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SUPPLEMENT #3

WASTE MANAGEMENT STRATEGY: NANUQ PROJECT, KIVALLIQ REGION, NU

NOTE: Revisions to the Strategy are identified with a superscript number, e.g., [1] = Revision 1

Background

Peregrine Diamonds Ltd. (Peregrine) conducts mineral exploration activities seasonally at the Nanuq Project south of Wager Bay, NU, a remote claimblock and exploration area comprised of a seasonal tent camp which can house up to 24 persons[1], and various drill areas for temporary use only whilst drilling is under way. Waste is generated in any exploration activity, with the bulk of it accumulated as waste hydrocarbons (for shipment off site) with a lesser volume of kitchen wastes (incinerated on site)[1] and toilet wastes (currently reporting to 2 pit privies at camp)[1]. Through commitment to its Environmental[1] Policy, the governing land-use permit and water licence conditions[1], and to various legislation and Government of Nunavut guidelines, Peregrine endeavours to control and manage waste generation and disposal.

This Waste Management Strategy (the Strategy) represents Peregrine's[1] response to a recommendation by the Nunavut Impact Review Board (NIRB), *i.e.*, recommendation #15 accompanying Land-Use Permit *#N2007C0039*, which states: "...the Proponent shall submit to the Government of Nunavut Department of Environment, a Waste Management Strategy which considers and includes the following: (a) purchasing policies that focus on reduced packaging; (b) on-site diversion and segregation programmes (*i.e.*, the separation of non-food waste items suitable for storage and subsequent transport and disposal or recycling), and (c) training plans for personnel operating and managing the incinerator".

Purpose of the Strategy

The Strategy sets out a framework for the management of exploration-related waste by employees and site contractors over the upcoming 2013[1] field season, and sets out principles, targets and ways to achieve targets, and provides for a programme of monitoring and evaluation. In addition, it is a tool to educate and reinforce the commitment of personnel to proactive waste management.

Towards Sustainability and a 'Resource' Mentality

Whilst achieving sustainability is a difficult goal for a relatively short-term activity such as exploration, Peregrine is nevertheless committed to *move towards sustainability*. This is a more achievable goal for a seasonal project in a remote area with the inherent challenges of remote location; restricted small-capacity transport; limited availability and choice; and limited access to recycling or return programmes available in large population centres. Moving towards sustainable waste management means taking action to minimise negative impacts to the environment during the life of the exploration project, and is comprised of organised action in preparing for, conducting and closing out activity so that the property can be used by present and future populations. (Closure is complete when property cleanup is considered complete by the permitting authorities who granted access).

In the Nanuq Project (Nanuq), Peregrine will aim to minimise waste and will adopt the philosophy inherent in sustainability, which is to regard major components of the waste stream as "resources" rather than as waste. In order to be considered a resource, the item must have a potential use beyond the present. Examples of such items are lumber, steel and used oil.

The traditional waste hierarchy includes the "three Rs" of REDUCE, REUSE and RECYCLE. In addition, Peregrine believes a fourth "R" also is key – RETHINK*. In order for the Nanuq site to move towards sustainability, personnel and contractors will be trained and retrained in waste handling and control, rethinking behaviours and emphasising substitution of materials, where possible.

Waste Profile

Nanuq camp is a small tent camp, planned to accommodate up to 24 people[1] over approximately 2.5ha[1], which includes use of a natural-sand airstrip for landing of a Twin Otter, landing pad for two helicopters, a cache of diesel and Jet-B fuel, and a tent camp, including a kitchen, dry and latrine. Greywater from the kitchen and dry will report to a natural-depression sump. A CSA-rated incinerator (dual-chamber forced-air unit) also is[1] on site for combustible waste. Drillsites (approximate size of 0.01 ha each for a core drillsite[1]), should drilling occur, will be in operation for several days to a week[1] each during the 2013[1] season, with drillwater (the 20% not recirculated) reporting to natural depression sumps. Drillsites will be served by a temporary fuel cache.

Waste generated is both domestic (*e.g.*, food scraps, toilet wastes, paper and packaging) and commercial (*e.g.*, wood and metal scrap, waste fuel, waste oil, used filters). At present, toilet wastes report directly to two latrine pits, with waste decomposing in situ[1]. The waste ratio for a typical Nanuq programme (drilling, and helicopter surveying and sampling) would be 70% commercial to 30% domestic.

