



Adaptive Management Report

Fish Habitat Management System for Yukon Placer Mining

Appendix C – Economic Health Monitoring Program 2018 Report





Economic Health Monitoring Program 2018 Report

Adaptive Management Framework for the Fish Habitat
Management System for Yukon Placer Mining

May 16 2019



Document Contributors

Economic Health
Monitoring & Reporting

- Nina Modeland, Government of Yukon, EMR, CMI

Economic Health Panel
Survey

- Vector Research



Acronyms

EHM	Economic Health Monitoring
FHMS	Fish Habitat Management System for Yukon Placer Mining



Table of Contents

Document Contributors.....	i
Acronyms.....	ii
Table of Contents.....	iii
Introduction.....	1
Methods.....	1
Results.....	3
Conclusion.....	4
Appendix C1: Panel Survey Results	

Introduction

The Fish Habitat Management System for Yukon Placer Mining (FHMS) 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. Within the FHMS there are three effects-monitoring programs and associated protocols including Economic Health, Water Quality Objectives, and Aquatic Health. All three programs help to verify the effectiveness of the FHMS in meeting its objectives.

The Economic Health Monitoring (EHM) Protocol was designed to measure and signal whether a viable placer industry is being maintained under the fish habitat management system. The EHM Protocol outlines a series of indicators which are used to measure whether or not the objective of a viable placer industry is being met. Viability refers to the placer mining industry's ability to exist and/or grow in the new regulatory environment. This information may be used, in combination with the results of the other effects-monitoring programs, to make changes to the FHMS through adaptive management. The annual EHM program is delivered by Government of Yukon Department of Energy, Mines and Resources. This report provides background information into the EHM program and presents the results of monitoring for 2018.

Methods

To monitor for and evaluate the occurrence of any adverse changes in placer mining industry viability, the two part EHM Protocol was followed for the 2018 assessment period. Part 1 involved the monitoring of placer industry viability and was administered by the Government of Yukon Department of Energy Mines and Resources. Part 2 involved the use of a panel survey, administered by a contracted supplier, which would be used to correlate adverse changes in industry viability were they detected. As per the EHM Protocol, advancement to Part 2 of the EHM Protocol should only be triggered when the adverse changes are detected in the Type A.1. However, both Part 1 and Part 2 of the EHM Protocol were to be carried out for the first five years following

implementation of the EHM Protocol in 2008 and this practice has continued to date. A detailed description of the methodology is available in the EHM Protocol (YPS 2008).

EHM Protocol Part 1: Monitoring of placer industry viability

For Part 1, two types of indicators were used to assess the viability of Yukon's placer mining industry. These include Type A Indicators, which are viability indicators potentially correlated with the FHMS; and Type B indicators which are viability indicators not attributable to the FHMS. Type A indicators are broken into A.1 and A.2, where A.1 indicators are based on secondary data sources. Type A.2 and Type B indicators are based on primary data collected through the panel survey.

During Part 1 of the EHM Protocol, Type A.1 viability indicator data was collected for 2018 compared with the data from the previous assessment period (2017) to determine if there were any adverse changes that would trigger advancement to Part 2 of the EHM Protocol. Adverse changes that would constitute advancement to Part 2 include: more than 15% in two or more of the indicators or of more than 10% in four or more of the of the indicators. The data and results of this analysis are presented in the Results section of this report.

EHM Protocol Part 2: Panel Survey

As per the EHM Protocol, advancement to Part 2 of the EHM Protocol is triggered when the adverse changes are detected in the Type A.1. However, it was decided that both Part 1 and Part 2 of the EHM Protocol would be carried out for the first five years following implementation of the EHM Protocol in 2008. This practice has continued to date, and the panel survey for 2018 was administered by the contracted supplier, Vector Research.

Part 2 of the EHM Protocol was designed to help ““allocate” changes in the values of Type A.1 viability indicators between a) changes that are the result of factors independent of the habitat management system and b) changes that are the result the new system.” (EHM Protocol, p.8). A panel survey is utilized to elicit the views of placer mine operators, representative of the industry in the Yukon, regarding the impacts of

the FHMS on their businesses. The panel survey questions have been relatively constant since implementation.

