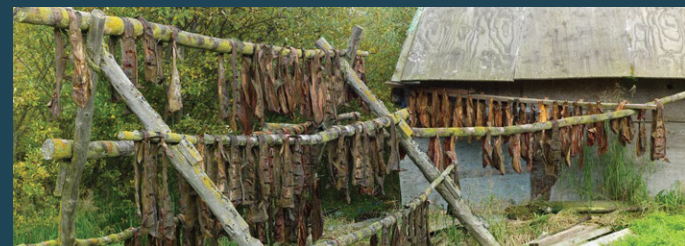
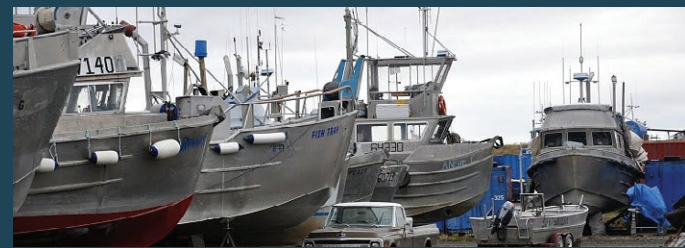


Final Determination of the U.S. Environmental Protection Agency Pursuant to Section 404(c) of the Clean Water Act Pebble Deposit Area, Southwest Alaska



January 2023

Executive Summary

**FINAL DETERMINATION OF THE
U.S ENVIRONMENTAL PROTECTION AGENCY
PURSUANT TO SECTION 404(C) OF THE CLEAN WATER ACT
PEBBLE DEPOSIT AREA, SOUTHWEST ALASKA**

U.S. Environmental Protection Agency
Office of Water

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Main photo: Upper Talarik Creek (Joe Ebersole, USEPA)

Thumbnail 1: Fishing boats at Naknek, Alaska (USEPA)

Thumbnail 2: Sockeye salmon in the Wood River (Thomas Quinn, University of Washington)

Thumbnail 3: Salmon drying at Koliganek (Alan Boraas, Kenai Peninsula College)

Thumbnail 4: Age-0 coho salmon in the Chignik watershed (Jonny Armstrong)

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EXECUTIVE SUMMARY

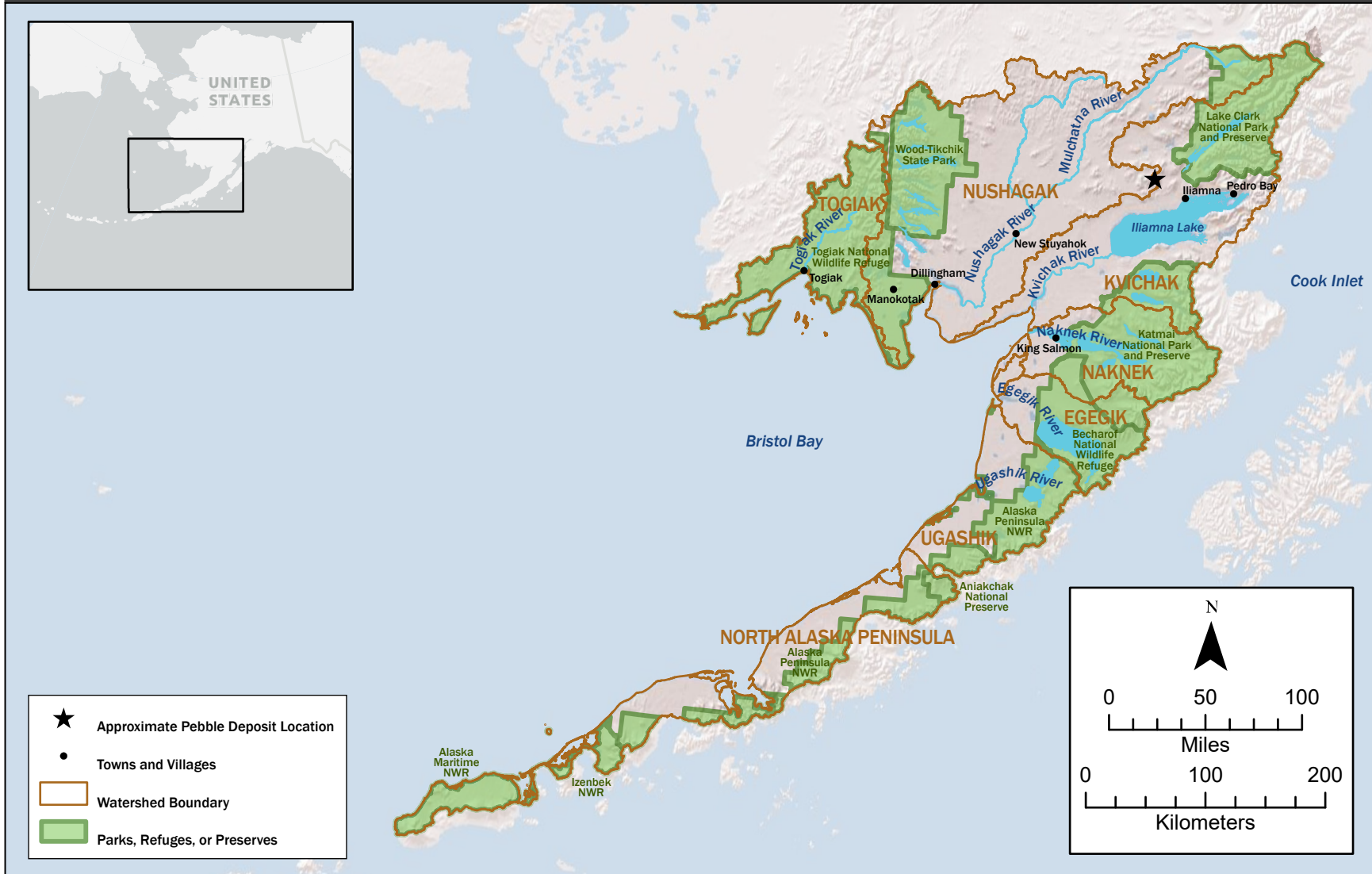
The U.S. Environmental Protection Agency (EPA) is prohibiting the specification of and restricting the use for specification of certain waters in the Bristol Bay watershed as disposal sites for certain discharges of dredged or fill material associated with development of a mine at the Pebble deposit, a large ore body in southwest Alaska. EPA is exercising its authority under Section 404(c) of the Clean Water Act (CWA) (Box ES-1) and its implementing regulations at 40 Code of Federal Regulations (CFR) Part 231 because the discharges of dredged or fill material associated with developing a mine evaluated in this final determination will have unacceptable adverse effects on anadromous¹ fishery areas in the Bristol Bay watershed. Development of a mine at the Pebble deposit has been the subject of study for more than two decades. This final determination is based on this extensive record of scientific and technical information and applies only to certain discharges of dredged or fill material associated with developing the Pebble deposit, not to any other resource development projects in the State of Alaska.

Alaska's Bristol Bay watershed (Figure ES-1) is an area of unparalleled ecological value, boasting salmon diversity and productivity unrivaled anywhere in North America. The Bristol Bay watershed provides intact, connected habitats—from headwaters to ocean—that support abundant, genetically diverse wild Pacific salmon populations. These salmon populations, in turn, help to maintain the productivity of the entire ecosystem, including numerous other fish and wildlife species. The region's salmon resources have supported Alaska Native cultures for thousands of years and continue to support one of the last intact salmon-based cultures in the world. Together, the Bristol Bay watershed's largely undisturbed aquatic habitats and productive salmon populations create this globally significant ecological and cultural resource.

The streams, wetlands, and other aquatic resources of the Bristol Bay watershed also provide the foundation for world-class, economically important, commercial and sport fisheries for salmon and other fishes. The Bristol Bay watershed supports the world's largest runs of Sockeye Salmon, producing approximately half of the world's Sockeye Salmon. These Sockeye Salmon represent the most abundant and diverse populations of this species remaining in the United States. Bristol Bay's Chinook Salmon runs are also frequently at or near the world's largest, and the region also supports significant Coho, Chum, and Pink salmon populations. Because no hatchery fishes are raised or released in the watershed, Bristol Bay's salmon populations are entirely wild and self-sustaining. Bristol Bay is remarkable as one of the last places on Earth with such bountiful and sustainable harvests of wild salmon. One of the main factors leading to the success of these fisheries is the fact that its diverse aquatic habitats are largely untouched and pristine, unlike the waters that support many other salmon fisheries worldwide.

¹ Anadromous fishes hatch in freshwater habitats, migrate to sea for a period of relatively rapid growth, and then return to freshwater habitats to spawn. For the purposes of this final determination, "anadromous fishes" refers only to Coho or Silver salmon (*Oncorhynchus kisutch*), Chinook or King salmon (*O. tshawytscha*), Sockeye or Red salmon (*O. nerka*), Chum or Dog salmon (*O. keta*), and Pink or Humpback salmon (*O. gorbuscha*).

Figure ES-1. The Bristol Bay watershed, composed of the Togiak, Nushagak, Kvichak, Naknek, Egegik, and Ugashik River watersheds and the North Alaska Peninsula. Only selected towns and villages are shown on this map.



