UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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REGIONAL
ADMINISTRATOR'S
DIVISION

May 5, 2022

Earl Stewart, Forest Supervisor
Tongass National Forest
648 Mission Street
Ketchikan, AK 99901

Dear Mr. Stewart;

The U.S. Environmental Protection Agency has reviewed the U.S. Forest Service's Draft Environmental Impact Statement for the Mendenhall Glacier Visitor Facility Improvements Project in the Tongass National Forest and the City and Borough of Juneau, Alaska (CEQ Number 20220021; EPA Project Number 20-0063-USFS). EPA has conducted its review pursuant to the National Environmental Policy Act and our review authority under Section 309 of the Clean Air Act. The CAA Section 309 role is unique to EPA and requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement.

The DEIS evaluates the potential environmental impacts associated with facility improvements within the Mendenhall Glacier Recreational Area over the next 30 years, including a new Welcome Center complex, habitat restoration and enhancement, boat docks, and trails. The DEIS also proposes changes to management plans and strategies, such as updates to visitor capacities, commercial use allocations, and the MGRA management unit boundaries.

The DEIS identifies four alternatives, with no preferred alternative identified. Alternative 2 (Proposed Action) evaluates infrastructure development, visitor capacity, and commercial use management actions based on projected increases in tourist visitation over the next 30 years. Alternative 3 and Alternative 4 evaluates similar project components based on increases in tourist visitation in the next 20 years and 15 years, respectively.

The DEIS includes a broad review of environmental impacts for facility improvements that may represent routine, ongoing actions to be taken regularly to improve the facilities over the next 30 years. As such, EPA notes that the DEIS appears to represent a programmatic NEPA analysis by which future decisions on proposed actions can be tiered from.

EPA has identified potential environmental impacts from the project activities to several resource areas, including: climate change, green infrastructure and climate resilience and adaptation, adaptive management planning, environmental justice, and Tribal consultation and coordination. The enclosed Detailed Comments provide specific recommendations to address these concerns for the Final EIS.

Thank you for the opportunity to review the DEIS for this projects. If you have any questions about this review, please contact Mark Jen at (907) 271-3411 or jen.mark@epa.gov in the Alaska Operations Office in Anchorage, or me at (206) 553-1774 or at chu.rebecca@epa.gov.

Sincerely,

Rebecca Chu

Digitally signed by Rebecca Chu
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Rebecca Chu, Chief
Policy and Environmental Review Branch

Enclosure

U.S. Environmental Protection Agency
Detailed Comments Regarding the Draft Environmental Impact Statement
Mendenhall Glacier Visitor Facility Improvements Project

NEPA Review

The Mendenhall Glacier Recreation Area encompasses roughly 5,800 acres adjacent to the Mendenhall Glacier in Juneau, Alaska. The MGRA is managed under the Tongass National Forest Land and Resource Management Plan, the Mendenhall Glacier Master Plan, and the Mendenhall Glacier Recreation Area Management Plan, which was developed in 1960 and most recently updated in 2015.[1] An Interpretive Plan for the MGRA is being developed to update educational exhibits, signage, and kiosks throughout the MGRA.

The DEIS includes a broad review of environmental impacts for facility improvements that may represent routine, ongoing actions to be taken regularly to improve the facilities over the next 30 years. The timeframe for agency decisions and implementation of project components described in the DEIS may be 15-, 20-, or 30-years in the future. As such, EPA notes that the DEIS appears to represent a programmatic NEPA review by which future decisions on proposed actions can be tiered from.

EPA recommends reviewing the Council on Environmental Quality's *Guidance on the Effective Use of Programmatic NEPA Reviews*[2], which describes how programmatic NEPA reviews can be utilized for proposed plans or projects for which future decisions on proposed actions can be evaluated either based on subsequent NEPA reviews (e.g., categorical exclusions or environmental assessments) tiered[3] to the programmatic EIS or the information and analysis incorporated by reference[4] or as an Appendix.[5]

For example, the DEIS notes that the Forest Service plans to make amendments to the visitor capacities and commercial use (outfitter, guide, and transportation services) management, as well as adjustments to management unit boundary areas and the Recreational Opportunity Spectrum.[6] These types of actions could be tiered for subsequent future NEPA reviews.

Purpose and Need

The purpose and need statement is important in developing the NEPA review, as it establishes the scope of the analyses, informs the range of reasonable alternatives to be analyzed and considered, and frames the decision(s) to be made.[2] As noted above, the DEIS appears to represent a programmatic NEPA analysis. EPA recommends that the purpose and need clearly communicate to the public and distinguish the analysis of impacts and alternatives between broader programmatic proposals and project-level proposals.

In addition, we recommend that the Forest Service take a balanced approach that considers the recreational needs of all visitors and expands recreational opportunities in the MGRA. The proposed action includes a new Welcome Center Complex and Visitor Center improvements, and other recreational facilities to accommodate the future growth of seasonal summer commercial tourism and

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[1] USDA Forest Service (2015). *Decision Notice and Environmental Assessment/Finding of No Significant Impact. Mendenhall Glacier Recreation Area Management Plan Revision: Commercial Guide, Outfitter, and Transport Services. Alaska Region, Tongass National Forest*.

[2] Council on Environmental Quality (December 18, 2014). *Guidance on Effective Use of Programmatic NEPA Reviews*. Accessible at: https://www.energy.gov/nepa/downloads/final-guidance-effective-use-programmatic-nepa-review

[3] 40 CFR § 1502.20. Tiering.

[4] 40 CFR § 1502.21. Incorporation by reference. (Information incorporated by reference should be "reasonably available" to the public for consideration during review and comment periods. Reasonably accessible locations should include the Appendix of the DEIS and/or the Forest Service's project webpage. Accessible at: https://www.fs.usda.gov/project/?project=53780).

[5] 40 CFR § 1502.18. Appendix.

[6] DEIS; p. 1-10.

cruise ship visitors.[7] Local residents have commented on the need for improved recreational opportunities in all MGRA management units.[8] EPA recommends that the purpose and need identify improvements for winter recreational opportunities (e.g., designated trails for cross-country skiing, snow shoeing, snow machining, etc. and designated areas for ice skating, ice fishing, sledding, motorized uses, etc.), as well as summer recreation (e.g., designated trails for hiking/walking, berry picking, mountain biking, horseback riding, and motorized uses, etc.) in the MGRA dedicated to year round activities for local residents.

Reasonable Range of Alternatives

The MGRA is organized under three management units: Visitor Center Unit, West Glacier Unit, and Dredge Lakes Unit. The timeframe for implementing proposed project- and plan-level, or reasonably foreseeable future actions under each management unit is based on future visitor capacity and commercial use allocations. The DEIS also identified proposed changes to the management unit boundary areas.

EPA recommends that the no action and action alternatives reflect the proposed project components, actions, and decisions to be made within the framework of the MGRA's management units and the project- and planning-level timeframes.[9] This approach would provide disclosure and understanding to the public and decision-makers.

Alternative 1 (No Action)	Alternative 2 (30-years growth)	Alternative 3 (20-years growth)	Alternative 4 (15-years growth)
Visitor Center Unit - capacity set to 543,000 - commercial use set to 95% **West Glacier Unit** - capacity set to 150,000 - commercial use set to 33% **Dredge Lakes Unit** - No capacity set	**Visitor Center Unit** - capacity set to 999,000 - commercial use set to 87% **West Glacier Unit** - capacity set to 249,000 - commercial use set to 40% **Dredged Lakes Unit** - capacity set to 77,040 - commercial use set to 30%	**Visitor Center Unit** - capacity set to 830,000 - commercial use set to 85% **West Glacier Unit** - capacity set to 249,000 - commercial use set to 40% **Dredged Lakes Unit** - capacity set to 77,040 - commercial use set to 30%	**Visitor Center Unit** - capacity set to 752,000 - commercial use set to 85% **West Glacier Unit** - capacity set to 210,000 - commercial use set to 45% **Dredged Lakes Unit** - No capacity set

EPA also recommends that the range of alternatives[10] represent a full spectrum, including appropriate percentages for commercial use allocations commensurate with the projected future visitor capacities under each alternative and management unit that could be phased and/or incrementally increased over the project timeframe.

Environmental Consequences

Construction Impacts

Proposed project construction activities (e.g., pile driving, mechanical dredging, and shoreline excavation for bridges, trails, boardwalks, boat docks, etc.). may result in adverse impacts to Essential Fish Habitat of Mendenhall Lake, Steep Creek, Zig Zag Pond, and other adjacent wetlands, streams, and ponds. Noise from pile driving hammers could affect the distribution and behavior of juvenile salmon and other fish species. Mechanical dredging and shoreline excavation could result in adverse impacts by

[7] The number of visitors to the MGRA is projected to increase at a rate of approximately 2 percent annually for the next 30 years as the cruise industry continues to grow in the region and the tourism season expands, with a projection of 1,000,000 annual visitors by 2050. Part of the increase in visitors is attributable to the cruise industry adding earlier- and later- season sailings, thereby extending Juneau's tourist season. In 2015, the tourism season was estimated to last 153 days from May 1 through September 30. In 2022, Juneau is scheduled to have cruise ships in port from April 25 through October 18 (DEIS; Appendix A Visitor Capacity Analysis).

[8] Solstice Alaska Consulting, Inc. (February 12, 2021). *Mendenhall Glacier Visitor Facility Improvement Project Scoping Report*.

[9] DEIS; p. 2-7 (Table 2-1). Summary Comparison of Alternatives for the Project Component: Visitor Capacity and Commercial Use Management.

[10] CEQ Memorandum (March 23, 1981). *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. Question 1. Range of Alternatives. Accessible at: https://www.energy.gov/sites/default/files/2018/06/f53/G-CEQ-40Questions.pdf.

removing or burying organisms, increasing turbidity, and altering the hydrodynamics and physical habitat of the aquatic environment. Sedimentation and turbidity would be expected, potentially causing temporary disorientation, reduced feeding efficiency, and clogged fish gills.[11]

In order to minimize potential environmental consequences to the Mendenhall Lake EFH and fisheries resources, we recommend that in-water pile driving, mechanical dredging, and shoreline excavation activities be conducted during the winter season. Mitigation measures, best management practices, and monitoring requirements should be identified and implemented during construction and post-construction activities to evaluate potential impacts to the aquatic environment and to minimize fish mortality.

Operational Impacts

The proposed commercial motorized tour boat operations on Mendenhall Lake may result in environmental consequences to the Mendenhall Glacier and nesting shorebird colonies, as well as potential conflicts with non-motorized vessels (e.g., canoes, kayaks, rafts, paddle boards, etc.). In particular, wakes generated from commercial motorized tour boats may cumulatively affect the rate of calving/recession of the Mendenhall Glacier and indirectly inundate Arctic Tern nesting areas and nesting gull colonies along the shoreline of Mendenhall Lake.

EPA recommends that the FEIS (Table 2-6; Section 2-6) include additional resource specific mitigation measures, such as:

- Establishing minimum separation distances between commercial motorized tour boats and the Mendenhall Glacier and nesting seabird colonies;
- Posting speed limits to minimize wave generation;
- Limiting commercial motorized tour boat operations to vessels within certain class sizes (e.g., length, width, weight, drafts), designs, capacities, etc. that would minimize boat wakes; and
- Establishing a Mendenhall Lake Navigation Plan for commercial motorized tour boat operations with identified navigational routes, established allowable daily motorized boat limits, maximum speed limits, safety protocols, passenger capacity limits, etc. to minimize potential conflicts with non-motorized vessels, and cumulative impacts to the glacier and nesting shorebird colonies along the lake.

Climate Change

Greenhouse Gas Emissions

The DEIS summarizes annual GHG emissions (CO2, CH4, and N2O) by alternatives associated with Visitor Center direct annual operations, visitor transportation, and commercial boat operations (Table 3-45). EPA recommends including the total GHG emission for all alternatives in the table. The GHG emissions for the no action alternative by vehicle type (e.g., bus, van, and passenger vehicle) for the Visitor Center Unit and West Glacier Unit is reported in Table 3-46. EPA recommends that GHG emissions also include construction related sources, such as pile driving, mechanical dredging and excavation; land clearing; vehicle and equipment exhaust (e.g., worker commute trips); haul trucks carrying supplies and materials to/from and within the project site; and construction equipment (e.g., dump trucks, dozers, loaders, excavators, and other heavy machinery); paving and laying concrete for parking areas, paved walkways, and building components, and reported in the annual summary for all action alternatives in Table 3-45.

[11] Limpinsel, D. E., M.P. Eagleton, and J.L. Hanson. 2017. *Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska. EFH Five Year Review: 2010 through 2015*. U.S. Department of Commerce, NOAA Tech. Memo. NMFS-F/AKR-14, 229p.

An estimated 85 percent of visitors to the MGRA arrive with commercial service providers (cruise ships and independent tour companies).[12] EPA recommends that cruise ships be considered within the scope of the NEPA review as connected and cumulative actions and their direct and indirect effects evaluated.[13] Emissions from cruise ships represent a significant source of GHGs to include in the annual GHG emissions (Table 3-45 and Table 3-46) for comparison between the no action alternative (baseline inventory) and the action alternatives representing temporal changes – 15 years (Alternative 4), 20-years (Alternative 3), and 30 years (Alternative 2) in the future (emissions forecast). EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020,*[14] reports on transportation-related GHG emissions, including ships, and the *National Emissions Inventory*[15] may be useful resources for this analysis.

The comparison of project-level emissions to total global emissions may not be equitable and may inappropriately diminish the significance of project-level GHG emissions in the MGRA. In particular, the DEIS reports emissions in mass for each GHG. We recommend that the project-level GHG emissions (e.g., CO2, CH4, N2O and fluorinated gases) be reported for their global warming potential weighted in CO_2 equivalent units (CO_2-e) and included to Table 3-45 and Table 3-46. EPA's *Greenhouse Gas Equivalencies calculator*[16] may be a useful tool to convert emissions or energy data to the equivalent CO_2-e emissions for this project**.**

EPA recommends that the FEIS:

- Include a detailed discussion of the project-level GHG emissions in the context of local and national GHG emission reduction goals. For example, the City and Borough of Juneau has committed to reducing carbon emissions (25 percent) by the year 2030[17] and has established goals to reach 80 percent of the city's energy use powered by renewable energy sources.[18]
- Establish GHG emission reduction goals within the MGRA over the life of this project that are compatible with CBJ's *Climate Action and Implementation Plan* and *Renewable Energy Strategy*;
- Identify and evaluate emissions reduction measures and policies that would advance the national 2030 and 2050 GHG reduction goals by adopting the recently published *Long Term Strategy of the United States*;[19]
- Reflect the local and national GHG emissions reduction goals through evaluation of the range of alternatives and mitigation measures for this proposed action; and
- Evaluate and disclose the potential climate damages through SC-GHG, which reflects the best available science and methodologies to monetize the value of the net harm to society associated with the changes in GHG emissions resulting from the proposed action.[20] EPA recommends including estimates of GHG emissions for construction and operations in the NEPA review to inform the public and decision makers regarding the social benefits of reducing GHG emissions and the social costs of increasing such emissions resulting directly, indirectly, and cumulatively from this proposed project. To assess the climate impacts and weigh their significance in terms

[12] DEIS; p. 1-2.
[13] 40 CFR §1508.25. Scope.
[14] U.S. Environmental Protection Agency (April 15, 2022) *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020*. EPA-430-R-22-003. Accessible at: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks.
[15] EPA National Emissions Inventory. Accessible at: https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei.
[16] EPA Greenhouse Gas Equivalencies Calculator. Accessible at: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.
[17] Juneau Climate Action and Implementation Plan (November 14, 2011). Adopted by the City and Borough of Juneau Assembly, Resolution 2593. Accessible at: https://chstm2y9cx63tv84u2p8shc3-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/CAP_Final_Nov_14.pdf.
[18] Juneau Renewable Energy Strategy (JCOS 2018). Accessible at: https://renewablejuneau.org/wp-content/uploads/2018/11/cbjenergyplanapprovedupdatedv3-41bapr2620181.pdf.
[19] U.S. Department of State and Executive Office of the President (November 2021). *The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050*. Accessible at: https://www.whitehouse.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf.
[20] Interagency Working Group on the Social Cost of Greenhouse Gases, United States Government (February 2021). *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide* - Interim Estimates under Executive Order 13990. Accessible at: https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf.

of benefits and costs, EPA recommends monetizing potential impacts of GHG emissions using estimates of the social cost of GHG (SC-GHG), as appropriate.

Mendenhall Glacier – Lake Outburst Floods

Notable local effects from climate change are associated with the increased rate of glacial recession, extreme precipitation events, and glacial lake outbursts.[21] In particular, glacial lake outbursts have increased the intensity and duration of flooding events within the MGRA. Since 2011, the MGRA and surrounding areas have experienced regular, periodic flooding due to glacial lake outburst floods, also known as "jökulhlaups." Glacial lake outburst floods have been occurring one to two times a year during the summer tourism season. Based on past flood events and recent MGRA flood inundation modeling map (Figure 3-12), prominent features likely to experience flooding could cause periodic trail closures and possible damage at the existing campground and trails in the Dredge Lakes Unit. Inundation of existing facilities from glacier outburst flooding is anticipated to continue impacting the MGRA for the next 10 to 20 years, with larger flows possible in the near future.[22]

Due to the unpredictable and catastrophic nature of the Mendenhall Glacier lake outburst flooding and the potential significant risks to loss of life and damage to property, EPA recommends that the FEIS (Table 2-6; Section 2-6) include additional resource specific mitigation and monitoring measures, such as:

- Continue field studies and modelling to predict the timing, magnitude, and intensity of future glacier lake outbursts;
- Continue Remote Monitoring Systems to collect information and observe for signs and characteristics that could be used to predict future glacier lake outbursts;
- Establish and implement an Early Warning System, which could include sensors to detect a potential glacier lake outburst and a communications infrastructure (visual, audio, text messaging, etc.) to issue timely evacuation warnings/alarms and to notify visitors of pending flooding around the Mendenhall Lake and the MGRA; and
- Establish and implement an MGRA Emergency Response and Rescue Plan to address major flooding incidents associated with glacier lake outbursts.

The Mendenhall River is the only waterbody in the MGRA that has been mapped for flooding risk by the Federal Emergency Management Agency.[23] The FEMA 1-percent annual exceedance probability base flood elevation, also known as a 100-year flood, for the Mendenhall River ranges from 57 to 63 feet in the project area, but does not consider the effects of the recurring glacial lake outbursts. A study to model and map flood inundation on the Mendenhall River at varying river stages associated with glacial lake outburst floods was completed.[24] A flood elevation analysis has not been conducted for the Mendenhall Lake.[25] EPA recommends developing a FEMA flood risk map for the Mendenhall Lake which considers the recurring glacial lake outburst events and identifies areas within the 1-percent AEP base flood elevation. This map may be used to identify the appropriate elevations along Mendenhall Lake to plan and site MGRA facilities and to ensure public safety in the event of a major glacial lake outburst flood.

[21] DEIS; p. 3-171.
[22] Kienholz, C., J. Peirce, E. Hood, J.K. Amundson, G.J. Wolken, A. Jacobs, S. Hart, K.W. Jones, D. Adbel-Fattah, and J.S. Conaway (May 2020). *Deglacierization of a Marginal Basin and Implications for Outburst Floods, Mendenhall Glacier, Alaska*. Frontiers in Earth Science.
[23] DEIS; p. 3-114.
[24] Alaska Silver Jackets (2015). Juneau Jokulhlaup Inundation Report.
[25] AWR Engineering LLC (October 5, 2021). Mendenhall Lake – Lake Flood Elevation Analysis Memorandum.

Mendenhall Lake – Sedimentation and Isostatic Rebound

Climate change has resulted in higher rates of recession and melting of the Mendenhall Glacier, which has expanded the surface area of the Mendenhall Lake as the glacier retreats and discharges additional meltwater into the lake. The Mendenhall Lake basin is reaching capacity as coarse and fine sediments are released from the melting glacier, as well as from the nearby streams, such as Nugget Creek and Steep Creek, which is increasing sediment deposition and changing the depth of the lake.[26]

The Mendenhall Lake is not listed as a federal navigable water for motorized commercial vessels. To ensure safe operations of future commercially operated motorized boat tours on the lake, EPA recommends that the FEIS include:

- Additional sedimentation studies for the Mendenhall Lake to evaluate sedimentation sources, rates, volumes, distribution patterns, etc.;
- A hydrographic/bathymetric map for the Mendenhall Lake to determine the lake bottom profile, elevations, depths, shoreline features, etc. This information would be useful for determining whether the proposed motorized commercial boats are able to navigate the lake at current depths and whether there would be a need for future navigational dredging; and
- A plan for securing a U.S. Coast Guard's navigability determination for the Mendenhall Lake prior to authorizing any commercial motorized boat tours operations on the lake.

In addition, the MGRA and other parts of southeast Alaska are experiencing ongoing isostatic rebound as a result of retreating and melting glaciers that are contributing to the gradual ground lifting, which may change local land elevations and the nature of existing surface water connections. As a result of isostatic rebound and increasing meltwater volumes to the Mendenhall Lake, EPA recommends that the Forest Service partner with the U.S. Geological Survey to maintain a water level gauge on the Mendenhall Lake to monitor seasonal and annual changes in water elevations, and particularly during a glacier lake outburst flooding event. An annual hydrograph of the Mendenhall Lake would be useful to compare seasonal surface water level changes over the 30-year life of this project.

Green Infrastructure for Climate Resiliency and Adaptation

The proposed action (Alternative 2) includes the construction of new parking areas, Welcome Center and plaza area, campground parking, new trails and trailhead parking, and paving two-thirds of the commercial overflow parking lot adjacent to wetlands and several Class I salmon streams. The total acreage of additional impervious surfaces from all components under Alternative 2 would be approximately 8.96 acres.[27]

Storm water runoff from impervious surfaces, such as parking lots, trails, and rooftops, represents a major source of water pollution carrying sediments, oil and grease, toxic substances, heavy metals, and other pollutants into adjacent wetlands, lakes, ponds, and fish-bearing streams. In particular, meltwater from the Mendenhall Glacier, heavy storm events, and annual glacier lake outbursts may increase flooding on Mendenhall Lake, which may damage certain infrastructure, facilities, and trails in the MGRA.

In 2019, Congress enacted the Water Infrastructure Improvements Act. The Act defines Green Infrastructure as: *the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspire stormwater and reduce flows to sewer systems or to surface waters.*

[26] DEIS; p. 3-106.
[27] DEIS; p. 3-129.

EPA recommends that the Forest Service incorporate green infrastructure systems in the planning, design, and operations of the Welcome Center Complex and other facilities at the MGRA to better manage stormwater runoff, as well as bolster resiliency and adaptation to climate change impacts associated with flooding and major storm events. Green infrastructure elements (e.g., permeable, porous or aggregate pavers) can be integrated into parking lot designs to increase permeability for snow melt and rain water to infiltrate, and thereby reducing runoff and promoting groundwater recharge to replenish adjacent wetlands, lakes, ponds, and streams. Rain gardens and/or vegetated bioswales installed in medians and along the parking lot perimeter are other options to slow stormwater runoff and promote infiltration, trap sediments and treat pollutants. In particular, EPA recommends that the new Welcome Center Plaza and the commercial overflow parking/staging area be constructed using permeable pavers. This may be a cost-effective solution where flooding and icing may be a problem.

To minimize the volume of storm water runoff, we recommend collecting, harvesting, and/or storing water from rainfall for future alternative water uses, such as toilet flush water, hydronic radiant heating systems, etc. The variety of systems include rain barrels, commercial building cisterns, and ground level pits. In addition, runoff from storm water and snow melt collected on rooftops can be reduced and/or minimized by routing drainage pipes into rain barrels and cisterns for storage, and/or into permeable areas, including rain gardens and/or vegetated swales to infiltrate and recharge the ground water aquifer. Green rooftops covered with natural growing media and local native vegetation would enable rainfall infiltration and evapotranspiration of stored water and should also be considered for the Welcome/Visitor Center rooftop designs. For additional information and resources regarding green infrastructure designs, plans, and tools for this proposed project, please refer to EPA's Green Infrastructure webpage.[28]

In 2020, CEQ released *Guiding Principles for Sustainable Federal Buildings*[29] consistent with fundamental sustainable design practices, such as EPA's green infrastructure, USDA's sustainable buildings implementation plan[30] and Forest Service's Sustainability Toolbox.[31] CEQ's six guiding principles focus on ensuring that Federal buildings: (1) employ integrated design principles; (2) optimize energy performance; (3) protect and conserve water; (4) enhance the indoor environment; (5) reduce the environmental impact of materials; and (6) assess and consider building resilience. EPA recommends incorporating CEQ's Guiding Principles into the planning, design, and operations of the MGRA Welcome/Visitor Centers and other recreational facilities.

Integrated design principle for Sustainable Siting[30] refers to identifying and mitigating current and projected site specific long-term risks through considerations that provide resilience to anthropogenic and natural events, such as flooding and heavy storm events. Consistent with this principle, EPA recommends the following actions for certain proposed project components:

- *Welcome Center* - avoid and minimize direct impacts to the adjacent wetlands and aquatic habitat by reducing the overall footprint (12,845 square feet) of the new Welcome Center and incorporating pile supported structures. Maintaining the natural wetland area would provide climate change resilience against major flooding and storm events. The reduced square footage of the main floor could be added to a second floor public viewing area, which could maximize 360 degree views of the MGRA and the Mendenhall Glacier; and

[28] EPA Green Infrastructure. Accessible at: https://www.epa.gov/green-infrastructure.
[29] Council on Environmental Quality (December 2020). *Guiding Principles for Sustainable Federal Buildings and Associated Instructions* (CEQ-OFS-2020-1). Accessible at: https://www.sustainability.gov/pdfs/guiding_principles_for_sustainable_federal_buildings.pdf.
[30] U.S. Department of Agriculture (June 3, 2011). *Sustainable Buildings Implementation Plan*. Accessible at: https://www.dm.usda.gov/emd/docs/SustainableBuildingsImpPlan.pdf.
[31] U.S. Forest Service Sustainability Building Toolbox. Accessible at: https://www.fs.fed.us/eng/toolbox/sus/.

- *Zig Zag Pond* – avoid direct impacts to Zig Zag Pond (0.5 acres) to expand the Welcome Center Complex parking area. Zig Zag Pond provides important aquatic overwintering and rearing habitat for juvenile coho salmon and other resident fish species, and maintains hydrological connections to Steep Creek. Zig Zag Pond may serve as an important water retention and storage area to attenuate and dissipate floodwaters from Mendenhall Lake and Steep Creek. Alternatives 3 and 4 would avoid direct impacts to Zig Zag Pond for expanding the parking area.

The proposed Welcome Center may qualify for the U.S. Green Building Council's Leadership in Energy and Environmental Design "Silver" certification based on energy innovations and sustainability features.[32] EPA notes that incorporating additional green infrastructure and CEQ's sustainable design practices into the design, construction, and operations of the Welcome Center may provide additional points to achieve LEED Silver, Gold, or Platinum certification. In addition, EPA recommends that the Visitor Center improvements incorporate green infrastructure and sustainable design practices to support LEED certification.

Adaptive Management Planning

Air Quality and Greenhouse Gas Emissions

The MGRA is located in the Mendenhall Valley, which was designated as a nonattainment area in 1990 by the EPA for exceedance of the National Ambient Air Quality Standard for particulate matter (PM_{10}). A number of corrective actions over the years have resulted in compliance with the PM_{10} standard and attainment in the Mendenhall Valley since 2013.

EPA recommends that the adaptive management plan include mitigation and monitoring requirements to address short-term and long-term cumulative effects to air quality and GHGs during project construction and operations. We note that in 2018 and 2019, air quality assessment at the Visitor Center's main parking area identified increased levels of particulate matter, primarily from diesel-powered vehicle emissions.[33] A consistent and on-going air quality monitoring program would establish baseline conditions for the MGRA that can serve as a comparison to future changes in conditions. We recommend that the Forest Service, in coordination with the Alaska Department of Environmental Conservation, develop and implement an air quality and GHG monitoring program for the MGRA. We recommend that the FEIS describe the types of air quality pollutants and parameters that would be monitored (e.g., NAAQS criteria pollutants, Air Toxics, CO2, CH4, N2O, fluorinated gases), proposed location of sampling stations within the MGRA, and comparison to the national and state air quality standards. EPA recommends the results of the GHG emissions monitoring be compared to baseline conditions and be used to determine if additional mitigation measures and corrective actions would be needed to achieve the GHG emission reduction goals consistent with local and national plans and policies.

Water Quality

EPA recommends that the adaptive management plan include mitigation and monitoring requirements to address short-term and long-term cumulative effects to water quality during project construction and operations. EPA notes that a water quality monitoring program would be developed with ADEC to ensure that installed stormwater runoff control structures are working effectively and that water quality in Steep Creek, Zig Zag Pond, and the Mendenhall Lake are not impacted.[34]

[32] DEIS; p. 2-17.
[33] DEIS; p. 3-160.
[34] DEIS; p. 3-136.

A consistent and on-going water quality monitoring program would establish baseline water quality conditions for the MGRA that can serve as a comparison to future changes in conditions. EPA recommends that the F EIS describe the types of pollutants and parameters that would be monitored, proposed location of sampling stations within the MGRA, and planned comparison to the national and state water quality standards to identify water quality exceedances, if any. In particular, streams, ponds, and lakes in the MGRA support important salmon habitat. EPA recommends the water quality monitoring program be designed to ensure protection of future aquatic life conditions.

Comparison of the short-term and long-term changes to the MGRA air quality/GHG and water quality conditions would inform the public and decision-makers regarding effects from established commercial uses (e.g., outfitter, guide, and transportation services), allocations, visitor capacities, and service days, etc. throughout project implementation. EPA recommends that the annual air quality/GHG and water quality monitoring results be incorporated into an annual report and be accessible and available to the public. In addition, EPA recommends that the Forest Service incorporate these results into an interpretive display in the Welcome and/or Visitor Center to demonstrate a commitment to conserve air quality/GHG and water quality in the MGRA.

Environmental Justice

EPA's EJScreen is an environmental justice screening and mapping tool (Version 2.0)[35] that provides a nationally consistent dataset and approach for combining environmental and demographic indicators. The DEIS used EJScreen as a reference source to identify and compare the percentage of low-income populations, specifically within 2.5 miles radius of the MGRA in the Mendenhall Valley (Table 3-53).[36]

EPA considers a project to be in an area with potential environmental justice concerns when the EJScreen report for the selected block group identifies at least one of the twelve EJ Indexes[37] to be at or above the 80th percentile when compared to the state (Alaska) and national levels. There may be uncertainties associated with this screening-level information and limitations on appropriate interpretations and applications of these indexes. Although EJScreen may be useful for the initial EJ screening analysis, it does not provide information on every environmental effect and demographic factor that may be relevant to a particular location and/or proposed project. EPA recommends that the FEIS evaluate all potential affected areas within a single block group and/or across several block groups and communities within CBJ and Southeast Alaska, and include other information sources in the EJ analysis/review to supplement the EJScreen report, particularly related to indigenous populations in southeast Alaska.

Environmental Justice communities include those overburdened, underserved, and vulnerable communities due to social, cultural, economic, and physical factors. Key characteristics may include the following: age (elderly or young); physical and mental disabilities; chronic health/medical conditions; cultural/religious beliefs; limited English proficiency and low education; and limited access to transportation. The Forest Service has accessibility resources, guidelines, and standards that apply to facilities in national forests.[38]

Approximately 85 percent of visitors to the MGRA arrive with commercial service providers (e.g., cruise ships and independent tour companies) and the remaining 15 percent arrive independently (locals

[35] EPA EJSCREEN – Environmental Justice Screening and Mapping Tool (Version 2020). Accessible at: https://www.epa.gov/ejscreen.
[36] DEIS; p. 3-188.
[37] Environmental Justice Indexes: Particulate Matter$_{2.5}$, Ozone, Diesel PM, Air Toxics (Cancer Risk), Air Toxics (Respiratory Hazard Index), Traffic Proximity, Lead Paint, Superfund Proximity, RMP Facility Proximity, Hazardous Waste Proximity, Underground Storage Tanks, and Wastewater Discharges (information not available for Alaska).
[38] U.S. Forest Service Accessibility Resources. Accessible at: https://www.fs.usda.gov/managing-land/national-forests-grasslands/accessibility/resources.

and independent travelers).[39] The cruise ship visitors to Juneau may include EJ populations from other states and foreign countries. In particular, cruise ship crews may include minority (people of color) and low income populations representing multiple foreign countries, such as southeast Asia. EPA recommends that the EJ analysis/review discuss overburdened, underserved, vulnerable, people of color and low income visitors and travelers to MGRA from other states and foreign countries. [40]

Identifying and addressing concerns from communities of color, low-income, overburdened, underserved, and vulnerable populations representing the local area, Alaska, other states, and abroad in the EJ analysis/review may be challenging. EPA recommends that the Forest Service continue to provide full consideration of EJ concerns through continued outreach, engagement, and involvement for visitors/travelers to the MGRA in a manner that enables meaningful public participation (e.g. collect additional information and monitoring through local and visitor surveys/interviews using verbal, visual, audio, written, and on-line/virtual formats) and conduct further EJ studies/reports, which could be incorporated by reference[4] as an appendix to the FEIS. This additional information would be useful for developing an MGRA Visitor Profile as part of the EJ analysis/review for this project.

EPA recommends that the FEIS (Table 2-6; Section 2-6) include additional resource specific mitigation measures in the evaluation and design of the MGRA facilities to advance environmental justice, promote equity, reasonable accommodations, and access to recreational opportunities for all people of color, low income, overburdened, underserved, and vulnerable communities, which may include, but not be limited to, the following:

- Convene a MGRA community advisory group comprised of local EJ and indigenous populations; Tribes; businesses; commercial guides; etc. to advise the Forest Service regarding community concerns and needs for future recreational development, commercial use allocations, etc.;
- Maintain Tribal consultation and coordination with local southeast Alaska Tribes and communities and ANCSA corporations regarding opportunities for traditional, cultural, and subsistence[41] activities and uses in the MGRA;
- Support seasonal hiring of multi-lingual staff and guides for the MGRA who can provide public outreach, education, and information to foreign visitors in their native language;
- Provide interpretive educational exhibits, signage, and kiosks at the Welcome/Visitor Centers, along trails and throughout the MGRA in multiple languages, such as English, Spanish, French, Filipino (Tagalog), etc. and using visual and audio and other multi-media formats;
- Provide reasonable accommodations and accessibility for the disabled and handicapped visitors by including handicap, wheelchair, and walker accessible ramps, trails, campsites, restroom facilities, boat docks and ramps, etc.; accommodations for service animals; and interpretive displays, exhibits, and signage for the vision and hearing impaired;
- Provide on-site medical support facilities to accommodate those with high-risk health/medical conditions, such as heart attack/strokes, diabetes, asthma, anaphylaxis, etc.; and
- Partner with the City and Borough of Juneau[42] to implement a public transportation pilot program to provide low cost public access between the downtown area/cruise ship docks and the MGRA. In summer 2022, the CBJ Capital Transit is planning to open a new Mendenhall Valley

[39] DEIS; p. 1-2.
[40] U.S. Forest Service Accessibility Resources. Accessible at: https://www.fs.usda.gov/managing-land/national-forests-grasslands/accessibility/resources.
[41] DEIS; p. 3-29. Subsistence use is prohibited within the Mendenhall Valley, Mendenhall Lake, and the MGRA.
[42] Solstice Alaska Consulting, Inc. (February 12, 2021). *Mendenhall Glacier Visitor Facility Improvement Project Scoping Report*. CBJ scoping comments indicated their interest in collaborating with the Forest Service and possibly committing funding to support transit for equitable access to recreation and recommended partnering with private entities to link transportation and transit networks between downtown and the MGRA (page 5 – 6).

Transit Center, which would enhance bus service between the cruise ship docks (Downtown Transit Center or Public Library) and the Mendenhall Valley.[43]

Tribal Consultation and Coordination

The MGRA and the Mendenhall Glacier Valley are part of the ancestral lands and the traditional territory of the Tlingit clan Áak'w Ḵwáan. The Mendenhall Glacier has long been a defining feature in the cultural landscape of the Áak'w Ḵwáan and is treated with deep respect.[44]

EPA encourages the Forest Service to continue government-to-government consultation and coordination with the Tribes, and incorporate feedback from the Tribes (e.g. indigenous knowledge/traditional ecological knowledge) when making decisions regarding the project. Integrating indigenous knowledge/TEK with western science can be used to develop interpretive stories the MGRA. TEK may also provide the opportunity to provide additional information about the local indigenous people.

EPA recommends identifying additional opportunities to support inclusion of Tribes in the FEIS (Table 2-6; Section 2-6) such as:

- Seek input from local indigenous communities on ways to integrate cultural considerations into the MGRA (e.g., utilize the Alaskan Tribal place name for the Welcome Center; display traditional Alaska native art, include information about indigenous culture and practices on kiosks); and
- Engage local indigenous communities when planning events (e.g., requesting a native elder to provide a traditional cultural blessing for the site and dedication of the new Welcome Center; host youth science and culture camps at the Welcome/Visitor Centers and the MGRA, etc.).

[43] Segall, Peter (April 20, 2022). With new transit center opening, officials seek feedback on bus scheduling. New Mendenhall Valley Transit Center opens in July, and schedules will need to change. The Juneau Empire. Accessible at: https://www.juneauempire.com/
[44] DEIS; p. 3-150.