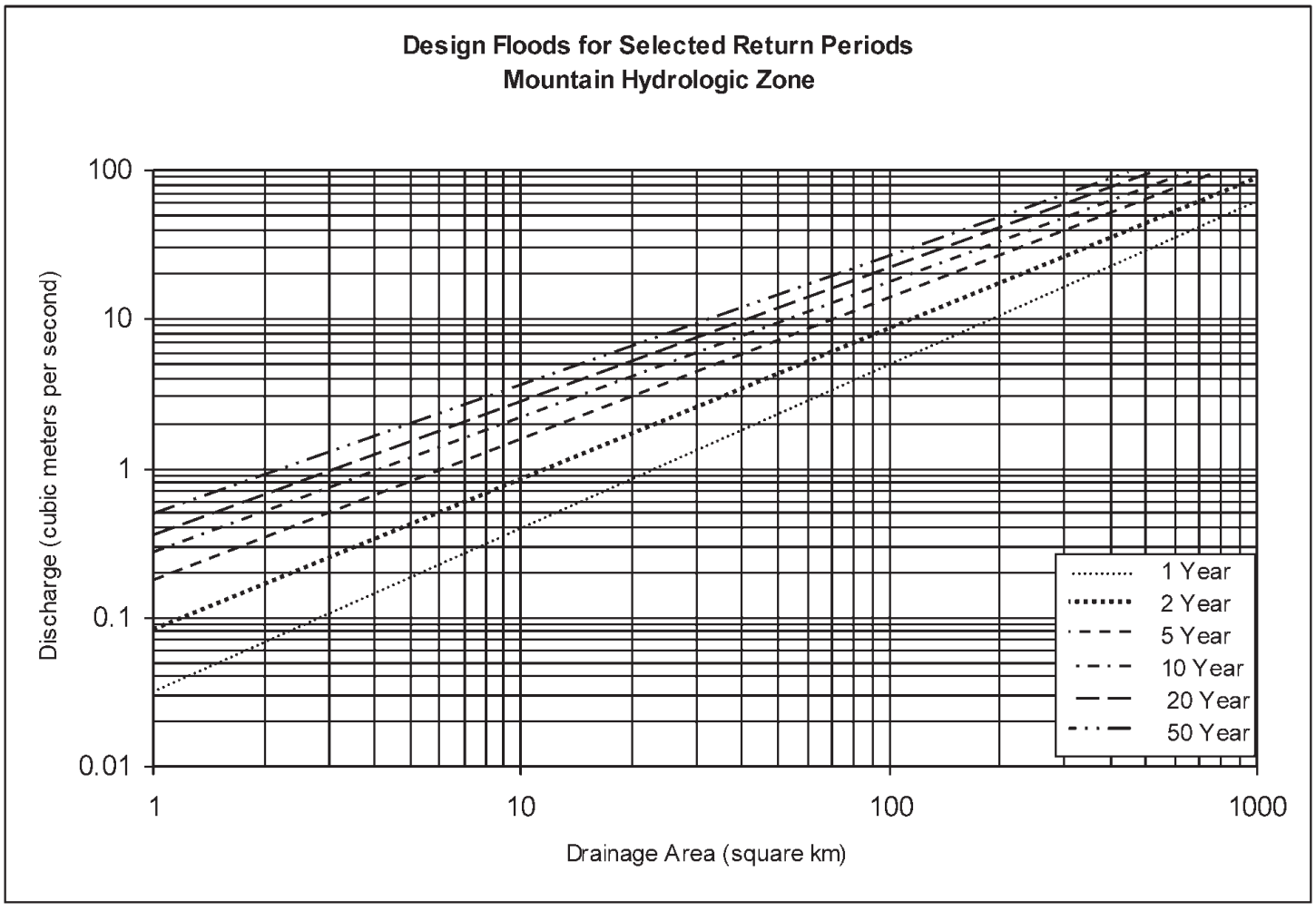
Mountain Hydrologic Zone Graph

If the proposed site is located in the Mountain Hydrologic Zone use the following graph.

Use the information from page one of Appendix D3 combined with the following graphs to determine the discharge (m^3/sec) required for your proposed diversion channel.