Results

EHM Protocol Part 1: Monitoring of placer industry viability

The data and results of the analysis for the Type A.1 viability indicators are presented in Table 1. None of the A.1 indicators, which data was available for, adversely changed between 2017 and 2018. Data for three of these indicators has become unavailable in recent years. These include the number of person days of employment, the total fuel consumption, and the number of active water licenses for placer mines washing (sluicing) more than 40,000 cubic yards of material per year. The reasons for these gaps in the information were investigated by Vector Research. With regard to the number of person days of employment series, Yukon Workers' Compensation Health and Safety Board has not updated the data series for the most recent years and so an alternative data series is being considered for this indicator. With regard to estimates of total fuel consumption, there has been a change in the Government of Yukon department responsible for this information as well as the policy for calculating and sharing this information. As such, estimates of total fuel consumption is not available at this time. The viability of the number of active water licenses for placer mines washing (sluicing) more than 40,000 cubic yards of material per year as an indicator for the EHM Protocol is under review.

EHM Protocol Part 2: Panel Survey

The results of Part 1 did not trigger advancement to Part 2 of the EHM Protocol. However, the panel survey was conducted out of routine. The results of the panel survey are provided in Appendix C1.



Table 1: Data and results for the Type A.1 Viability Indicator analysis. The decision rule, yearly data, and percent (%) change for 2017-2018 is provided for each indicator.

	Type A.1 Viability Indicator	Potential adverse change if the indicator goes...	2017	2018	% change 2017 to 2018
Top Four Indicators	Active licenses	↓	156	160	3% (no adverse change)
	Gold royalty collected	↓	\$25,543	\$ 27,207	7% (no adverse change)
	Number of person days of employment	↓	Not available		
	Level of non-compliance (# of "inspectors directions")	↑	7	6	- 14% (no adverse change)
Bottom Four Indicators	Total placer claims staked in reporting period - Sept to Oct	↓	2,513	2722	8% (no adverse change)
	Total fuel consumption	↓	Not available		
	Number of claims in good standing per type of stream classification	↓	23,625	25,507	8% (no adverse change)
	Number of water licenses (>40,000 cubic yards washed per year)	↓	Indicator under review		

Conclusion

The FHMS did not adversely affected the viability of Yukon's placer mining industry in 2018. This was demonstrated through the monitoring and analysis of the placer viability indicators following Part 1 of the EHM Protocol. For this reason, no further action related to the FHMS is required at this time.

Fish Habitat Management System for Yukon Placer Mining
Economic Health Monitoring Program 2018 Report.

Appendix C1: Panel Survey Results



**Fish Habitat Management System
for Yukon Placer Mining**

**Economic Health Monitoring Protocol
Wave 11 Panel Survey Findings**

Submitted to:
Compliance Monitoring and Inspections
Yukon Energy, Mines and Resources
300 Main Street
Whitehorse, Yukon
Y1A 2B5

Prepared by:
Paul Kishchuk, MA

203 - 301 Hawkins Street
Whitehorse, Yukon Y1A 1X5
paul@vectorresearch.ca
t: 867.668.3164

Draft 25 February 2019
Final 18 March 2019

**Economic Health Monitoring Protocol
Wave 11 Panel Survey Findings**

Table of Contents

Introduction	1
Wave 11 Panel Survey Findings	1
<i>Size of Operation</i>	2
<i>Permitting Experiences</i>	2
<i>Water Quality Sampling</i>	3
<i>Settling Ponds</i>	3
<i>Diversion Channels</i>	4
<i>Zero Discharge Approach (100% Recirculation)</i>	4
<i>Other Operating Activities to Ensure Conformity</i>	5
<i>Opportunity Costs</i>	5
<i>Number of Placer Mines</i>	6
<i>Gold Production</i>	7
<i>Labour Requirements</i>	8
<i>Claim Staking</i>	9
<i>Fuel Consumption</i>	10
<i>Expansion into New Areas</i>	11
<i>Quality of the Gold Resource</i>	12
<i>Additional Comments</i>	12
<i>Conclusion</i>	13

