



Fish Habitat Management System for Yukon Placer Mining

Economic Health Report (2010)

Prepared by

The Yukon Placer Secretariat

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ECONOMIC HEALTH MONITORING REPORT (2010)

The Fish Habitat Management System for Yukon Placer Mining replaced the Yukon Placer Authorization (YPA) in 15 Yukon watersheds on April 11, 2008 and 1 Yukon watershed on November 1, 2010. Founded on principles of adaptive management and incorporating a risk-based approach to decision-making, the system is intended to balance the objectives of a sustainable Yukon placer mining industry with the conservation and protection of fish and fish habitat supporting fisheries.

Adaptive management recognizes that the effectiveness of any management system is hampered by a degree of uncertainty and lack of knowledge. It seeks to improve the system by monitoring the effects of management actions, in order to learn from the results. The Adaptive Management Framework for Yukon placer mining is complemented by water quality objectives monitoring, aquatic health monitoring, economic health monitoring programs and traditional knowledge. The results should provide new information and a rational basis for making any adjustments required to achieve the two management objectives.

The economic health monitoring program is governed by the Economic Health Monitoring Protocol, and has been designed to measure and signal whether a viable placer industry is being maintained under the fish habitat management system. The Protocol consists of two steps. In Step 1, eight indicators are evaluated to determine whether the industry's economic health is increasing or decreasing. If a downward trend is detected then Step 2 is invoked by administering a Panel Survey to a representative cross-section of placer miners. The Panel Survey is designed to determine whether an adverse trend can be attributed to the fish habitat management system, or is related to other factors (i.e. gold prices, cash costs, natural conditions etc.).

Following consultation it was agreed that as a precautionary measure the Panel Survey will be administered automatically for the first five years following implementation of the fish habitat management system. Currently we are in the 3rd year of the Panel Survey.

Economic Health Monitoring – Step 1

The following table lists the viability indicators potentially correlated with the management system. The indicators are present in order of weighting. The indicators which hold the greatest potential to monitor placer industry health appear at the top of the list. The table also includes information on the potential adverse changes.

Advancement to the Panel Survey will normally proceed if there is an adverse change of more than 15% (in comparison to the previous period) in two or more of the top four indicators or when an adverse change of more than 10% is recorded in four or more of any eight indicators.

	A.1 Industry-wide indicators (secondary data)	2008 Potential adverse change in viability if the arrow goes	2009 Potential adverse change in viability if the arrow goes	2010 Potential adverse change in viability if the arrow goes
<i>Top 4</i>	record and count the number of placer mines in production	↓ ↑ +12%	↓ ↓ -33%	↓ ↑ +9.4%
	gold royalty collected	↓ ↓ -18%	↓ ↓ -25%	↓ ↓ -0.4%
	number of person days of employment (workers' compensation) Increase of .07% for 2009, 2010 not available until spring of 2011	↓ ↑ +5%	↓ ↑ +5%	↓ ↑ +0.7%
	level of non-compliance (number of "inspector's directions")	↑ ↓ nil	↑ ↓ -42% 4 directions	↑ ↑ +200% 12 directions
<i>Bottom 4</i>	total claims staked in the reporting period	↓ ↑ +27% 709 claims	↓ ↑ +8% 770 claims	↓ ↓ -25% 580 claims
	total fuel consumption (fuel tax exempt permit data/fuel tank manifests – Using the 2009 fuel information – 2010 not available until early spring of 2011)	↓ ↓ -19%	↓ ↓ -19%	↓ ↑ +8.5%
	number of claims in good standing per type of stream classification (* see table below)	↓ ↑ +.1%	↓ ↑ +.02%	↓ ↓ -0.4%
	number of active water licenses (>40,000 cubic yards moved per year)	↓ ↑ +8	↓ ↑ +18.5%	↓ ↑ +175%

There is a downward change to three of the indicators listed above: gold royalty collected, claims staked and number of claims in good standing. This result would normally trigger the Panel survey to be conducted when an adverse change of more than 10% is recorded in four or more of any eight indicators, but as mentioned the Panel Survey will be conducted automatically for the first five years following implementation of the fish habitat management system.