Applicant Name:
Stream Name:

DESIGN FLOOD ESTIMATE
Enter the chart on the horizontal axis (Drainage Area). Draw a vertical straight line up through the appropriate flood design line on the graph. Draw a horizontal straight line to the left axis (left side of chart) from the intersection point with the vertical line. Read the Discharge on the left axis.
Record the required diversion channel design discharge: _____ m^3/sec



Appendix D3

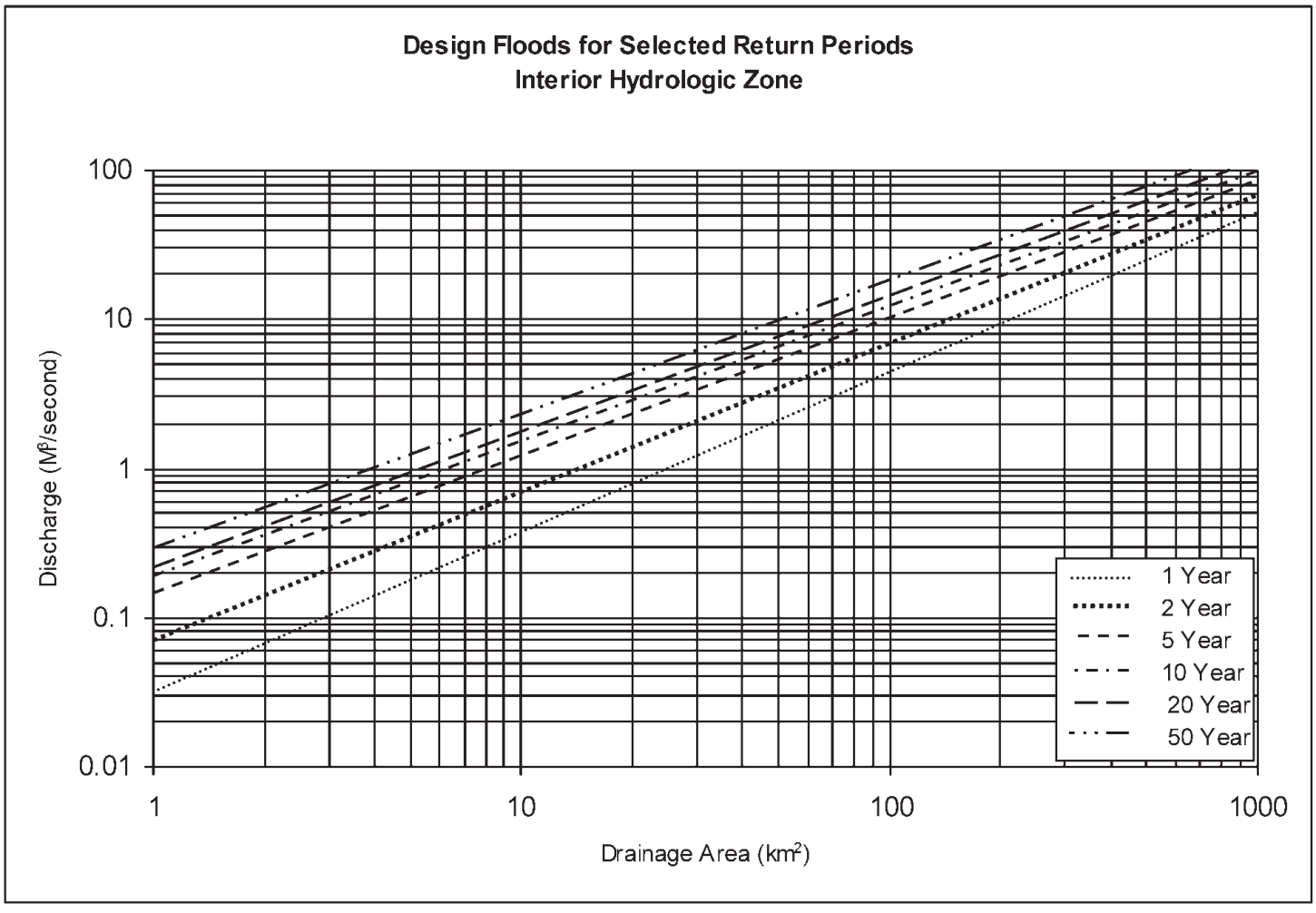
Interior Hydrologic Zone Graph

If the proposed site is located in the Interior Hydrologic Zone use the following graph.