Roughly 50 to 70 percent of Bristol Bay’s Sockeye and large numbers of its Coho, Chinook, Pink, and Chum salmon are sustainably harvested in subsistence, commercial, and recreational fisheries before they can return to their natal lakes and streams to spawn. Thus, these salmon resources have significant nutritional, cultural, economic, and recreational value within and beyond the Bristol Bay region. The total economic value of the Bristol Bay watershed’s salmon resources, including subsistence uses, was estimated at more than \$2.2 billion in 2019 (McKinley Research Group 2021). The Bristol Bay commercial salmon fishery generates the most significant component of this economic activity, resulting in 15,000 jobs and an economic benefit of \$2.0 billion in 2019, \$990 million of which was in Alaska (McKinley Research Group 2021). Beyond their economic and environmental value, the diverse fishery and other aquatic and terrestrial resources of the Bristol Bay watershed, which depend upon the complex of healthy streams, wetlands, and other waters, are irreplaceable because they are inseparable from the cultures of the native people they support. Section 3 of this final determination provides an overview of the streams, wetlands, and other aquatic resources of the Bristol Bay watershed and discusses their role in supporting important subsistence, commercial, and recreational fisheries.

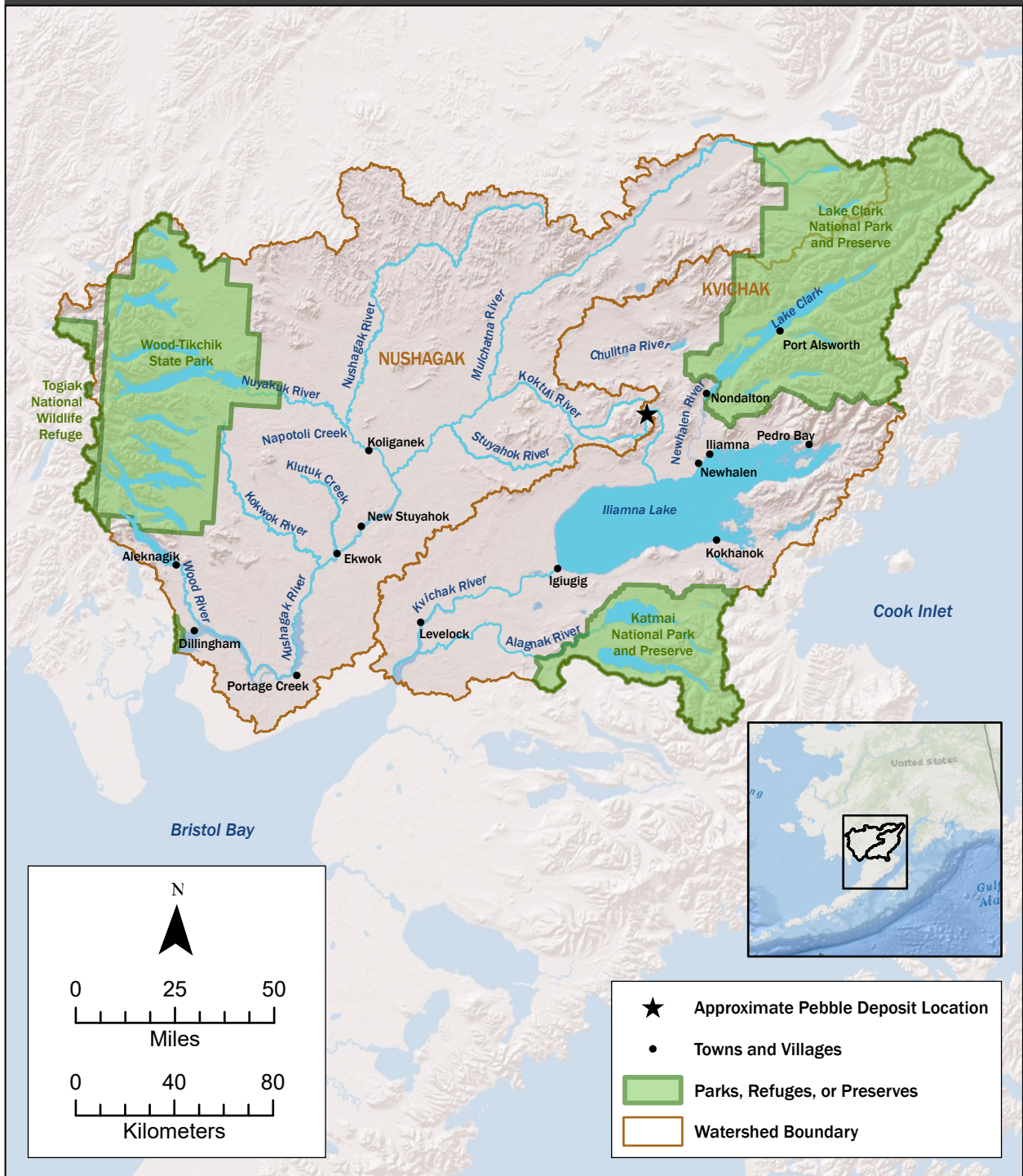
BOX ES-1. SECTION 404 OF THE CLEAN WATER ACT

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters. Section 404(c) of the CWA authorizes the U.S. Environmental Protection Agency (EPA) to (1) prohibit or withdraw the specification of any defined area as a disposal site, and (2) deny, restrict, or withdraw the use of any defined area for specification as a disposal site, whenever it determines, after notice and opportunity for public hearings, that the discharge of dredged or fill material into the area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. EPA has used its CWA Section 404(c) authority judiciously, having completed only 13 CWA Section 404(c) actions in the 50-year history of the CWA prior to this final determination.

Proposed Mine at the Pebble Deposit

The Pebble deposit, a large, low-grade deposit containing copper-, gold-, and molybdenum-bearing minerals, is located at the headwaters of the pristine Bristol Bay watershed. The Pebble deposit underlies portions of the South Fork Kaktuli River (SFK), North Fork Kaktuli River (NFK), and Upper Talarik Creek (UTC) watersheds, which drain to two of the largest rivers in the Bristol Bay watershed, the Nushagak and Kvichak Rivers (Figure ES-2).

Figure ES-2. Major waterbodies within the Nushagak and Kvichak River watersheds.



Since 2001, Northern Dynasty Minerals Ltd. (NDM) and subsequently the Pebble Limited Partnership (PLP)² have been conducting data collection and analysis as part of efforts to pursue the development of a large-scale mine at the Pebble deposit. Given current mining technology and the high density of water resources in the area, the discharge of dredged or fill material into waters of the United States is expected to be necessary to develop the Pebble deposit. Such discharges would require a CWA Section 404 permit from the U.S. Army Corps of Engineers (USACE). In December 2017, PLP submitted a CWA Section 404 permit application to USACE to develop a mine at the Pebble deposit, which triggered the development of an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA). In response to the CWA Section 404 permit review/NEPA review process, PLP submitted a revised permit application in June 2020 (the 2020 Mine Plan) (PLP 2020).

In the 2020 Mine Plan, PLP proposes to develop the Pebble deposit as a surface mine at which 1.3 billion tons of ore would be mined over 20 years. The project consists of four primary elements: (1) the mine site situated in the SFK, NFK, and UTC watersheds (Figure ES-3); (2) the Diamond Point port; (3) the transportation corridor, including concentrate and water return pipelines; and (4) the natural gas pipeline and fiber optic cable. The first element, a fully developed mine site, would include an open pit, bulk tailings storage facility (TSF), pyritic TSF, a 270-megawatt power plant, water management ponds (WMPs), water treatment plants (WTPs), milling and processing facilities, and supporting infrastructure (Figure ES-4). Under the 2020 Mine Plan, PLP would progress through four distinct mine phases: construction, operations (also referred to as production), closure, and post-closure. The construction period would last approximately four years, followed by 20 years of operation. Closure, including physical reclamation of the mine site, is projected to take approximately 20 years. Post-closure activities, including long-term water management and monitoring, would last for centuries (USACE 2020a). The potential direct and indirect impacts from construction and operation of the 2020 Mine Plan on streams, wetlands, and other waters across the mine site area (Figure ES-5) have been evaluated in detail.

On July 24, 2020, USACE published a Notice of Availability for the Final EIS (FEIS) in the *Federal Register* (USACE 2020a), and on November 20, 2020, USACE issued its Record of Decision (ROD) denying PLP's CWA Section 404 permit application on the basis that the 2020 Mine Plan would not comply with the CWA Section 404(b)(1) Guidelines and would be contrary to the public interest (USACE 2020b). By letter dated November 25, 2020, USACE notified PLP that the proposed project failed to comply with the CWA Section 404(b)(1) Guidelines because, even after consideration of proposed mitigation measures, "the proposed project would cause unavoidable adverse impacts to aquatic resources which would result in Significant Degradation to aquatic resources" (USACE 2020b: Transmittal Letter, Page 1).

On January 19, 2021, PLP filed a request for an appeal of the USACE permit denial with USACE. USACE accepted the appeal on February 25, 2021, and review of the appeal is ongoing.

