LANDSCAPE LINES
17

Cultural Landscapes & NPS Facility Management

Prepared by John Auwaerter, SUNY College of Environmental Science and Forestry
Partner, National Park Service Olmsted Center for Landscape Preservation

Introduction

For its second century, the National Park Service is renewing its call to achieve a standard of excellence in cultural resource stewardship that serves as a model throughout the world.[1] The preservation planning methods contained in Cultural Landscape Reports, Cultural Landscapes Inventories, and Preservation Maintenance Plans continue to define best practices for preserving and enhancing the nation's landscape legacy. Successful implementation of these plans, including long-term sustainability, requires close coordination between planners and maintenance staff to address the many preservation challenges facing historic landscapes, from funding and staffing to natural dynamics of growth and decline (fig. 1). Until recently, however, there was no systematic means within the park service for translating preservation plans into the actual work of facilities management. Differing objectives

Figure 1. Assessing the condition of a historic apple tree that is part of the maintained landscape at Sagamore Hill National Historic Site, 2010. (NPS Olmsted Center)

and data structures between cultural landscape preservation and facility management has long made it difficult to bridge the two programs.

Today, the Facility Management Software System (FMSS), developed to improve the effectiveness of facility operations, has the capability of serving as a powerful tool for landscape preservation. With proper data input, FMSS allows facility managers access to information about the historic significance and treatment of cultural landscapes, and to use that information for determining operational and funding priorities. The integration of cultural landscape data into FMSS is enhancing stewardship of the vast array of historically significant landscapes in the national park system, from gardens, farms, and country estates, to parkways, trails, and campgrounds.

While park facility managers have the primary responsibility for managing FMSS, Park Cultural Landscapes Program staff can play an important role in helping parks successfully integrate cultural landscape data into the system. *Landscape Lines 17: Cultural Landscapes and Facility Management,* has been developed to advance this role by fostering understanding of the relationship between facility management and cultural landscapes preservation. This brief provides cultural landscape professionals with an introduction to facility management concepts and terms (section 1); addresses how existing cultural landscapes data from Cultural Landscapes Reports (CLR), Cultural Landscapes Inventories (CLI), and Preservation Maintenance Plans (PMP) can be integrated into FMSS (section 2); and offers guidance on adapting CLRs to better address the data needs of FMSS (section 3). Preliminary recommendations are also provided for CLIs and PMPs (sections 4 and 5). Improved alignment between facility management and cultural landscapes preservation will enable parks to fund and implement the critically important facility work necessary to preserve and enhance their landscape heritage.

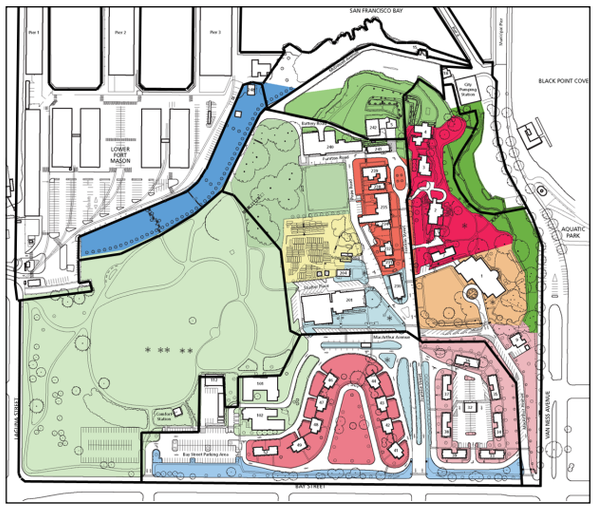

Figure 2. The cultural landscape of Fort Mason at Golden Gate National Recreation Area showing differing organization: bold black lines by the Cultural Landscapes Program, and colored areas by Facility Management. (NPS Olmsted Center)

1. Overview of Facility Management in the National Park Service

Facility Management and the Park Cultural Landscapes Program share the same National Park Service mission to conserve resources unimpaired for future generations. Yet the two programs have distinct ways of achieving stewardship. For example, Facility Management uses different terms to identify resources and activities, and the two programs organize landscapes differently to achieve their respective goals (fig. 2). While the Park Cultural Landscapes Program addresses all aspects that comprise a cultural landscape, the focus of Facility Management is on those that require ongoing maintenance.

A facility is property the NPS maintains to preserve value and function over set life cycles. A facility in turn is composed of assets such as buildings and structures, utility systems, signage, and landscapes (fig. 3). Facility Management encompasses work needed to operate, maintain, rehabilitate, and enhance park facilities. Certain capital improvements, such as construction of a new building or parking lot,

Figure 3. Tree care underway at Fort Yellowstone National Historic Landmark District, Yellowstone National Park, 2008. Facilities Management is responsible for upkeep of the historic architecture and cultural landscape assets. (NPS Olmsted Center)

may also be included. The NPS relies on standards of the facilities management industry to assess condition, determine maintenance requirements, and estimate costs. These standards, however, generally do not include historic preservation as a knowledge base. Therefore, the NPS has adapted the FMSS system to incorporate additional cultural resource data to meet federal preservation laws and the mission of the National Park Service.[2] A CLR and CLI serve as sources for such data on cultural landscapes, along with the List of Classified Structures (LCS), Historic American Landscape Survey (HALS), and other databases. When facilities are historic, the management goal is preservation - or in facilities language, extension of life cycles in perpetuity. For example, facilities industry standards typically call for replacement of an asset that is beyond its expected life and where repair costs exceed replacement costs. A historic asset, however, is repaired to preserve it through continuous life cycles (fig. 4).