Use the information from page one of Appendix D3 combined with the following graphs to determine the discharge (m^3/sec) required for your proposed diversion channel.

Applicant Name:
Stream Name:

DESIGN FLOOD ESTIMATE
Enter the chart on the horizontal axis (Drainage Area). Draw a vertical straight line up through the appropriate flood design line on the graph. Draw a horizontal straight line to the left axis (left side of chart) from the intersection point with the vertical line. Read the Discharge on the left axis.
Record the required diversion channel design discharge: _____ m^3/sec



Appendix E1 - Guidebook Reference Section 2.3.7

Channel Replication Worksheet

Applicant Name:	
Stream Name:	

DIVERSION CHANNEL

Diversion channel width:
Average Original Channel Width (from Appendix C) _____ metres X 1.2 = _____ metres

Diversion channel depth:
Average Original Channel Depth (from Appendix C) _____ metres X 1.5 = _____ metres

Original channel gradient: (from Appendix C) _____ %

Proposed diversion channel length: _____ metres

Is the diversion channel length less than the natural channel length?

- ○ If Yes, drop structures are required.
- ○ If No, drop structures are not required.

DROP STRUCTURES

Required number of drop structures: _____

Diversion channel bed elevation change:
Proposed Diversion Channel Length _____ metres X Channel Gradient _____ % / 100 = _____ metres

Total height of drop structures required:
Natural Channel Bed Elevation Change _____ metres − Diversion Channel Bed Elevation Change _____ metres = _____ metres

Proposed individual drop structure height: _____ metres

Number of drop structures required:
Total Height of Drop Structures _____ metres / Individual Drop Structure Height _____ metres = _____

Appendix E2 - Guidebook Reference Section 2.3.8

Floodplain Design Worksheet

Applicant Name:	
Stream Name:	

FOODPLAIN WIDTH

Originally a non-floodplain system:	Average Original Channel Width (from Appendix C) ____ metres	X	3.0	=	_____	metres
Originally a narrow or wide floodplain system:	Average Original Channel Width (from Appendix C) ____ metres	X	6.0	=	_____	metres

RESTORATION CHANNEL

Restoration channel width:	Average Original Channel Width (from Appendix C) ____ metres	X	1.2	=	_____	metres
Restoration channel depth:	Average Original Channel Depth (from Appendix C) ____ metres	X	1.2	=	_____	metres
Restoration channel length: (Original channel length - from Appendix C)	_____ metres					

ADDITIONAL INFORMATION (OPTIONAL):

Appendix E3 - Guidebook Reference Section 2.3.9

Regime Channel Worksheet

Use *Design Charts 1-4*

Applicant Name:

Stream Name:

BED MATERIAL

○ Sand ○ Gravel ○ Small Cobbles ○ Rocks ○ Boulders

DIVERSION CHANNEL

Diversion channel discharge: (Refer to Design Flood Estimate in Appendix D3: page 2 or 3) _____ m^3/sec

Diversion channel width: (Use *Design Chart 1* based on Discharge and All Bed Material) _____ metres

Diversion channel depth: (Use *Design Chart 2* based on Discharge and relevant Bed Material) _____ metres

Total diversion channel depth:
Add additional freeboard based on the following table:

Diversion Channel Width	Freeboard
< 5 metres	Add 0.5 metres
5 – 10 metres	Add 1.0 metre
> 10 metres	Add 1.5 metres

Diversion Channel Depth _____ metres + Freeboard _____ metres = _____ metres

Diversion channel gradient: (Use *Design Chart 3* based on Discharge and relevant Bed Material) _____ %

Diversion channel velocity of flow: (Use *Design Chart 4* based on Discharge and relevant Bed Material) _____ m/sec

Diversion channel length:

$$\frac{\text{Change in Natural Channel Bed Elevation (metres)}}{\text{Diversion Channel Gradient (\%)}} \times 100\ \% = \text{_____ metres}$$