Introduction

A new system for managing placer mining activity under the *Fisheries Act* was implemented by the Yukon Placer Secretariat in 2008. As part of the system, the Economic Health Monitoring Protocol was developed to measure and signal whether a viable placer industry is being maintained under the Fish Habitat Management System for Yukon Placer Mining. Implementation of the Economic Health Monitoring Protocol requires the use of a *panel survey* designed to determine whether changes in placer industry viability are attributable to the integrated regulatory regime. The panel survey is based on the premise that “fish can’t talk but miners can.”

The eleventh wave of the panel survey was undertaken over the months of November 2018 to January 2019 with the assistance of the Klondike Placer Miners Association. Panel surveys were completed by representatives of 13 placer mining operations. Thus, the population size (n) for the Wave 11 panel survey is 13. This report presents the findings of the Wave 11 panel survey.

Participants in the inaugural wave of the panel survey on April 3, 2009 provided many insights regarding how to improve the Wave 2 survey. In response to those insights, the panel survey instrument was extensively revised to improve its relevance and clarity. As a result, some of the findings of the Wave 2 through Wave 11 surveys are not directly comparable to the findings of the inaugural Wave 1 survey. Thanks are again due to panel survey participants who so articulately shared their experiences and knowledge.

Wave 11 Panel Survey Findings

To get them thinking about their placer mining season, participants were asked to describe in a line or two “how placer mining went for you this past season”. Participants’ verbatim responses included:

- *It went well. Did have an issue with an inspector who though it was his job to look after the roads. I got support from the Highways guy. And then was able to correct things (I think).*
- *Past season was average.*
- *The weather was a big factor with less heat, made for less thawing of gravel.*
- *Poor year – diesel prices increased 25%, gold price dropped, and we got less gold because we cut back in people by 33%.*
- *Season was OK, we had very good weather in the latter half of the season with what seems to be a new normal, a two week slower start in the spring.*
- *We had a good season. We moved a lot of earth. We burned a lot of fuel, hired several employees and upgraded some equipment.*
- *So, so – not as good as I hoped but I turned a profit.*
- *We had a good season this year. We were able to sluice most of what we set out to get done.*
- *Our gold production was down significantly because we decided to work at a nearby hard rock mine with our equipment.*
- *We mined only on our [_____] claims in 2018. Used 2 wash plants, larger crew, more machines. It was a good season.*

Economic Health Monitoring Protocol: Wave 11 Panel Survey Findings

- *Frantic and stressful – digging to the bottom of 120 feet of ground to get to the bedrock takes a lot of timing and organization. When “new” computerized equipment screws up (only because of the computerization) it can completely wreck the best plans in the world. Having to mine to the last possible “above freezing days” of the year stresses a person beyond belief.*
- *The mining season this year for us went about average. Ran into a few issues that slowed production down.*

Size of Operation

Panel survey participants were asked to indicate the size of their total operating costs [fuel, repairs, maintenance, labour, etc.] in 2018. Counts of participants’ responses are outlined in the table below.

Total operating costs in 2018	Number of Respondents (13)
less than \$50,000	0
between \$50,000 and \$250,000	2
between \$250,000 and \$500,000	1
between \$500,000 and \$1 million	4
between \$1 million and \$2.5 million	2
between \$2.5 million and \$5 million	2
more than \$5 million	2

Permitting Experiences

Ten of the 13 panel survey participants indicated they had permitted a placer operation in 2018. All participants who permitted a placer operation under the new placer system in 2018 indicated that more effort was required than was their experience in the past. The additional effort was described as:

