FACT SHEET

NPDES Permit Number:	ID-002832-1
Public Notice Issuance Date:	February 8, 2007
Public Notice Expiration Date:	April 9, 2007

The U.S. Environmental Protection Agency (EPA) plans to issue a National Pollutant Discharge Elimination System (NPDES) permit to discharge pollutants pursuant to the provisions of the Clean Water Act, 33 U.S.C. § 1251 et seq. to

FORMATION CAPITAL CORPORATION, U.S.
IDAHO COBALT PROJECT

and
the State of Idaho Proposes to Certify the Permit

Technical Contact

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EPA Proposes NPDES Permit Issuance

The EPA proposes to issue a NPDES permit to Formation Capital Corporation, U.S., for their Idaho Cobalt Project, a proposed underground mine located in east-central Idaho. The draft permit sets conditions for the discharge of pollutants to Big Deer Creek, a water of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

- information on public comment, public hearings and appeal procedures
- a description of the discharge
- the draft effluent limitations, monitoring schedules and other conditions
- technical material and background information supporting the conditions in the draft permit

Idaho State Certification

The Idaho Department of Environmental Quality proposes to certify the NPDES permit under section 401 of the Clean Water Act. The state has submitted a preliminary section 401 certification prior to the public notice.

Public Comment

Persons wishing to provide comments on the draft permit or request a public hearing for the draft permit may do so in writing before the expiration date of the public notice. A written request for public hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All written comments should be submitted to EPA as described in the public comments section of the attached public notice.

After the public notice expires, and all significant comments have been considered, EPA's Regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the conditions in the draft permit will become final and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the issuance date unless an appeal is submitted to the Environmental Appeals Board within 30 days.

Persons wishing to comment on state certification of the draft permit should submit written comments by the public notice expiration date to:

Troy Saffle
Idaho Department of Environmental Quality
Idaho Falls Regional Office
900 North Skyline, Suite B
Idaho Falls, Idaho 83402
troy.saffle@deq.idaho.gov

Documents are Available for Review

The draft NPDES permit, fact sheet, and related documents can be reviewed or obtained by visiting or contacting the EPA's Idaho Operations Office in Boise between 8:30 a.m. and 4:00 p.m. (Mountain Time), Monday through Friday at:

United States Environmental Protection Agency Region 10
Idaho Operations Office
1435 North Orchard Street
Boise, Idaho 83706
(208) 378-5757

The draft general permit and fact sheet are also available for review and copying at the following federal and State offices:

U.S. Environmental Protection Agency Region 10
1200 Sixth Avenue, OWW-130
Seattle, Washington 98101
206/553-0523 or
1-800-424-4EPA (within Alaska, Idaho, Oregon and Washington)

U.S. Department of Agriculture, Forest Service
Salmon-Challis National Forest
1206 South Challis St.
Salmon, Idaho 83467

Idaho Department of Environmental Quality
Idaho Falls Regional Office
900 N. Skyline, Suite B
Idaho Falls, Idaho 83402
208/528-2650

The draft permit, fact sheet, and other information can also be found by visiting the EPA Region 10 website at www.epa.gov/r10earth/waterpermits.htm, click on "draft permits", then "Idaho". Concurrent with the 60 day public notice period of the draft permit and fact sheet, the U.S. Forest Service, as lead National Environmental Policy Act (NEPA) agency, is noticing the draft Environmental Impact Statement (EIS). NEPA documents for the proposed Idaho Cobalt Project are located on the Salmon-Challis National Forest home page at www.fs.fed.us/r4/sc.

For technical questions regarding the draft permit or fact sheet, contact Robert Rau at the phone number or e-mail at the top of this fact sheet. Comments relating to EPA's NEPA compliance and the draft EIS should be directed to Hanh Shaw at (206) 553-0171, or at shaw.hanh@epa.gov. Services can be made available to persons with disabilities by contacting Audrey Washington at (206) 553-0523, or at washington.audrey@epa.gov.

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Formation Capital Corporation, U.S.
Idaho Cobalt Project
812 Shoup Street
Salmon, Idaho 83467

Facility Contact: William G. Scales, President
(208) 756-4578

II. FACILITY ACTIVITY

Formation Capital Corporation, U.S. (Formation) is proposing the development of a cobalt mine located 22 miles west of Salmon, Idaho in Lemhi County (Figure 1). The Idaho Cobalt Project is on unpatented mining claims in the Salmon-Challis National Forest adjacent to the Blackbird Mine Superfund cleanup site. The project will include two underground mines (the Ram and the Sunshine) producing approximately 800 tons of ore per day, a flotation mill, a lined dry-stack tailings and waste rock disposal facility, a water management pond, water treatment facilities, and various ancillary facilities. Construction will take approximately two years, the mines will operate for about 10 years employing 150 people, followed by an undetermined closure period. The total proposed area of physical disturbance is approximately 122 acres. During closure, all facilities will be removed and the area reclaimed except for roads needed in the post mining landscape. Additional information on the proposed mine are described in this section of the fact sheet, and details can be found in the *Plan of Operations for the Idaho Cobalt Project, Lemhi County, Idaho* (Formation 2006) and in the *Draft Environmental Impact Statement* (USFS 2007).

A. Location

The Idaho Cobalt project (ICP) is centered on 45°07’50” north latitude and 114°21’42” west longitude, and is located on the Gant Mountain, 7.5 minute, U.S. Geological Survey topographic map. The project area is within or adjacent to Sections 8, 9, 15, 16, 17, 20 21 and 22 Township 21 North, Range 18 East (Boise Meridian). The property consists of 145 unpatented mineral claims for a total of 2,524 acres of mineral rights.

The ICP lies within the Panther Creek drainage, which flows to the Salmon River near Shoup, Idaho. The Salmon river flows to the Pacific Ocean via the Snake and Columbia Rivers. Panther Creek, the Salmon River and various tributaries form the Middle Salmon River-Panther Creek Subbasin (HUC #17060203). The ICP itself lies near the headwaters of several drainages including Bucktail Creek, Big Deer Creek, Big Flat Creek, Little Deer Creek and Blackbird Creek. All of these drainages ultimately flow into Panther Creek (Figure 2). The project area contains flat-topped mountains and moderate to steep V-shaped canyons that cover an area ranging in elevation from 6,100 to 8,100 feet. The area of physical disturbance that will be affected by mining and mill operations is centered on the divide between Bucktail Creek and Big Flat Creek (Figure 2).

B. Project Description

Under Formation's Plan of Operations, the Ram and Sunshine portals will be located on the slopes above Bucktail Creek and above the hydrostatic groundwater level. Declines will be developed such that groundwater will not drain from the mine portals. The mineral cobaltite (cobalt arsenic sulfide, CoAsS) is the primary ore material. At full production, the mill will process 280,000 tons of ore to produce about 11,200 tons of concentrate each year. The concentrate will be trucked to a metallurgical facility located near Kellogg, Idaho. Although the mine is being developed specifically for cobalt production, gold and copper will also be produced as byproduct. Both the mine and the mill will operate 24 hours a day, 7 days a week.

Ore stockpiles, the mill, the tailings and waste rock storage facility, a water management pond, the water treatment plant and ancillary facilities will all be located on and surrounding an area of relatively flat ground (aka, the Big Flat) located on the converging headwaters of Big Deer, Big Flat, Bucktail and Little Deer Creek (Figure 2). Overall, the mill will consist of ore processing and tailings/concentrate dewatering facilities and include crushing and grinding equipment, flotation cells, concentrate thickeners, tailings thickeners, concentrate filters, tailings filters, and ancillary equipment. Ore rock will be physically crushed to a minus 200 mesh size then conditioned and processed in flotation cells where ore concentrate will be floated (separated) from gangue (waste). Tailings (gangue residuals from flotation) will also be dewatered in the mill prior to disposal in the tailings and waste rock storage facility (TWSF), or used as backfill in the mines. Placing tails into TWSF using the dry stack method eliminates the need for a impoundment dam, and maximizes the recycling of water through the process circuit in the mill. Approximately half of the tailings produced at the mill will be disposed of in the TWSF with the remainder going underground as backfill material.

C. Water Management

Comprehensive hydrologic modeling of the ICP, including water management, pollutant and water volume mass balance, effluent and net precipitation predictions, and groundwater-surface water – atmospheric interactions, were all accomplished for the life of the mine and into the closure period using a probabilistic dynamic system model (DSM) that is described in the document titled *Environmental Response to Mining at the Idaho Cobalt Project* (Telesto 2005), and in the draft EIS (USFS 2007). The primary demand for water at the ICP is for ore processing in the mill. Effluent from the milling operation will report to the water management pond where it will mix with mine pumped groundwater (i.e., mine drainage) along with drainage from the ore stockpiles and the TWSF, then will be recycled back to the mill. The water management pond will be double lined, equipped with leak detection, and divided into two cells with a total capacity of 12 million gallons. The pond is sized to contain all waters from the mining operation, other than stormwater and sanitary discharges, assuming a 1 in 500-year probability event. Stormwater runoff will be managed in accordance with the terms and conditions of the 2007 Multi-Sector General Permit (MSGP) for industrial activities while sanitary wastes will be directed to a septic drain field.

Water supplying the mill comes from two primary sources: 1) dewatering of the underground mines; and, 2) drainage from the TWSF. TWSF drainage is further composed of waters from several sources including draindown from the dry stacked tails, as well as precipitation on: 1) the TWSF facility; 2) ore stockpile; and, 3) water management pond. Figure 3 presents a generalized line drawing showing water movement through the mill and treatment plant based upon DSM predictions corresponding to a non-exceedance probability of 0.2% (a 500 year estimated recurrence interval). During full production, mine drainage is expected to yield 75 gpm, while TWSF drainage will contribute 38 gpm. All of this water (113 gpm) reports to the water management pond, and is directed to the water treatment plant while 400 gpm is continually recycled through the mill circuit. Some of the water in the mill circuit is bleed from the process which also reports to the treatment plant. Process bleed water may originate from either mine or TWSF drainage. An estimated 1 gpm from the treatment plant is used for sludge solidification and disposal in the TWSF. This yields an estimated net discharge of 112 gpm leaving the water treatment plant to be discharged through Outfall 001. The treatment plant itself has a design capacity of 150 gpm.

D. Description of Treatment and Discharge

The primary pollutants of concern at the ICP are predicted to be nitrate, sulfate and metals. Under Formation's Plan of Operations, which is described as Alternative II in the draft EIS, the water treatment plant will utilize the following treatment units in series, as necessary: 1) plant storage and equalization; 2) pretreatment (pH adjustment, coagulation and clarification); 3) filtration; 4) reverse osmosis (RO) membrane separation; 5) vibratory membrane separation (VSEP) of RO concentrate; 6) secondary RO treatment of VSEP permeate; and, 7) final concentration and stabilization of VSEP and secondary RO concentrate. Treatment plant reject (i.e., RO waste brine) will be stabilized in a cement-bentonite slurry and disposed of in the TWSF while water from the treatment plant will be discharged to Big Deer Creek through Outfall 001 (Figure 2) under the terms and conditions of the draft permit. Through predictive simulations runs using the DSM, Formation estimates that their discharge through Outfall 001 will generally not exceed 112 gpm, although the treatment plant has a design flow capacity of 150 gpm. As shown in Figure 2, Outfall 001 is located in Big Deer Creek approximately 100 feet downstream (east) of water quality monitoring station WQ-24. Formation has not applied to the Idaho Department of Environmental Quality (IDEQ) for a mixing zone. Accordingly, the draft permit contains end-of-pipe effluent limitations to meet state water quality standards, and the treatment plant has been designed for this purpose. Under their Plan of Operations (Alternative II in the draft EIS) , Formation predicts that the post-operational mine water chemistry would be suitable for discharge to downgradient groundwater, and ultimately to surface water, rendering post-operational groundwater management unnecessary. However, if actual (i.e., monitored) water quality conditions during the post-operational period require it, Formation proposes to install groundwater extraction or pumpback wells downgradient of the Ram and Sunshine to capture a portion of the pollutants derived from the mines for treatment.

As the lead NEPA agency, the U.S. Forest Service is required to identify a preferred alternative that best meets the purpose and need of the proposed action. The draft EIS has selected Alternative IV as the preferred alternative, and if selected, would require Formation to modify their Plan of Operations. One of the main differences between Formation's proposed plan and Alternative IV is that Alternative IV would not necessarily require RO as a polishing step to remove sulfate from wastewater. This would eliminate the need for disposal of the stabilized RO waste stream, but might result in higher sulfate concentrations in discharge water. Within the context the draft EIS, this alternative was considered more desirable because it was estimated that actual brine volumes would be approximately four to 10 times higher than those predicted by Formation in their Plan of Operations. The basis for the sulfate limit in the draft permit is further discussed in Appendix B (Section B.6) of this fact sheet. Details of Formation's proposed plan and the preferred alternative are described in Chapter 4 of the draft EIS (USFS 2007).

As part of their NPDES application, Formation was required to estimate the concentration and mass of certain pollutants, along with estimates of other pollutants that could potentially be present in their treated wastewater. This information was estimated from engineering studies along with best professional judgment, and is reproduced below in Table 1.