Proposed diversion channel length: _____ metres

Diversion channel bed elevation change:

$$\text{Diversion Channel Length (metres)} \times \frac{\text{Diversion Channel Gradient (\%)}}{100} = \text{_____ metres}$$

Total height drop structures required:

Natural Channel Bed Elevation Change (value from Appendix C) _____ metres − Diversion Channel Bed Elevation Change (value from calculation above) _____ metres = _____ metres

Proposed individual drop structure height: _____ metres

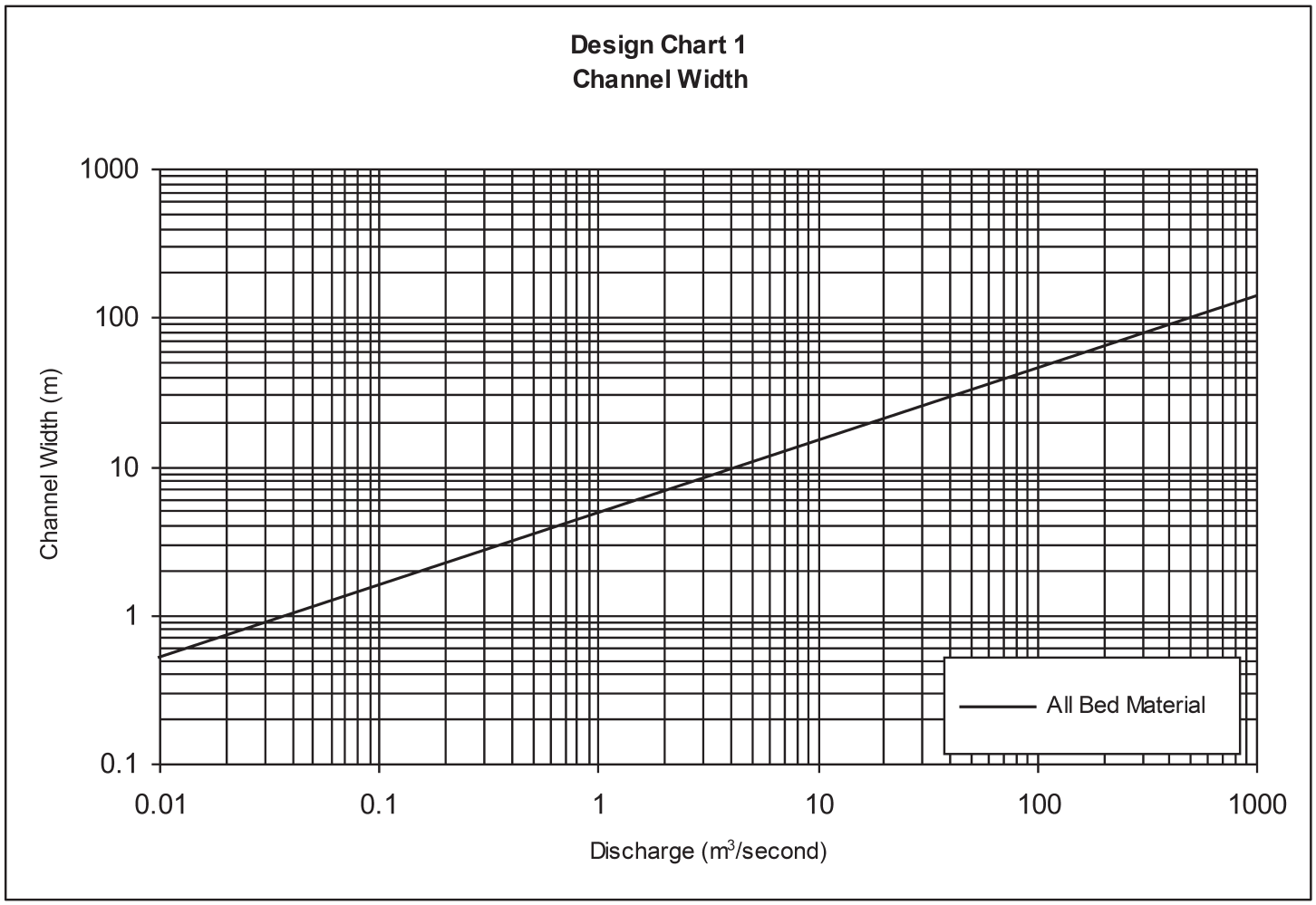
Number of drop structures required:

$$\frac{\text{Total Height of Drop Structures (metres)}}{\text{Proposed Individual Drop Structure Height (metres)}} = \text{_____}$$