- *I could not do it myself. This was the second time for me under the new regime. Very little from the first time was useable in the second application.*
- *Had to hire a consultant.*
- *Many more forms and questions to complete, with multiple regulatory agencies. So complex, had to hire a consultant to assist us.*
- *New forms to complete, additional detailed drawings. Wetland discussions [added] one year delay to get permit.*
- *The workbook sections are repetitive and some are more time consuming than the previous system and once the application is submitted to YESAA the rounds of questions to get it accepted can add significantly to the time required on the process.*
- *Time! The process seems to be getting longer and longer.*
- *I have been unable to permit an operation in the _____ – it’s a renewal but the Water Board is holding it up and I don’t think we will be able to mine there.*
- *The application system is more onerous and takes more time.*
- *We always did our own water licenses, now we hire a consultant to do them because we are not sure how to answer some of the questions. It has become much more difficult.*
- *Addressing questions from people that have no background in mining (i.e. YESAB), takes a lot of time and patience.*

The additional costs were described as:

- *Had to hire more people. \$3,000 in additional costs.*
- *Consultant cost \$6,500. [Trips] to town and time taken to meet with consultant. Estimated \$10,000 in additional costs.*
- *\$7,500 additional to pay consultant to assist.*
- *Lost a year of revenue and still had equipment costs, lost employees. Time discussing and writing additional responses, consultant costs. Estimated \$200,000 in time, lost revenue, lost people [workers].*
- *Yes, and the costs are still on-going, so it's impossible to say how much more.*
- *Very minimal costs, as we do all applications ourselves. Estimated \$1,000 in additional wages.*
- *Consultant fees were approximately \$6,000 each, with 4 applications x \$6,000 each, it equals approximately \$24,000.*
- *Despite what some people think, my time in the winter to push an application to completion has a cost. Using government rates of pay for similar work, each application probably cost \$15,000 to \$20,000 to follow through to a signed permit.*

Water Quality Sampling

Three out of 12 panel survey participants found it necessary to take additional water quality samples in order to comply with the new placer system. The additional number of samples required was reported as:

- Approximately 50 additional water samples.
- Additional water samples were taken daily.
- Four additional water samples.

Settling Ponds

Seven out of 13 panel survey respondents reported that greater effort was required to maintain or improve settling ponds. Level of effort and estimated average cost per machine hour were reported as:

- 200 machine hours (\$250 per hour).
- 50 machine hours (\$250 per hour).
- 10 machine hours (\$1,500 per hour).
- 10% more machine hours.
- 24 machine hours (\$175 per hour).
- 200 machine hours (\$200 per hour).
- 300 machine hours (\$200 per hour).

Diversion Channels

Three out of 13 panel survey respondents indicated that greater effort was required to construct new or improved diversion channels in order to be compliant with the new system. Associated levels of effort included:

- 30 machine hours.
- 100 machine hours (approximately).
- 10% more machine hours.

Three respondents indicated making a more rapid transition from temporary diversion channels to final restoration channels in 2018. Factors considered when deciding to make a more rapid transition to final restoration channels were described as:

- *There is no room in my valley, so the creek takes the whole thing.*
- *We are in a new area with a new inexperienced inspector so we are very uncertain about what we need to do.*
- *We have always tried to do permanent diversion channels as it is better for the environment and stability of the channel.*

Zero Discharge Approach (100% Recirculation)

Five respondents indicated they moved to a zero discharge approach (100% recirculation system) in order to conform with more restrictive discharge standards. Additional costs were noted by respondents as follows:

- *\$50,000 additional costs.*
- *\$50,000 additional costs.*
- *\$10,000 additional costs.*

A respondent noted that "our in-cut mining/settling method allows us to easily maintain compliant discharge targets." Another respondent noted that they "have had zero discharge for several years." Another respondent noted that "we have always been zero discharge due to our operation being on a hill."

In response to being asked about the extent to which they perceive a change in gold recovery rate resulting from the move to a zero discharge approach, respondents stated:

- *In order to maintain our recovery rate similar to using fresh water, we have doubled our sluice clean up frequency which has doubled the gold room work.*
- *Fine gold recovery will have been poorer due to the higher silt load in the sluice feed water.*

Seven out of 13 respondents indicated they had considered moving to a 100% recirculation system but are unable to do so because of the physical characteristics of their placer claim (e.g., steep valley walls, significant groundwater flows, valley gradient).