Table 1. Estimates of Pollutant Discharge Through Outfall 001

Pollutant	Maximum Daily Value		Average Daily Value	
	Concentration	Mass	Concentration	Mass
Biological Oxygen Demand	1 mg/l	0.818 kg	1 mg/l	0.610 kg
Chemical Oxygen Demand	1 mg/l	0.818 kg	1 mg/l	0.610 kg
Total Organic Carbon	1 mg/l	0.818 kg	1 mg/l	0.610 kg
Total Suspended Solids	30 mg/l	24.5 kg	15 mg/l	9.2 kg
Flow	150 gpm	---	112 gpm	---
Ammonia (as N)	1 mg/l	0.818 kg	1 mg/l	0.6104 kg
Temperature (Winter)	55° F	---	35° F	---
Temperature (Summer)	55° F	---	40° F	---
pH	9 s.u.	---	7.5 s.u.	---
Nitrate + Nitrite as N	10 mg/l	8.18 kg	6 mg/l	3.66 kg
Sulfate	250 mg/l	204 kg	50 mg/l	31 kg
Aluminum	200 µg/l	164 g	20 µg/l	12 g
Cobalt	38 µg/l	31.1 g	10 µg/l	6.1 g
Iron	300 µg/l	245 g	30 µg/l	18 g
Magnesium	100 mg/l	81.8 kg	10 mg/l	6.1 kg
Manganese	50 µg/l	40.9 g	5 µg/l	3.1 g
Nickel	39 µg/l	31.9 g	5 µg/l	3.1 g
Zinc	26 µg/l	21.3 g	5 µg/l	3.1 g
Arsenic	8 µg/l	6.54 g	5 µg/l	3.05 g
Cadmium	0.09 µg/l	0.074 g	0.05 µg/l	0.031 g
Copper	2.8 µg/l	2.29 g	1.5 µg/l	0.92 g
Lead	0.39 µg/l	0.319 g	0.3 µg/l	0.183 g
Mercury	0.0018 µg/l	0.001 g	0.001 µg/l	0.001 g
Selenium	4 µg/l	3.27 g	2 µg/l	1.22 g
Thallium	2 µg/l	1.6351 g	1 µg/l	0.6104 g

Notes:
- Information presented as reported on Section V. of NPDES Application Form 2D
- Maximum daily values based on design flow of 150 gpm, average daily values based on estimated discharge

III. RECEIVING WATER

In their NPDES application dated May 22, 2006, Formation proposes to discharge to Big Deer Creek through Outfall 001 located approximately 1/3 of a mile downstream (east) of its confluence with the South Fork of Big Deer Creek (Figure 2). This location is approximately 100 feet downstream of monitoring station WQ-24 and three miles upstream from the confluence of Panther Creek near WQ-25. Idaho water quality standards (WQS) identify this reach of Big Deer Creek as Stream Unit S-5 within the Middle Salmon-Panther Subbasin (HUC 17060203), which includes the reach from South Fork Big Deer Creek to its mouth (i.e., its confluence with Panther Creek). By default, Big Deer Creek is protected for cold water aquatic life and primary contact recreation because it has not been specifically designated for any beneficial uses (IDAPA 58.01.02.101.01).

Due to the historic activities at the Blackbird Mine site, elevated concentrations of metals (primarily copper, arsenic and cobalt) are found in the water and sediments of some of the area streams. Around the headwaters of Bucktail Creek, drainage from open pits, underground workings, tailings and waste rock piles have resulted in acid mine drainage and the release of hazardous substances to the environment (USFS 2005). Storm events have also transported tailings and waste rock material, and deposited them along the banks of downstream creeks (locally referred to as overbank deposits) including Panther Creek and its tributaries. In addition, the Clear Creek Fire of 2000 burned a significant portion of the Panther Creek watershed including much of the ICP area which further served to destabilize the ground and increase sedimentation.

Within the ICP area, Bucktail Creek, South Fork Big Deer Creek and Big Deer Creek are the most impacted by historic mining activities. However, remedial action performed by the Blackbird Mine Site Group (BMSG) has resulted in significant improvements in water quality throughout the drainage, and pollutant concentrations have been shown to decrease rapidly in a downstream direction (USFS 2005). Table 2 shows the decrease in concentration of selected pollutants in the downstream direction across the ICP area. Cleanup activities at the Blackbird Mine site are documented in the Record of Decision (ROD) for the site which was issued in February 2003 (EPA 2003). The BMSG is currently implementing the remedy outlined in the ROD under a Unilateral Administrative Order issued by EPA in 2004.

Table 2. Water Quality in Bucktail, South Fork Big Deer and Big Deer Creeks (mg/L)

Location	Date	Dissolved Cobalt		Dissolved Copper		Total Sulfate	
		Max	Min	Max	Min	Max	Min
Bucktail @ mouth (WQ-21)	1995	50.4	9.39	272	40.9	344	---
	2000	1.54	1.2	1.16	0.492	148	134
	2004	0.547	0.499	0.311	0.263	81.3	72.6
SF Big Deer below Bucktail	1995	0.871	0.533	1.34	0.23	42.9	42.6
	2000	0.089	0.056	0.155	0.104	28.8	9.3
	2004	0.069	0.026	0.064	0.019	20.8	9.5
Big Deer below SFK (WQ-24)	1995	0.11	0.056	0.342	0.144	9.5	5.55
	2000	0.011	0.005 U	0.021	0.003	7.4	1.3
	2004	0.014	0.003 U	0.011	0.003	6.6	3
Criteria		0.086 mg/L [1]		0.0035 [2]		250 [3]	

Table 2. Water Quality in Bucktail, South Fork Big Deer and Big Deer Creeks (mg/L)

Location	Date	Dissolved Cobalt		Dissolved Copper		Total Sulfate	
		Max	Min	Max	Min	Max	Min

Notes
1 No Idaho water quality criteria for cobalt. Value represents a site-specific action level developed by EPA for the Blackbird mine site.
2 Criterion for copper is hardness dependent. Value assumes average hardness in Big Deer Creek is 25 mg/L.
3 For comparison, federal secondary drinking water standard for sulfate is 250 mg/L
U = Non-detect at given concentration
Source: (USFS 2005)

Water quality throughout the Middle Salmon River-Panther Creek Subbasin is generally good with the exception of the streams affected by historic mining at Blackbird. In 1998, IDEQ listed eight streams in the subbasin on their 303(d) list (including Blackbird, Bucktail, Big Deer and Panther Creeks) as water quality impaired for metals (copper), pH and sediment. In 2001, IDEQ published a Subbasin Assessment and Total Maximum Daily Load (TMDL) for the subbasin. However, TMDLs were not developed for the above listed streams as restoration activities were already being implemented, and developing TMDLs were seen as being a duplication of effort. This situation changed in 2002 as a consequence of a court settlement resulting in a reevaluation of TMDLs and their implementation schedules. As a consequence of this action, the development of a TMDL for Big Deer Creek remains a “high priority” for IDEQ.

In accordance with Idaho water quality standards, until a TMDL or equivalent process is completed for a “high priority” water quality limited body, no new or increased discharges of pollutants can be authorized unless it is demonstrated that there will be no net increase in pollutant loading to that water body (IDAPA 58.01.02.054.04). To comply with this section of the State’s water quality standards, IDEQ requires no net increase in copper loading to Big Deer Creek as condition of their draft Clean Water Act (CWA) section 401 certification of the permit (Appendix F). To fulfill this requirement, the permittee must provide demonstration of this pollutant reduction to IDEQ in the form of a written plan (see Section VI.D). As part of the draft EIS, DSM simulations were executed to predict the effects of the ICP on copper loading to Big Deer Creek under various alternatives and scenarios. These model predictions are summarized in Chapter 4 and in Appendix B of the draft EIS. Under preferred Alternative IV, the DSM predicts decreased copper loading to Big Deer Creek during both operational and post-operational mine phases under any model scenario. Modeled scenarios included the most probable or expected case (i.e., the 50^{th} percentile) the worst case (90% probability the concentrations will be higher) and the best case (90% probability that concentrations will be lower) scenario. For the proposed plan under Alternative II, the DSM predicts slight increases in copper loading to Big Deer Creek during the closure period under the worst case scenario. However, this increase can be mitigated under Formation’s proposal to activate the groundwater pumpback wells during the post-operational phase, if necessary.

Surface water flow in area streams are sustained by snowmelt, stormwater runoff and groundwater discharge. Lowest stream flows occur during the fall/winter period from October through March. Diverse snowmelt patterns within the watershed cause significant runoff events in the spring through early summer. Summer thunderstorm events can cause infrequent high flow in isolated drainages.

No USGS gauging stations exist on any of the streams within the ICP area. However baseline stream monitoring performed by Formation have defined the flow characteristics of Big Deer Creek at station WQ-24. This flow data is presented below in Table 3 along with that from other stations in the study area. Note that under average flow conditions, Big Deer Creek accounts for about half of the discharge in Panther Creek (89 cfs vs. 170 cfs). For comparison purposes, Panther Creek at its mouth (i.e., at the confluence with the Salmon River) has annual instantaneous maximum flows ranging from 600 to 3,100 cfs based on historical flow data from 1945 to 1977 at USGS gauge Site #13306500.

Table 3. ICP Area Instantaneous Stream Flow Measurements (cfs)

Location	# of Measurements	Minimum Flow	Maximum Flow	Mean Flow
Panther Creek (WQ-25)	23	62.26	397.87	170.49
Big Deer Creek (WQ-24)	27	4.35	343.48	88.61
SF Big Deer Creek (WQ-22)	34	1.15	56.58	11.23
Bucktail Creek (WQ-21)	24	0.03	14.01	4.14

Source: (USFS 2005)

Big Deer Creek is a third order stream draining Blackbird Mountain to the south and Gant Ridge to the north. The headwaters originate in the Frank Church River of No Return Wilderness. Big Deer drains an area of 44 square miles and is a tributary of Panther Creek (a 5th order stream). Big Deer Creek has a natural cascade about 0.7 miles upstream from its confluence with Panther Creek that reportedly blocks upstream fish migration. Chinook salmon have been observed in Panther Creek, while rainbow and westslope cutthroat trout occur in Big Deer Creek. Bull trout have not been observed in Big Deer Creek, and no fish have been observed in either Bucktail or South Fork Big Deer Creek (USFS 2005). Maximum stream temperatures in Big Deer Creek for the seven year period 1996 to 2003 varied from 14.8 to 19.0°C with a slightly lower range reported for the maximum 7-day average temperatures (14.0 to 18.2°C). The Salmon River (from Panther Creek to the Middle Fork Salmon River) has been designed by IDEQ as a Special Resource Water (IDAPA 58.01.02.056).

Ongoing baseline stream monitoring, as well as the planned operational monitoring, are described in the *2006 Water Monitoring Plan for the Idaho Cobalt Project* (Telesto 2006) and in the Plan of Operations (Formation 2006). Currently, Formation is planning on monitoring a total of 22 stream locations and 2 surface seeps across the ICP area during the life of mining operations. This includes quarterly monitoring at locations WQ-24 (Big Deer Creek just upstream from Outfall 001), WQ-28 (mouth of Big Deer Creek), and WQ-25 located in Panther Creek downstream from all ICP operations. These monitoring requirements are in addition to those prescribed in the draft permit.

A. Water Quality Standards

Idaho's water quality standards (WQS) are codified in IDAPA 58, Title 1, Chapter 2 (IDAPA 58.01.02) in the document titled *Water Quality Standards and Wastewater Treatment Requirements*. A state's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an antidegradation policy. The use classification system designates the beneficial uses (such as cold water biota, contact recreation, etc..) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the state to support the beneficial use classification of each water body. The antidegradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

The use of a water body is the most fundamental articulation of its role in the aquatic and human environments, and all of the water quality protections established by the CWA follow from the water's designated use (63 FR 36742). Since no use designations are listed for Big Deer Creek in the Idaho WQS, undesignated water bodies are classified for cold water aquatic life and primary contact recreation by default (IDAPA 58.01.02.101.01). This is consistent with the "fishable and swimable" goal for all waters as stated in Section 101(a)(2) of the CWA. In addition, Section 100 of the Idaho WQS designates that all waters of the State are to be protected for the uses of industrial and agricultural water supply (100.03 b. and c.), wildlife habitats (100.04) and aesthetics (100.05). These narrative criteria state that all surface waters of the State shall be free from hazardous materials; toxic substances; deleterious materials; radioactive substances; floating, suspended or submerged matter; excess nutrients; oxygen demanding materials; and sediment in concentrations which would impair beneficial uses. In Section 252.02, the WQS also state that the criteria from the document titled *Water Quality Criteria 1972*, also referred to as the "Blue Book" (EPA-R3-73-033), can be used to determine numeric criteria for the protection of the agricultural water supply use.

Effluent limits in NPDES permits must also protect the designated uses and water quality criteria of downstream waters. Panther Creek (from Big Deer Creek to its mouth) has been designated for cold water aquatic life, salmonid spawning and secondary contact recreation. These uses are protected by numeric water quality criteria which appear in Sections 210, 250 and 251 of the WQS, in addition to the narrative criteria protecting the beneficial uses of Panther Creek. Therefore, EPA must ensure that the discharge at Outfall 001 does not cause or contribute to water quality standards violations in Panther Creek as well as in Big Deer Creek. EPA is requesting that IDEQ state in its CWA 401 certification that the terms and conditions of the permit are protective of the beneficial uses of these receiving waters.

The water quality criteria applicable to the draft permit are provided in Appendix B, and provide the basis for most of the effluent limitations.

IV. EFFLUENT LIMITATIONS

The CWA prohibits the discharge of pollutants to waters of the United States without an NPDES permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations, and other requirements including monitoring and reporting. NPDES permits are developed in accordance with various statutory and regulatory authorities established pursuant to the CWA. The regulations governing the EPA NPDES permit program are generally found in title 40 CFR, parts 122, 124, 125, and 136.