Based on information from programmes at the Nanuq campsite, the following percentages (consistent with typical exploration activity in remote locations) are estimated for past activities:

- 90% of non-burnable waste = to community landfill
- 10% of non-burnable waste divided as follows:
    - 3% = recycled, returned to supplier/distributor/contractor or moved to another project.
    - 7% = stored off-site in a special waste-management area or properly disposed of by waste receiver/community expeditor. (Nunavut expeditors generally handle waste shipped from camp in one of three ways – either directing the waste (such as steel scrap, batteries or drums of used oil) to designated areas of the community landfill where materials are scavenged by local residents (a tradition of recycling) or, if there is sufficient volume, stockpiling of hazardous waste for various public and private clients and shipping out manifested waste to a registered hazardous waste receiver on the seasonal sealift).

Targets for improving the waste profile are discussed below in the section "Principles and Targets".

Waste Management Strategy for Nanuq Project

The Strategy aims to provide a framework to cut waste, recycle more and return outbound hazardous waste to suppliers/distributors, where possible.

The Peregrine team – comprised of the site manager or designate, staff and contractors – will address waste issues through practical, co-ordinated measures appropriate to the location, size and scope of the current project and waste-handling capacity of the community-based expeditor.

The Strategy establishes priorities, sets targets and provides an action plan for waste management at Nanuq from 2013 to 2014[1], In order to control growth of waste volume and reduce landfilling, this Strategy focuses on a team effort to minimise waste, promote product substitution, divert hazardous waste from the waste stream (*i.e.*, in compliance with the Canada-Wide Standards for Dioxins and Furans, and the Canada-Wide Standards for Mercury, as well as various Nunavut environmental guidelines) and return waste products, where possible, to suppliers/distributors for reprocessing or recycling.

The principles and targets set out the Strategy's broad framework.

* "Zero Waste Challenge", The Sustainable Region Initiative, Greater Vancouver Regional District, February 2007.

Principles and Targets

#1: Waste Awareness

- Through training, reinforcement and management's leading-by-example, develop a camp culture whereby *waste* is regarded (to the degree possible) as a *resource* (*e.g.*, used engine oil, batteries and printer cartridges can be sent out for recycling rather than for disposal). The primary purpose of waste awareness is to measurably improve the Nanuq waste profile.
- Include waste awareness as a regular topic at weekly safety, health, environment (SHE) meetings; group develops a short-list of waste-awareness areas for improvement and implements trial solutions.
- Encourage camp occupants to *take responsibility* for the waste they generate (*e.g.*, taking long showers means taking more than your share of the camp's licensed daily water allotment and adds to the workload burden of someone else – the camp attendant who must refill the potable-water tank — and adds additional volume of waste water to the greywater sump).
- Discourage over-ordering (too many spares), which may lead to wasted/expired product or waste of aircraft resources (*e.g.*, an extra flight to remove accumulated surplus items).
- Discourage misuse of inventory (*e.g.*, opening several of the same item at the same time, rather than finishing the first container before opening a second).

Targets

- 100% of camp staff trained in waste awareness within first week of their arrival.
- 30% of weekly SHE meetings (or approx. 4 meetings, based on a 14-week maximum schedule) will include waste awareness as a topic, focusing on areas for improvement, adoption of goals and progress toward goals.
- Within 4 weeks of camp mobilisation, develop and implement action plans for the short-list of areas for improvement identified in initial SHE meeting discussions.

#2: Waste Minimisation

- At orientation, and through reinforcement at weekly SHE meetings, build camp culture of wise use of resources and reducing waste production.
- Through both direct purchases (by staff or contractors) or through expeditors, focus on *reduced packaging* to the degree possible and return of reusable packaging, keeping in mind constraints of local suppliers, long-distance travel and requirements for transporting dangerous goods (*e.g.*, work with suppliers to eliminate, where possible, unnecessary packaging or return policy on packaging).
- Each programme sector (drilling, surveying, sampling, camp operations) shall focus on at least one key area in which it can minimise the waste produced (*e.g.*, appropriate ordering to reduce duplication and too many spares/surplus items, co-ordinating activities to reduce heli-time and fuel use, keeping heating stoves on low setting, *etc.*)

Targets

- 100% of camp staff trained in importance of waste minimisation within first week of their arrival.
- 30% of weekly SHE meetings (or approx. 4 meetings, based on a 14-week maximum schedule) will include waste minimisation as a topic, focusing on areas for improvement, adoption of goals and progress toward goals.
- Within 4 weeks of camp mobilisation, develop and implement action plans for the short-list of areas for improvement identified in initial SHE meeting discussions.
- Near halfway point of 2008 programme (*i.e.*, 6 weeks, when camp population is at maximum) have overall 2% minimisation in programme-generated waste in at least 3 types of waste as compared to startup, as evidenced from camp records.