Over the past several decades, the formal connection between the Park Cultural Landscapes Program and Facility Management has been the Preservation Maintenance Plan, which guides cyclical and long-term maintenance work needed to retain contributing features and sustain the historic character of a cultural landscape. Preservation Maintenance Plans, along with similar reports including Landscape Stabilization Plans and resource-specific management plans such as Historic Orchard Management Plans, are used to implement and sustain the treatment recommendations in a CLR or the stabilization measures in a CLI. With just under forty Preservation Maintenance Plans and related reports completed to date, however, few parks have such guidance for their cultural landscapes.

Since its widespread application began over the past decade, FMSS has provided parks with the capability of integrating cultural landscape data into facility operations at a level not previously possible through printed reports. The origins of FMSS extend back to 1986, when the NPS Maintenance Management System was adopted to improve the accountability of facility management in the national park system. This has evolved into today's Asset Management Process, which serves as the foundation of park Facility Management. Using the NPS mission of stewardship at its

Figure 4. Repair of stone steps on a historic but heavily deteriorated trail at Hopewell Furnace National Historic Site, 2009. This illustrates facility work designed to preserve historic assets. (NPS Olmsted Center)

core, the process involves four basic steps: Asset Inventory, Work Identification and Planning, Work Performance, and Evaluation (fig. 5). FMSS is the tool, built on IBM Maximo® as a standard software platform, that the NPS uses to implement the Asset Management Process (Appendix 2: FMSS sample screens). All NPS units are responsible for using FMSS to manage facilities data, information, work management, and reporting.[3] However, beyond baseline requirements, the organization of data and level of detail at which FMSS is implemented varies by park.

To achieve the agency's mission of stewardship for historic assets, the Asset Management Process accommodates cultural landscape data in the first two of four phases: *Asset Inventory* and *Work Identification & Planning*. FMSS allows park staff to plan and track preservation maintenance needs by including cultural landscape data in the asset inventory; by incorporating condition assessments that consider preservation goals and objectives; and by developing work orders that can address stabilization, maintenance, protection, repair, and reestablishment of historic landscape features. FMSS includes a work order application that can detail preservation techniques, schedules, materials, replacement strategies, labor, and cost estimating to help parks plan for and obtain funding. The program is integrated with the NPS Project Management Information System (PMIS) via an interface called the Project Scoping Tool (PST), part of the Project Bridge.

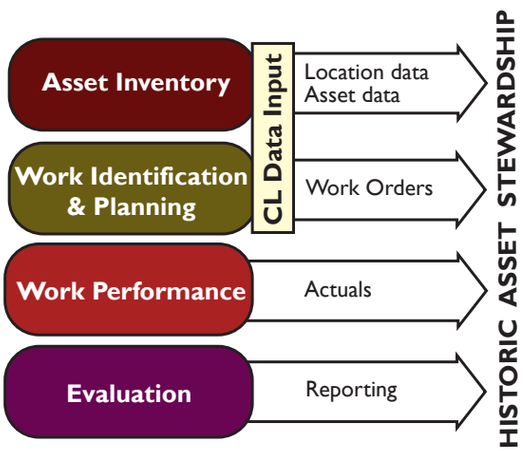

Figure 5. The four stages of the Asset Management Process showing input of cultural landscape data that is necessary to achieve the goal of historic asset stewardship. (SUNY ESF, based on Eppley, FMSS Student Manual, 2011)

Asset Inventory

Cultural landscapes are inventoried according to the hierarchy of Landscape-Characteristic-Feature, while FMSS uses Site-Location-Asset. There is no one-to-one correlation between the two hierarchies.

Site in FMSS is a management area comprised of one or more Location records, often of different Asset Types.[4] Small parks may include their entire property as one Site record, while larger parks may use multiple Site records to differentiate areas.

A Location record is comprised of maintained property, also known as a "facility," that the NPS wishes to track as a distinct entity. Locations are defined by Asset Types, which are categorized by name and numerical code, such as 1100 Roads, 2100 Trails, 3100 Maintained Landscapes, 4100 Buildings, 5400 Electrical Systems, and 7100 Monuments (list of Asset Types in Appendix 3).