Appendix E3

Regime Channel Worksheet: Design Chart 1

Applicant Name:
Stream Name:

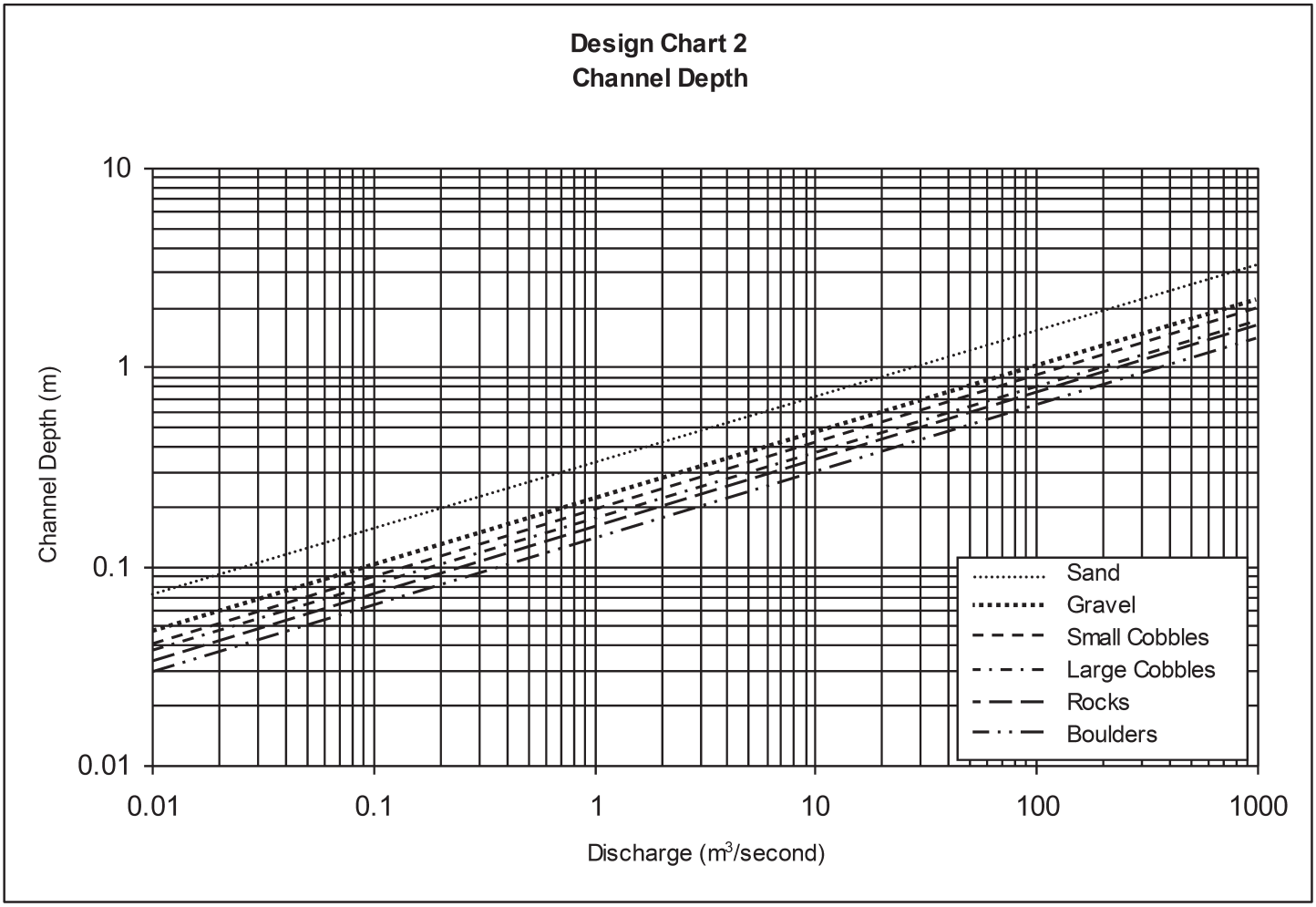


ADDITIONAL INFORMATION (OPTIONAL):