A respondent noted that "we have done *net zero* for 5 years." Another respondent noted "in some areas we can, in some areas we cannot."

Other Operating Activities to Ensure Conformity

Three panel survey respondents reported having to undertake other additional operating activities in order to conform with more restrictive sediment discharge standards. Additional activities included:

- *Additional restoration work to control non-point discharge to waterways from development activities.*
- *Building higher berms to have deeper settling ponds.*
- *Sluice less of the marginal ground (which also contains a higher percentage of silt). More diligent taking of sludge from the pre-settling pond.*

A respondent who responded with a *no* noted that “but that is because I have always been a reasonable miner and since we have been required to have settling ponds (from about 1988) my discharge has been mostly zero until the pond starts to fill up.”

Opportunity Costs

Previous panel survey participants indicated that opportunity costs (e.g., time spent on designing new pond systems, time taken away from sluicing to do additional sampling, etc.) associated with the new placer system are significant. When asked to describe their opportunity costs and estimate the number of additional hours, participants said:

- *This has not changed for me in the last 10 years but it is still onerous. 50 hours.*
- *Hiring consultant, more design features in diversions and bigger ponds. 100 hours.*
- *We have always had a closed system.*
- *Additional effort to permit (time). Costs were more related to wetland issue than new placer regime. Lost employees, lost a year of revenue.*
- *We have moved into the mid-stage of compliance with the new management system; correspondingly our additional costs have stabilized. Operating methods have also changed to remove our production areas from proximity to streams. To accomplish this, additional capital investment of some \$350,000 has been over and above our former operation in the last 6 years. Additional hours are to cover for the addition of one larger excavator and one 30-tonne truck to move both pay and waste to dumps and/or processing areas away from streams. 200 hours.*
- *More time spent with one machine making deeper settling ponds. 10 to 20 hours.*
- *It depends – in the _____ Creek area, new inspector – uncertainty about what he wants, I would say we are losing 20%.*
- *We have always run 100% recycling for over 15 years. We do not notice the additional work anymore, but running an operation like this does take away from time spent sluicing and stripping. We need to haul cut out completely rather than sluice as we go. When ponds fill up with sediment we are forced to move plant or build up dikes or wait for pond to clear. 100 hours.*

Economic Health Monitoring Protocol: Wave 11 Panel Survey Findings

- 20 machine hours lost to settling pond construction to be compliant with new system. When sluicing, we average approximately one ounce per hour. Gold price = \$1,500 CDN/ounce x 20 hours = \$30,000. Additional 8 hours.
- In this instance, the settling pond system was designed in the early planning stage and is good for the life of the project. 60 hours.

Number of Placer Mines

The number of placer mines in operation in the Yukon changes from year to year. Panel survey participants were asked, based on their own placer mining 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 in 2018. Their responses are outlined below:

Most important factor	No. of responses (13 total)
quantity and quality of the gold resource	6
gold price	3
fuel costs	2
permitting costs / delays	1
minesite access	1

Second-most important factor	No. of responses (13 total)
gold price	2
natural conditions (snow pack, water flows, fires, etc.)	2
permitting costs / delays	2
quantity and quality of the gold resource	2
availability of economically viable claims/ground	1
fuel costs	1
labour costs	1
labour quality rather than labour costs	1
TV shows	1

Third-most important factor	No. of responses (12 total)
permitting costs / delays	3
fuel costs	2
gold price	2
quantity and quality of the gold resource	2
equipment costs	1
new minesite management costs	1
minesite access costs	1

Fourth-most important factor	No. of responses (11 total)
labour costs	4
fuel costs	3
quantity and quality of the gold resource	2
gold price	1
new minesite management costs	1

Fifth-most important factor	No. of responses (12 total)
fuel costs	3
labour costs	2
permitting costs / delays	2
ability to mine in a systematic manner	1
equipment costs	1
gold price	1
natural conditions (snow pack, water flows, fires, etc.)	1
new minesite management costs	1