Sections 101, 301(b), 304, 308, 401, and 402 of the CWA provide the process and statutory basis for the effluent limitations and other conditions in the permit. EPA evaluates discharges with respect to these sections of the CWA and the relevant NPDES regulations in determining which conditions to include in the permit.

EPA first determines which technology-based limits apply to the discharges in accordance with applicable national effluent limitation guidelines and standards. EPA further determines which water quality-based limits apply to the discharge based upon an assessment of the pollutants discharged and a review of state water quality standards (IDAPA 58.01.02). In general, the CWA requires that the effluent limit for a particular pollutant be the more stringent of either the technology-based limit or the water quality-based limit. Monitoring requirements must also be included in the permit to determine compliance with effluent limits and the need for changes to limits in the future. Appendix B provides additional information on the statutory and regulatory basis for the effluent limits proposed in the draft permit

The draft NPDES permit provides CWA authorization for the wastewater discharge at Outfall 001. Stormwater runoff, including that from roadways and disturbed area, are subject to the requirements of the 2006 Multi-Sector General permit (MSGP) for Industrial Activities, Sector G (Metal Mining).

A. Proposed Effluent Limitations and Monitoring Requirements

The discharge from Outfall 001 was evaluated by comparing the technology-based effluent limitations in 40 CFR § 440 Subpart J, along with the water quality-based effluent limits appropriate for the pollutants identified by Formation in their NPDES application (see Appendix B). For most parameters, the WQBELs are more restrictive. The proposed effluent limitations for the ICP are summarized below and in Table 4.

Table 4. Proposed Outfall 001 Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limits and Monitoring Requirements			
		Maximum Daily Limit	Average Monthly Limit	Monitoring Frequency	Sample Type
Arsenic [2]	µg/l	100	50	Weekly	Grab
Cadmium [2]	µg/l	0.52	0.26	Weekly	Grab
Cobalt [2]	µg/l	141	70.4	Weekly	Grab

Table 4. Proposed Outfall 001 Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limits and Monitoring Requirements			
		Maximum Daily Limit	Average Monthly Limit	Monitoring Frequency	Sample Type
Copper [2]	µg/l	4.80	2.40	Weekly	Grab
Lead [2]	µg/l	0.90	0.45	Weekly	Grab
Mercury [2]	µg/l	0.12	0.01	Weekly	Grab
Nickel	µg/l	26.52	13.22	Weekly	Grab
Thallium	µg/l	0.95	0.47	Weekly	Grab
Zinc	µg/l	37.02	18.45	Weekly	Grab
Ammonia (total as N)	mg/l	5.62	2.80	2/Month	Grab
Nitrate + Nitrite	mg/l	100	---	2/Month	Grab
Sulfate	mg/l	250	---	2/Month	Grab
Sulfide	µg/l	2	---	2/Month	Grab
TSS	mg/l	30	20	Weekly	Grab
pH	s.u.	Between 6.5 and 9.0 at all times		Weekly	Grab
Dissolved Oxygen	mg/l	Must exceed 6.0 at all times		2/Month	Grab
Temperature	C°	19	---	2/Month	Grab
Iron	µg/l	---	---	Monthly	Grab
Aluminum	µg/l	---	---	Monthly	Grab
Hardness	mg/l	---	---	Monthly	Grab
Chloride	mg/l	---	---	Monthly	Grab
Conductivity	mS/m	---	---	Monthly	Grab
TDS	mg/l	---	---	Monthly	Grab
Whole Effluent Toxicity (WET)	TU_C	---	---	1x/6 months	Grab
Expanded Effluent Testing [1]	---	---	---	3x/5 years	Grab

Notes:
- Metals limits expressed as total recoverable except for mercury which is expressed as total.

1. Expanded effluent testing includes the 126 chemicals listed in 40 CFR § 131.36. This testing shall occur in years 2, 3 and 4 of the permit cycle, and should occur coincident with WET testing and other routine monitoring.
2. Reporting is required within 24 hours of a maximum daily limit violation.

1. The permittee must not discharge any waste streams, including spills and other nonintentional or non-routine dischargers of pollutants, that are not part of the normal operation of the facility as disclosed in the permit application, or any pollutants that are not ordinarily present in such waste streams.

2. The permittee must not discharge hazardous materials in concentrations found to be of public health significance or to impair the beneficial uses of the receiving water.

3. The permittee must not discharge chemicals or toxic pollutants in concentrations that impair the beneficial uses of the receiving water.

4. The permittee must not discharge deleterious materials in concentrations that impair the beneficial uses of the receiving water.

5. The permittee must not discharge floating, suspended or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair the beneficial uses of the receiving water.

6. The permittee must not discharge excess nutrients that cause visible slime growths or other nuisance aquatic growths impairing beneficial uses of the receiving water.

7. The permittee must not discharge wastewater from the TWSF and the ore stockpile in combined flows exceeding 38 gpm (54,720 gpd). The permittee shall establish an internal monitoring point to continuously measure the combined flow from the TWSF and the ore stockpile.

For all effluent monitoring, the permittee must use methods that can achieve a method detection limit (MDL) less than the effluent limitation. For parameters that do not have effluent limitations, the permittee must use methods that can achieve MDLs less than or equal to those specified in Table 5.

B. Basis for Effluent Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and/or ambient surface water data to determine if additional effluent limitations are required in the future, and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for permit renewal, as appropriate, to EPA.

Since ICP will be a new source metals mine, effluent monitoring data is currently not available. In order to gain a more comprehensive understanding of the pollutants that may be present in the effluent, the draft permit requires three episodes (events) of expanded effluent along with semiannual whole effluent toxicity (WET) testing. Semiannual WET testing shall occur during the low-flow fall (September) and winter (February) seasons. Expanded effluent testing includes a full priority pollutant scan of the 126 chemicals as listed in 40 CFR 131.36. The draft permit requires this monitoring in the second, third, and fourth year of the permit, and should be timed such that it occurs coincident with the September WET testing along with routine effluent testing.

Whole effluent toxicity is defined as the aggregate toxic effect of an effluent measured directly by an aquatic toxicity test. Due to the unknown cumulative and synergistic effects of pollutants, WET testing is a methodology that allows permits to be protective of the narrative “no toxics in toxic amounts” criterion that is applicable to all waters of the United States, and Idaho state waters (IDAPA 58.01.02.200.02). This is also of concern at the ICP due to the unknown effects of various milling reagents and chemicals, including copper sulfate, xanthates, and various flocculants. Accordingly, chronic WET testing has been included in the draft permit as a monitoring requirement. In addition to submitting results from the WET and expanded effluent testing along with DMR forms, these data should be submitted to EPA and IDEQ along with the application for permit reissuance at least 180 days before permit expiration.

Table 4 shows various pollutants with effluent limitations along with the expanded effluent and whole effluent toxicity testing requirement. Table 4 also identifies several other parameters for which effluent monitoring is required including hardness, iron, aluminum, chloride, conductivity and total dissolved solids (TDS). As described in Appendix B, hardness is important because the criteria for several metals are hardness dependent, and this data may be necessary for determining reasonable potential, and in calculating effluent limitations during the next permit cycle. Similarly, it may be necessary to further evaluate iron and aluminum for their potential to exceed WQS during the next permit issuance. Chloride, conductivity and TDS are all interrelated parameters that describe the salinity of the discharge. These parameters are of importance in monitoring the effectiveness of the treatment process as the RO and VSEP process removes salts from the waste stream.

Effluent monitoring frequencies (as shown in Table 4) are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance and effluent variability. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136), and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

For mercury monitoring, the permittee must use the appropriate version of EPA Method 1631, or the most sensitive analytical method approved in 40 CFR § 136, which ever is most sensitive. The method detection limit must be identified on the DMR report. In addition, the permittee will be required to participate in the IDEQs statewide ambient mercury fish tissue monitoring program as described in the guidance document entitled *Implementation Guidance for the Idaho Mercury Water Quality Criteria* (IDEQ 2005). Details of the fish tissue monitoring program will be identified in the State's 401 certification of the permit.

V. AMBIENT MONITORING REQUIREMENTS

As described above, ambient surface water sampling is typically required in NPDES permits to monitor the affects of the discharge on the receiving water, and to assess the needs for future monitoring and/or effluent limits. However, because the draft permit contains end-of-pipe effluent limits with no mixing zone, the need for ambient monitoring is reduced. As described in the ICP Plan of Operations (POO), Formation has proposed monitoring a total of 22 stream locations and 2 surface seeps across the ICP area during the life of mining operations. This includes quarterly monitoring at locations WQ-24 (Big Deer Creek just upstream from Outfall

001), WQ-28 (mouth of Big Deer Creek), and WQ-25 located in Panther Creek downstream from all ICP operations (Formation 2005). The ambient stream monitoring requirements described below are in addition to those Formation has included in the ICP POO. Surface water monitoring is required both upstream (at WQ-24) and downstream (at WQ-28) of Outfall 001. Although monitoring station WQ-28 is located downstream of Outfall 001, it is located too far downstream (approximately 3 miles) and there are too many intervening tributaries to make this a useful monitoring station. Accordingly, the draft permit requires Formation to establish an ambient stream monitoring location in Big Deer Creek at a location downstream from Outfall 001. The location should be at least 400 feet downstream from Outfall 001 to allow for complete mixing, but no further downstream (i.e., east) than the confluence of Big Deer Creek with the unnamed tributary to which SS-1 (surface seep #1) drains. The final location of this newly established monitoring station must be approved in writing by IDEQ

At each of the two surface water monitoring stations (WQ-24 and the newly established station), quarterly monitoring (i.e., once every 3 months) shall be conducted for flow and hardness. For scheduling purposes, the following seasonal monitoring applies for quarterly sampling: fall quarter – September/October/November; winter quarter – December/January/February; spring quarter – March/April/May; summer quarter – June/July/August. For all other parameters listed in Table 4 (excluding WET and expanded effluent testing), ambient monitoring shall be conducted every six months. This monitoring shall be conducted during the fall and spring quarter. These requirements are summarized below in Table 5 (note that silver has been added to the list of monitoring requirements).

Table 5. Ambient Surface Water Monitoring Requirements at WQ-24 and Downstream Station

Parameter	Units	Monitoring Frequency	Sample Type	Maximum ML
Flow	gpm	Quarterly	Grab	---
Arsenic	μg/l	1x/6 months	Grab	5.0
Cadmium	μg/l	1x/6 months	Grab	0.2
Cobalt	μg/l	1x/6 months	Grab	5.0
Copper	μg/l	1x/6 months	Grab	1.0
Lead	μg/l	1x/6 months	Grab	0.4
Mercury	μg/l	1x/6 months	Grab	0.01
Nickel	μg/l	1x/6 months	Grab	5.0
Silver	μg/l	1x/6 months	Grab	2.0
Thallium	μg/l	1x/6 months	Grab	0.3
Zinc	μg/l	1x/6 months	Grab	5.0
Ammonia (total as N)	mg/l	1x/6 months	Grab	1.0
Nitrate + Nitrite	mg/l	1x/6 months	Grab	10
Sulfate	mg/l	1x/6 months	Grab	10
Sulfite	μg/l	1x/6 months	Grab	2.0
TSS	mg/l	1x/6 months	Grab	5
pH	s.u.	1x/6 months	Grab	---
Dissolved Oxygen	mg/l	1x/6 months	Grab	---
Temperature	C°	1x/6 months	Grab	---
Iron	μg/l	1x/6 months	Grab	20
Aluminum	μg/l	1x/6 months	Grab	20
Hardness	mg/l	Quarterly	Grab	---
Chloride	mg/l	1x/6 months	Grab	1.0

Table 5. Ambient Surface Water Monitoring Requirements at WQ-24 and Downstream Station

Parameter	Units	Monitoring Frequency	Sample Type	Maximum ML
Conductivity	mS/m	1x/6 months	Grab	---
TDS	mg/l	1x/6 months	Grab	---

Results from surface water monitoring must be reported to EPA and IDEQ along with the application for renewal. This includes all surface water monitoring required under the draft permit, in addition to all other data (operational and pre-operational) collected at surface water monitoring stations WQ-24 and WQ-28.

VI. OTHER PERMIT CONDITIONS

A. Quality Assurance Plan

Federal regulations at 40 CFR § 122.41(e) require the permittee to properly operate and maintain their facilities, including providing "adequate laboratory controls and appropriate quality assurance procedures". To implement this requirement, the draft permit requires that Formation develop a Quality Assurance Plan (QAP) to ensure that the monitoring data submitted are complete, accurate, and representative of the environmental condition being sampled. The QAP must include written procedures that the permittee must follow for sample collection, handling, storage, and shipping; along with chain-of-custody procedures, instrument calibration, laboratory analysis, and data reporting and validation. The draft permit requires Formation to submit written notification to EPA and IDEQ that the QAP has been developed and implemented within 90 days of the effective date of the permit.

B. Best Management Practices Plan

Section 402 of the CWA, and federal regulations at 40 CFR § 122.44(k) authorize EPA to require best management practices (BMPs) in NPDES permits. BMPs are measures that are intended to prevent or minimize the generation and potential release of pollutants to waters of the United States through runoff, spillage, leaks or erosion. These measures are important tools for waste minimization and pollution prevention, and should apply to all components of operation at the ICP.

The draft permit requires Formation to prepare and implement a BMP Plan within 90 days and 120 days, respectively, of the permit effective date. The intent of the BMP plan is to recognize the hazardous nature of various substances used and produced by the facility, and the way in which these substances may be accidentally dispersed or released into the environment. The BMP Plan should incorporate elements of pollution prevention as set forth in the Pollution Prevention Act of 1990, 42 U.S.C §§ 13101 to 13109.