Number of claims in good standing per type of stream classification

Stream Classification	2008	2009	2010	↓ ↑ %
Areas of Special Consideration	525	476	460	↑ 3.4%
High Suitability	59	99	58	↓ 41.0%
Medium Tributary to Small Lake Trout Lake		1	0	↓ 100%
Medium Tributary to Large Lake Trout Lake		186	216	↑ 16.0%
Large Tributary to Large Lake Trout Lakes		157	161	↑ 2.5%
Low Suitability (Freshwater Fisheries)	13737	13534	13774	↑ 7.1%
Large tributary to Small Trout Lake		84	87	↑ 3.6%
Small Tributary to Large Lake Trout Lake		67	107	↑ 6.0%
Small Tributary to Small Lake Trout Lake		0	0	N/A
Moderate-Low Suitability	1427	1457	1419	↑ 2.6%
Moderate-High Suitability	108	97	164	↑ 69.0%
Moderate-Moderate Suitability	721	735	731	↑ 0.5%
Not Classified	398	420	321	↑ 23.6%

Lakes	139	132	104	↓ 21.2%
Water Quality	283	293	320	↑ 9.2%
Total	17945	17990	17922	↑ 0.4%

Economic Health Monitoring – Step 2

The first wave of the panel survey was on April 3, 2009 and the second wave of the panel survey was undertaken on November 25, 2009 in Whitehorse. The third wave of the panel survey was undertaken on November 26, 2010 in Whitehorse. Attendees for the 3 wave of the panel survey included seven placer miners, one consultant representing the placer industry and one consultant with the Yukon Placer Secretariat. Completed panel surveys were received from all seven placer miners in attendance. Two additional surveys were later received by fax and/or mail. Thus, the population size (n) for the third panel survey was 9.

This report discusses the results of the November 26, 2010 panel survey session. Please note that it was not mandatory for the participants to complete all questions within the survey, therefore some of the responses do not add to the population size for the panel survey.

General observations

- overall, the November 26 session was very productive, panel survey participants candidly shared of their knowledge and experiences, their verbal and written input provided valuable insight into miners operating circumstances;
- the participants who applied for permits in 2010 under the new placer system indicated that more effort was required than was their experience in the past;
- the fact that gold prices were up, enabled miners to mine leaner ground, that wouldn't be mined with lower gold prices;
- many operations are transitioning to 100% recirculation with additional requirements for mechanical/classical treatment systems – due to the increased regulatory environment;
- additional sampling and action level approach caused additional protection work to ensure compliance with the standards.

For Consideration in Wave 4:

- consider how to address opportunity costs that effects miners being discouraged to explore and begin operations in new areas/watersheds;
- how to account for changes in operating costs (i.e. new or changing permitting costs, building water use structures, wear and tear costs)

Wave 3 Synopsis:

A synopsis of the Wave 3 panel survey findings are presented below. Given the small number of operators who have so far been affected by changes to the new regulatory regime for placer mining, the results are not representative but are presented here for illustrative purposes.

1. How did your mining season go?

Most of the operators stated that their season went well. One operator commented that their season was extremely problematic due to a request for security to the Water Board.

2. Size of Operation – operating costs

Panel survey participants were asked to indicate the size of their total operation costs (fuel, repairs, maintenance, labour, etc.) in 2010. Counts of participants' responses are outlined in the table below:

Total operating costs in 2010	Number of Respondents (9)
less than \$50,000	--
between \$50,000 and \$250,000	3
between \$250,000 and \$500,000	3
between \$500,000 and \$1 million	2
between \$1 million and \$2.5 million	1
between \$2.5 million and \$5 million	--
more than \$5 million	--

3. Permitting Experience

Approximately 56% of the panel survey participants indicated they had permitted a placer operation in 2010.

All the participants who permitted a placer operation indicated that more effort was required than was their experience in the past.