² PLP was created in 2007 by co-owners NDM and Anglo American PLC to design, permit, construct, and operate a long-life mine at the Pebble deposit (Ghaffari et al. 2011). In 2013, NDM acquired Anglo American's interest in PLP, and NDM now holds a 100 percent interest in PLP (Kalanchey et al. 2021).

Figure ES-3. Mine site hydrography. Figure 2-1 from PLP's June 8, 2020 Clean Water Act Section 404 permit application (PLP 2020).

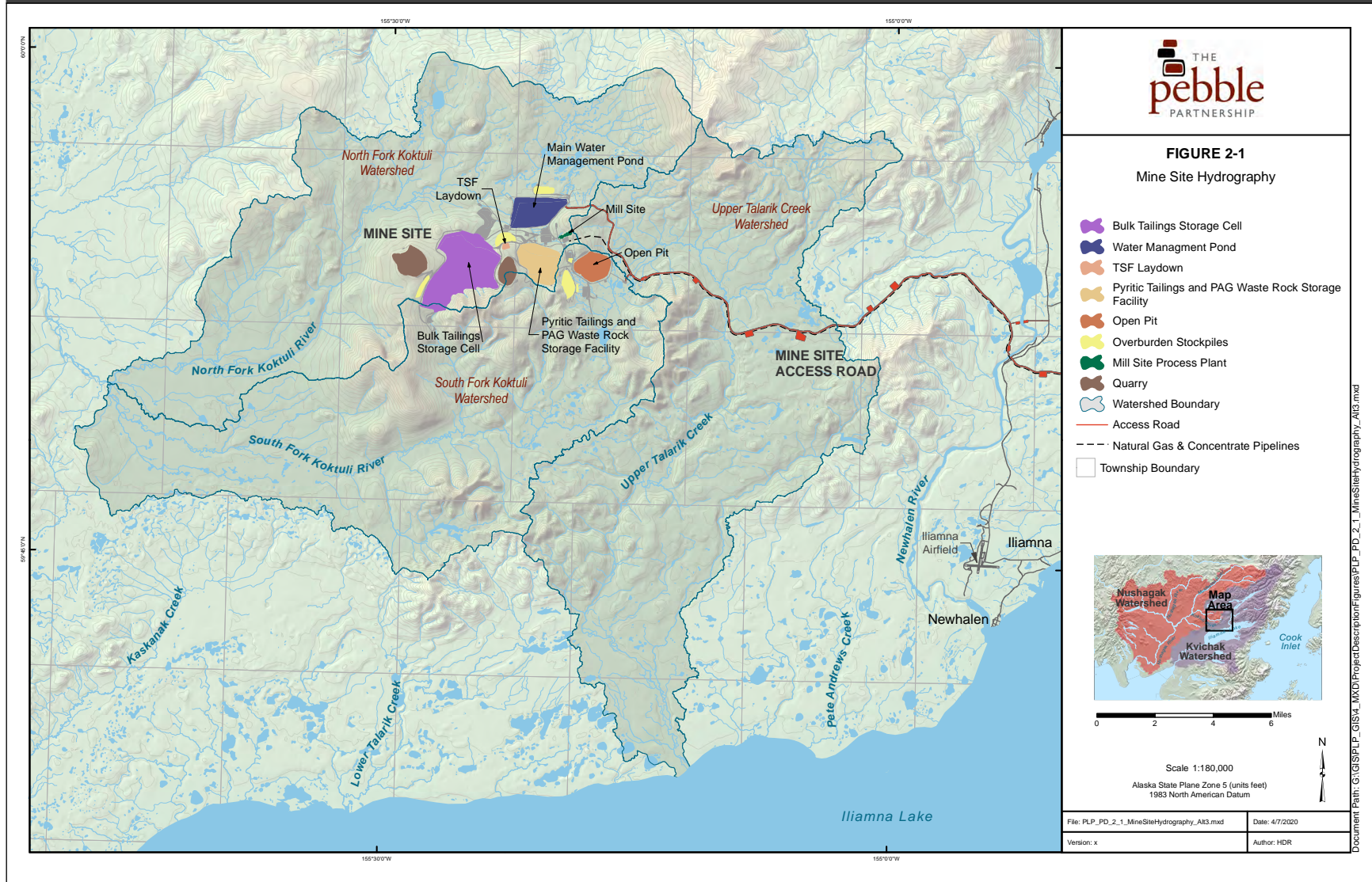


Figure ES-4. Mine site map. Figure 1-4 from PLP's June 8, 2020 Clean Water Act Section 404 permit application (PLP 2020).

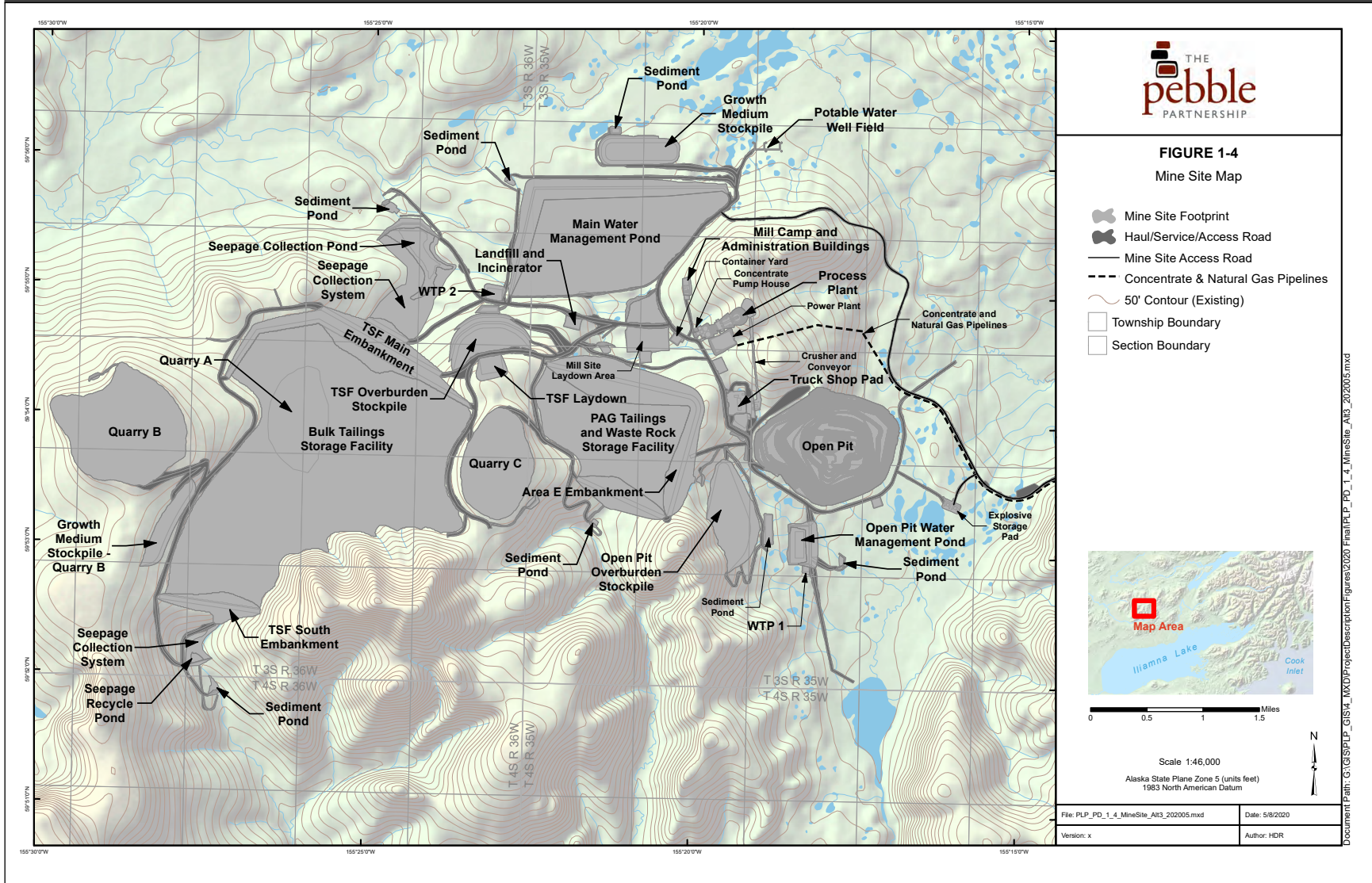
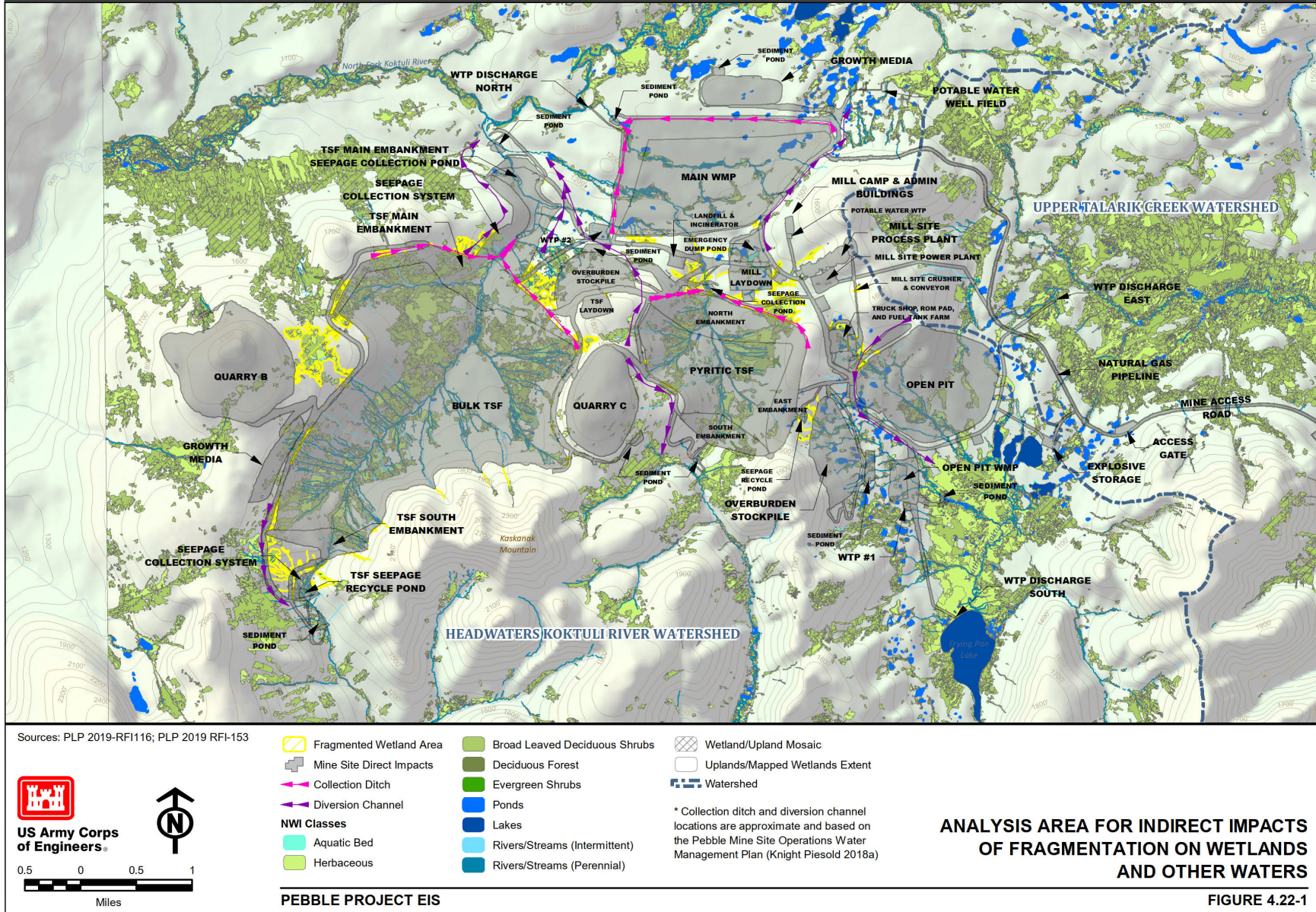