#3: Waste Diversion and Segregation

- Diversion and segregation of waste shall be an integral operational activity.

- In order to fulfil this principle, worksite organisation shall be stressed throughout the programme.
- Sorting of waste at point of origin (*e.g.*, separation of metal and glass containers from food waste, separation of waste drill-rod grease and other solids from liquid waste such as waste diesel) shall be a regular part of operations.
- At orientation, and through reinforcement at weekly SHE meetings, diverting waste (*e.g.*, for recycling) and segregation (*i.e.*, separating potentially toxic waste such as Styrofoam and plastics from the general waste stream) shall be an expected daily activity of programme sectors.

Targets
- 100% of camp staff trained in importance of waste diversion and segregation within first week of their arrival.
- 20% of weekly SHE meetings (or approx. 3 meetings, based on a 14-week maximum schedule) will include waste diversion and segregation as a topic, focusing on areas for improvement, adoption of goals and progress toward goals.
- Within 4 weeks of camp mobilisation, identify a short-list of waste to be diverted from the waste stream (*e.g.*, reusable cardboard) and segregated (*e.g.,* plastics from packaging, fluorescent tubes) and develop and implement action plans for diversion and segregation of short-list items.
- Near halfway point of 2013[1] programme (*e.g..*, 6 weeks, when camp population is at maximum), have improved diversion and segregation from startup levels by up to 3%, as evidenced from camp records.

#4: Training for Waste Management and Incineration
- Training and retraining of personnel shall be a cornerstone activity of the 2013[1] programme.
- Camp staff require and shall receive focused training in order to be able to co-ordinate elements of the Strategy, execute tasks effectively and maintain records.
- Camp personnel charged with operation and maintenance of the incinerator shall receive training specific to the safe and efficient operation of unit on site, prior to use of unit.
- Key procedures for proper operation and maintenance of the incinerator shall be posted for ease of reference by incinerator operator(s).

Targets
- 100% of camp staff trained in Principles #1, #2 and #3 within first week of their arrival.
- Incinerator operator and alternate to be trained in proper operation and maintenance of the incinerator prior to startup of incinerator, and reinforced with posting of key procedures.
- 20% of weekly SHE meetings (or approx. 3 meetings, based on a 14-week maximum schedule) will include new or refresher training in a topic of group interest, focusing on areas of general interest and applicability, *e.g.*, waste management to discourage attracting wildlife.
- By camp closure 2013[1], camp training records are 100% complete, with participant signoff, indicating training and retraining by topic, and any comments on followup required for 2014[1] season.

How the Strategy Plans to Meet the Targets

Peregrine realises that *training* and *reinforcement* are key to establishing behaviours. In this Strategy, Peregrine has not only allowed for orientation training but inclusion of Strategy Principles within the framework of the weekly SHE meetings, which leads to a different training dynamic. The aim is to establish the right balance, so that the camp population feels that it understands what to do, is challenged and empowered to participate in waste management – *resource* management – rather than becoming bored and complacent with too much repetition.

A *team* approach also shall be used: Although the manager or camp supervisor will lead by example, it is the participation of the whole camp population that is critical to effective camp waste management; for example, ideas brought forward by a camp attendant or survey assistant are equal to the same consideration and discussion at SHE meetings as ideas raised by a geologist or supervisor. Inclusion leads to effective communication and co-ordination, which are key elements of Strategy success.

Training and a team approach lead naturally to *individual responsibility*: Peregrine will emphasise the importance of personal responsibility throughout, and will implement suitable means of recognising those who take responsibility for waste management in their own jobs and thus set an example for others.

Substitution is a key means of meeting the targets of waste minimisation, waste diversion and segregation. Substitution shall be pursued in various areas and implemented where possible; examples include: environmentally-benign drill additives and greases; ceramic or paper cups (instead of Styrofoam cups); low-mercury fluorescent tubes; rechargeable batteries; high-efficiency compact fluorescent lamps (rather than incandescent light bulbs); antifreeze and solvents which are non-toxic and biodegradable[1], or can be returned to the supplier for reprocessing (rather than stored for hazardous waste disposal); biodegradable, phosphate-free, low-sudsing soaps and wash powders; latex paint (rather than alkyd paint); and garbage bags made from recycled, biodegradable materials.

Organisation is not only mandated by workplace safety legislation, but leads to effective waste diversion and segregation. A well-organised worksite leads to ready identification of type, number and volume of waste products, and lessens the potential of environmental release. Peregrine will ensure that structures, caches and other use areas are kept in a tidy manner as outlined in the governing land-use permit, so that waste may be stored and handled so as to divert and segregate hazardous, recoverable or recyclable wastes from the general waste stream.