The BMP Plan shall be a "living document". The draft permit requires that the BMP Plan be maintained to reflect any systems changes, and that any modifications to the facilities operation are made with consideration of the effect the modification could have on the generation or potential release of pollutants. The BMP Plan must be revised if the facility is modified, or as new pollution prevention practices are developed. The draft permit requires Formation to submit written notification to EPA and IDEQ that the BMP Plan has been developed and implemented within 120 days of the effective date of the permit.

C. Methylmercury Study Plan

As described in the *Implementation Guidance for the Idaho Mercury Water Quality Criteria* (IDEQ 2005), IDEQ is moving away from aquatic life mercury criteria based on water column concentrations, to human health-based criteria based on fish tissue concentrations expressed as mg/kg of mercury. In most cases, IDEQ considers that human health criteria based on fish tissue concentrations will be protective of aquatic life as well. Several details of this implementation guidance remain to be worked out, but in the interim, the chronic mercury criteria for the protection of cold water biota (0.012 µg/l) is still available for CWA purposes including NPDES permitting.

As described in the State’s certification of the draft permit, the permittee must prepare and implement a study plan to assess compliance with IDEQs methylmercury fish tissue criteria in order to determine if additional effluent limitations will be necessary during the next permit cycle. Within 12 months of the effective date of this permit, the permittee must develop a written Methylmercury Study Plan, and submit it to EPA and the IDEQ regional office. IDEQ must approve the plan, and the permittee must submit a report to EPA and IDEQ summarizing the results of the study in accordance with the approved schedule in the plan, but not later than 4 years from the effective date of this permit.

D. Copper Loading Demonstration Plan

As described in the State’s draft certification of the permit, and in Section III of this fact sheet, the permittee must demonstrate to IDEQ, prior to the commencement of discharge, that there will be no net increase in copper mass loading to the Big Deer Creek watershed as a consequence of mining activity. Because Big Deer Creek is listed as a “high priority” waterbody under the TMDL program, this requirement is necessary in order to comply with State water quality standards at IDAPA 58.01.02.054.04. Prior to discharge, the permittee must prepare a written plan that: 1) describes the measures that will be implemented (if any) to ensure that, notwithstanding the addition of copper from the discharge, the total mass load of copper remains constant or decreases in the Big Deer Creek watershed; and, 2) includes a schedule for the implementation of these measures. The written plan must be submitted to EPA and the IDEQ regional office. The plan must be approved by IDEQ prior to discharge, and implemented in accordance with the approved plan. This plan, or the implementation thereof, does not necessarily require in instream reduction or elimination of copper to compensate for the mass entering Big Deer Creek through Outfall 001 (see Table 1), but rather can be demonstrated through a modeling approach such as described in Section III for the DSM. As described in Section VI.E below, the draft permit requires that such a model be updated on a regular basis.

E. Predictive Hydrologic Model Updates

In order to avoid inaccurate or unreliable predictions of future water quality, the draft permit requires the permittee to periodically update and refine their computer model that predicts water and chemical mass balance relationships between the project components and the surrounding water environment throughout the life of the mine and the post-operational period. At a minimum, the model must be updated during the time the permittee applies for permit renewal, at least 180 days before the expiration date of the draft permit. In the cover letter for permit renewal, the permittee must provide written notification that the hydrologic model has been updated. Summary reports of these updates, or electronic copies of the model simulations, must also be made available to EPA and IDEQ upon request.

F. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, compliance responsibilities, and other general requirements.

VII. OTHER LEGAL REQUIREMENTS

A. National Environmental Policy Act

Because hardrock mines for the beneficiation of gold and copper have effluent limitation guidelines and new source performance standards promulgated at 40 CFR § 444 Subpart J, an evaluation under the National Environmental Policy Act (NEPA) is required for the issuance of a new source NPDES permit such as for the proposed ICP. The ICP will be a new source as defined in 40 CFR § 122.29(b), and is subject to new source performance standards. In addition, EPA's issuance of a new source NPDES permit is considered a major federal action subject to the provisions of NEPA at 40 CFR Parts 1500-1508, and EPA's NEPA implementing regulations at 40 CFR Part 6. Along with IDEQ, EPA is participating in the Environmental Impact Statement (EIS) process for the ICP as cooperating agencies, with the U.S. Forest Service, Salmon-Challis National Forest, as the lead federal agency. The Forest Service is public noticing the draft EIS for a 60 day period concurrent with the public comment period for the draft NPDES permit.

The ICP draft EIS describes the land, people, and resources potentially affected by the proposed underground cobalt mine and associated facilities (USFS 2007). The Forest Service will use this information to determine whether or not to approve the Plan of Operations for the ICP. The draft EIS evaluated five alternatives for the proposed ICP including no action (Alternative I), Formation's proposed plan (Alternative II), the preferred alternative (Alternative IV), and the environmentally preferred alternative (Alternative V). The proposed plan and the preferred alternative are briefly described in Section III of this fact sheet. Alternative V was identified as environmentally preferred because it would require the smallest physical disturbance by utilizing lands on the adjoining Blackbird Mine Superfund site. However, the agencies can not require the ICP obtain an agreement with another private party to operate facilities on property they do not own. The draft EIS and other NEPA documents for the proposed ICP can be reviewed and downloaded on the Salmon-Challis National Forest home page at www.fs.fed.us/r4/sc.

B. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS); and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects (either adverse or beneficial) that an action may have on listed endangered species or critical habitat. On July 3, 2006 EPA sent letters to NMFS and the USFWS requesting a list of threatened or endangered species in the vicinity of the discharge, and received responses later that month that are summarized below in Table 6.

Table 6. Species List for the ICP

Species	Comments
Listed Species	
Gray Wolf (*canis lupus*)	Experimental / Non-essential population. USFWS Jurisdiction
Canada lynx (*Lynx Canadensis*)	USFWS Jurisdiction
Bald eagle (*Haliaeetus leucocephalus*)	USFWS Jurisdiction
Bull trout (*Salcelinus confluentus*)	USFWS Jurisdiction
Fall Chinook salmon (*Oncorhynchus tshawytsha*)	NOAA Jurisdiction
Steelhead (*Oncorhynchus mykiss*)	NOAA Jurisdiction
Sockeye salmon (*Oncorhynchus nerka*)	NOAA Jurisdiction
Critical Habitat	
Steelhead (*Oncorhynchus mykiss*)	NOAA Jurisdiction
Candidate Species	
Yellow-billed cuckoo (*coccyzus americanus*)	USFWS Jurisdiction

As part of the NEPA process, a Biological Assessment (BA) is being prepared as a component of the final EIS to analyze potential adverse effects on threatened or endangered species. This document is in support of the formal consultation process between the Forest Service (lead NEPA agency), EPA, NMFS and the USFWS. While the draft BA is not scheduled for completion until after the beginning of the public notice period (estimated middle February 2007), preliminary conclusions indicate that the that ICP discharge at Outfall 001 is *not likely to adversely affect* threatened or endangered species in the vicinity of the discharge. When the draft BA is complete, it can be reviewed and downloaded on the Salmon-Challis National Forest home page at www.fs.fed.us/r4/sc.

EPA provided NMFS and USFWS with copies of the draft permit and fact sheet prior to the public notice period. Any comments received from the Services regarding threatened or endangered species will be considered prior to issuance of the permit.

C. Essential Fish Habitat

Section 305(b) of the Magnuson-Stevens Act [16 USC 1855(b)] requires federal agencies to consult with NMFS when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. The EFH regulations define an adverse effect as any impact that reduces quality and/or quantity of EFH. These may include direct (e.g. contamination or physical disruption) or indirect (e.g., loss of prey, reduction in species' fecundity) effects; and site-specific or habitat wide impacts (including individual, cumulative, or synergistic consequences of action).

Waters within the ICP area are contain designated EFH for Chinook salmon. EPA has determined that issuance of the NPDES permit to the ICP is *not likely to have an adverse* effect on EFH in the vicinity of the discharge. End-of-pipe effluent limits in the permit with no mixing zone assures that the permit will be protective of water quality in Big Deer Creek, and downstream waters of Panther Creek.

D. State Certification

Section 401 of the CWA requires EPA to seek State certification that the permit will be protective of State water quality standards (including the antidegradation policy) before issuing the final permit. As a result of the certification, the State may require more stringent permit conditions and/or additional monitoring requirements to ensure the permit complies with water quality standards. EPA is requesting that IDEQ state in its CWA 401 certification that the terms and conditions of the permit are protective of the beneficial uses of Big Deer Creek and downstream receiving waters such as Panther Creek.

On December 1, 2006, EPA received a draft (i.e., preliminary) certification of the ICP NPDES permit from IDEQ. Two separate issues were addressed by the State in their draft certification of the permit: 1) the permittee must prepare and implement a study plan to determine compliance with Idaho's methylmercury fish tissue criteria (IDEQ 2005); and, 2) prior to commencing discharge, the permittee must develop and implement a plan to ensure compliance with IDAPA

58.01.02.054.04 by demonstrating a no net increase in copper mass loading to Big Deer Creek (see Sections VI. C & D). A copy of the draft CWA 401 certification is provided in Appendix F.

E. Antidegradation

In setting permit limits, EPA must consider the State's antidegradation policy (IDAPA 58.01.02.051). Under this policy, existing water quality and water uses must be protected and maintained even if the existing quality is higher as compared to the standard unless the state grants a variance. Variances can be authorized in the form of a mixing zone, using site specific criteria, or under special circumstances determined necessary to accommodate special economic or social development.

The effluent limits in the draft permit are based upon current water quality criteria and/or technology-based effluent limits that have been shown not to cause or contribute to an exceedance of water quality standards. WQBELs are applied end-of-pipe with no mixing zone. Accordingly, the discharges as authorized in the draft permit will comply with the State's antidegradation requirements.

F. Permit Expiration

The permit will expire five years from the effective date of the permit.

VIII. ACRONYMS

AML	Average monthly limit
APA	Administrative Procedures Act
BA	Biological Assessment
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practice
BMSG	Blackbird Mine Site Group
BPJ	Best Professional Judgment
BPT	Best Practicable Control Technology Currently Available
CF	Conversion Factor
CFR	Code of Federal Regulations
COCs	Contaminants of Concern
cfs	Cubic feet per second
CV	Coefficient of variation
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
DMR	Discharge monitoring report
DSM	Dynamic System Model
EFH	Essential Fish Habitat
ELG	Effluent Limitation Guideline
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
Formation	Formation Capital Corporation, U.S.
ICP	Idaho Cobalt Project
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
MDL	Maximum daily limit or Method detection limit
mg/L	Milligrams per liter
MGD	Million gallons per day
ML	Minimum level
MSGP	Multi-Sector General Permit for industrial stormwater discharges

NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
POO	Plan of Operation
QAP	Quality Assurance Plan
RO	Reverse Osmosis
ROD	Record of Decision
RPM	Reasonable Potential Multiplier
TMDL	Total Maximum Daily Load
TDS	Total Dissolved Solids
TSD	Technical Support Document For Water Quality-based Toxics Control (EPA 1991)
TSS	Total Suspended Solids
TWSF	Tailings and Waste Rock Storage Facility
USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
VSEP	Vibratory Membrane Separation
WET	Whole effluent toxicity
WLA	Waste load allocation
WQBEL	Water Quality-Based Effluent Limit
WQS	Water Quality Standard
µg/L	Micrograms per liter