Appendix E3

Regime Channel Worksheet: Design Chart 2

Applicant Name:
Stream Name:

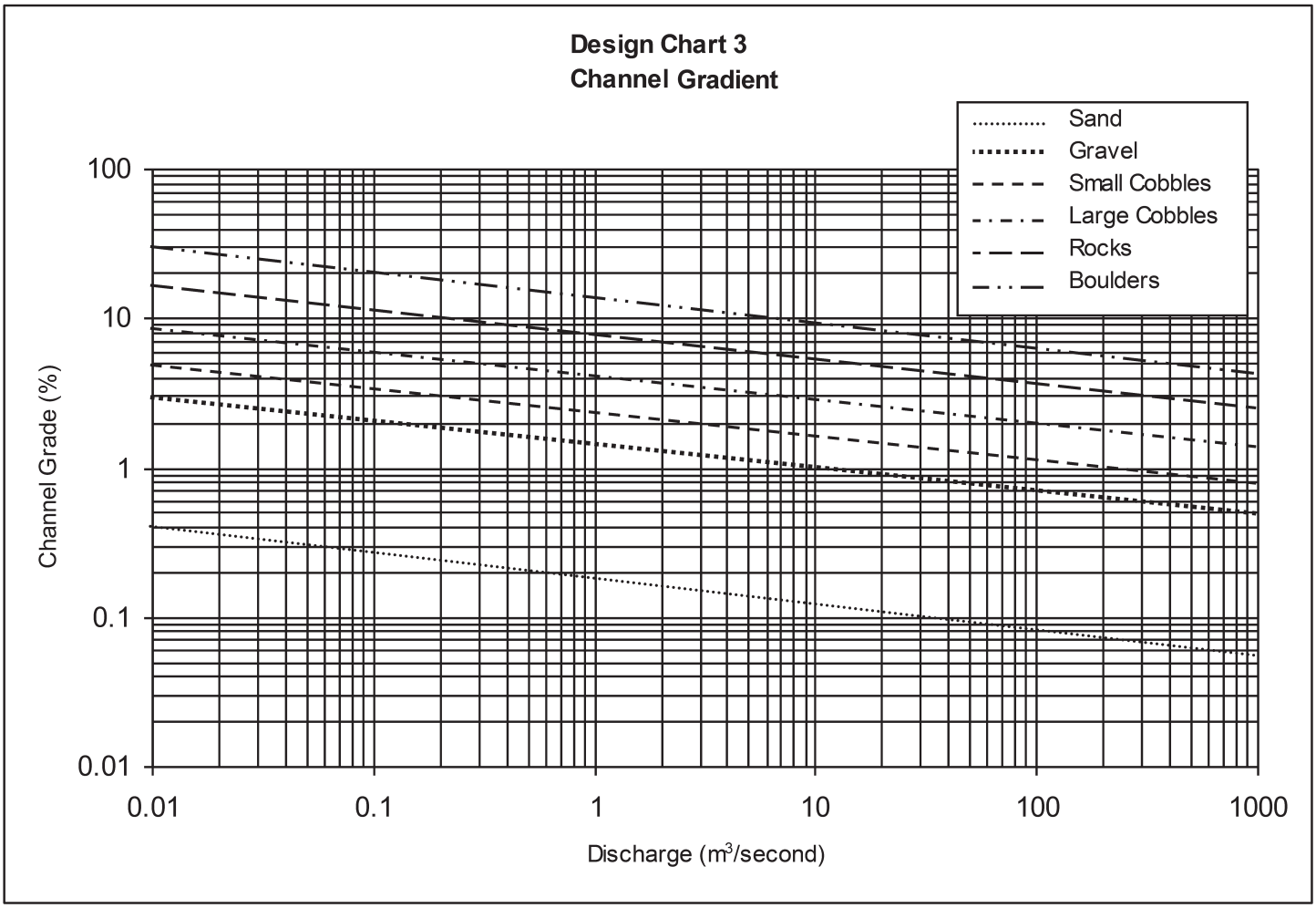


ADDITIONAL INFORMATION (OPTIONAL):