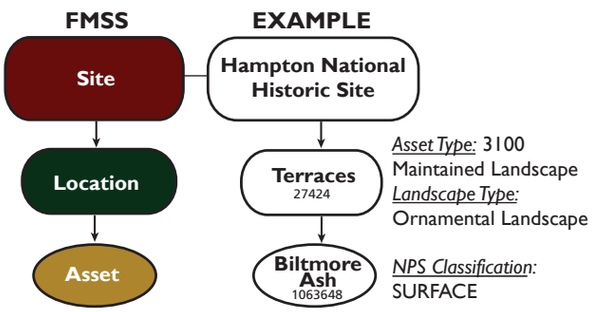

Figure 6. Example of an FMSS asset hierarchy for a 3100 Maintained Landscape Location at Hampton National Historic Site. The inventory numbers for the Terraces Location and Biltmore Ash Asset are assigned through FMSS. (SUNY ESF)

Figure 7. The Terraces at Hampton National Historic Site, an example of a 3100 Maintained Landscapes Location record, photographed 2010. Component Asset records of this Location include the turf, specimen trees, and marble urns. The mansion is a separate 4100 Buildings Location record. (SUNY ESF)

The Asset Type most closely aligned with cultural landscapes is 3100 Maintained Landscapes. At Hampton National Historic Site, the "Terraces" is a 3100 Maintained Landscapes Location record that encompasses the estate's formal landscape, and the Mansion at its core is a separate 4100 Building Location record (figs. 6, 7). As evident in this example, a cultural landscape may have assets that are categorized under several different Asset Types in the same geographic area. In addition, there is no one-to-one correlation between the boundaries of a 3100 Maintained Landscapes Location record and the boundaries of a cultural landscape. For example, the single cultural landscape documented in the CLR for the Mansion Grounds at Marsh-Billings-Rockefeller National Historical Park contains six 3100 Maintained Landscapes Location records (fig. 8).

Asset Types are subdivided into set categories known as Facility Type. Under 4100 Buildings, for example, "Warehouse" is a Facility Type. For 3100 Maintained Landscapes, there is just one Facility Type (Maintained Landscape), but each record can also be categorized as one of twenty-two different attributes known as Landscape Type. Examples include Agricultural Landscape, Ornamental Landscape, Burial Landscape, Picnic Area, and Trail Corridor. The Hampton "Terraces," for example, are the Landscape Type "Ornamental Landscape." There is no direct correlation between FMSS Landscape Types and landscape characteristics (e.g., Spatial Organization, Circulation, Vegetation), which are the broad components and processes of a cultural landscape.

Location records are composed of Asset records, which roughly parallel cultural landscape "features." Asset records in the Hampton "Terraces" Location record include the Biltmore Ash along with the Terrace Lawn, Terrace Specimen Trees, and Small Marble Miscellany (marble urns visible in fig. 7). Assets may be organized according to a parent-child hierarchy within each Location record. This tool is sometimes used to track a particular asset at a higher level, such as a high-maintenance flower garden that needs to remain associated with the surrounding landscape, rather than being defined as its own separate Location record.

Each Asset record, regardless of Asset Type, is classified according to the NPS Asset Classification

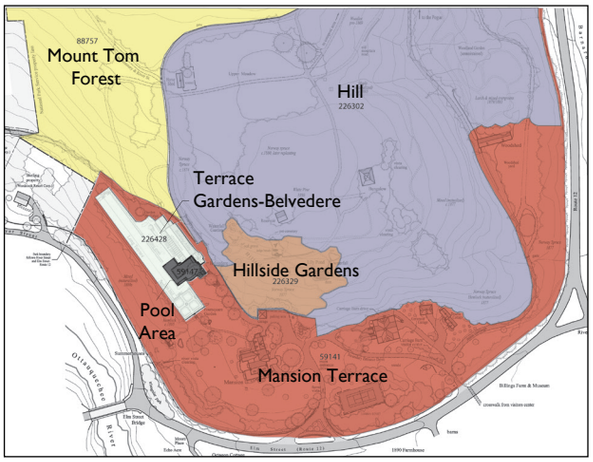

Figure 8. A CLR existing conditions plan of the Mansion Grounds cultural landscape at Marsh-Billings-Rockefeller National Historical Park showing its division into six FMSS 3100 Maintained Landscape Location records. (SUNY ESF and NPS Olmsted Center.)

Hierarchy. These are categories based on function and link to specifications. Parent asset classifications often found in cultural landscapes include Archeological, Barriers & Fencing, Electrical, Exhibit, Furnishing, Signage & Marking, Structure, Surface, and Water Control (see Appendix 4). These in turn are broken down into Sub-Parent Classifications, such as Railing under Barrier & Fencing. In the Hampton "Terraces," for example, the lawn is classified as Surface/Turfgrass-Pasture Crop.