Figure ES-5. Mine site analysis area for wetlands and other waters. Figure 4.22-1 from the FEIS (USACE 2020a: Section 4.22).



The USACE permit denial addresses only PLP's specific permit application for the 2020 Mine Plan; it does not address any other potential plans to develop the Pebble deposit. Information regarding the Pebble deposit and the 2020 Mine Plan can be found in Section 2 of this final determination.

2014 Proposed Determination

For more than a decade, many Alaska Native communities in the Bristol Bay watershed; subsistence, commercial, and recreational fishing interests; conservation groups; and others have raised concerns about the potential impacts that a large-scale mine at the Pebble deposit could have on the region's socially, ecologically, and economically important fishery areas. Starting in May 2010, these groups and others began requesting that EPA use its CWA Section 404(c) authority to protect the region's fishery areas. In February 2011, EPA decided to conduct an ecological risk assessment before considering additional steps. In January 2014, after three years of study, two rounds of public comment, and independent, external peer review, EPA released its *Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*³ (Bristol Bay Assessment or BBA) (EPA 2014). In July 2014, after careful consideration of available information, including the findings of the BBA and consultation with PLP and the State of Alaska, EPA Region 10 published a proposed determination under Section 404(c) of the CWA to restrict the use of certain waters in the SFK, NFK, and UTC watersheds as disposal sites for dredged or fill material associated with mining the Pebble deposit (2014 Proposed Determination) for public comment.

As a result of litigation brought by PLP, EPA Region 10's CWA Section 404(c) review process was halted in November 2014 until EPA and PLP resolved the case in a May 2017 settlement agreement. As a condition of that settlement agreement, EPA Region 10 initiated a process to propose to withdraw the 2014 Proposed Determination, and EPA ultimately withdrew the 2014 Proposed Determination in August 2019. In October 2019, 20 tribal, fishing, environmental, and conservation groups challenged EPA's withdrawal of the 2014 Proposed Determination. The ultimate result of the litigation that began in October 2019 was an October 29, 2021 decision by the U.S. District Court for the District of Alaska to vacate EPA's 2019 decision to withdraw the 2014 Proposed Determination and remand the action to the Agency for reconsideration.

The District Court's vacatur of EPA's 2019 decision to withdraw the 2014 Proposed Determination had the effect of reinstating the 2014 Proposed Determination and reinitiating EPA's CWA Section 404(c) review process. The next step in the CWA Section 404(c) review process required the Region 10 Regional Administrator to decide whether to withdraw the 2014 Proposed Determination or prepare a recommended determination within 30 days. On November 23, 2021, EPA Region 10 published in the *Federal Register* a notice extending the applicable time requirement through May 31, 2022, to provide sufficient time to consider available information and determine the appropriate next step in the CWA

³ EPA conducted the BBA consistent with its authority under CWA Section 104(a) and (b). For more information about EPA's efforts in Bristol Bay or copies of the Bristol Bay Assessment, see <http://www.epa.gov/bristolbay>.

Section 404(c) review process. In its notice, EPA concluded that it should consider information that had become available since EPA issued the 2014 Proposed Determination before making a decision. Information regarding the 2014 Proposed Determination and the history of EPA's work in the Bristol Bay watershed can be found in Section 2 of this final determination.

2022 Proposed Determination

To determine the appropriate next step in this CWA Section 404(c) process, EPA Region 10 considered a wide array of information that had become available since it issued the 2014 Proposed Determination, including the following:

- More than 670,000 public comments submitted to EPA Region 10 in response to the 2014 Proposed Determination.
- PLP's CWA Section 404 permit application, including the 2020 Mine Plan (PLP 2020).
- USACE's FEIS evaluating the 2020 Mine Plan, including the FEIS appendices, technical support documents, and references (USACE 2020a).
- The 12-week coordination process between EPA, the U.S. Fish and Wildlife Service, and USACE in spring 2020 to evaluate PLP's proposed project for compliance with the CWA Section 404(b)(1) Guidelines.
- USACE's ROD denying PLP's CWA Section 404 permit application for the 2020 Mine Plan, including the ROD supporting documents (USACE 2020b).
- NDM's *Pebble Project Preliminary Economic Assessment* dated September 9, 2021 (Kalanchey et al. 2021).
- Updated data regarding fishery resources in the Bristol Bay watershed.
- New scientific and technical publications.

In January 2022, consistent with its regulatory procedures for proposed determinations at 40 CFR 231.3(a), EPA Region 10 notified USACE, the Alaska Department of Natural Resources (ADNR), PLP, Pebble East Claims Corporation, Pebble West Claims Corporation, and Chuchuna Minerals⁴ (the Parties) of EPA Region 10's intention to issue a revised proposed determination because, based on a review of information available to that date, it continued to believe that the discharge of dredged or fill material associated with mining the Pebble deposit could result in unacceptable adverse effects on important fishery areas. EPA Region 10 provided the Parties with an opportunity to consult with the Region and to submit information for the record to demonstrate that no unacceptable adverse effects would result

⁴ EPA Region 10 notified Chuchuna Minerals because USACE's FEIS for the 2020 Mine Plan indicates that it is reasonably foreseeable for discharges associated with mining the Pebble deposit to expand in the future into portions of areas where Chuchuna Minerals holds mining claims.

from discharges associated with mining the Pebble deposit or that actions could be taken to prevent unacceptable adverse effects on important fishery areas.

ADNR, PLP, and Chuchuna Minerals submitted response letters asserting legal, policy, scientific, and technical arguments, and EPA met individually with PLP and Chuchuna Minerals. Based on the information provided to the Agency, ADNR, PLP, and Chuchuna Minerals did not demonstrate to the satisfaction of EPA Region 10 that no unacceptable adverse effects would occur as a result of the discharge of dredged or fill material associated with mining the Pebble deposit (Section 2.2.2). Thus, EPA Region 10 decided that the appropriate next step in this CWA Section 404(c) process was the publication of a revised proposed determination (the 2022 Proposed Determination).