Peregrine also will devote special effort to working with its expeditor, direct suppliers and contractors to *reduce the volume of packaging* arriving at the camp. This is an especially challenging goal for a small operation in a remote location where options are limited. Nevertheless, the interim policy shall be: *Peregrine will reduce the volume of packaging used for incoming shipments to a measurable degree by the end of the 2013[1] season and, wherever possible, will reuse stored packaging for outshipments.*

Peregrine also plans to meet its diversion and segregation targets by implementing the following: Styrofoam will be reused, recycled or returned, and, as a last resort, disposed to a designated community hazardous-waste disposal facility; 0% of Styrofoam packaging will be incinerated. To the extent possible, plastics will be reused, recycled or returned, and, as a last resort, disposed to a designated community hazardous-waste disposal facility; a minor amount of plastic (such as food wrapping[1]) must be incinerated, due to public-health considerations.

Monitoring and Evaluation

The targets outlined in this Strategy will be monitored and performance reported on a regular basis. Monitoring and evaluation will need to remain somewhat flexible, due to the temporary and changeable nature of exploration; nevertheless, camp record-keeping will be constant throughout the 2013[1] season, from startup to closure. Records will be standardised for ease of comparison, and will include such data as volume of waste generated per day, waste type, and means of disposal. Training, and any supporting practice drills, will be evaluated immediately upon conclusion. Other evaluations will be carried out at key milestones, *e.g.,* at the mid-point and conclusion of specific programmes, such as drilling and camp operations. An unbroken cycle of monitoring and evaluation will allow adjustment of targets and overall continuous improvement in site practices.

Beyond

As 2013[1] can be viewed as a further[1] pilot year, it is expected that 2014[1] will build upon the prior year's monitoring and evaluation results and move the project farther *towards sustainability.* This could include targets for specific substances, based upon 2013[1] data, as well as established relationships with suppliers who accept return of their used product, and new environmentally-benign products available for camp use.

Conclusion

Peregrine looks forward to working co-operatively with its staff, contractors, suppliers, expeditor, receiving community and regulating authorities to carry out this Strategy and ensure effective, robust and evolving waste management of the Nanuq Project.

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for Peregrine Diamonds Ltd. – April-May 2008; revision 1 – September 2012

References

- Prospectors and Developers Association of Canada, e3 (Environmental Excellence in Exploration) website – "Camp and Associated Facilities" section, "Waste Management" subsection.
- Nunavut Department of Environment, "Environmental Guideline for General Management of Hazardous Waste" (January 2002, April 2010[1]).
- ibid., "Environmental Guideline for Industrial Waste Discharges" (January 2002).
- ibid., "Environmental Guideline for Waste Solvents" (January 2002).
- ibid., "Environmental Guideline for Waste Paint" (January 2002).
- ibid., "Environmental Guideline for Waste Batteries" (January 2002).
- ibid., "Environmental Guideline for Waste Antifreeze" (January 2002).
- ibid., "Disposal Guidelines for Fluorescent Lamp Tubes" (January 2003).
- Health Canada, It's Your Health Series, "Dioxins and Furans" (September 2005).
- Canadian Council of Ministers of the Environment, "Canada-Wide Standards for Dioxins and Furans" (April-May 2001).
- Canadian Council of Ministers of the Environment, "Canada-Wide Standards for Mercury Emissions" (June 2000).
- Environment Canada, Federal Facility Mercury Inventory System, Mercury-Containing Product Stewardship – Appendix A: "Categories of Mercury-Containing Products".
- Government of British Columbia, The Sustainable Region Initiative, "Zero Waste Challenge – Detailed Summary of Ideas, 04 November to 05 December 2006", www.gvrd.bc.ca/zerowaste (February 2007).
- Nunavut Impact Review Board, Screening Decision Report NIRB File No. 08EN002, "Screening Decision for Peregrine Diamonds Ltd.'s Nanuq Diamond Exploration Project Proposal" (28 March 2008); "Screening Decision for Peregrine Diamonds Ltd.'s Amendment Request with Indian and Northern Affairs Canada for its *Nanuq Diamond Exploration Project...*" (23 November 2009)[1].
- Environment/Sustainability Policy, BHP Billiton (used by permission of Peregrine Diamonds Ltd.), (October 2007).
- Government of Nunavut, Environmental Protection Act – Consolidation, R.S.N.W.T. 1988,c.E-7 (December 2006).