An FMSS Asset record may correspond to a single cultural landscape feature, or it may group or split features depending on other facility needs, such as funding and operations. Within the Hill, a CLR landscape character area at Marsh-Billings-Rockefeller, six Circulation features were grouped into four Asset records within the FMSS Hill Location record (fig. 9). The CLR Circulation features were grouped using a combination of geographic and asset classification factors. The Hill character area also includes many other Location

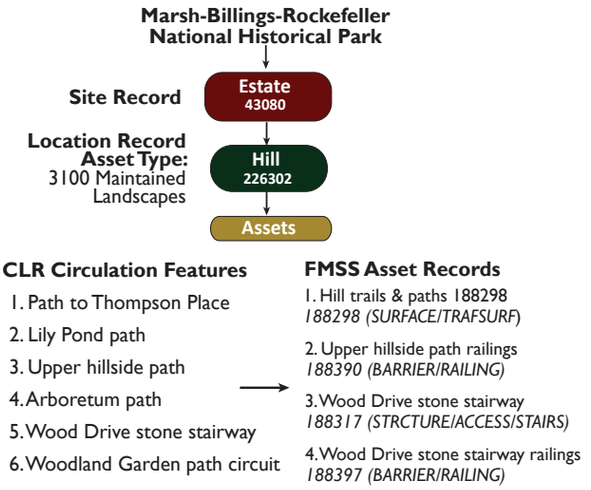

Figure 9. Example of conversion of six CLR Circulation features within the Hill at Marsh-Billings-Rockefeller into FMSS 3100 Maintained Landscape Asset records. The text in italics indicates FMSS record numbers and NPS Asset Classification categories for each Asset. The Wood Drive documented in the CLR is a road and was captured under the 1100 Road Location record. The park decided not to capture these trails and paths as 2100 Trails. (SUNY ESF)

records, including 1100 Roads, 2100 Trails, and 4100 Buildings, each of which have their own associated Asset records.

There are also differences in methods of evaluation. NPS cultural landscape methods are based on historical significance and integrity using the National Register of Historic Places Criteria, while FMSS evaluates facilities according to physical condition and the park's mission. These values are accommodated in FMSS according to the following four values assigned to Location records:

1. Asset Priority Index (API) is a value (1-100) assigned to a Location record that ranks assets in relation to a park's mission and management objectives as a measurement for allocating funding to a park's highest priority assets. The API is scored according to four criteria: resource preservation (natural and cultural), visitor use, park operations, and substitutability (uniqueness of the asset). Each criterion is then given one of four values—none, low, medium, or high—based on criteria listed in the API Scoring Guide (see definitions in Appendix 5). For example, a historically significant landscape may score high in the resource preservation category, but if it scores low in visitor use, park operations, and substitutability, it may receive a low API. This may be the case with a road that is part of historic designed landscape, but is not used by visitors or for park operations, and is paralleled by another active road.

2. Current Replacement Value (CRV) is an approximate industry standard cost estimate for current replacement of the entire location (minus real estate value), based on numbers updated annually by RS Means. For example, a park may have a CRV of $350,000 for a formal garden that comprises one Location record, which would be the cost for reconstruction if the garden and its assets were destroyed. Assignment of the CRV does not mean the garden will be replaced, but rather serves as a tool for parks to determine management costs. The CRV is determined using

a calculator that figures the cost based on the Asset Type and Facility Type, or Landscape Types for 3100 Maintained Landscapes (Appendix 6: sample calculator screenshot). The calculator allows a user to add in additional costs associated with replacing historic or expensive features.

3. Optimizer Band (OB) is a number, 1-5, assigned to each Location record and is based on the priority of the Locations each band contains, and their importance to the park's mission. Banding suggests a certain level of base funding that should be allocated to assets in each band. Band 1 contains the highest priority Locations which are critical to the operations and purpose of the park or have high visitor use, therefore requiring the highest base funding.

4. Facility Condition Index (FCI) is a numerical measure of physical condition of a Location to help prioritize work and funding allocations, reflecting a ratio of the cost of work to remedy Deferred Maintenance and the Current Replacement Value (i.e., DM/CRV = FCI). If a park's formal garden with a CRV of $350,000 has deferred maintenance totaling $53,000 (work need to bring it up to good condition), it would receive an FCI of 0.15 (fair condition). An FCI less than 0.1 represents a location in good condition, while an FCI greater than 0.5 reflects a location in poor condition.

In addition to informing work planning, the FCI can influence how a park establishes its FMSS Asset inventory. At Acadia National Park, for example, the views along the historic motor roads were defined as a separate 3100 Maintained Landscapes Location record. If the views were part of the 1100 Roads Location record, the high CRV for the motor roads would result in a very low FCI for the Location, meaning the FCI would not be in a fundable range for project funds to support recurring maintenance on the views. This is due to the relatively small cost to maintain the views compared with the high cost to maintain the roads and their associated built components. A separate Location record also allows the views to compete more successfully against other facilities for project funding.

Work Identification and Planning

Once assets are inventoried and data is entered into FMSS, facility managers can generate work orders to preserve and enhance the character of a cultural landscape by correcting deferred maintenance and carrying out recurring maintenance. Work orders include job plans, time tracking, costs, and work completion data fields, along with a list of materials, tools, and labor needed to complete the work. Work is identified by cyclical condition assessments, CLI condition assessment and stabilization measures, and CLR treatment plans. Work orders are used to generate PMIS (NPS Project Management Information System) statements, when project funding is being sought.