More time required on ground measurements, approximately an extra 6 days was required to complete the paperwork, including consulting with DFO.

One participant indicated that after starting the application it was too time consuming and complex, so they hired a consultant to assist.

4. Water Quality Sampling

Approximately 44% of the panel survey participants indicated they found it necessary to take additional water quality samples in order to comply with the new placer system.

One participant indicated that 100% more water quality samples were required due to problems with the licence and directions from Client services, not attributed to the new placer system.

5. Settling Ponds

Approximately 95% of the panel survey participants indicated that it took more effort and cost to maintain and improve settling ponds. This was due in part to the use of more machine hours.

6. Diversion Channels

One participant indicated that greater effort was required to construct new or improve diversion channels to comply with the new system.

Two participants indicated that no diversion were required.

One participant indicated that they chose not to mine an area because it would have required a significant cost related to diversion channels, so they moved to an area that did not require diversions.

One participant indicated that they were sluicing in an area that had final diversions in place.

7. Recycling

Two participants indicated that they moved to 100% recycling and one of these participants reported additional costs for pump refits.

One participant indicated that they did not want to move to recycling because of the extra costs.

8. Other Operating Activities to ensure Conformity

Three participants reported having to undertake additional operating activities in order to conform with more restrictive sediment discharge standards.

The first of those participants reported undertaking additional activities in the form of increased dam construction and water handling, at an estimated increased cost of 25%.

The second participant reported that construction of large settling ponds and a secondary pond for dewatering effluent was considerable and the impact on costs was estimated as an increase of 2-3% of overall costs. Once these were in place they worked excellent all season.

The third participant noted they needed to construct more settling facilities than in the past and the impact on costs being estimated at an increase of 1-2% of overall costs.

9. Opportunity Costs

When asked to describe opportunity costs and estimate the number of additional hours, participants said:

- Ponds now require more planning and time to construct and estimated that approximately 80-90 additional man hours were required.
- Doing things under the new management system definitely takes more time but coming up with a hours figure would be tough (10 – 200 additional hours)
- Excavator needed to renovate ponds, making it unavailable for sluicing, stripping or mining. Major design work for water handling and sediment retention systems is also required.
- More time (approximately 40 -50 additional hours) spent on sampling, checking ponds, drains and walls to ensure everything is functioning as planned, especially during and after flooding.
- Choosing to mine in a different area is an opportunity cost in two ways: 1) the area not mined is an opportunity loss – hard to measure. 2) the costs associated with moving to a different area.

10. Number of Placer Mines in operation

Participants were asked, based on their own experiences in the last year, what they thought the top five factors were that could have contributed to a change in the total number of placer mines in operation in the Yukon. Their responses are outlined below:

Most important factor	No. of responses (9 total)
quantity and quality of the gold resource	3
permitting costs	2
price of gold (US or CDN)	2
availability of economically viable claims/ground	1
changes in costs for mine site access	1

Second-Most important factor	No. of responses (9 total)
price of gold (US or CDN)	3
fuel cost	1
equipment cost	1
changes in costs for mine site access	1
quantity and quality of the gold resource	1
ability to mine in a systematic manner	1
experience level/education of miners	1

Third-most important factor	No. of responses (9 total)
equipment costs	2
labour costs/quality	2
quantity and quality of the gold resource	2
availability of economically viable claims/ground	1
permitting delays (rather than costs)	1
price of gold (US or CDN)	1

Fourth-most important factor	No. of responses (8 total)
fuel costs	2
equipment costs	1
transportation costs	1
new mine site management costs	1
availability of economically viable claims/ground	1
labour quality rather than costs	1
acquiring equipment/lack of available equipment	1

Fifth-most important factor	No. of responses (8 total)
permitting costs	2
equipment costs	1
fuel costs	1
quantity and quality of the gold resource	1
new mine site management costs	1
availability of economically viable claims/ground	1
permitting delays	1

11. Gold Production

Participants were asked, based on their own experiences in the last year, what they think were the top five factors that contributed to the change in gold production at their placer operation.