Gold Production

Panel survey participants were asked, based on their own placer mining 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 survey respondents who reported an increase in production:

Most important factor	No. of responses (5)
quantity and quality of the gold resource	4
permitting costs / delays	1
Second-most important factor	No. of responses (4)
ability to mine in a systematic manner	2
gold price	1
labour quality rather than labour costs	1
Third-most important factor	No. of responses (4)
natural conditions (snow pack, water flows, fires, etc.)	2
labour costs	1
quantity and quality of the gold resource	1
Fourth-most important factor	No. of responses (3)
equipment costs	3
Fifth-most important factor	No. of responses (3)
fuel costs	1
labour costs	1
natural conditions (snow pack, water flows, fires, etc.)	1

For survey respondents who reported a decrease in production:

Most important factor	No. of responses (5)
gold price	2
quantity and quality of the gold resource	2
natural conditions (snow pack, water flows, fires, etc.)	1
Second-most important factor	No. of responses (4)
equipment costs	1
fuel costs	1
gold price	1
natural conditions (snow pack, water flows, fires, etc.)	1
Third-most important factor	No. of responses (4)
fuel costs	2
labour costs	1
quantity and quality of the gold resource	1
Fourth-most important factor	No. of responses (4)
labour costs	2
fuel costs	1
quantity and quality of the gold resource	1
Fifth-most important factor	No. of responses (4)
equipment costs	1
gold price	1
labour costs	1
permitting costs / delays	1

Economic Health Monitoring Protocol: Wave 11 Panel Survey Findings

For survey respondents who reported that production stayed the same:

Most important factor	No. of responses (3)
quantity and quality of the gold resource	2
equipment costs	1
Second-most important factor	No. of responses (2)
minesite access	1
fuel costs	1
Third-most important factor	No. of responses (2)
permitting costs / delays	1
natural conditions (snow pack, water flows, fires, etc.)	1
Fourth-most important factor	No. of responses (2)
fuel costs	1
labour costs	1
Fifth-most important factor	No. of responses (2)
labour costs	1
quantity and quality of the gold resource	1

Labour Requirements

Eight respondents reported an increase in labour requirements at their most productive placer operation in 2018. Two respondents reported a decrease in labour requirements. Three respondents reported that their labour requirements were about the same.

Reasons for the increase in labour requirements included:

- *More workers.*
- *Equipment breakdown, therefore more mechanics.*
- *Additional work to handle greater depth of overburden and place it away from streams and also in proximity to where needed for restoration.*
- *Natural ground conditions. Deeper ground equals more stripping.*
- *Deeper ground.*
- *We had a few more family members get old enough to work on site, so our operation is growing. Because we had more people we were able to mine deeper ground.*
- *Added a second washplant to production all summer so had to add employees.*
- *Deeper overburden means more equipment and running hours so more labour needed (both operational and maintenance).*

Reasons for the decrease in labour requirements included:

- *Needing to cut expenses to match escalating costs of doing business and trying to make ground last longer by having less overhead and needing less gold.*
- *Decision to cut back on operation due to higher fuel cost, lower gold price, more regulatory challenges and costs.*

Economic Health Monitoring Protocol: Wave 11 Panel Survey Findings

A respondent whose labour requirements stayed the same noted that “we have a two man operation, but could operate more efficiently with 3 people. However, the costs of labour and uncertainty of gold resource keeps us from hiring third person.”

Another respondent whose labour requirements stayed the same noted that “I find it very hard to find good employees that are committed to the full season. Good help seems hard to find.”

Claim Staking

Panel survey respondents were asked, while thinking about the overall Yukon placer industry during the past year, whether the total number of placer claims staked increased, decreased or stayed the same.