Determining what work to do and what level of planning is needed should be based on the Asset Priority Index (API) and Facility Condition Index (FCI). These values create guidelines for the type of facility work a Location should receive (fig. 10).

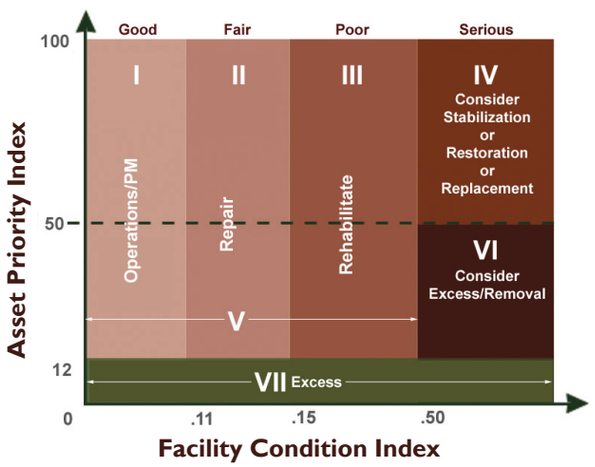

Figure 10. Chart showing use of the Asset Priority Index (API) and Facility Condition Index (FCI) to inform work planning priority related to a Location record. "PM" in the first column stands for Preventative Maintenance. (NPS, Asset Management Reporting System)

For example, a Location with a low FCI of .05 (good condition) and high API of 80 (high value) should be retained and receive maintenance to keep it in good condition. In contrast, a Location with a FCI of .50 and an API of 45 may be in such poor condition and of minimal resource value to the park that it could be considered for removal. Work Orders are also prioritized according to Risk Assessment Codes (RAC) for Health, Life, and Safety, which are values used to determine how quickly deficiencies should be remedied. Parks of course consider many other factors in work planning in addition to these values, such as funding, staffing, and public needs.

There are three broad categories of work as defined in FMSS: Facility Maintenance, Facility Operations, and Capital Improvement, each with a number of sub work types (Appendix 7: list of work sub types). Most cultural landscape treatment, preservation maintenance, and stabilization measures correspond to the Facility Maintenance sub-work types of Preventative Maintenance (PM), Recurring Maintenance (RM), Deferred Maintenance (DM), and Component Renewal (CR).[5] Preventative Maintenance is regularly scheduled maintenance within a year that typically includes inspections and minor adjustments such as draining an irrigation system, cleaning furnishings, and shearing hedges (fig 11). Recurring Maintenance includes activities between 1 and 10 years such as painting, sign replacement, and cyclic pruning (fig. 12).

Deferred Maintenance is defined as deficiencies or problems that are overdue for repair, such as rebuilding a slumping road, replanting a missing historic tree, or clearing woods to reestablish a historic field (fig. 13). Component Renewal, meaning the planned replacement of a component that has reached the end of its serviceable life, is often used for building assets such as roofs, but can also be applied to landscape features such as a gravel walk surface. Capital Improvement generally relates to construction of new features, such as the addition of a new visitor center, rest room facility, or parking area, rather than reconstruction of historic features.

Parks identify needed work in part through condition assessments, which are inspections used to generate work orders that inform work plans within FMSS. Condition assessments may be

Figure 11. Boxwood hedges at Adams National Historical Park that are due for shearing, 2012. This planned work is an example of Preventative Maintenance (PM) because it is performed more than once a year to preserve the geometric form of the hedges. (NPS Olmsted Center)

Figure 12. Cyclical pruning of a historic oak tree at Lyndon B. Johnson National Historical Park, 2007. This work is an example of Recurring Maintenance (RM), because it is work undertaken every few years to retain and perpetuate the historic form of the tree. The tree is also pruned for its health and the safety of visitors. (NPS Olmsted Center)

made by park staff, resource experts, and facilities maintenance contractors. The most basic level of inspection is Routine Assessments (RA), which are made on a daily, weekly, or monthly basis to identify minor deficiencies such as downed limbs or irrigation leaks, leaning fence posts, and pest damage. RAs support recurring maintenance such as pruning, mulching, and aerating, and also set short-term work plans and more in-depth assessments for long-term work planning.

The NPS uses two types of in-depth assessments for use in FMSS work planning:

***Condition Assessments – Annual* (CAA):** Inspections made on a 1-year cycle to identify minor and major deficiencies such a broken fence or loss of a tree, and to inform work planning through creation of work orders for correcting deficiencies.

***Condition Assessments – Comprehensive* (CAC):** Inspections made on a 5-year cycle to identify the same issues as the CAA, but at a more detailed level. In addition, CACs are used to validate FMSS asset inventories, update condition and life cycle replacement information, and provide a basis for long-range work plans and budget allocations.