For participants who reported an increase in production:

Most important factor	No. of responses (6)
quantity and quality of the gold resource	4
gold price	1
natural conditions (no permafrost)	1

Second-most important factor	No. of responses (5)
ability to mine in a systematic manner	3
moved more ground and double-shifted	1
natural conditions (early spring)	1

Third-most important factor	No. of responses (4)
equipment costs	1
extra effort	1
gold price	1
quantity and quality of the gold resource	1

Fourth-most important factor	No. of responses (3)
equipment upgrades	1
gold price	1
labour costs	1

Fifth-most important factor	No. of responses (3)
equipment upgrades	1
fuel costs	1
labour quality	1

Participants that reported their gold production stayed the same:

Most important factor	No. of responses (2)
gold price	1
quantity and quality of the gold resource	1

Second-most important factor	No. of responses (1)
quantity and quality of the gold resource	1

Third-most important factor	No. of responses (1)
labour quality	1

Fourth-most important factor	No. of responses (1)
permitting hassles and delays	1

Participants that reported their gold production decreased:

Most important factor	No. of responses (1)
quantity and quality of the gold resource	1

Second-most important factor	No. of responses (1)
natural conditions	1

Third-most important factor	No. of responses (1)
changes in costs for mine site access	1

Fourth-most important factor	No. of responses (1)
equipment costs	1

Fifth-most important factor	No. of responses (1)
fuel costs	1

12. Labour Requirements

Three of the participants reported an increase in labour requirements in 2010. Five participants reported that their labour requirements were about the same and the remaining participant reported a decrease in labour requirements.

13. Claim Staking

There was a reported decrease of 25% in placer claim staking between 2009 and 2010. The primary reason given by the participants for this decrease in staking included:

- All historical mining creeks have been staked, creeks with mining potential are becoming rare; access to the fringe areas with potential could be a problem, with physical difficulty in access and land use permitting requirements.
- Not knowing what rules are coming down the pipe.
- Lack of speculator interest – focus is on hardrock; age of current operators.
- Speculation by independents to control ground that can be leased to hard rock outfits because of the recent boom; placer miners are still stymied by permitting problems re; period of time to road build to stake in new areas; season small/short and time is being spent on maintenance pre-slucice season and post-slucice season, not exploration.
- Gold prices on a positive note, but regulations and permitting have slowed the staking of claims as well.
- Diminished reserve; speculators and promoters have all moved over to hardrock industry because that's where the dollars are; "new regime" making opening up new creeks more prohibitive.

14. Fuel Consumption

One participant reported a decrease in fuel consumption in 2010. Two respondents indicated that their fuel requirements stayed about the same while the remainder reported an increase in fuel consumption.

15. Expansion into New Areas

When asked if the new Fish Habitat Management System for Yukon Placer Mining discouraged them from expanding into new areas, six participants responded 'no' and three said 'yes'.

16. Quality of the Gold Resource

A key factor that influences the health of the placer industry, but which is very difficult to measure, is the extent to which all of the "good placer ground" has already been mined out.

Participants were asked to consider their own placer operation over the past year and to identify the extent to which the quality of placer gold resource on the claims they mined affect the health of their operation. Responses are outlined in the table on the next page.

Extent to which the quality of the placer gold resource on claims mined affected health of the placer operation 2010	
Degree of extent	Number of responses (9)
not at all	1
to a small extent	2
to a moderate extent	1
to a great extent	5

Additional comments from the participants are:

- Expected upgrade of reclamation requirements subsequent to mining will create serious additional costs.
- Our site is still under a site-specific authorization from DFO, so significant restrictions and requirements associated with this are additional to those associated with the new placer system.
- The price of gold right now could give industry a false sense of security. We all know that history repeats itself and the high times we are experiencing now may not last.
- In terms of lost opportunity, our biggest concern is with another creek that we have staked leases on but we are not sure we want to convert to claims and apply for a water licence because of the new classification. Without changes to the classification of this stream, we may lose this opportunity.