In May 2022, EPA Region 10 published in the *Federal Register* a notice of availability for the 2022 Proposed Determination under Section 404(c) of the CWA to prohibit the specification of and restrict the use for specification of certain waters in the SFK, NFK, and UTC watersheds as disposal sites for the discharge of dredged or fill material associated with mining the Pebble deposit (87 FR 32021, May 26, 2022). The notice started a public comment period ending on July 5, 2022. On June 16 and 17, 2022, EPA Region 10 held three public hearings on the 2022 Proposed Determination: two in-person hearings in the Bristol Bay region (in Dillingham and Iliamna) and one virtual hearing. More than 186 people participated in the three hearings, 111 of whom provided oral statements.

EPA Region 10 received requests to extend the public comment period, as well as requests not to extend the public comment period. EPA Region 10 considered each of these requests and found good cause existed pursuant to 40 CFR 231.8 to extend the public comment period through September 6, 2022 (87 FR 39091, June 30, 2022).

On September 6, 2022, EPA Region 10 published in the *Federal Register* a notice to extend the period for the EPA Region 10 Regional Administrator to evaluate public comments. According to the notice, EPA found good cause existed pursuant to 40 CFR 231.8 to extend the time period provided in 40 CFR 231.5(a) to either withdraw the proposed determination or to prepare a recommended determination through no later than December 2, 2022, to help ensure full consideration of the extensive administrative record including all public comments (87 FR 54498, September 6, 2022). In addition to the testimony taken at the hearings, EPA Region 10 received more than 582,000 written comments during the public comment period.

EPA Region 10 completed its review of the extensive administrative record, including all public comments. The Regional Administrator determined that the discharge of dredged or fill material associated with developing the Pebble deposit would be likely to result in unacceptable adverse effects on anadromous fishery areas and, thus, prepared a recommended determination. The recommended determination, along with the administrative record, was transmitted to EPA's Assistant Administrator for Water on December 1, 2022, for review and final action.

The Final Determination

On December 2, 2022, the Assistant Administrator for Water notified the Parties⁵ that she had received EPA Region 10's recommended determination and, consistent with EPA's CWA Section 404(c) regulations at 40 CFR 231.6, provided them the opportunity to notify EPA of their intent to take corrective action to prevent unacceptable adverse effects on anadromous fishery areas from certain discharges of dredged or fill material associated with developing the Pebble deposit.

ADNR and PLP submitted response letters asserting legal, policy, scientific, and technical arguments that each had previously raised during consultation with EPA prior to issuance of the proposed determination and in public comments on the proposed determination. EPA also met with ADNR and other representatives from the State of Alaska. USACE and Chuchuna Minerals also submitted response letters. None of the Parties identified corrective action to prevent unacceptable adverse effects satisfactory to the Assistant Administrator for Water. Section 2 of this final determination includes a summary of the Assistant Administrator for Water's consultation with the Parties.

Following review of EPA Region 10's recommended determination and the extensive administrative record supporting the Regional Administrator's decision, including all public comments, the Assistant Administrator for Water has determined that certain discharges of dredged or fill material associated with developing the Pebble deposit into certain waters of the United States will have unacceptable adverse effects on anadromous fishery areas and affirms the recommended determination.⁶ Section 4 of this final determination provides the basis for EPA's findings regarding unacceptable adverse effects on anadromous fishery areas.

As demonstrated in the FEIS and ROD, construction and routine operation of the mine proposed in the 2020 Mine Plan would result in the discharge of dredged or fill material into waters of the United States, including streams, wetlands, lakes, and ponds overlying the Pebble deposit and within adjacent watersheds. The direct effects (i.e., resulting from placement of fill in aquatic habitats) and certain secondary effects of such discharges (i.e., associated with discharges of dredged or fill material, but not resulting from the actual placement of such material) would result in the total loss of aquatic habitats important to anadromous fishes. These losses would result from the construction and routine operation of the various components of the mine site, including the open pit, bulk TSF, pyritic TSF, power plant, WMPs, WTPs, milling/processing facilities, and supporting infrastructure. According to the FEIS and ROD, discharges of dredged or fill material to construct and operate the mine site proposed in the 2020 Mine Plan would result in the total loss of approximately 99.7 miles (160.5 km) of stream habitat, representing approximately 8.5 miles (13.7 km) of anadromous fish streams and 91 miles (147 km) of additional streams that support anadromous fish streams. Such discharges of dredged or fill material

⁵ Consistent with EPA's regulations, the USACE representative who received this notification was the Chief of Engineers.

⁶ EPA has made additional clarifications throughout this final determination based on EPA Office of Water's review of the recommended determination and administrative record, as well as final consultation with the Parties, conducted consistent with 40 CFR 231.6.

also would result in the total loss of approximately 2,108 acres (8.5 km²) of wetlands and other waters in the SFK and NFK watersheds that support anadromous fish streams.

Additional secondary effects of the proposed discharges of dredged or fill material at the mine site would degrade anadromous fishery areas downstream of the mine site. Specifically, the stream, wetland, and other aquatic resource losses from the footprint of the 2020 Mine Plan would reverberate downstream, depriving downstream anadromous fish habitats of nutrients, groundwater inputs, and other ecological subsidies from lost upstream aquatic resources. Further, streamflow alterations from water capture, withdrawal, storage, treatment, or release at the mine site are another secondary effect of the discharge of dredged or fill material associated with the construction and routine operation of the 2020 Mine Plan. Such streamflow alterations would adversely affect approximately 29 miles (46.7 km) of anadromous fish streams downstream of the mine site due to greater than 20 percent changes in average monthly streamflow.⁷ These streamflow alterations would result in major changes in ecosystem structure and function and would reduce both the extent and quality of anadromous fish habitat downstream of the mine. As recognized in the FEIS, all instances of complete loss of aquatic habitat and most impairment to fish habitat function would be permanent and “no other wild salmon fishery in the world exists in conjunction with an active mine of this size” (USACE 2020a: Page 4.6-9).

Although Alaska has many streams and wetlands that support salmon, individual streams, stream reaches, wetlands, lakes, and ponds play a critical role in supporting individual salmon populations and protecting the genetic diversity of Bristol Bay’s wild salmon populations. The diverse array of watershed features across the region creates and sustains a diversity of aquatic habitats that support multiple populations of salmon with asynchronous run timings and habitat use patterns (i.e., biocomplexity, after Hilborn et al. 2003). These population differences are reflected in salmon genetic diversity and adaptation to local conditions within Bristol Bay’s component watersheds (e.g., Quinn et al. 2012) and provide stability to the overall system (Schindler et al. 2010). Impacts of the 2020 Mine Plan are concentrated in the SFK and NFK watersheds, which are a part of the Nushagak River watershed. Recent analysis specific to the Nushagak River watershed underscores the important role that the streams, wetlands, lakes, and ponds across the entire Nushagak River watershed, including those that would be adversely affected by the 2020 Mine Plan, play in stabilizing the Nushagak River’s productive Sockeye and Chinook salmon fisheries (Brennan et al. 2019). Similarly, both the Koktuli River (the SFK and NFK are tributaries to the Koktuli River) and UTC have been documented to support genetically distinct populations of Sockeye Salmon (Dann et al. 2012, Shedd et al. 2016, Dann et al. 2018). Loss of salmon habitats and associated salmon diversity in the SFK, NFK, and UTC watersheds would erode both the habitat complexity and biocomplexity that help buffer these populations from sudden and extreme changes in abundance, and ultimately maintain their productivity.

⁷ Streamflow alterations would vary seasonally. Streamflow reductions exceeding 20 percent of average monthly streamflow would occur in at least one month per year in at least 13.1 miles (21.4 km) of anadromous fish streams downstream of the mine site, and operation of the 2020 Mine Plan would increase streamflow by more than 20 percent of baseline average monthly streamflow in at least 25.7 miles (41.3 km) of downstream anadromous fish streams due to WTP discharges.

In addition to supporting genetically distinct salmon populations, the streams and wetlands draining the Pebble deposit area provide key habitat for numerous other fish species and supply water, invertebrates, organic matter, and other resources to downstream waters (Meyer et al. 2007, Colvin et al. 2019, Koenig et al. 2019). This is particularly true in dendritic stream networks like the SFK, NFK, and UTC systems, which have a high density of headwater streams. As a result, headwater streams and wetlands play a vital role in maintaining diverse, abundant anadromous fish populations—both by providing important fish habitat and supplying the energy and other resources needed to support anadromous fishes in connected downstream habitats.

EPA has determined the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan will have unacceptable adverse effects on anadromous fishery areas in the SFK and NFK watersheds. In this regard, EPA makes independent unacceptability findings, each of which is based on one or more factors, including the large amount of permanent loss of anadromous fish habitat (including spawning and breeding areas); the particular importance of the permanently lost habitat for juvenile Coho and Chinook salmon; the degradation of and thus damage to additional downstream spawning and rearing habitat for Coho, Chinook, and Sockeye salmon due to the loss of ecological subsidies provided by eliminated streams, wetlands, and other waters; and the resulting erosion of and thus damage to habitat complexity and biocomplexity within the SFK and NFK watersheds, both of which are key to the abundance and stability of salmon populations within these watersheds. EPA has also determined that discharges of dredged or fill material associated with developing the Pebble deposit anywhere in the mine site area (Figure ES-5) within the SFK and NFK watersheds that would result in the same or greater levels of loss or streamflow changes as the 2020 Mine Plan also will have unacceptable adverse effects on anadromous fishery areas in these watersheds, because such discharges would involve the same aquatic resources characterized as part of the evaluation of the 2020 Mine Plan. These conclusions support the prohibition described in Section 5.1 of this final determination.