Appendix E3

Regime Channel Worksheet: Design Chart 3

Applicant Name:
Stream Name:

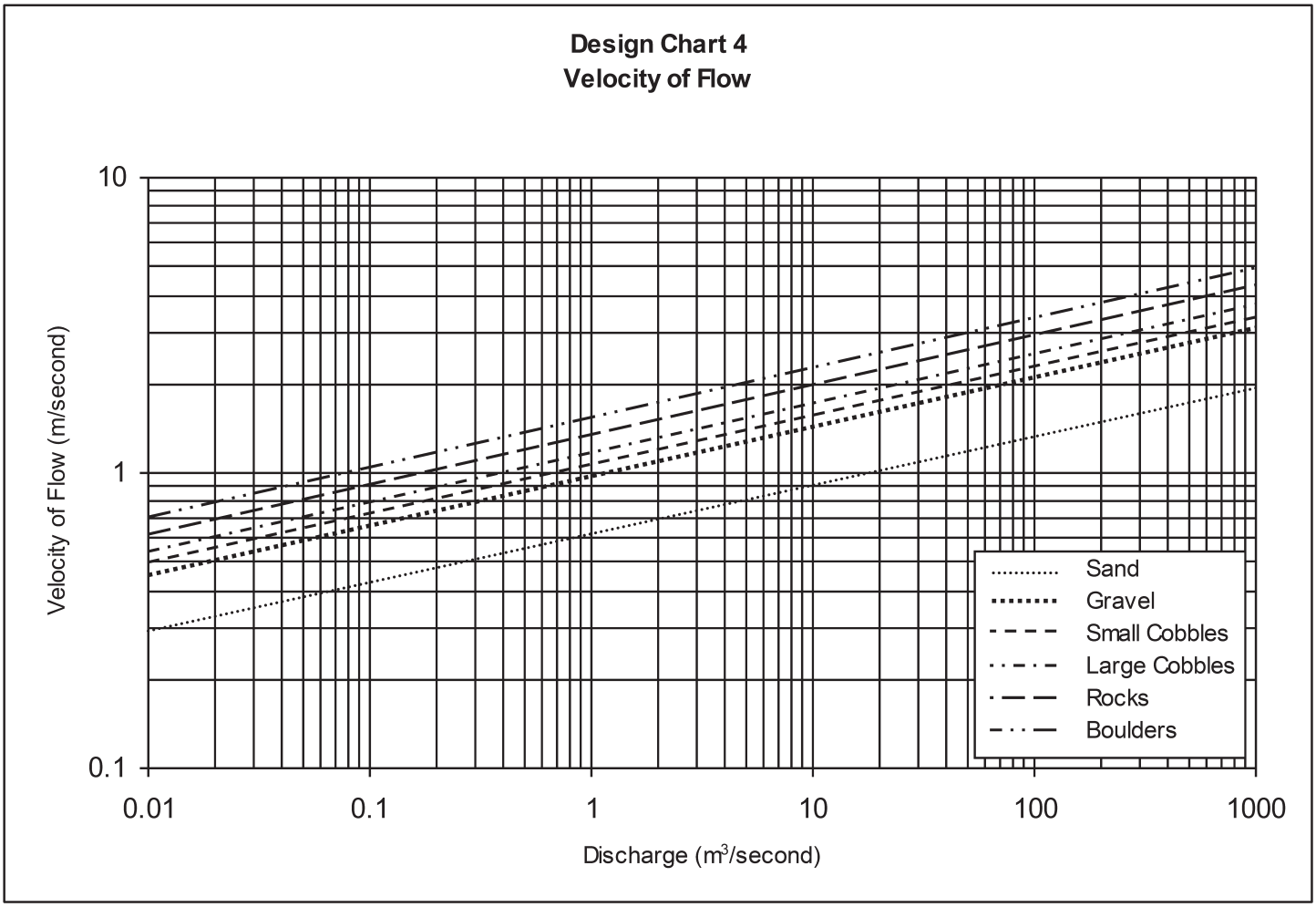


ADDITIONAL INFORMATION (OPTIONAL):

Appendix E3

Regime Channel Worksheet: Design Chart 4

Applicant Name:
Stream Name:



ADDITIONAL INFORMATION (OPTIONAL):

Appendix F

Fish Habitat Feature Design Worksheet

Temporary or Permanent Restoration Channel

Applicant Name:	
Stream Name:	

Use the template below to draw a schematic of the proposed fish habitat features that will be constructed.