CAAs and CACs are based on inspection guidance organized according to both Asset Type and NPS asset classification. For example, the inspection checklist for a specimen tree (Maintained Landscapes, classification "Surface/Plant") includes "soil compaction," "branch/limb problems," or "dead/missing." Certain checklists, which are based on industry standards of maintenance, may not take the special needs of historic landscapes in to account. For example, a historic bluestone sidewalk may be identified as deficient because the stone is cracked or because it is too narrow for accessibility standards. In contrast, a condition assessment could, based on recommendations in a CLR or input from park staff, identify an asset in good physical condition as having deficiencies due to loss of historic character (fig. 14). Business Practices developed for the Asset Types, including 3100 Maintained Landscapes, address how conditions assessments should take historic preservation into account.

Figure 13. Clearing of successional woods on a historic field at Sagamore Hill National Historic Site, 2011. This work is an example of Deferred Maintenance (DM) because it is addressing maintenance (mowing) that had ceased decades earlier, leading to growth of the woods. In cultural landscape terminology, this work is restoration. (NPS Olmsted Center)

Figure 14. The horseshoe hedge at the entrance to Saint-Gaudens National Historic Site, 1996. This overgrown hedge is an example of an asset in good condition, but which has a deficiency due to lack of historic character. The hedge, historically 3 to 4 feet tall and wide, was subsequently replaced to reinstate its historic dimensions. (NPS Olmsted Center)

2. Guidance on Integrating Cultural Landscape Data into FMSS

Despite shared outcomes, most cultural landscape documents do not readily correlate to FMSS due to differing methods and terminology. In order to facilitate preservation work, cultural landscape data needs to be readily transferable to the FMSS maintenance database. Park Cultural Landscapes Program staff can assist with transferring this data in a number of ways (Sidebar 1: summary of potential assistance)

Cultural Landscape Data for FMSS Asset Inventories

CLRs, CLIs, and Preservation Maintenance Plans can help populate a list of Assets in FMSS and provide information on determining the API and CRV (Sidebars 2, 3: cultural landscape data for an FMSS asset inventory). These reports may also inform the delineation of Location record boundaries. There is generally no one-to-one correlation between the two data sets because Location records and Asset records are defined by existing Asset Type definitions. However, CLRs, CLIs and Preservation Maintenance Plans provide information for completing Location and Asset records, as well as establishing preventive and recurring maintenance plans.

Definition of cultural landscape-related Location and Asset records should be undertaken as a team approach among facility managers, resource managers, and Park Cultural Landscapes Program staff. Cultural landscape input should occur early in the process, because it is difficult for facility managers to change an asset inventory, particularly with regard to Location boundaries, once the hierarchy has been established.

Parks with limited FMSS information may use cultural landscape data as a baseline for developing a list of Asset records. However, cultural landscape documents will only provide data for assets that

Sidebar 1: Summary of Potential Assistance by Park Cultural Landscapes Program

Asset Inventories

Data for Location Records

- Advise on identification of Asset Types in a cultural landscape
- Provide data to inform the delineation of Location boundaries
- Provide data to identify Location records as historic
- Participate with park management to assess the API Cultural Resource Value
- Describe historic character of Locations (Long Description)
- Identify Landscape Type for 3100 Location records
- Provide existing condition plans to graphically document boundaries of Location records

Data for Asset Records

- Provide the cultural landscape feature inventory to inform an inventory of Asset records
- Describe historic character of Assets (Long Description)
- Identify historic Assets lost to Deferred Maintenance

Work Planning

Condition Assessments

- Provide information on landscape condition and integrity issues
- Participate in field work for Comprehensive Condition Assessments

Work Orders

- Provide CLR treatment guidelines and tasks, and CLI Stabilization Measures to inform creation of work orders
- Identify preservation maintenance work as FMSS work types