Further, EPA has determined the discharge of dredged or fill material for the construction and routine operation of a mine at the Pebble deposit anywhere in the SFK, NFK, and UTC watersheds will have unacceptable adverse effects on anadromous fishery areas if the effects of such discharges are similar or greater in nature and magnitude to the adverse effects of the 2020 Mine Plan. In this regard, EPA makes independent unacceptability findings, each of which is based on one or more factors, including the pristine condition and ecological importance of anadromous habitat throughout the SFK, NFK, and UTC watersheds; how aquatic habitats across these three watersheds function similarly to support productive anadromous fishery areas; the large amount of permanent loss of anadromous fish habitat; the degradation of and thus damage to additional downstream spawning and rearing habitat for Coho, Chinook, and Sockeye salmon due to the loss of ecological subsidies provided by the eliminated streams, wetlands, and other waters; and the resulting erosion of and thus damage to habitat complexity and biocomplexity within the SFK, NFK, and UTC watersheds, both of which are key to the abundance and stability of salmon populations within these watersheds. This conclusion supports the restriction described in Section 5.2 of this final determination.

Overview of Prohibition and Restriction in the Final Determination

This final determination includes two parts: a prohibition and a restriction, which are described in more detail in Sections 5.1 and 5.2, respectively.

Prohibition

The EPA Assistant Administrator for Water has determined that the discharges of dredged or fill material for the construction and routine operation of the mine identified in the 2020 Mine Plan (PLP 2020) at the Pebble deposit will have unacceptable adverse effects on anadromous fishery areas in the SFK and NFK watersheds. Based on information in PLP's CWA Section 404 permit application, the FEIS, and the ROD, such discharges would result in the following aquatic resource losses and streamflow changes:

- The loss of approximately 8.5 miles (13.7 km) of documented anadromous fish streams (Section 4.2.1).
- The loss of approximately 91 miles (147 km) of additional streams that support anadromous fish streams (Section 4.2.2).
- The loss of approximately 2,108 acres (8.5 km²) of wetlands and other waters that support anadromous fish streams (Section 4.2.3).
- Adverse impacts on approximately 29 additional miles (46.7 km) of anadromous fish streams resulting from greater than 20 percent changes in average monthly streamflow (Section 4.2.4).

EPA has also determined that discharges of dredged or fill material for the construction and routine operation of a mine to develop the Pebble deposit anywhere in the mine site area within the SFK and NFK watersheds that would result in the same or greater levels of loss or streamflow changes as the 2020 Mine Plan also will have unacceptable adverse effects on anadromous fishery areas in these watersheds, because such discharges would involve the same aquatic resources characterized as part of the evaluation of the 2020 Mine Plan.

Sections 4.2.1 through 4.2.4 describe the basis for EPA's determination that each of the above losses and changes to streamflow independently will have unacceptable adverse effects on anadromous fishery areas (including spawning and breeding areas).

Accordingly, the Assistant Administrator for Water prohibits the specification of waters of the United States within the Defined Area for Prohibition (Figures ES-6, ES-7, and ES-8) as disposal sites for the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan. For purposes of the prohibition, the "2020 Mine Plan" is (1) the mine plan described in PLP's June 8, 2020 CWA Section 404 permit application (PLP 2020) and the FEIS (USACE 2020a); and (2) future proposals to construct and operate a mine to develop the Pebble deposit with discharges of dredged or fill material in the Defined Area for Prohibition that would result in the same or greater levels of loss or

streamflow changes as the mine plan described in PLP's June 8, 2020 CWA Section 404 permit application.⁸ Because each of the losses or streamflow changes described in Sections 4.2.1 through 4.2.4 independently will have unacceptable adverse effects on anadromous fishery areas, future proposals to construct and operate a mine to develop the Pebble deposit that result in any one of these losses or streamflow changes will be subject to the prohibition.

Restriction

The Assistant Administrator for Water has determined that discharges of dredged or fill material associated with future proposals to construct and operate a mine to develop the Pebble deposit will have unacceptable adverse effects on anadromous fishery areas (including spawning and breeding areas) anywhere in the SFK, NFK, and UTC watersheds if the adverse effects of such discharges are similar or greater in nature⁹ and magnitude¹⁰ to the adverse effects of the 2020 Mine Plan described in Sections 4.2.1 through 4.2.4 of this final determination.

Accordingly, the Assistant Administrator for Water restricts the use of waters of the United States within the Defined Area for Restriction (Figures ES-7 and ES-8) for specification as disposal sites for the discharge of dredged or fill material associated with future proposals to construct and operate a mine to develop the Pebble deposit that would either individually or cumulatively result in adverse effects similar or greater in nature and magnitude to those described in Sections 4.2.1 through 4.2.4 of this final determination. Because each of the losses or streamflow changes described in Sections 4.2.1 through 4.2.4 independently will have unacceptable adverse effects on anadromous fishery areas, proposals to discharge dredged or fill material that result in any one of these losses or streamflow changes will be subject to the restriction. To the extent that future discharges are subject to the prohibition, the restriction will not apply.

⁸ By clarifying that the "2020 Mine Plan" includes, for the purposes of the prohibition, future proposals to construct and operate a mine to develop the Pebble deposit with discharges of dredged or fill material in the Defined Area for Prohibition that would result in the same or greater levels of loss or streamflow changes as the mine plan described in PLP's June 8, 2020 CWA Section 404 permit application, EPA ensures that future applicants cannot circumvent the prohibition by proposing small changes in the location of discharges within the mine site that would not result in any change to the levels of aquatic resource loss or streamflow change, or that would result in greater levels of aquatic resource loss or streamflow change. In doing so, EPA gives full effect to the purpose of the prohibition to prevent adverse effects at the mine site that EPA has already determined are unacceptable.

⁹ *Nature* means type or main characteristic (see Cambridge Dictionary available at: <https://dictionary.cambridge.org/us/dictionary/english/nature>).

¹⁰ *Magnitude* refers to size or importance (see Cambridge Dictionary available at: <https://dictionary.cambridge.org/us/dictionary/english/magnitude>).

Figure ES-6. The Defined Area for Prohibition at the 2020 Mine Plan mine site. Figure based on information from PLP (2020), USGS (2021a), and USGS (2021).