Reasons given by panel survey respondents for the increase in staking included:

- *Exploration by long term miners and new miners looking for ground. Reality shows bring in “newbies.”*
- *Really...it's the TV shows and the promoters hoping to cash in on the fad. Also contributing is the price of gold. Do I think the former is healthy? No.*
- *Speculation based on TV show exposure.*

Reasons given by panel survey respondents for the decrease in staking included:

- *Political atmosphere, YG – FN relations, fear of uncertainty.*
- *Risk of First Nations intrusion or the Yukon Government giving First Nations more power and First Nations then closing mining.*
- *Price of gold; cost of operating ratio.*
- *I think the interest in mining as at its peak 2 or 3 seasons ago. There is still some interest and claims being staked but it has tapered off. Gold price was lower this year than some previous years.*
- *Probably down due to the new notification procedure.*

A respondent who noted that the number of placer claims staked stayed the same stated that “I think with gold price staying in the mid-range it is less appealing to new people to come to Yukon to stake new claims. After the influx a few years ago due to TV shows and high gold price, I feel like staking has levelled out.”

Fuel Consumption

Three respondents reported that their fuel requirements decreased, one respondent reported that their fuel requirements stayed about the same and nine reported an increase in fuel consumption.

Primary reasons for the decrease in fuel consumption noted by panel survey respondents included:

- *Quality of the ground being mined (2 respondents).*
- *Fuel prices (1 respondent).*
- *Lack of qualified employees (1 respondent).*
- *Shorter season due to more downtime (1 respondent).*
- *Downsized crew (1 respondent).*
- *Equipment used for other purpose (1 respondent).*

The primary reasons for the increase in fuel consumption noted by panel survey respondents included:

- *Quality of the ground being mined (5 respondents).*
- *More hours on machines (4 respondents).*
- *Fuel efficiency of earth moving equipment (3 respondents).*
- *Fuel prices (3 respondents).*
- *Quantity of the ground being moved (2 respondents).*

When asked if the change in fuel consumption was attributable to the new placer system, respondents indicated "yes", for the following reasons:

- *There is considerable time and money spent in building and maintaining ponds and diversions. The main reason I believe that we should have a higher discharge is to give miners some time and [comfort] to build new ones. As to the diversions, no matter what we do, nature does what it wants.*
- *We have changed our operation to move away from streams to have dumps and processing sites removed. This has added additional equipment hours, both in actual earth moving and additional road building and maintenance. Running a truck needs a much higher standard of road, and to move the material away requires a longer road.*
- *Yes, I had to use fuel in order [to] improve my settling ponds and make them deeper.*
- *Of course, building better and more permanent settling ponds costs money and fuel.*
- *We do burn more fuel than we would if we were not running 100% recycling, as we now run one pump filling ponds as a make-up water pump and one pump running the plant. Our dikes and water systems also take more effort to maintain. Last season our ponds were well established so there was not a huge influx in cost as far as building pond systems.*
- *The extra effort to maintain a zero discharge settling system certainly used more fuel. Most of the change is due to more (deeper) stripping being done.*

Expansion into New Areas

When asked if the new Fish Habitat Management System for Yukon Placer Mining discouraged them from expanding into new areas, eight out of 13 respondents to this question said 'yes'. Comments from respondents included:

- *It is just too much effort and discouraging to do the paper work.*
- *Many streams that were previously unmined have very restrictive conditions. [In] small narrow creeks, it is hard to set up recirculating systems. Concern with the new wetland rules that a piece of ground staked and where exploration dollars spent might not be permit-able.*
- *Challenge in meeting discharge standards.*
- *The permitting complexity has caused reluctance to begin the process, this has caused me to miss having water licenses or amendments on two of our remote operations with the consequence of missing two seasons for exploration and planning. This will materially affect our mining plans as the projects will not be "ready to go" when we need to move. It has recently become quite critical as we have to acquire a "Notification" now to do base level work on the claims.*
- *We cannot move some streams and when we move streams that we can move our new inspector has unrealistic expectations of how fast we can reclaim and what it needs to look like.*
- *We were looking at staking some new ground but found that the stream classification would make it hard to mine, so we chose not to pursue this opportunity as our costs would be too great.*
- *In the last few years we have applied for three water licenses in new areas. One of the applications was very difficult to submit as we provided much more detail than usual and we were willing to attempt mining with zero discharge and no diversions. This application was rejected by the local First Nation because it bordered Type B lands and they wanted more studies done on the impact of placer mining on fish habitat (after agreeing we had mitigated their concerns). The other two applications have also requested much more detail than in the past. The mining activities allowed are more restricted than they used to be. This is very discouraging for expanding into new areas.*
- *A system designed to tighten the noose around placer mining's neck, but never loosen it, is not one that I care to extend my experience with. The "cartographic mapping" of "fish creeks" based solely on the use of contour lines to assume where "fish creeks" are is a scientifically horrendous mistake. YESAB personnel are using these maps to harass miners and restrict their activities and access to potential minesites.*