Sidebar 2: Cultural Landscape Data for an FMSS Asset Inventory: Location Records

CL Data Source		CL Data for Location Records	Guidance
CLR	Existing Conditions	CLR existing conditions plan	The existing conditions plan may provide parks with a basemap to graphically document all Location record boundaries associated with the cultural landscape.
		Existing conditions narrative	Existing conditions narrative in a CLR will help parks assign the FMSS Landscape Types (such as 3100 Maintained Landscapes). Parks may need this information to complete data fields in FMSS and calculate the Current Replacement Value.
		Existing conditions documentation on dimensions, materials, and other data	Parks may need this information to complete Location record data fields in FMSS.
	Analysis and Evaluation	National Register documentation	National Register documentation will allow parks to identify Locations as historic, in addition to helping to determine Cultural Resource Preservation value for the API.
		Landscape evaluation summary (such as a summary table) that lists all landscape features	This list will help parks identify potential Asset Types in the cultural landscape. For example, a cultural landscape may contain a 3100 Maintained Landscapes Location record along with a historic driveway (1100 Roads), a historic summerhouse (4100 Buildings), and historic light standards (5400 Electrical Systems).
		Documentation of landscape character areas; or spatially related features under Spatial Organization, Cluster Arrangement, and Land Use	This data may help parks delineate Location record boundaries. For example, a hedge-enclosed garden space (landscape feature) may inform boundaries of a 3100 Maintained Landscapes Location record.
		Comparison of historic and existing extents of the cultural landscape	This will allow parks to identify currently unmaintained historic landscapes. For example, if a garden was twice as large during the historic period, the park may decide to include the previously maintained area within the 3100 Maintained Landscapes Location boundary to address future restoration.
		Summary narrative of historic character, derived from the landscape characteristic evaluations	Such narratives will allow parks to document the intended historic character of the Location. This text is entered in the Location record Long Description field.
		Documentation on areas outside of park boundaries that contribute to the historic character of the cultural landscape	Parks can enter this documentation in the Location record Long Description field. Examples include the external focal point of a vista from within the park, or a public streetscape bordering a park. If the NPS is bound through a legal agreement to maintain the external land, these areas should be captured as part of a Location record.
CLI	Inventory Unit Summary and Site Plan	CLI number for the landscape	The CLI number will identify Locations records as historic.
		CLI site plan	The site plan may serve as a basemap to graphically document Location boundaries and the interface of 3100 Maintained Landscapes with other Asset Types. There may be no one-to-one correlation between CLI boundaries and FMSS Location boundaries.
	Geographic Information	Inventory Unit Boundary Description	The Inventory Unit Boundary Description may contain data that can inform Location record boundaries for 3100 Maintained Landscapes and other Asset Types.
	Management Information	Identification of contributing adjoining lands and NPS legal interest in those lands	Parks may document this information in the Location record Long Description field. If the NPS is bound through a legal agreement to maintain the external land, these areas should be captured as part of a Location record.
	National Register Information	National Register Explanatory Narrative, Eligibility	National Register information can help parks assign the Cultural Resource Preservation value for the Asset Priority Index (API).
	Analysis and Evaluation of Integrity	See Guidance under CLR Analysis and Evaluation	
PMP	Areas and Categories of Features	Map showing the areas of the landscape	The Preservation Maintenance Plan may inform delineation of Location records of 3100 Maintained Landscapes and other Asset Types.
		Text and graphics describing the categories of features	The categories of features may help identify Asset Types in the landscape.

Sidebar 3: Cultural Landscape Data for an FMSS Asset Inventory: Asset Records

CL Data Source		CL Data for Asset Records	Guidance
CLR	Analysis and Evaluation	Landscape evaluation summary, (table identifying contributing and non-contributing features) that lists all landscape features	Parks can use this data to generate an initial Asset list for all Asset Types, and to identify Assets as historic. There will probably be no one-to-one correlation between cultural landscape features and FMSS Assets records since parks often need to group or split features based on various factors aside from cultural values. Refer to Sidebar 4 for guidance on converting landscape characteristics and features to FMSS Asset records.
		Prioritized list of landscape features that identifies those that should be included in the FMSS asset inventory as soon as possible	This data, which can be incorporated into the prior guidance, will help parks focus their efforts to ensure that the most important historic Assets are adequately addressed in FMSS work planning. For example, if a deteriorating historic wall is not captured in FMSS, it has a greater chance of not receiving required treatment, or receiving inappropriate maintenance that does not preserve or enhance its historic character.
		Concise summary of historic character for assets that have no other cultural data source	Parks can insert this data in the Asset record Long Description field to document how an historic Asset should look and how it should be maintained. A CLR is usually the primary source of cultural data on Assets that correlate to Circulation, Vegetation, and Small-Scale Features. Buildings/structures and archeological sites generally are documented in other reports. For example, a park may have plans and specifications for its exterior lighting system (Small-Scale Features), but no reports that document its historic character and significance.
		Documentation on the relationship of features associated with Spatial Organization, Land Use, Cultural Traditions, Cluster Arrangement, and Views & Vistas to maintained Assets	These landscape characteristics can be documented in the FMSS Asset records which are associated with the Location records of Maintained Landscapes and other Asset Types. Parks should describe this relationship in the corresponding Asset record Long Description field. For example, a perimeter hedge (an FMSS Asset record) that defines a garden space should note in its Long Description how it maintains the historic garden space (a Spatial Organization feature).
		Documentation on missing historic landscape features that warrant reestablishment and future inclusion as Asset records	Missing historic landscape features should not be included as part of the Asset record inventory, but rather be recorded outside of the FMSS as deficiencies. Once the park is moving forward with re-establishing the feature or has reestablished the feature, a new Asset record can be added.
CLI	Analysis and Evaluation of Integrity	Landscape characteristic narratives and list of landscape features for each characteristic	Parks can use this list to generate an initial Asset list for all Asset Types. The CLI Landscape Characteristic narrative should be consulted, and any features listed in the narrative but not in the feature fields should be added to the list of cultural landscape data. There will probably be no one-to-one correlation between cultural landscape features and FMSS Asset records since parks often need to group or split features based on various factors aside from cultural values. Refer to Sidebar 4 for guidance on converting landscape characteristics and features to FMSS Asset records. The CLI inventory will generally include most documentation from the List of Classified Structures (LCS); however, the LCS should be consulted in addition to the CLI to ensure that all previously inventoried built features are addressed in the Asset record list. See also guidance under CLR Analysis and Evaluation.
PMP	Inventory of Landscape Features	Inventory of landscape features	Parks can use this inventory to generate an initial Asset list for all Asset Types. Because this list generally includes only maintained landscape features, it may align with an FMSS asset inventory, but features may be split or grouped differently. This list may not identify historic (contributing) features.
	Feature Data	Information on location, existing conditions, and historical appearance of landscape features	This information can be used to complete data fields in FMSS Asset records.
For additional guidance, refer to the *Asset Business Practices and Asset Best Management Practices* for each Asset Type available through InsideNPS, http://inside.nps.gov/waso/waso.cfm?prg=190&lv=4			