IX. REFERENCES

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APPENDIX A

FIGURES

Figure 1. General Location Map

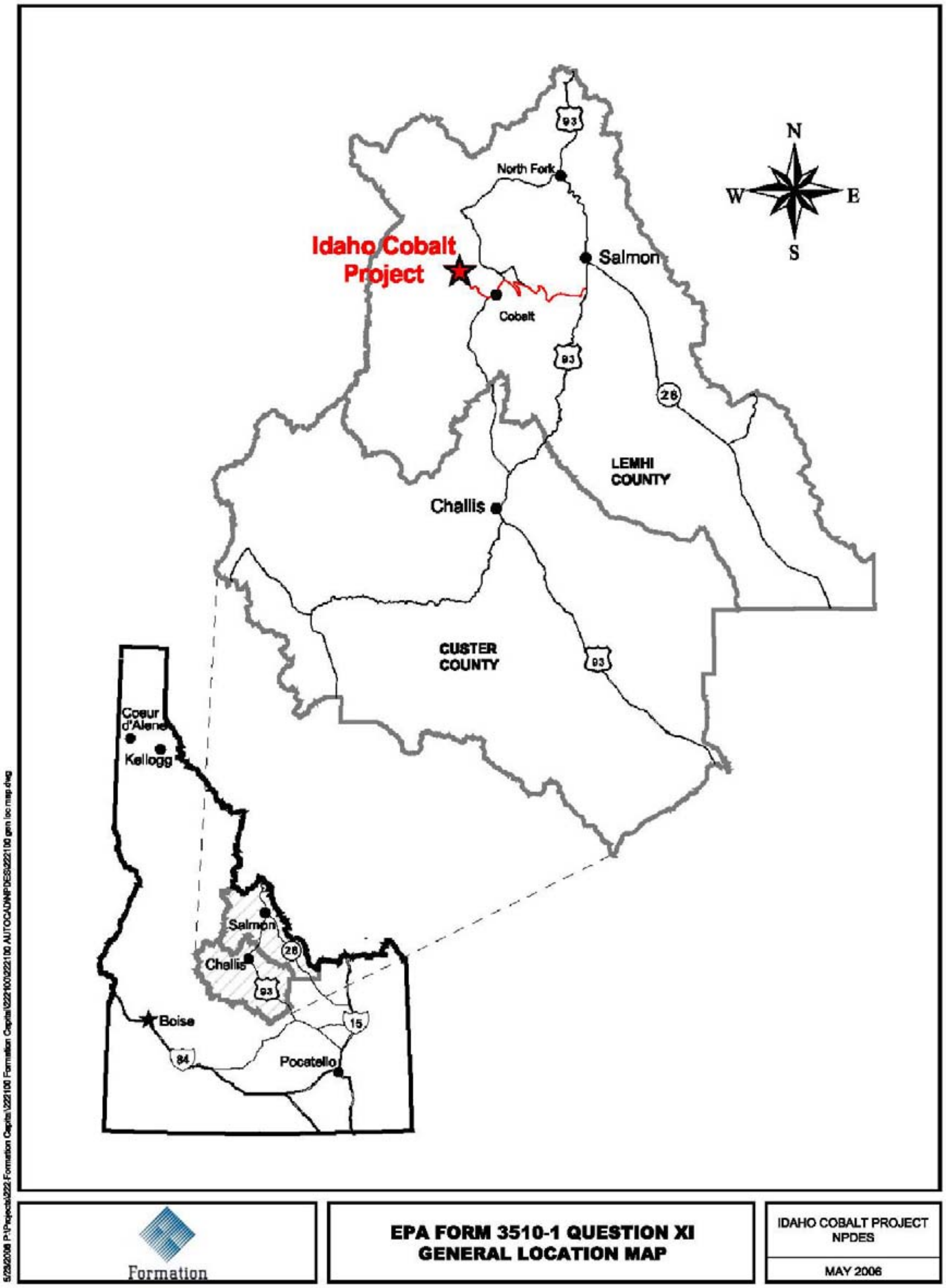


Figure 2. ICP Project Area

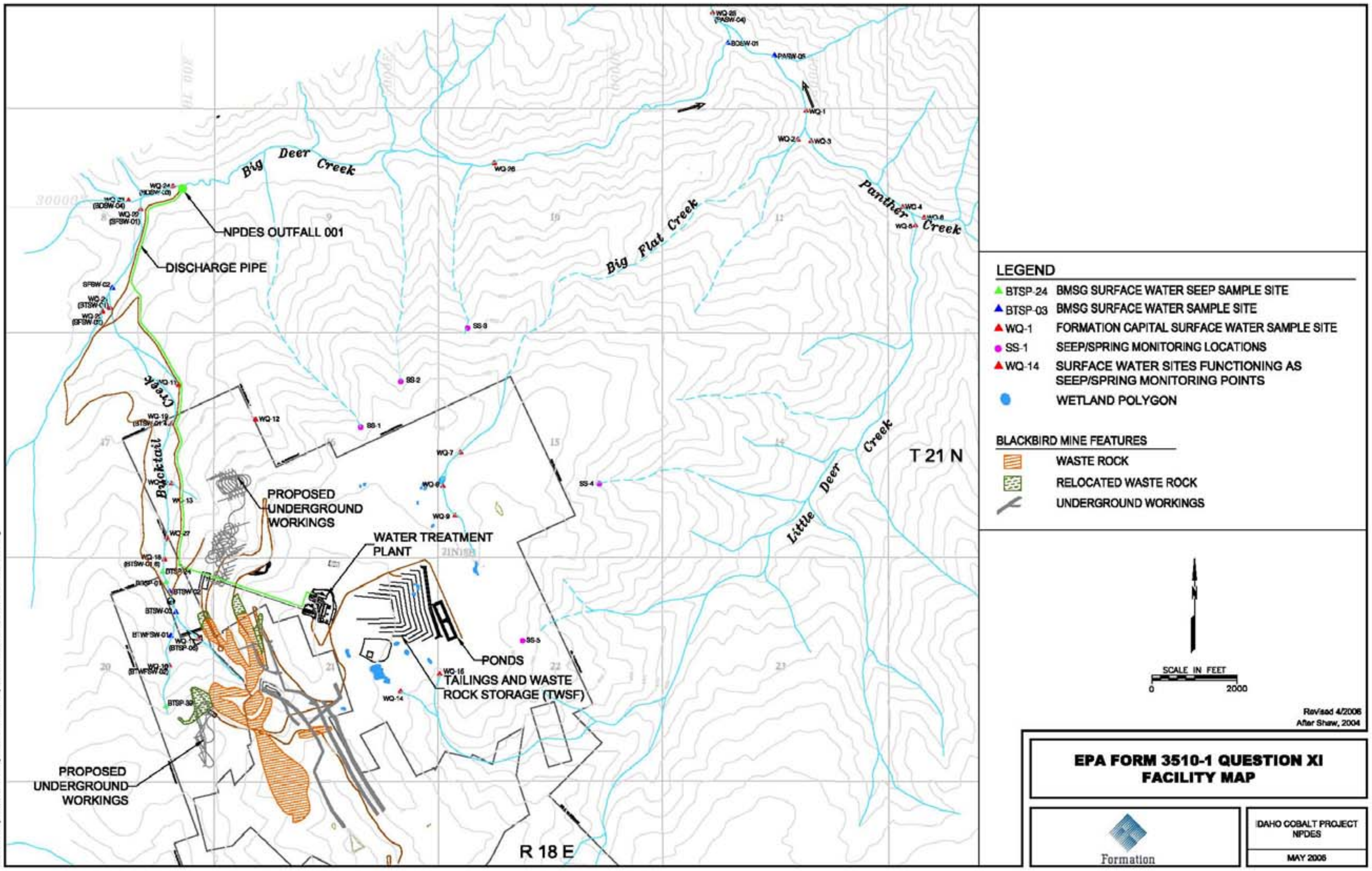
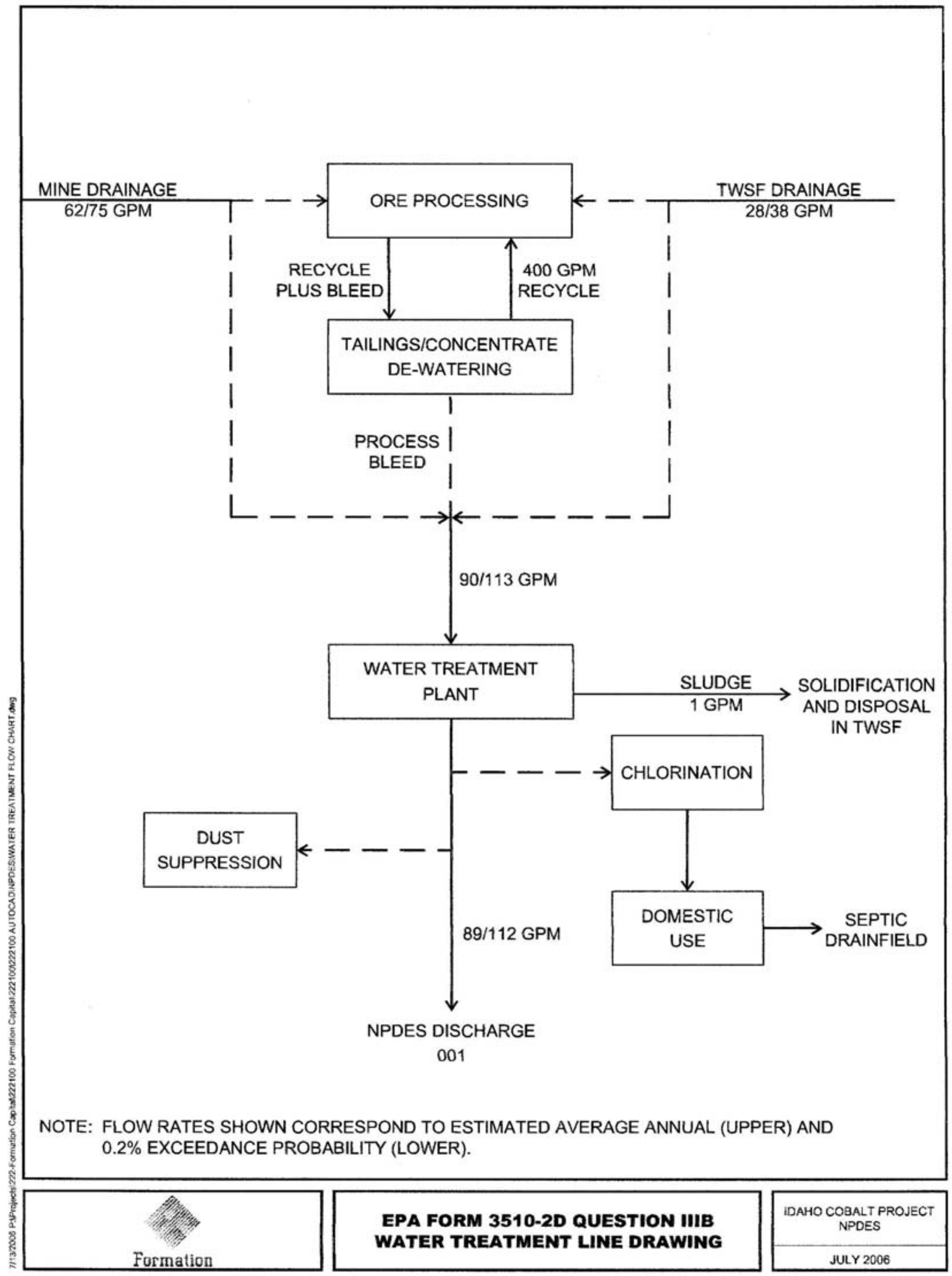


Figure 3. Generalized Water Flow Diagram



APPENDIX B: BASIS FOR EFFLUENT LIMITATIONS

Effluent limitations were summarized in Section IV. of this fact sheet. The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits (WQBELs).

A Technology-based Effluent Limits

Section 301 of the CWA requires particular categories of industrial dischargers to meet technology-based effluent limitation guidelines. The intent of a technology-based effluent limitation is to require a minimum level of treatment for industrial point sources based on currently available treatment technologies while allowing a discharger to choose and use any available control technique to meet the limitations.

The CWA initially focused on the control of "traditional" pollutants (conventional pollutants and some metals) through the use of Best Practicable Technology (BPT). Permits issued after July 1, 1977, must include any conditions necessary to ensure that the BPT level of pollution control is achieved. BPT limitations are based on effluent limitation guidelines (ELGs) developed by EPA for specific industries. Where EPA has not yet developed guidelines for a particular industry, permit limitations may be established using Best Professional Judgment (BPJ) [40 CFR 122.43, 122.44, 125.3, and 402(a)(1)].

Section 301(b)(2) of the CWA also requires further technology-based controls on effluents. After March 31, 1989, all permits are required by CWA 301(b)(2) and 301(b)(3) to contain effluent limitations for all categories and classes of point sources which: 1) represent Best Conventional Technology (BCT); and, 2) control toxic pollutants and nonconventional pollutants through the use of Best Available Technology Economically Achievable (BAT). BCT effluent limitations apply to conventional pollutants (pH, BOD, oil and grease, suspended solids and fecal coliform). BAT effluent limitations apply to toxic and nonconventional pollutants. Toxic pollutants are those listed in 40 CFR 401.15 and 131.36. Nonconventional pollutants include all pollutants not included in the toxic and conventional pollutant categories, such as ammonia and total residual chlorine. In no case may BCT or BAT be less stringent than BPT. Like BPT requirements, BAT and BCT permit conditions may be established using BPJ procedures in the absence of effluent limitations guidelines for a particular industry.

EPA has been developing ELGs for existing industrial and commercial activities since 1972 as directed in the original Federal Water Pollution Control Act (40 CFR 403 through 471 inclusive). For the mining operation proposed at the ICP, applicable ELGs were promulgated in 40 CFR § 440 Subpart J (Parts 100 through 105) on December 3, 1982 (47 FR 54609), and are titled *Copper, Lead, Zinc, Gold, and Molybdenum Ores Subcategory*. Regulations in Subpart J are applicable because copper and gold are being mined in addition to cobalt.

40 CFR § 440.104 contains the New Source Performance Standards for hardrock mines regulated under Subpart J. New Source Performance Standards (NSPS') are technology-based standards for facilities that qualify as *new sources* under 40 CFR § 122.2 and 40 CFR § 122.29. These

standards consider that the new source facility has the opportunity to design and maintain operations to more effectively control pollutant discharges by application of the best available demonstrated technology (BADT). The term *new source* means any source, the construction of which commenced after the publication of the proposed regulations prescribing a standard of performance under Section 306 of the CWA, which will be applicable to such source, if such standard is thereafter promulgated in accordance with Section 306. The Idaho Cobalt Project is considered a new source, and mine drainage discharged from Outfall 001 is subject to the technology-based effluent limits in 40 § CFR 440.104. These limits are summarized below in Table B-1

Table B-1. Technology-based Effluent Limits

Pollutant	Daily Maximum	Monthly Average
Cadmium (µg/L)	100	50
Copper (µg/L)	300	150
Lead (µg/L)	600	300
Mercury (µg/L)	2	1
Zinc (µg/L)	1,500	750
TSS (mg/L)	30	20
pH (s.u.)	Between 6.0 and 9.0	

Note: Table B-1 represents NSPS from 40 CFR § 440.104(a)

In addition to the numerical technology limits identified in Table B-1, NSPS' at 40 CFR § 104(b)(1) prohibit the discharge of process wastewater from mills that use the froth-flotation process alone, or in conjunction with other processes for the beneficiation of ore. Process wastewater is further defined in 40 CFR § 122.2 as "any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct or waste product." Using this definition, wastewater associated with the ICP, other than mine drainage and stormwater, is considered process water. This includes drainage from the TWSF and the ore stockpile. The purpose of the zero discharge NSPS is to encourage the recycling of process wastewater to the maximum extent practical. However, EPA recognizes that this may not be possible depending on the climate conditions at the mine site. In the event that the annual precipitation falling on the drainage area that contributes surface runoff to the treatment facility exceeds the annual evaporation, the net precipitation volume of process water can be discharged subject to the technology limits in Table B-1 [40 CFR § 440.104(b)(2)].