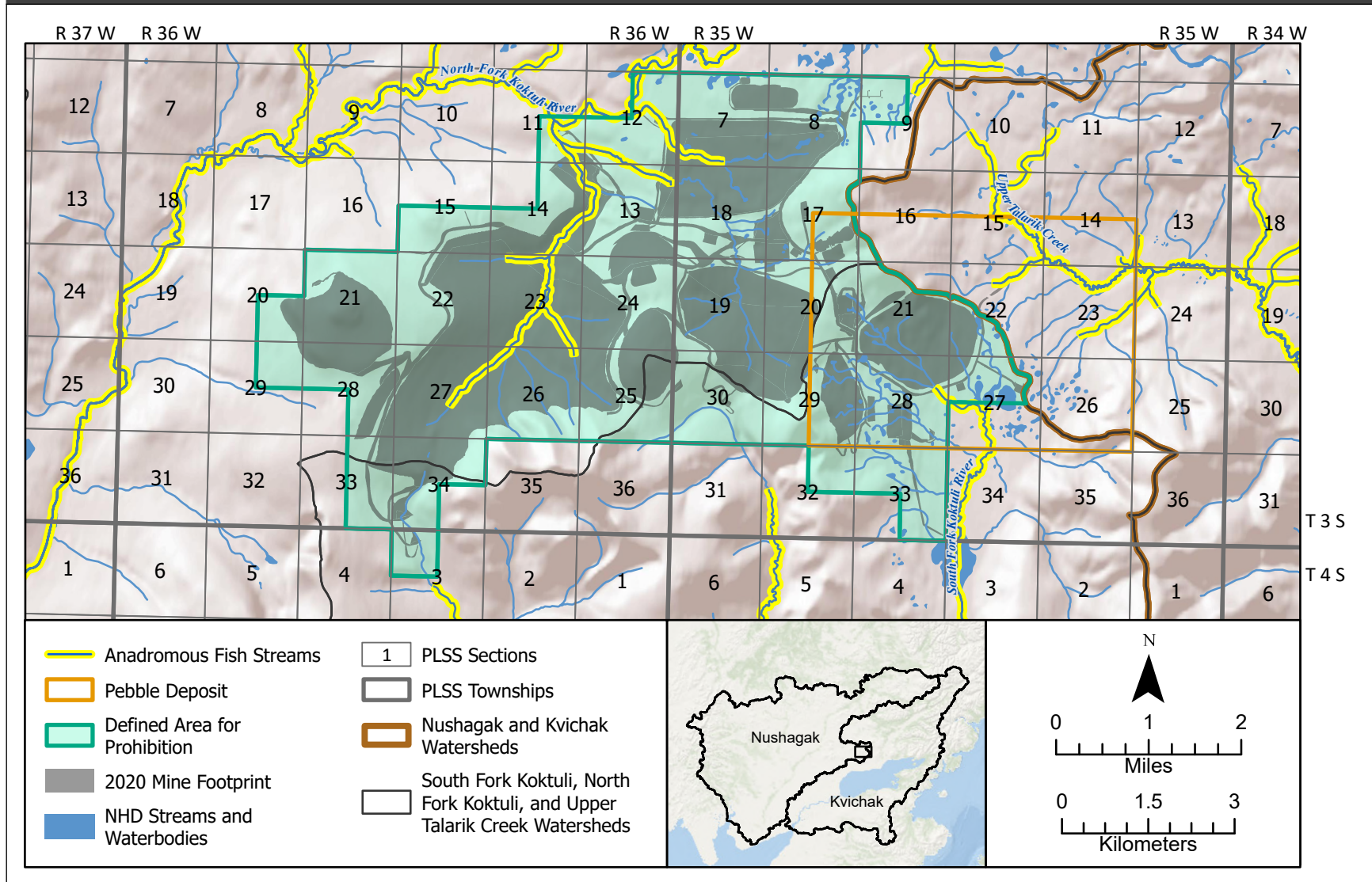


Figure ES-7. The Defined Area for Restriction and the Defined Area for Prohibition overlain on wetlands from the National Wetlands Inventory (USFWS 2021).

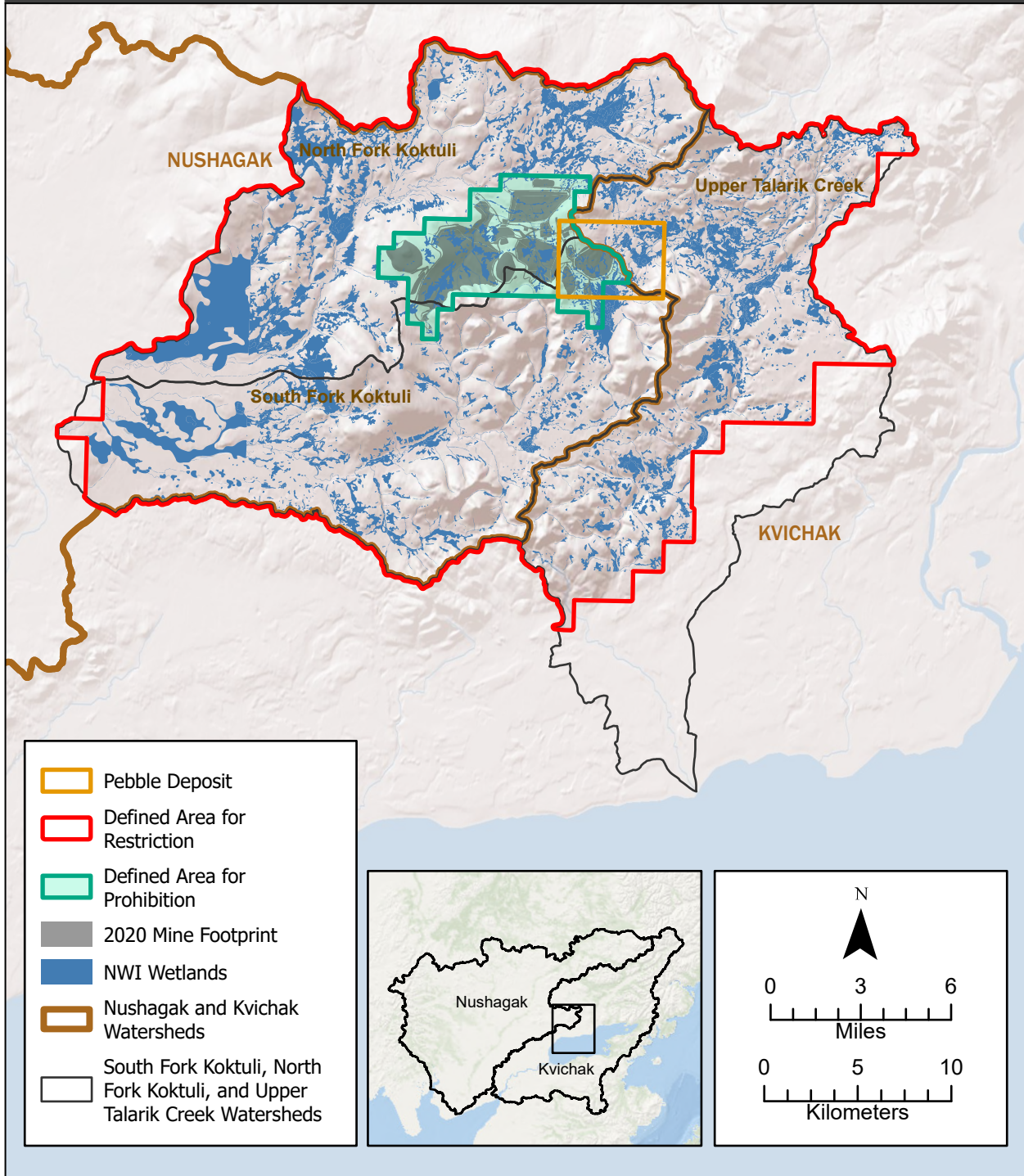
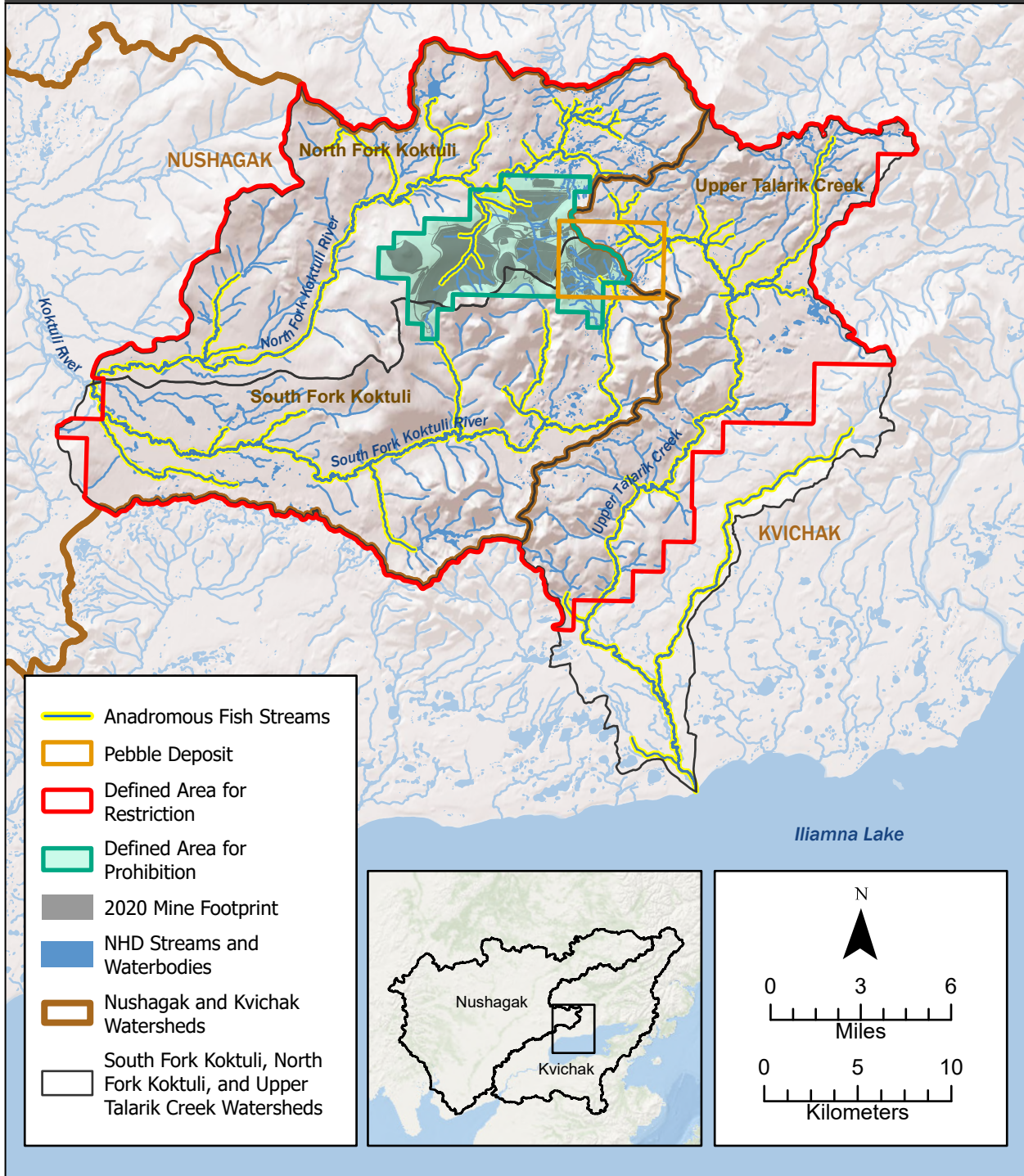


Figure ES-8. The Defined Area for Restriction and the Defined Area for Prohibition overlain on streams and waterbodies from the National Hydrography Dataset (USGS 2021b).