Natural Channel Start

Site Length (m):

North Arrow

Flow Direction

Natural Channel End

USE THE FOLLOWING SYMBOLS TO INDICATE HABITAT FEATURE LOCATIONS.

Stream Bank ———	**Rock Island / Boulder Group**	**Anchored or buried tree**	**Transplant**
Topsoil - _ _ _ -	**Ford**	**Willow staking** VV	**Drop Structure** XXXX

Fish Habitat Feature Description	**Spacing Requirement** (multiplied by channel width)	**Spacing Proposed (m)** (Channel Width multiplied by Spacing Requirement)

Appendix G1

Severity of Effects Assessment for In-stream Works Worksheet

Applicant Name:	
Stream Name:	

DESIGN COMPONENT	RANGE	RANGE SCORE	PROJECT SCORE
Channel Width Constriction	> 30% channel constriction **(Not applicable to Moderate-High habitat suitability.)**	3	
	5% to 30% of Channel	2	
	< 5%	1	
Above and Below the Structure – Difference in Water Surface Level	> 2.0 metres **(Not applicable to Moderate-High habitat suitability.)**	3	
	0.3 to 2.0 metres	2	
	< 0.3 metres	1	
Material Type	Fine (silt-sand) **(Not applicable to Moderate-High, Moderate-Moderate, or Moderate-Low habitat suitability.)**	3	
	Compactable (fine gravel and sand)	2	
	Metal/ riprap/ structure	1	
Construction Method	Non-compaction/ dumped	3	
	Moderately compacted/ placement	2	
	Compacted shallow lift (or rip-rap, gabions, or boulders)	1	
Amount of In-water Work	Completely in water	3	
	Partially in water (more than ½)	2	
	In dry	1	
Structure Height	Above bank full	3	
	Between bank full and channel bed	2	
	Below channel bed	1	
		Total Project Score for In-Stream Works	0

Maximum permitted score for in-stream works in Moderate-High habitat suitability:	12
Maximum permitted score for in-stream works in Moderate-Moderate habitat suitability:	12
Maximum permitted score for in-stream works in Moderate-Low habitat suitability:	14
Maximum permitted score for in-stream works in Low habitat suitability:	16
Maximum permitted score for in-stream works in Water Quality zones:	17

Note: Some ranges are not permissible in specific habitat suitability classes.

Note: In-stream settling ponds must be constructed from compactable material that is placed and compacted in shallow lifts.

Appendix G2

In-stream Works Worksheet

Applicant Name:	
Stream Name:	

DESCRIPTION OF THE PROPOSED IN-STREAM WORKS			
Your proposal includes:	☐ Excavation of Dugout	☐ Stream Channel As Conduit	☐ Wing Dam
	☐ In-stream Dam	☐ In-stream Settling	☐ In-stream Reservoir
Additional information:			
Calculated total score from Severity of Effects Assessment table: _____			
Maximum permitted score for in-stream works: _____			

Use the template below to draw a schematic of the proposed in-stream works.

In-Stream Work Start

Site Length (m):

North Arrow

Flow Direction

In-stream Work End

USE THE FOLLOWING SYMBOLS TO INDICATE FEATURE LOCATIONS.		
Stream Bank ———	**Dugout**	**Point of Discharge** X
In-stream Settling Area	**In-stream Dam**	**Wing Dam**

Appendix H

Worksheet for In-stream Settling Ponds and Use of Stream Channels as Conduit

NOTE: *Use this worksheet to record the results from Workbook Section G: In-stream Works.*

Applicant Name:
Stream Name: