

CHAPTER 2: ALTERNATIVES

INTRODUCTION

NEPA requires federal agencies to explore a range of reasonable alternatives aimed at addressing the purpose of and need for the proposed action. The alternatives under consideration must include the “no action” alternative as prescribed by CEQ regulations for implementing NEPA (40 CFR 1502.14).

The action alternatives/options analyzed in this document, in accordance with NEPA, are based on preliminary design and the result of internal scoping and public scoping and meet the overall purpose of and need for proposed action. The NPS explored and objectively evaluated two alternatives in this EA, including:

- alternative A: no action
- alternative B: modify Line #2 and install Line #3 using either directional drilling (option 1) or open trenching (option 2)

Alternatives that were considered but were not technically feasible, did not meet the purpose of and need for the project, created unnecessary or excessive adverse impacts on cultural or natural resources, and/or conflicted with the overall management of the park or its resources were dismissed from further analysis and are also described in this chapter.

The descriptions of alternative B are based on preliminary designs and information available at the time of this writing. Specific distances, areas, and layouts used to describe the alternatives are estimated based on good engineering practice and may change during the actual design. If changes during any approved design are not consistent with the intent and effects of the selected alternative, additional compliance may be required prior to project implementation to ensure that NEPA guidelines are met.

DESCRIPTIONS OF ALTERNATIVES

ALTERNATIVE A: NO ACTION

Alternative A, the no action alternative, is the continuation of current management. It does not imply or direct discontinuing the present action or removing existing uses, developments, or facilities. The no action alternative provides a baseline of existing conditions and actions and provides a basis for evaluating the changes and impacts of the action alternative.

Currently, Summit Hall removes silt periodically from the intake to keep the line operational, which has been the situation in past years. In order to remove silt from the intake, Summit Hall obtains an access permit to cross park property. Access is currently by foot or by vehicle from Sycamore Landing along the towpath to the site. There is associated NPS administrative costs and time for park personnel with issuing the required permits.

ALTERNATIVE B: MODIFY LINE #2 AND INSTALL LINE #3 (NPS PREFERRED ALTERNATIVE WITH OPTION 1)

Alternative B would modify Line #2 and install Line #3. Specifically, this alternative would relocate the existing Line #2 approximately 200 feet upstream (west) from the present location. Pump #2 would remain in its current location; the new Line #2 would be approximately 345 linear feet long. Line #3 would be installed approximately 1,700 feet downstream (east) of historic Culvert #41 (see figure 2). Pump #3 would be located off of NPS property (on Summit Hall) and set within a pit that is not visible to users of the C&O Canal towpath. Both the modification to Line#2 and the installation of new Line #3 would be modeled after the existing Line #1. Each would have a 10-inch pipe anchored on the Potomac River shoreline with a concrete support foundation of approximately 15 inches wide by 50 inches long

(approximately 5.5 square feet) by 15 inches deep (figure 3). Extensions to the intake lines would be manually attached as needed to reach deeper waters and removed when not in use. Once Line #2 is modified, the section of existing Line #2 that is located in Culvert #39 would be removed with the remainder of the line that is located below grade to be abandoned in place. The existing cement foundation for Line #2 would also be left in place.

Installation of the new lines would use one of the following construction options:

- **Option 1 - Directional Drilling (preferred alternative option):** The project would employ horizontal directional drilling technology to establish the additional water lines.

Commonly called directional boring or Horizontal Direct Drilling (HDD), directional drilling is a trenchless method of installing underground pipes, cables, and/or conduits in a shallow arc along a prescribed bore path. HDD utilizes a surface-launched drill rig that results in minimal impact on the surrounding environment. The surface-launched drill would be located and operated from the Summit Hall property, so there would be no surface disturbance on NPS property except where the drill emerges.

- **Option 2 - Open Trenching:** The project would employ open trenching to establish the additional water lines.

Open trenching is a method of installing underground pipes, cables, and/or conduits using an open trench. This method requires more ground disturbance, but can be less expensive than HDD. Backhoe-type equipment would be used to dig a trench, and soils/subsoils would be stockpiled and then replaced over the installed pipe; any extra spoils would be reused on the farm. By necessity, the trenches would cut through the towpath and the canal prism to install the new water lines. Archeological monitoring would occur during construction. Immediately after construction, the trenches would be backfilled with existing material and the disturbed area would be revegetated by seeding with an NPS/C&O Canal NHP-approved seed mix (see mitigation measures, below).

The width of the trench would vary depending on the depth of the cut through the varying terrain (assuming that the trenches would require a bottom width of three feet and that they would be excavated with sloping sidewalls, following Occupational Safety and Health Association excavation safety standards). The maximum width at grade would be approximately 21 feet, depending on the varying terrain. Shallower areas of the trench would not be as wide. The new pipe would be three feet below the bottom of the canal prism.

Figure 2. Location of Proposed Lines #2 and #3

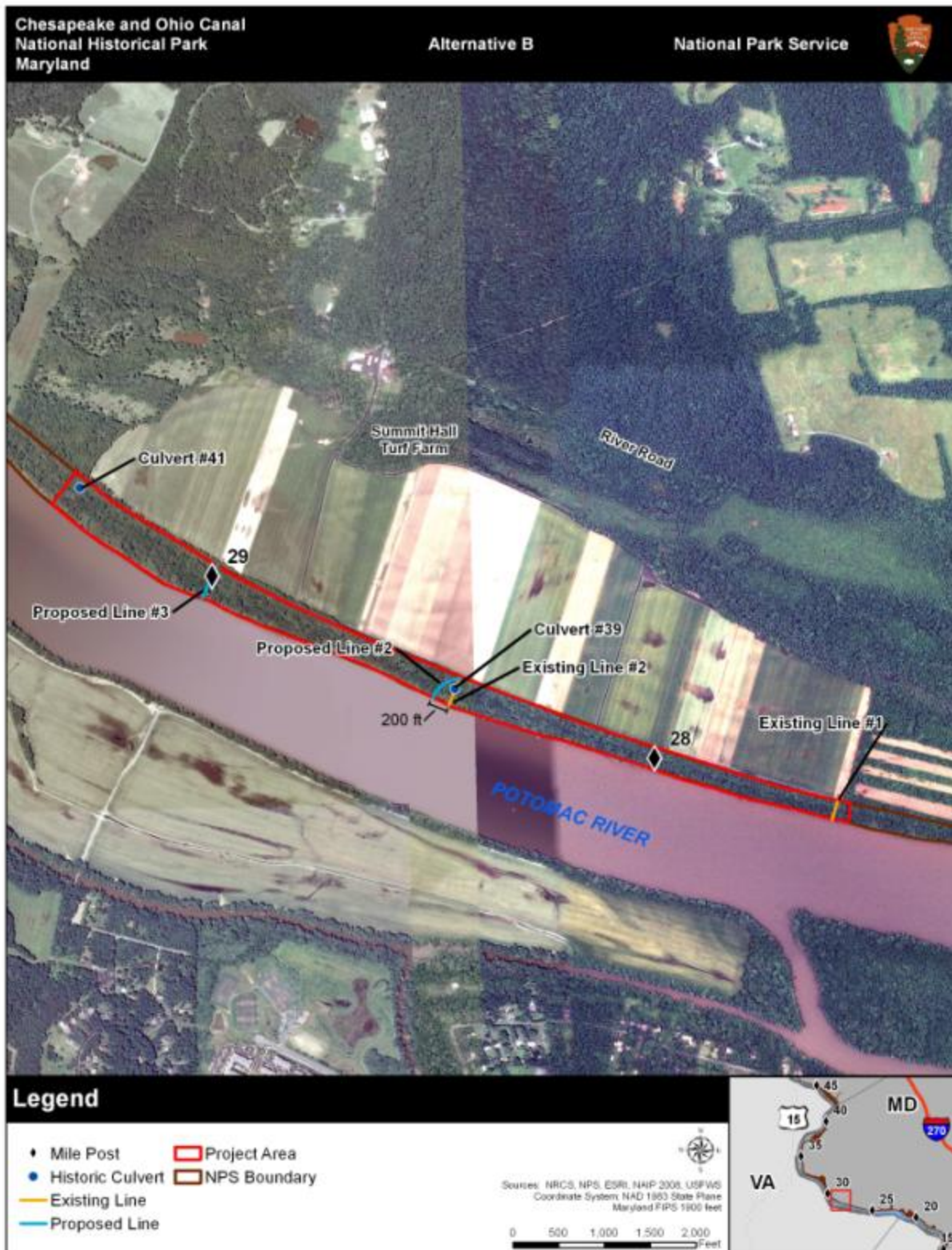


Figure 3. Existing Line #1 Anchored on the Shoreline



MITIGATION MEASURES OF THE ACTION ALTERNATIVES

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures would be implemented as part of the selected action alternative. The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving their intended results. In addition, the Deed would be re-written to reflect the waterline alignments as determined through the EA and construction processes.

SOILS

- Mitigation would be required only if the open trenching construction method (Alternative B, option 2) is implemented. A waterproof layer would be established in the canal prism per the construction design to prevent a breach of the clay layer underneath the prism.

VEGETATION

- All protection measures would be clearly stated in construction specifications, and workers would be instructed to avoid conducting activities beyond the construction zone, as defined by the construction zone fencing.
- Trimming and removing vegetation would be minimized to accommodate construction equipment ingress and egress.

- Collision of equipment with trees and other vegetation would be avoided. Protective fencing would be placed around tree trunks in close proximity to construction activities to minimize potential adverse effects to bark or other tree attributes resulting from collision.
- Cutting trees would be minimized whenever possible, particularly of trees with large diameter at breast height (DBH).
- Construction contractor would be required to powerwash all construction vehicles and equipment prior to arrival at the park to remove seed and plant material. In addition, machines should be cleaned each time they are removed and returned to the site.
- Disturbed areas would be revegetated as soon as possible with a NPS/C&O Canal NHP-approved native seed mix to help prevent the spread of exotic invasive plant species.
- Monitoring protocol would be enacted to ensure no new or additional exotic invasive plant species are spread into the project area.

TERRESTRIAL WILDLIFE AND WILDLIFE HABITAT

- Vegetation clearing would be conducted outside the breeding season for migratory birds (typically April through August) and/or no occupied bird nests would be removed to ensure compliance with the Migratory Bird Treaty Act.
- Appropriate-sized screening over the intake lines would be used to avoid entrainment of fish or mussel larvae. It will be incumbent on the project applicant to ensure that all design and review by the appropriate agencies are in place prior to construction.

CULTURAL RESOURCES

- Mitigation would be required only if the open trenching construction method (Alternative B, option 2) is implemented. If this option is chosen, NPS would develop a program of archeological investigation that would begin with a formal NRHP evaluation (Phase II study) of archeological Site 18MO4 along with a combined Phase I and Phase II study of Site 18MO93 to formally determine its boundary and integrity.
- A program of geoarcheological testing would also be developed (for option 2) and implemented within the construction corridors for Line #2 and Line #3 to assess the potential for deeply buried sites. Depending on these results, a combined Phase I and Phase II study would be implemented.
- Assuming that NRHP-eligible archeological resources are identified at either of the two trench corridors, additional mitigation measures would be evaluated, such as realignment of the water line, archeological documentation during construction through a program of monitoring, or a formal archeological data recovery program.
- All archeological monitoring of construction, Phase I, or Phase II studies would be completed by professional staff with appropriate training and experience in cultural resource management.
- Throughout this process of archeological identification, evaluation, and treatment, NPS would consult with the Maryland Historical Trust (MHT; Maryland's State Historic Preservation Officer [SHPO]).

VISITOR USE AND EXPERIENCE

- Public information would be issued through press releases and on signs posted on-site to inform visitors of construction activities within the project area.
- If the towpath is closed during construction, a bypass would be created to enable safe visitor passage.

ALTERNATIVES CONSIDERED BUT DISMISSED

No other alternatives or alternative elements were identified during the internal and public scoping process. Under the terms of the Deed, Summit Hall is entitled to install up to three raw water intakes for agricultural purposes. Summit Hall must complete the modification and installation of any lines under the supervision of a representative of the superintendent of the C&O Canal NHP and ensure full compliance with agreed-upon terms of installation.

ENVIRONMENTALLY PREFERABLE

The environmentally preferable alternative is defined by CEQ as the alternative that would promote the national environmental policy as expressed in NEPA Section 101. This includes

- fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
- assuring for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
- achieving a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and
- enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources (NEPA, Section 101).

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. The NPS, in accordance with the Department of the Interior policies contained in the Departmental Manual (516 DM 4.10) and the CEQ's *NEPA's Forty Most Asked Questions*, defines the environmentally preferable alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA (Section 101(b) (516 DM 4.10). In their *Forty Most Asked Questions*, CEQ further clarifies the identification of the environmentally preferable alternative, stating "Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (Q6a).

The following paragraphs discuss how each alternative meets the first five policy criteria. The sixth criterion was not applicable because this project does not involve the management of renewable resources.

After completing the environmental analysis, the NPS identified alternative A, no action, as the environmentally preferable alternative in this EA because it best meets the definition established by the CEQ. Alternative A causes the least damage to the park's biological and physical environment and best protects and preserves the historic, cultural, and natural resources of the park, because there would be no new impacts from construction, with no potential damage to unknown cultural resources or damage to vegetation (including root systems) and soils. Alternative A fully meets criteria 1, 2, and 4 and partially meets criteria 3 and 5, allowing for some resource use and beneficial use of the environment while avoiding degradation and other undesired consequences.

Alternative B - option 1 does not involve extensive land disturbance and is the least invasive option, but it does include negligible to minor impacts on natural and cultural resources, and it does not meet criteria

1,2,or 4 as well as the no action alternative does. Criteria 3 and 5 would be met, as alternative B - option 1 would accommodate the agricultural activities of Summit Hall while simultaneously continue allowing for recreational uses of the C&O Canal NHP with minimal impacts, although there could be unintended consequences of directionally drilling to cultural resources and vegetation (root systems). Alternative B - option 2 would be the most invasive option and have increased environmental impact compared to option 1 or the no action alternative and therefore would not meet criteria 1, 2, and 3 as well as the other alternatives do. This option would also not fulfill criteria 4 because it would involve digging into the historic C&O Canal prism, potentially damaging historic resources. Although this option would fulfill criteria 5 by enabling water intake for agricultural uses while simultaneously enabling recreational use of the towpath, this option would result in a longer closure of the towpath during construction.

The environmentally preferable alternative is alternative A - no action, because it includes no new disturbance to park resources, minimizes impacts on park resources and values, and surpasses alternative B (either option) in realizing the full range of national environmental policy goals as stated in section 101 of NEPA. However, it is not the NPS preferred alternative because it does not meet the legal mandates of the Deed agreement between the NPS and Summit Hall and does not meet the purpose of and need for action. The NPS preferred alternative is alternative B - option 1, which meets the purpose and need and allows access for water intake per the Deed requirements, while also protecting park resources and values. The NPS believes alternative B - option 1 would fulfill its mandates and direction, given due consideration to legal, environmental, and technical factors.

A summary of the environmental consequences of the alternatives analyzed in this EA follows in table 1.

Table 1. Summary of Environmental Consequences

Impacted Resource	Alternative A: No Action	Alternative B: Modify Line #2 and Install Line #3	
		Option 1 – Directional Drilling	Option 2 – Open Trenching
Soils	<ul style="list-style-type: none"> No adverse impacts No cumulative impacts 	<ul style="list-style-type: none"> Short-term negligible adverse impacts Long-term minor adverse cumulative impacts 	<ul style="list-style-type: none"> Short-term minor adverse impacts Long-term minor adverse cumulative impacts
Vegetation	<ul style="list-style-type: none"> Long-term negligible adverse impacts Long-term minor adverse cumulative impacts 	<ul style="list-style-type: none"> Short- and long-term negligible adverse impacts Long-term minor adverse cumulative impacts 	<ul style="list-style-type: none"> Short- term negligible and long-term negligible to minor adverse impacts Long-term minor adverse cumulative impacts
Terrestrial Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> Short- and long-term negligible adverse impacts Long-term minor adverse cumulative impacts 	<ul style="list-style-type: none"> Short-term negligible adverse impacts Long-term minor adverse cumulative impacts 	<ul style="list-style-type: none"> Short-term negligible and long-term minor adverse impacts Long-term minor adverse cumulative impacts
Cultural Resources	<p>Historic Districts and Structures</p> <ul style="list-style-type: none"> No impacts No cumulative impacts <p>Archeology</p> <ul style="list-style-type: none"> No impacts No cumulative impacts 	<p>Historic Districts and Structures</p> <ul style="list-style-type: none"> Long-term beneficial impacts and long-term negligible adverse impacts Overall beneficial cumulative impacts <p>Archeology</p> <ul style="list-style-type: none"> Long-term negligible adverse impacts Long-term minor adverse cumulative impacts 	<p>Historic Districts and Structures</p> <ul style="list-style-type: none"> Long-term beneficial impacts and long-term minor adverse impacts Short-term negligible adverse impacts Overall beneficial cumulative impacts <p>Archeology</p> <ul style="list-style-type: none"> Long-term negligible to moderate adverse impacts Long-term minor adverse cumulative impacts
Visitor Experience	<ul style="list-style-type: none"> Long-term negligible adverse impacts on visitor experience; no impacts on visitor use Long-term beneficial cumulative impacts 	<ul style="list-style-type: none"> Short-term minor adverse impacts Long-term beneficial cumulative impacts 	<ul style="list-style-type: none"> Short-term minor and long-term negligible adverse impacts Long-term beneficial cumulative impacts
Park Operations and Management	<ul style="list-style-type: none"> Long-term negligible adverse impacts Long-term minor adverse cumulative impacts 	<ul style="list-style-type: none"> Long-term beneficial impacts and short-term minor adverse impacts Long-term minor adverse cumulative impacts 	<ul style="list-style-type: none"> Long-term beneficial impacts and short-term minor adverse impacts Long-term minor adverse cumulative impacts