Evaluation of Portions of the CWA Section 404(b)(1) Guidelines

EPA's CWA Section 404(c) regulations provide that consideration should be given to the "relevant portions of the Section 404(b)(1) Guidelines" in evaluating the "unacceptability" of effects (40 CFR 231.2(e)). EPA's consideration of the relevant portions of the CWA Section 404(b)(1) Guidelines further confirm EPA's unacceptable adverse effects determinations.

Specifically, EPA has determined that direct and secondary effects of the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan would result in significant degradation under the CWA Section 404(b)(1) Guidelines. Additionally, EPA has determined that direct and secondary effects of the discharge of dredged or fill material associated with future proposals to construct and operate a mine at the Pebble deposit that would result in adverse effects that are the same, similar or greater than the adverse effects of the 2020 Mine Plan would also result in significant degradation under the CWA Section 404(b)(1) Guidelines. These findings are based on the significantly adverse effects of the discharge of dredged or fill material on special aquatic sites, life stages of anadromous fishes, anadromous fish habitat, and aquatic ecosystem diversity, productivity, and stability under the CWA Section 404(b)(1) Guidelines.

EPA evaluated PLP's two compensatory mitigation plans and neither plan adequately mitigates adverse effects described in this final determination to an acceptable level. For informational purposes, EPA also evaluated additional potential compensation measures proposed by PLP and others over the past decade (see Appendix C of this final determination). Available information demonstrates that known compensation measures are unlikely to adequately mitigate effects described in this final determination to an acceptable level. Information regarding evaluation of the CWA Section 404(b)(1) Guidelines can be found in Section 4.3 of this final determination.

Information about Other Adverse Effects of Concern on Aquatic Resources

While not a basis for EPA's final determination, EPA has identified additional potential adverse effects of concern on aquatic resources within the SFK, NFK, and UTC watersheds from discharges of dredged or fill material associated with developing the Pebble deposit.¹¹ First, adverse effects could result from accidents and failures, such as a tailings dam failure. Uncertainty exists as to whether severe accidents or failures could be prevented over a management horizon of centuries (or in perpetuity), particularly in such a geographically remote area. If such events were to occur, they would have profound ecological ramifications. Second, there are potential adverse impacts associated with the ancillary project components beyond the mine site, such as along the transportation corridor and at the Diamond Point port. Third, there are potential adverse impacts associated with the reasonably foreseeable expansion of

¹¹ EPA provides an alternative basis for its determination that relies on a broader set of considerations in Section 4.4 of this final determination. To the extent statements in this final determination outside of Section 4.4 conflict with statements within Section 4.4, for purposes of the alternative basis for EPA's determination the text of Section 4.4 governs.

the 2020 Mine Plan evaluated in the FEIS. The FEIS finds that it is reasonably foreseeable that the mine proposed in the 2020 Mine Plan would expand in the future to mine approximately 8.6 billion tons of ore over 78 years. The FEIS estimates that the discharge of dredged or fill material for the construction and operation of this expanded mine would result in the total loss of approximately 430 miles (6921 km) of streams at the expanded mine site, representing approximately 43.5 miles (70 km) of anadromous fish streams and approximately 386 miles (621 km) of additional streams that support anadromous fish streams. Further, the FEIS estimates that discharges of dredged or fill material to construct and operate the expanded mine site would also result in the total loss of more than 10,800 acres (43.7 km²) of wetlands and other waters that support anadromous fish streams. EPA has already determined that the adverse effects of the discharges evaluated in this final determination are unacceptable and the additional losses that would result from the Expanded Mine Scenario would represent extraordinary and unprecedented levels of anadromous fish habitat loss and degradation, dramatically expanding the scope and scale of unacceptable adverse effects in the SFK, NFK, and UTC watersheds. For example, significant additional anadromous fish habitat losses and degradation in the SFK, NFK, and UTC watersheds caused by future expansion of the mine would threaten genetically distinct Sockeye Salmon populations in both the Koktuli River and UTC.

See Section 6 of this final determination for a discussion of other concerns and considerations.

Authority and Justification for Undertaking a CWA Section 404(c) Review at this Time

Congress enacted CWA Section 404(c) to provide EPA the ultimate authority, if it chooses on a case-by-case basis, to prohibit, withdraw, deny, or restrict the use of any defined area for specification as a disposal site for the discharge of dredged or fill material into waters of the United States “whenever” the Agency makes the required determination under the statute (33 USC 1344(c); 40 CFR 231.1(a), (c); 44 FR 58076; *Mingo Logan Coal Co. v. EPA*, 714 F.3d 618, 612-13 (D.C. Cir. 2013)). EPA may exercise its CWA Section 404(c) authority “at any time,” including before a permit application has been submitted, at any point during the permitting process, and after a permit has been issued (*Mingo Logan Coal Co.*, 714 F.3d at 613; 33 U.S.C. 1344(c); 40 CFR 231.1(a), (c); 44 FR 58076).

EPA has reviewed the available information, including the relevant portions of the USACE permitting record, and this information supports EPA’s determinations that the discharges of dredged or fill material evaluated in this final determination will have unacceptable adverse effects on anadromous fishery areas within the SFK, NFK, and UTC watersheds.

By acting now, EPA makes clear its assessment of the effects of certain discharges of dredged or fill material associated with developing the Pebble deposit into certain waters of the United States within the SFK, NFK, and UTC watersheds in light of the significant loss of and damage to important anadromous fishery areas. The federal government, the State of Alaska, federally recognized tribal governments, PLP, and many other interested parties have devoted significant resources over many years of study, engagement, and review. Considering the extensive record, it is not efficient or effective

to engage in one or more additional multi-year NEPA and CWA Section 404 processes for future proposals to discharge dredged or fill material associated with developing the Pebble deposit into waters of the United States within the SFK, NFK, or UTC watersheds that will result in adverse effects that EPA has already determined are unacceptable. By acting now, based on an extensive and carefully considered record, EPA promotes regulatory certainty for all interested parties, including USACE and the regulated community; facilitates planning by proponents; and avoids unnecessary expenditure of additional resources by all interested parties (see 44 FR 58077). Ultimately, by acting now, EPA also facilitates “comprehensive rather than piecemeal protection” of important aquatic resources (see *id.*) by ensuring the protection of valuable anadromous fishery areas in the SFK, NFK, and UTC watersheds against unacceptable adverse effects from the discharges evaluated in this final determination.

Conclusion

Discharges of dredged or fill material to construct and operate the 2020 Mine Plan’s proposed mine site alone would result in the permanent loss of approximately 8.5 miles (13.7 km) of anadromous fish streams, 91 miles (147 km) of additional streams that support anadromous fish streams, and approximately 2,108 acres (8.5 km²) of wetlands and other waters in the SFK and NFK watersheds that support anadromous fish streams. These discharges would also result in streamflow alterations that would adversely affect approximately 29 miles (46.7 km) of additional anadromous fish streams downstream of the mine site due to greater than 20 percent changes in average monthly streamflow. The aquatic resources that would be lost or damaged play an important role in supporting salmon populations in the SFK, NFK, and UTC watersheds.

EPA has determined that the large-scale loss of and damage to headwater streams, wetlands, and other aquatic resources that support salmon populations in the SFK, NFK, and UTC watersheds from the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan will have unacceptable adverse effects on anadromous fishery areas in the SFK, NFK, and UTC watersheds.

To prevent these unacceptable adverse effects, this final determination prohibits the specification of certain waters of the United States in the SFK and NFK watersheds as disposal sites for the discharge of dredged or fill material for the construction and routine operation of the 2020 Mine Plan, including future proposals to construct and operate a mine to develop the Pebble deposit with discharges of dredged or fill material into waters of the United States that would result in the same or greater levels of aquatic resource loss or streamflow changes as the 2020 Mine Plan.

This final determination also restricts the use for specification of certain waters of the United States in the SFK, NFK, and UTC watersheds as disposal sites for the discharge of dredged or fill material associated with future proposals to construct and operate a mine to develop the Pebble deposit with discharges of dredged or fill material into waters of the United States that would result in adverse effects

similar or greater in nature and magnitude to the adverse effects of the 2020 Mine Plan (see Section 5 of this final determination).

Proposals to discharge dredged or fill material into waters of the United States associated with developing the Pebble deposit that are not subject to this determination remain subject to all statutory and regulatory authorities and requirements under CWA Section 404.

In light of the immense and unique economic, social, cultural, and ecological value of the aquatic resources in the region, including the fishery areas in the SFK, NFK, and UTC watersheds, and their susceptibility to damage, EPA will carefully evaluate all future proposals to discharge dredged or fill material in the region.

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