In their application supplement, Formation identified the net precipitation applicable to the NSPS to be 20.2 million gallons/year (38 gpm) based on a non-exceedance probability of 0.2 percent (Formation 2006a). Accordingly, the draft permit adopts this flow rate as an effluent limitation pursuant to 40 CFR § 440.104(b). Combined wastewater flow from the TWSF and the ore stockpile must not exceed 38 gpm (54,720 gpd). Details of the water budget are presented in Section II.C. of this fact sheet, and in the Plan of Operations (Formation 2006).

For the ICP, water quality-based effluent limits for metals are generally more stringent than technology-based limits. Limits for TSS and flow are the only technology-based limits included in the draft permit.

B Water Quality-based Effluent Limits

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet and protect state water quality standards by July 1, 1977. Discharges to state or tribal waters must also comply with limitations imposed by the state or tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected states. The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state or tribal water quality standard, including narrative criteria for water quality.

NPDES regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

For any given pollutant, different uses may have different criteria. To protect all beneficial uses, effluent limits are based on the most stringent of the water quality criteria applicable to those uses. As described in Section III.A, Big Deer Creek is not protected for specific designated beneficial uses. Under these circumstances, undesignated water bodies are protected for cold water aquatic life and primary contact recreation by default (IDAPA 58.01.02.101.01). The applicable water quality criteria for Big Deer Creek are based on these uses, and are summarized in Table B-2 for the pollutants identified in Formation's NPDES application which they believe will be present in their effluent.

Table B-2. Water Quality Criteria Applicable to the Idaho Cobalt Project and Big Deer Creek

Pollutant (µg/l unless otherwise noted)	Cold Water Aquatic Life Criteria		Human Health Criteria [1]	Agriculture Water Supply [2]
	Acute Criteria	Chronic Criteria		
Arsenic	340	150	50	
Cadmium [3]	0.52	0.37		50
Cobalt [4]		86		1,000
Copper [3]	4.6	3.5		500
Iron				5,000 [9]
Lead [3]	13.88	0.54		100
Mercury		0.012		10
Nickel [3]	145	16.1		
Selenium	20	5	4,200	50
Silver [3]	0.32			
Thallium			0.47	
Zinc [3]	36.2	36.5		25,000
Ammonia (mg/l) [6]	5.6	2.34		

Nitrate + Nitrite (mg/l)				100
Sulfate (mg/l)				250 [A]
Sulfide		2		
pH (s.u.)	Within the range of 6.5 – 9.5 [5]			
Temperature (°C) [7]	Maximum daily ≤ 19			
WET (TU_C)	Surface waters shall be free from toxic substances in concentrations that impair designated beneficial uses. [8]			

Notes

1. Human health criteria are for the consumption of organisms only. Values are presented in column C2 for Criteria for Toxic Substances, and apply to all waters designated for recreational use [IDAPA 58.01.02.210.01(b)].
2. Numeric criteria for agriculture water supply are presented for livestock watering (except for iron), and were obtained from the document *Water Quality Criteria 1972* (Blue Book) per IDAPA 58.01.02.252.02.
3. Aquatic life criteria are hardness dependent, and were calculated per the equations shown in Table B-3. The hardness value used in calculating metals criteria was 25 mg/l.
4. Cobalt criteria was calculated as a site specific value for streams impacted by the Blackbird Mine Superfund cleanup site. This numeric value is based on chronic criteria for the protection of cold water aquatic life (Allans 2005), and is being incorporated into the draft permit under the hazardous materials narrative criteria at IDAPA 58.01.02.200.01 and 40 CFR § 122.44(d)(1)(vi)(A).
5. General Criteria applicable to all aquatic life use designations (IDAPA58.01.02.250.01)
6. Ammonia criteria were calculated as a function of temperature and pH of the receiving water per IDAPA 58.01.02250.02.(d). Input parameters represent 95^{th} percentile of temperature and pH values measured at ambient monitoring station WQ-24. Equations for calculating ammonia criteria are shown in Table B-4.
7. As per IDAPA 58.01.02250.02(b) [19°C = 66°F]. If natural background temperatures in the receiving water are above these limits, then the discharge may not raise water temperatures more than 0.3°C above the natural condition on a cumulative basis considering all anthropogenic sources [IDAPA 58.01.02.401.03(a)(v).
8. As per IDAPA 58.01.02.200.02. EPA's recommended magnitude for this narrative criteria at 1 TU_C for chronic toxicity based on a whole effluent toxicity (WET) test (EPA 1991). TU_C are chronic toxicity units and are equal to the reciprocal of the effluent concentration that causes no observable effect in chronic toxicity tests.
9. Numeric criteria for agriculture water supply are presented for irrigation water, and was obtained from the document *Water Quality Criteria 1972* (Blue Book) per IDAPA 58.01.02.252..02.

A.The 250 mg/l criteria is a secondary drinking water criteria based on taste and odor thresholds, and is being adopted into the permit based upon narrative water quality standards prohibiting deleterious materials in concentrations that may impair designated beneficial uses (IDAPA 58.01.02.200.03).

- Aquatic life criteria expressed as dissolved concentrations
- In their NPDES application, Formation also identified magnesium, manganese and sulfate as pollutants of concern. However, there are no state WQS applicable to these pollutants for the designated use of Big Deer Creek.
- Metals criteria expressed as dissolved concentrations.

The Idaho WQS incorporate numeric criteria for toxic substances set forth in 40 CFR § 131.36(b)(1) as of July 1, 1993 (National Toxics Rule). These criteria appear Section 210.01 of the Idaho WQS, and were initiated in response to Section 304(a) of the CWA. Except for iron and cobalt, all of the metals criteria identified in Table B-2 were adopted from the National Toxics Rule (NTR).

1. Hardness Dependent Metals

Metals are the primary pollutant of concern at the ICP, and are naturally occurring in the ore body. During the milling process, metals become liberated from rock material and must be treated in wastewater to reduce their concentrations to levels at or below WQS. Idaho's aquatic life criteria for several of the metals of concern are calculated as a function of hardness measured in mg/l of calcium carbonate ($CaCO_3$). For metals of concern at the ICP, these include cadmium, copper, lead, nickel, and zinc. For these metals, hardness is used as a surrogate for a number of water quality characteristics which affect the toxicity of metals. As the hardness of the receiving water increases, the toxicity of the metals decreases and the numerical value of the criteria increases. For the purposes of calculating aquatic life criteria for hardness dependent metals, Idaho WQS stipulate minimum and maximum hardness values of 25 mg/l and 400 mg/l, respectively [IDAPA 58.01.02.210.03(c)(i)]. For the purposes of calculating a conservative value for metals criteria, the *Technical Support Document for Water Quality-based Toxics Control* (TSD, EPA 1991) recommends using the 5^{th} percentile of hardness values measured in the receiving water. In the case of the ICP, the 5^{th} percentile of 16 hardness measurements collected from WQ-24 is 20.5 mg/l (i.e., soft water). Accordingly, a hardness value of 25 mg/l was used in calculating numeric criteria for hardness dependent metals.

Idaho's aquatic life water quality criteria for metals are expressed as dissolved concentrations. However, effluent limits in NPDES permit must be expressed as total recoverable metals [40 CFR § 122.45(c)]. The dissolved fraction of a metal is that which passes through a 0.45 micron filter whereas total recoverable concentrations are those measured in an unfiltered sample. To account for the difference between total recoverable and dissolved concentrations, "translators" are used in reasonable potential determinations and permit limit calculations. Translators address the relationship between the total amount of a particular metal in the water column, including that fraction sorbed onto suspended sediment particles (total recoverable metal), and the fraction of that metal which is bioavailable and causes toxicity (dissolved metal). Translators can be either site specific, or default values. EPA guidance related to the use of translators in NPDES permits is found in *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 1996). In the absence of site specific translators, this guidance recommends the use of water quality criteria "conversion factors" as the default translators. Because site-specific translators are not available for Big Deer Creek and the ICP, default conversion factors contained within the Idaho WQS in Section 210.02 were used. For cadmium and lead, these conversion factors are hardness based equations whereas they are numeric constants for other metals.

Hardness-based water quality criterion equations for cold water aquatic life and default conversion factors for metals of concern at the ICP at presented in Table B-3.

Table B-3. Hardness Dependent Metals and Conversion Factor Detail

Parameter	WQ Criteria Equations [1,2,3,4]		Conversion Factors [5]	
	Acute	Chronic	Acute	Chronic
Cadmium [6]	$e^{1.0166[\ln(\text{hardness})]-3.924}$	$e^{0.7852[\ln(\text{hardness})]-3.490}$	1.002	0.967
Copper	$e^{0.9422[\ln(\text{hardness})]-1.464}$	$e^{0.8545[\ln(\text{hardness})]-1.465}$	0.960	0.960
Lead [7]	$e^{1.273[\ln(\text{hardness})]-1.460}$	$e^{1.273[\ln(\text{hardness})]-4.705}$	0.993	0.993
Nickel	$e^{0.846[\ln(\text{hardness})]+2.255}$	$e^{0.846[\ln(\text{hardness})]+0.0584}$	0.998	0.997
Zinc	$e^{0.8473[\ln(\text{hardness})]+0.884}$	$e^{0.8473[\ln(\text{hardness})]+0.884}$	0.978	0.986

Notes:
1. "e" is the exponential constant, approximately equal to 2.718
2. "ln" is the natural logarithm (base e)
3. hardness is measured in mg/l as $CaCO_3$
4. These equations compute the criteria as total recoverable metal
5. Multiplying the results of WQ equations by these conversion factors yields total recoverable criteria
6. Conversion factors for cadmium are hardness dependent and were computed as follows for a hardness of 25 mg/l: Acute: 1.136672 –[0.041838·ln(hardness)], Chronic: 1.101672 – [0.041838·ln(hardness)]
7. Conversion factors for lead are hardness dependent and were computed as follows for a hardness of 25 mg/l: Acute: 1.46203 –[0.145712·ln(hardness)], Chronic: 1.46203 – [0.145712·ln(hardness)]

2. Hardness Independent Metals

Idaho water quality criteria for mercury and selenium are expressed as total recoverable metal and are independent of hardness. Arsenic criteria for the protection of aquatic life is also independent of hardness, and has a conversion factor of one (1) meaning that the dissolved and total recoverable criteria are the same (i.e., 340 µg/l and 150 µg/l for acute & chronic exposures, respectively). For each of these three metals, water quality criteria are the same for waters throughout Idaho unless a site-specific criterion is in effect. In addition, water quality criteria for the protection of human health and agriculture water supply are also expressed as total recoverable and are independent of hardness.

EPA has not established toxics criteria for cobalt in 40 CFR § 131.36, and Idaho has not adopted any numeric cobalt criteria for the protection of aquatic life or human health in their WQS. However, a site specific cleanup value of 86 µg/l has been established for all surface water impacted by the Blackbird Mine Superfund site (Allans 2005, EPA 2003). This value was derived from a risk-based analysis conducted as part of a broader aquatic ecological risk assessment performed for surface waters throughout the Blackbird/ICP area pursuant to Section 121 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund). The cobalt criteria of 86 µg/l was derived without regards to receiving water hardness, and is being adopted in the draft permit as a numeric chronic criteria for the protection of aquatic life under the narrative hazardous materials standard (IDAPA 58.01.02.200.01). This narrative standards says that "surface waters of the state shall be free from hazardous materials in concentrations found to be of public health significance or to impair designated beneficial uses". In the case of cobalt, the numeric criteria of 86 µg/l was developed to be protective of cold water aquatic life. The NPDES regulations at 40 CFR § 122.44(d)(1)(vi)(A) allows the permitting authority to establish water quality criteria for parameters that do not have numeric state criteria using risk assessment methodology.

3. Iron

As noted in Section III.A of this fact sheet, all waters of the State are to be protected for agricultural water supply, and Idaho WQS adopt the numeric criteria specified in the "Blue Book" (EPA 1972) for these purposes. Although there are no toxic criteria established for iron in Section 210 of the Idaho WQS, a value of 5.0 mg/l (5,000 µg/l) is recommended in the Blue Book for irrigation water supply. In their NPDES application, Formation anticipated that their discharge would contain a maximum daily iron concentration of 300 µg/l. At this concentration, the discharge shows no reasonable potential of violating WQS, and an iron effluent limit was not developed for the draft permit (see Appendix C).

4. Ammonia, Total (as Nitrogen)

The Idaho WQS contain criteria for the protection of aquatic life from the toxic effects of ammonia [IDAPA 58.01.02.250(d)]. Because Big Deer Creek is known to support a resident population of trout, EPA has applied ammonia criteria which are protective of early life stages of aquatic life. The criteria are dependent on pH and temperature because the fraction of ammonia present as the toxic, un-ionized form, increases with increasing pH and temperature. Therefore, the criteria become more stringent as the pH and temperature increase. The ammonia criteria shown in Table B-2 were calculated according to the following equations in Table B-4.