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 the placer gold resource on the claims they mined affect the health of their placer operation. Their responses are outlined in the table below.

Extent to which the quality of the placer gold resource on claims mined affected health of the placer operation in 2018.	
Degree of extent	Number of responses (12)
not at all	0
to a small extent	1
to a moderate extent	4
to a great extent	7

Additional Comments

Panel survey participants were also asked if they had any other comments about how the new Fish Habitat Management System affected their placer mining operation this past season. Participant’s responses are outlined below:

- *I did not answer question 16 as I did not understand it. But as to the health of my mine, I am finding that the dredges were not as efficient as first thought. So, the life of my mine which I thought was almost done is looking like it will last longer than I thought. Bottom line, it looks like my resources are bigger than I thought a few years ago.*
- *The largest concern for causing lack of, or reduced expenditures, is the First Nation. A concern that either YTG will give more power or First Nation will take more power (unopposed) to close or restrict mining.*
- *Should likely start to track the costs of wetland permit delays, including opportunity costs and also the additional cost to do what is required to reclaim wetlands. Many recirculation systems are not 100%.*
- *The uncertainty regarding mining in undisturbed wetlands is also having a negative impact on our business, by causing us to take certain steps to protect our ability to mine in the future, which are cost prohibitive and disruptive to our mining plans.*
- *A similar survey could be conducted for the lack of a wetlands policy for the Indian River and area. This is affecting our industry as well.*
- *1) Your questions are difficult to answer intelligently – we have been living with the new regime for a while. I find it very difficult to answer the questions – we operate in three areas – each area is treated differently by inspectors and government and it does not make a lot of sense. 2) I have a new operation with a new inspector. Our biggest problem there is our inspector does not know what he is doing and he is not good at listening. 3) It’s impossible to re-license our claims in the Indian River – it’s crazy.*

- *We believe in having regulations for our industry that are enforceable. However, as a result of recent water license applications we have attempted it seems that the Fish Habitat Management System is becoming more restrictive overall to our industry. From our perspective, our creek has been a good producer for [decades], but we need to move into new areas. Unfortunately, the regulations and environmental assessment process is becoming more restrictive. Placer mining is a risky business and we can't pass on increasing costs (or lost opportunities) to a customer. My family does not have the financial resources to spend money on exploration in new areas if these new areas are not going to be allowed to be mined or if a water license is granted and the operating conditions are overly restrictive / expensive.*
- *Since the [First Nations] want income from placer mining, they should start their own placer mine. This would give them direct experience in how legislation and regulations can restrict a mining operation. I'd be willing to bet that you would see them backing off on the wetland regulations. You would also see them trying to get the water regulations rolled back a bunch.*

Conclusion

Overall, the Wave 11 panel survey responses indicate that placer miners participating in the panel survey have now adapted to the Fish Habitat Management System implemented in 2008. Most Wave 11 respondents reported having permitted a placer operation in 2018. Many respondents reported a level of permitting complexity that required the assistance of consultants to complete the permitting process. Several survey respondents indicated moving to a zero-discharge approach in 2018 while others noted that they have been using a zero-discharge approach for several years now. Concern about the viability of exploring and moving operations into new areas continued to be expressed by respondents. A new area of concern flagged by Wave 11 respondents relates to difficulty in securing permits for operations in wetland areas.