Table B-4. Water Quality Criteria for Ammonia

Acute Criterion	Chronic Criterion
$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85, 1.45\times 10^{0.028\times(25-T)}\right)$

For the ICP, pH and temperature input parameters for the equations in Table B-4 were the 95th percentile values of those measured at station WQ-24. These are: pH = 8.0 (n=15), and temperature = 15.1°C (n=13).

5. Nitrates and Nitrites

Nitrate is a pollutant present in mine drainage water at the ICP as a residual from underground blasting operations. There are no numeric nitrate criteria directly applicable to the ICP in the Idaho WQS. However, the Blue Book recommends a value of 100 mg/l of nitrate plus nitrite (NO_3^- + NO_2^-) for agricultural stock watering. Nitrite nitrogen is relatively unstable and is easily oxidized to the nitrate form. Consequently, nitrite is not expected to be present in ICP wastewaters. Idaho WQS also have narrative criteria that are applicable to nitrogen compounds, including nitrate, at IDAPA 58.01.02.200.06. This standard states that “surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses”. For the purposes of the draft permit, both the narrative nutrient standard and the numeric criteria for agricultural stock watering have been adopted. The numeric criteria has been set equal to the maximum daily limit in the draft permit.

6. Sulfates and Sulfides

Sulfur compounds are naturally occurring within the ore body at the ICP in the form of metallic sulfide minerals. Once liberated, both sulfates and sulfides will be present in wastewater from the mill and in the discharge at Outfall 001. EPA has not established toxics criteria for sulfates or sulfides in 40 CFR § 131.36, and Idaho has not adopted any numeric criteria for these pollutants to protect aquatic life or human health in their WQS. However, a secondary drinking water criteria of 250 mg/l has been established for sulfate along with a total sulfide chronic criteria of 2 µg/l for the protection of freshwater aquatic life (EPA 1972, 2004).

For sulfate (SO_4^{-2}), the secondary drinking water criteria is adopted into the draft permit as a maximum daily limit through the narrative criteria prohibiting deleterious materials in concentrations that impair designated beneficial uses (IDAPA 58.01.02.200.03). Deleterious materials are defined as “any nontoxic substance which may cause the tainting of edible species of fish, taste and odors in drinking water supplies, or the reduction of the usability of water without causing physical injury to water users or aquatic or terrestrial organisms” (IDAPA 58.01.02.003.23). The secondary drinking water criteria for sulfate (250 mg/l) is based on taste and odor thresholds rather than human health considerations. As such, the “Blue Book” (EPA 1972) has adopted this criteria for aesthetic considerations for all recreational waters, including

Big Deer Creek. These criteria state that waters shall be free of "substances producing objectionable color, odor, taste or turbidity".

While reviewing the preliminary draft permit and fact sheet, IDEQ commented that the 250 mg/l sulfate limit may be overly stringent. While the State is obligated to point out areas where a permit may be made less stringent and still meet WQS, such recommendations are advisory for EPA, but may be included at the Agency's discretion. As described in Section II.D., Formation's proposed plan (Alternative II) includes secondary RO treatment which is fully capable of achieving sulfate effluent concentrations of 250 mg/l. However, the draft EIS selected Alternative IV as the preferred alternative partly because removing RO from the treatment train can achieve all other effluent limitations, but not generate large volumes of stabilized brine residuals that would require disposal. If Alternative IV is selected for the final action, and Formation modifies their Plan of Operations accordingly, then the final NPDES permit may contain a mixing zone for sulfate or the sulfate limit may be removed entirely from the permit as authorized by IDEQ. As described in Chapter 4 the draft EIS, Alternative IV does not necessarily preclude the use of RO or equivalent technologies for secondary treatment, it simply recommends against its use.

The "Blue Book" (EPA 1972) and the "Gold Book" (EPA 1986) both recommend that the concentration of total sulfides (undissociated H_2S) not exceed 2 µg/l (0.002 mg/l) at any time or place for the chronic protection of aquatic life. Although the toxicity of sulfides is primarily dependent on the concentration of hydrogen sulfide (H_2S) rather than the sulfide ion (S^{-2}), which in turn is dependent on temperature and pH conditions, the 2 µg/l criteria is recommended for all waters and is being adopted in the draft permit as a maximum daily limit.

7. pH

Idaho WQS state that the pH of all waters with aquatic life use designations shall be within the range of 6.5 and 9.0 standard units [IDAPA 58.01.02.250.01(a)]. This standard is being applied directly as an effluent limitation at the ICP, and is more stringent that the technology-based effluent limitation specified in 40 CFR § 440.104. Consequently, the pH of the discharge at Outfall 001 shall be between 6.5 and 9.0 at all times.

8. Dissolved Oxygen

For the protection of cold water aquatic life, Idaho WQS state that the dissolved oxygen (DO) concentration shall exceed 6.0 mg/l at all times [IDAPA 58.01.02.250.02(a)] This standard is being applied directly as an effluent limitation at the ICP as a minimum concentration of dissolved oxygen.

9. Temperature

For the protection of cold water aquatic life, Idaho WQS specify maximum daily average temperatures of no greater than 19°C (66°F) [IDAPA 58.01.02.250.02(b)]. This standard is being applied directly as an effluent limitation at the ICP.

10. Narrative Criteria

The Idaho WQS specify narrative criteria that apply to all surface waters of the state (IDAPA 58.01.02.200). For the ICP, narrative criteria for hazardous materials (Section 200.01); toxic substances (Section 200.02); deleterious materials (Section 200.03); floating, suspended or submerged matter (Section 200.05); and excess nutrients (Section 200.06) are applied as effluent limitations that will read as follows in the draft permit:

- The permittee must not discharge hazardous materials in concentrations that pose a threat to public health or impair the beneficial uses of the receiving water.

- The permittee must not discharge chemicals or toxic pollutants in concentrations that impair the beneficial uses of the receiving water.

- The permittee must not discharge deleterious materials in concentrations that impair the beneficial uses of the receiving water.

- The permittee must not discharge floating, suspended or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair the beneficial uses of the receiving water.

- The permittee must not discharge excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing beneficial uses of the receiving water.

APPENDIX C: REASONABLE POTENTIAL DETERMINATION

This Section describes the process EPA used to determine if the ICP discharge from Outfall 001 has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. EPA uses the process described in Chapter 3 of the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential.

To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA typically compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit [40 CFR 122.44(d)(1)(i)]. However, in the case of the ICP, Formation has not applied to the State for a mixing zone so EPA compares the maximum projected effluent concentration directly to the numeric criteria for that pollutant. This section discusses how the reasonable potential determination was conducted.

A. Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using a steady state model represented by the following mass balance equation:

$$C_dQ_d = C_eQ_e + C_uQ_u \qquad \text{(Equation C-1)}$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (i.e., 1Q10 or 7Q10)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_eQ_e + C_uQ_u}{Q_e + Q_u} \qquad \text{(Equation C-2)}$$

If a mixing zone is not allowed (as is the case with the ICP), dilution is not considered when projecting the receiving water concentration, and,

$$C_d = C_e \qquad \text{(Equation C-3)}$$

In other words, if a mixing zone is not allowed (either because the stream already exceeds water quality standards, the facility does not apply for one, or the state does not allow one), EPA considers only the concentration of the pollutant in the effluent regardless of the upstream flow and concentration. If the maximum projected concentration of the pollutant in the effluent is less than the water quality standard, the discharge cannot cause or contribute to a water quality violation for that pollutant. In this case the mixing or dilution factor is equal to zero and the mass balance equation is simplified to $C_d = C_e$.

B. Maximum Projected Effluent Concentration

The maximum projected effluent concentration (C_e) is defined by the TSD as the 99th percentile of the effluent data. This is calculated by multiplying the maximum reported effluent concentration by a reasonable potential multiplier (RPM). Since the ICP is a new source, no effluent data exists and modeling was performed to predict probable effluent characteristics. During the future reissuances of the ICP NPDES permit, the maximum value of the actual effluent data will be used to determine reasonable potential to exceed WQS. For pollutants with technology-based effluent limitation guidelines, the maximum effluent concentration used to determine reasonable potential was the technology-based maximum daily limitation. The technology-based limit was used since water quality-based limits are only required if discharges at the technology-based limits have the potential to exceed WQS. However, in the case of the ICP analysis, the results of the reasonable potential determination are the same regardless of whether modeled concentrations or technology-based limits are used for the maximum effluent concentrations.

The RPM accounts for uncertainty in the effluent (or modeled) data, and depends on the quantity and variability of this data as measured by the number of samples collected (n) and the coefficient of variation (CV). The RPM is the ratio of the 99th percentile concentration to the maximum reported effluent (or modeled) concentration. The CV is defined as the ratio of the standard deviation of the data set to the mean, but when fewer than 10 data points are available (as is the case with ICP), the TSD recommends setting the CV equal to 0.6. Using the equations in Section 3.3.2 of the TSD (or the Table 3-1 calculator), a RPM of 13.2 is obtained for all pollutants associated with the ICP where there are no technology-based effluent limits. Table C-1 summarizes the reasonable potential determination conducted for the ICP.

Table C-5. Summary of Reasonable Potential Determination (CV = 0.6, n = 1)

Pollutant (µg/l unless otherwise noted)	Effluent Concentration [2]	RPM	Maximum Projected Effluent Concentration	Criteria	Reasonable Potential ?
Arsenic	8	13.2	105	50	Yes
Cadmium	50 [1]	1.0	50	0.37	Yes
Cobalt	38	13.2	501	86	Yes
Copper	150 [1]	1.0	150	3.5	Yes
Iron	300	13.2	3,960	5,000	No
Lead	300 [1]	1.0	300	0.54	Yes
Mercury	1 [1]	1.0	1	0.012	Yes
Nickel	39	13.2	514	16	Yes
Selenium	4	13.2	52	5	Yes
Thallium	2	13.2	26	0.47	Yes
Zinc	750 [1]	1.0	750	36	Yes
Ammonia (mg/l)	1	13.2	13.2	2.34	Yes
Nitrate + Nitrite (mg/l)	10	13.2	132	100	Yes

Notes:
1. Effluent concentration set equal to the technology-based effluent limit (monthly average)
2. Projected effluent concentration from NPDES permit application unless otherwise noted

APPENDIX D: CALCULATION OF WQBELs

A. Calculation of Wasteload Allocations (WLAs)

Once EPA has determined that a WQBEL is required for the pollutant, the first step in developing the permit limit is development of a wasteload allocation (WLA) for that pollutant. A WLA is the concentration (or loading) of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. WLAs and permit limitations were derived based on the guidance in Chapters 4 and 5 of the TSD. For the draft ICP permit, WLAs were established based on meeting Idaho water quality standards at the end-of-pipe with no mixing zone.

Where the state authorizes a mixing zone, the WLA is calculated as a mass balance based upon available dilution, background concentration of the pollutant, and the most restrictive applicable water quality criteria. These calculations are performed using the same mass balance equation used in the reasonable potential evaluation (see Equation C-1). However, C_d is set equal to the acute or chronic criteria and the equation is solved for C_e (i.e., the WLA). The calculated C_e is the acute or chronic WLA. Equation D-1 presents the WLA calculation where mixing zones are allowed.

$$C_e = WLA = \frac{C_d (Q_u \times \%MZ) + C_d Q_e}{Q_e} - \frac{[C_u Q_u \times \%MZ)]}{Q_e} \qquad \text{(Equation D-1)}$$

In the case of the ICP where no mixing zone is allowed, the criteria becomes the WLA (see Equations D-2 and D-3). Establishing the criteria as the WLA ensures that the permittee does not contribute to an exceedance of the criteria.

WLA = Criteria (Equation D-2)

WLA = Criteria / Translator (Equation D-3, for criteria expressed as dissolved concentrations)

B. Calculation of Long-Term Average Concentrations (LTAs)

As discussed above, WLAs are calculated for each parameter for each criteria (i.e., acute, chronic). Because different criteria apply over different time frames, it is not possible to compare them or the WLAs directly to determine which results in the most stringent effluent limitations. For example, acute aquatic life criteria are applied as a one-hour average while chronic criteria are applied as a four-day average.

To allow for comparison, the acute and chronic aquatic life criteria are statistically converted to LTA concentrations. This conversion is dependent on the CV of the effluent data and the probability basis used. The probability basis corresponds to the percentile of the estimated concentration. As recommended in the TSD, EPA uses a 99th percentile for calculating a LTA. The following equations from Chapter 5 of the TSD were used in calculating LTAs:

$LTA_a = WLA_a \times \exp(0.5\sigma^2 - z\,\sigma)$ (Equation D-4)
$LTA_c = WLA_c \times \exp(0.5\,\sigma_4^2 - z\,\sigma_4)$ (Equation D-5)

where,

$\sigma^2 = \ln(CV^2 + 1)$
$\sigma = \sqrt{\sigma^2}$
$\sigma_4^2 = \ln(CV^2/4 + 1)$
$\sigma = \sqrt{\sigma_4^2}$
$z = 2.326$ for 99th percentile probability basis

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as described below.

C. Calculation of Water Quality-Based Effluent Limitations

The LTA concentration is calculated for each criteria and compared. The most stringent LTA concentration is then used to develop maximum daily (MDL) and average monthly (AML) permit limits. The MDL is based on the CV of the data and the probability basis, while the AML is dependent on these two variables and the monitoring frequency. As recommended in the TSD, EPA used a probability basis of 95 percent for the AML calculation and 99 percent for the MDL calculation. The MDL and AML are calculated using the following equations from Section 5.4.1 of the TSD (alternatively, Table 5-2 of the TSD may be used):

$MDL = LTA \times \exp(z_m\,\sigma - 0.5\,\sigma^2)$ (Equation D-6)
$AML = LTA \times \exp(z_a\,\sigma_n - 0.5\,\sigma_n^2)$ (Equation D-7)

where σ, and σ^2 are defined as they are for the LTA equations (D-4 and D-5) and,

$\sigma_n^2 = \ln(CV^2/n + 1)$
$\sigma = \sqrt{\sigma_n^2}$
$z_a = 1.645$ for 95th percentile probability basis
$z_m = 2.326$ for 99th percentile probability basis
n = number of sampling events required per month (minimum of 4 regardless of the monitoring frequency)

For establishing water quality-based effluent limits for the protection of human health uses, the TSD recommends setting the AML equal to the WLA and then calculating the MDL (i.e., no calculation of LTAs). The human health MDL is ten calculated based on the ratio of the AML and MDL as expressed by Equations D-6 and D-7. Therefore, the MDL is based on the effluent variability and the number of samples per month. AML/MDL ratios are provided in Table 5-3 of the TSD. For the ICP draft permit, effluent limits for arsenic and thallium were calculated in this way. As shown in Table 5-3 of the TSD, the MDL is equal to 2.01 times the value of the AML (where CV = 0.6, n = 4).

In situations where there is only a single value criteria intended to protect aquatic life, the TSD recommends considering the single criteria as a chronic value and calculating a chronic WLA and LTA from this criteria. The chronic LTA is then the limiting LTA and the permit limits are calculated from this LTA as usual. The effluent limits for cobalt were calculated in this way using the site specific aquatic life criteria of 86 µg/l developed for the Blackbird Superfund site. For pollutants with criteria protective of agricultural designated uses (i.e., nitrate + nitrite), the TSD does not provide specific guidance on how to calculate WQBELs. In these cases, the criteria was set equal to the MDL and no AML is provided. This same procedure was used to derive a permit for sulfides since the 2 µg/l aquatic life criteria is presented in the Blue and Gold books rather than Idaho Water Quality Standards, and this single value for MDL is considered conservatively protective. For sulfate, the 250 mg/l criteria is a secondary drinking water criteria based on taste and odor thresholds, and is being adopted in the draft permit as a MDL based upon narrative water quality standards prohibiting deleterious materials in concentrations that may impair designated beneficial uses (IDAPA 58.01.02.200.03).

Table D-1. Summary of WQBEL Derivation (Concentration in µg/l Unless Otherwise Indicated)

Pollutant	Aquatic Life Criteria WLA Concentrations		Aquatic Life Criteria LTAs Concentrations		Human Health WLA	Agriculture WLA	WQBELs		
	Acute WLA	Chronic WLA	Acute LTA	Chronic LTA			Basis	MDL	AML
Arsenic	340	150			50		Human	100	50
Cadmium	0.52	0.38	0.167	0.201		50	Acute	0.52	0.26
Cobalt		86		45.35			Chronic	141.3	70.4
Copper	4.8	3.62	1.54	1.91		500	Acute	4.8	2.4
Lead	13.98	0.54	4.49	0.29		100	Chronic	0.90	0.45
Mercury		0.012		0.006		10	Chronic	0.02	0.010
Nickel	144.92	16.10	46.61	8.51			Chronic	26.52	13.22
Thallium					0.47		Human	0.95	0.47
Zinc	37.02	37.02	11.88	19.52		25,000	Acute	37.02	18.45
Ammonia (mg/l)	5.6	2.34	1.80	1.83			Acute	5.62	2.80
Nitrate + Nitrite (mg/l)						100	Agriculture	100	
Sulfate (mg/l)						250	Deleterious	250	
Sulfide		2					Chronic	2	

Notes:
Concentrations expressed as total recoverable

APPENDIX E: EXAMPLE WQBEL CALCULATION

This appendix demonstrates how the water quality-based analysis (including reasonable potential determination and development of effluent limits) that was described in Appendices B, C and D was performed using copper as an example.

Step 1: Determine The Applicable Water Quality Criteria

The published (i.e., lookup) aquatic life criteria for copper in the Idaho water quality standards (IDAPA 58.01.02.210.01) are 17 µg/l (acute) and 11 µg/l (chronic) using a default receiving water hardness of 100 mg/l (as $CaCO_3$). When calculating water quality criteria for hardness dependent metals, the TSD recommends using the 5th percentile of measurements collected in the receiving water. In the case of Big Deer Creek at monitoring station WQ-24 (located just downstream of Outfall 001), the 5th percentile hardness value is 20.5 mg/l based upon 16 measurements collected. However, Idaho WQS specify that a minimum hardness value of 25 mg/l be used for calculating metals criteria that are hardness dependent [IDAPA 58.01.02.210.03(c)]. For copper, this results in aquatic life criteria of 4.6 µg/l (acute) and 3.5 µg/l (chronic) measured as dissolved concentrations. For the purposes of calculating and expressing permit limits, these dissolved criteria must first be converted to total recoverable concentrations using a translator or conversion factor. Since site-specific translators have not been developed for the ICP, default conversion factors are used from the WQS (IDAPA 58.01.02.210.01). For copper, the default conversion factor is 0.960 for both acute and chronic exposures, resulting in aquatic life copper criteria of 4.80 µg/l (acute) and 3.62 (chronic) expressed as total recoverable (TR) concentrations. There is also an agricultural water supply (stock watering) copper criteria of 1,000 µg/l that is applicable for the designated uses of Big Deer Creek, but this criteria does not drive any of the limit calculations for the draft ICP permit.

Table E-1. Copper Water Quality Criteria in Big Deer Creek

Pollutant	Dissolved Criteria		Total Recoverable Criteria	
	Acute	Chronic	Acute	Chronic
Copper	4.6 µg/l	3.5 µg/l	4.8 µg/l	3.62 µg/l

Note:
Criteria expressed at a hardness of 25 mg/l

Step 2: Determine if There is Reasonable Potential to Exceed Water Quality Criteria

To determine if there is reasonable potential for the discharge to exceed WQS when no mixing zone is authorized, the maximum projected effluent concentration is compared to the appropriate numeric criteria for the receiving water. If this exceeds the criteria, then a reasonable potential exists, and a WQBEL must be established.

Through their DSM model predictions, Formation estimated maximum daily effluent copper concentrations of 2.8 µg/l in their discharge. However, since copper has a technology-based copper limit of 150 µg/l (monthly average), this value was used in the RP calculation. In the case of copper, the maximum projected effluent concentration is calculated by multiplying the technology-based effluent limit by the reasonable potential multiplier (RPM) as follows:

150 µg/l x RPM = 150µg/l x 1 = 150µg/l

Since 150 µg/l is greater than either the acute (4.8 µg/l) or chronic (3.62 µg/l) aquatic criteria, there is reasonable potential to exceed WQS and a WQBEL must be developed. If copper did not have a technology-based effluent limit, the reasonable potential calculation would be as follows (CV=0.6, n=1, RPM=13.2):

2.8 µg/l x 13.2 = 36.96 µg/l

In either case, there is reasonable potential to exceed aquatic criteria.

Step 3: Determine Wasteload Allocation

Since a mixing zone has not been authorized for the ICP discharge, the wasteload allocation (WLA) is equal to the criteria expressed as a total recoverable concentration. The acute and chronic wasteload allocation are 4.8 µg/l and 3.62 µg/l, respectively.

Step 4: Develop Long-Term Average Concentrations

Effluent limits are developed by converting the aquatic life WLAs to long-term average (LTA) concentrations The most stringent of the acute or chronic LTA concentration is then used to develop the effluent limits. The aquatic life WLAs are concerted to LTA concentrations using the following equation:

$$LTA_a = WLA_a \times \exp(0.5\sigma^2 - z\,\sigma) \qquad \text{(Equation E-1)}$$
$$LTA_c = WLA_c \times \exp(0.5\,\sigma_4^2 - z\,\sigma_4) \qquad \text{(Equation E-2)}$$

where,

$\sigma^2 = \ln(CV^2 + 1)$
$\sigma = \sqrt{\sigma^2}$
$\sigma_4^2 = \ln(CV^2/4 + 1)$
$\sigma = \sqrt{\sigma_4^2}$
$z = 2.326$ for 99th percentile probability basis

In the case of copper:

$\sigma^2 = \ln(0.6^2 + 1) = 0.307$
$\sigma = \sqrt{\sigma^2} = 0.55$
$\sigma_4^2 = \ln(0.6^2/4 + 1) = 0.0862$
$\sigma = \sqrt{\sigma_4^2} = 0.2936$
$z = 2.326$ for 99th percentile probability basis

Therefore:

LTA_a = 4.80 µg/l x exp(0.5 x 0.307 – 2.326 x 0.555) = 1.541 µg/l
LTA_c = 3.62 µg/l x exp(0.5 x 0.862 – 2.326 x 0.2936) = 1.907 µg/l

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below. For copper, the acute LTA is more stringent.

Step 5: Develop Effluent Limitations

The acute copper WLA is converted to a maximum daily limit (MDL) and an average monthly limit (AML) using the following equations as specified in the TSD:

$MDL = LTA \times \exp(z_m \sigma - 0.5 \sigma^2)$ (Equation E-3)
$AML = LTA \times \exp(z_a \sigma_n - 0.5 \sigma_n^2)$ (Equation E-4)

where σ, and σ^2 are defined as they are for the LTA equations (E-1 and E-2) and,

$\sigma_n^2 = \ln(CV^2/n + 1)$
$\sigma = \sqrt{\sigma_n^2}$
z_a = 1.645 for 95th percentile probability basis
z_m = 2.326 for 99th percentile probability basis
n = number of sampling events required per month (minimum of 4 regardless of the monitoring frequency)

In the case of copper:

MDL = 1.541 µg/l x exp(2.326 x 0.555 – 0.5 x 0.307)
MDL = 4.8 µg/l

AML = 1.541 µg/l x exp(1.645 x 0.294 – 0.5 x 0.86)
AML = 2.4 µg/l

APPENDIX F

DRAFT STATE CWA 401 CERTIFICATION

DRAFT WATER QUALITY CERTIFICATION*

Based on the Department's review of the referenced permit, the Department certifies, pursuant to the provisions of Section 401 of the Federal Water Pollution Control Act (Clean Water Act) as amended, 33 USC Section 1341, and Idaho Code Sections 39-101 et. seq., and 39-3601 et.seq., that if Formation Capital Corporation (Formation) complies with the terms and conditions as written in Permit No. ID-002832-1 and the conditions provided in this 401 certification, then there is a reasonable assurance that the authorized discharges will comply with applicable requirements of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and the Idaho Water Quality Standards, IDAPA 58.01.02.

CONDITIONS NECESSARY TO ASSURE COMPLIANCE WITH WQS

Methylmercury Criteria

There is not adequate information to assess compliance with the fish tissue methylmercury criterion set forth in the Idaho Water Quality Standards. Therefore, the permit must require the following actions to obtain the necessary information that can be used for assessing compliance with Idaho's methylmercury criterion and the inclusion, if necessary, of appropriate limits in the next permitting cycle:

1. Within 12 months of the effective date of the permit, Formation must develop and submit to the Department for approval a study plan to assess whether more stringent permit limits are necessary to ensure compliance with the Idaho's methylmercury criteria, set forth in the Water Quality Standards, IDAPA 58.01.02.210.01. Once approved by the Department, the study plan shall be implemented by Formation.
2. Formation must submit a report summarizing the results of the study to the Department in accordance with the approved plan, but no later than 4 years after the effective date of the permit.

Compliance with IDAPA 58.01.02.054.04

Big Deer Creek is a high priority water body listed on Idaho's 303d list for metals. The level of copper in Big Deer currently exceeds the aquatic life criteria in the WQS. The NPDES permit allows Formation to discharge additional copper to Big Deer at the following levels: 4.8 ug/l maximum daily limit, and 2.4 ug/l average monthly limit. Prior to discharging copper into Big Deer, Formation shall develop and obtain the Department approval of a plan that describes how Formation will comply with IDAPA 58.01.02.054.04. At a minimum, the plan shall (1) describe the measures Formation will implement to ensure that, notwithstanding the addition of copper from Formation's discharge, the total load of copper remains constant or decreases in the Big Deer Creek watershed, and (2) include a schedule for the implementation of the measures. Once approved by the Department, the plan shall be implemented according to the schedule in the approved plan.

OTHER PROVISIONS

This certification does not constitute authorization of the permitted activities by any other local, state or federal agency or private person or entity. This certification does not excuse the permit holder from any obligation that may exist to obtain any other necessary approvals, authorizations or permits, including without limitation, any approval, if one is required, from the owner of a water conveyance system to use the system in connection with the permitted activities.

The final § 401-certification decision may be appealed pursuant to the Idaho Environmental Protection and Health Act, Idaho Code § 39-107(5) and the Idaho Administrative Procedure Act. Such an appeal is a prerequisite to any district court action and must be initiated by filing a petition for a contested case in accordance with the Rules of Administrative Procedure before the Department of Environmental Quality Board (IDAPA 58.01.23) within thirty-five (35) days of the date of the Department's decision regarding the final 401 certification.

Sincerely,

James S. Johnston
Regional Administrator
Idaho Falls Regional Office

c: Doug Conde, Deputy AG

*Excerpted from Idaho Department of Environmental Quality correspondence dated December 1, 2006