define the physical historic character of a landscape. Below-ground utilities or contemporary site furnishings such as directional signs and garbage cans are typically not inventoried in cultural landscape documents.

The actual data that can be provided will depend on the landscape. A CLR for a parkway would primarily involve the 1100 Roads Asset Type, while a CLR for a forest may contain 2100 Trails and 1100 Roads Asset Types, with much of the natural landscape outside the scope of FMSS since it does not track natural resources. Definition of Location record boundaries for 3100 Maintained Landscapes often require more analysis than other Asset Types given the often complex interface with other assets and natural resources. 3100 Maintained Landscapes Location records are mostly populated by the characteristics of Vegetation and Small-Scale Features, while Circulation, Topography, and Buildings and Structures are often categorized as other Asset Types. Small buildings and landscape structures are, however, often captured under 3100 Maintained Landscapes.[6]

Certain cultural landscape characteristics and features do not translate directly into discrete FMSS records, but can inform facility management goals for Locations and Assets (Sidebar 4: guidance on translating cultural landscape characteristics and features to an FMSS asset inventory). These include Spatial Organization, Land Use, Cultural Traditions, Cluster Arrangement, and Views and Vistas because they are composed of maintained features found under other characteristics. For example, the parade ground at Fort Baker in Golden Gate National Recreation Area, a Spatial Organization landscape feature, is maintained by the turf and perimeter trees (Vegetation), streets (Circulation), and buildings (Buildings and Structures), which are categorized under three Asset Types (1100 Roads, 3100 Maintained Landscapes, and 4100 Buildings) (fig. 15). Exclusion of cultural landscape characteristics or features

Figure 15. The parade ground, a Spatial Organization feature at Fort Baker in Golden Gate National Recreation Area, 2009. While the parade ground space is not captured in an FMSS Asset inventory, its component turf and perimeter trees can be entered as assets of a 3100 Maintained Landscapes Location. (SUNY ESF)

from an FMSS asset inventory does not diminish their historic significance or mean a feature will not be preserved. The primary purpose of delineating Location and Asset records within FMSS is to support operational needs, which ultimately support stewardship.

After an Asset inventory is generated, Facility Management and Cultural Resources staff should conduct a walk-through of the site with maps and narratives to ground truth Location record boundaries, the inventory of Asset records, and the cultural landscape data.

When parks develop an asset inventory from CLRs, CLIs, and Preservation Maintenance Plans, it is helpful to create a summary crosswalk table that correlates the relationships and discrepancies between data sets for each landscape characteristic and feature, including data from other cultural resource inventories, such as the List of Classified Structures for Buildings (sample crosswalk table in Appendix 8).

Cultural Landscape Data for FMSS Work Planning

Cultural landscape data can inform condition assessments and the development of FMSS work

Sidebar 4: Translating Cultural Landscape Characteristics to an FMSS Asset Inventory

Cultural Landscape Characteristic Feature Examples	Typical FMSS Asset Type (Location Record)	NPS Asset Classification	Guidance on Translating Characteristics and Features to Locations and Assets
Natural Systems and Features Stream, swamp, marsh, beach, dune, pond, lake, desert, natural landform, unmanaged natural vegetation (woods, grasslands, chaparral)	n/a	n/a	Natural Systems and Features are often character-defining parts of a cultural landscape, but they are typically not included in an Asset inventory. Natural features that receive periodic maintenance, such as woods that require pruning along a roadway or field, are managed as buffer areas of the related road or field, and not as maintained landscapes on their own. Natural features may define boundaries of Maintained Landscapes Location records, such as where the developed/constructed landscape ends and the natural unmaintained area begins.
Spatial Organization Corral, garden, forecourt, yard, field, pasture, plaza, quadrangle, terrace, road/ trail corridor, amphitheater	0000 Site 3100 Maintained Landscapes, 3800 Boundary, 7300 Fortifications, 7100 Monuments, 7900 Amphitheaters	n/a	Spatial Organization may correlate to Location records, but generally does not translate as Asset records because spatial features are typically defined by Assets inventoried under other characteristics. For example, a formal garden space may be a 3100 Location record, but the maintained assets are the hedges, buildings, and fences that define the space (but alone are not the space), which would be inventoried in a CLR/CLI under Vegetation, Buildings and Structures, and Small-Scale Features. The relationship of these features to the landscape's Spatial Organization should be explained in their Asset record Long Description field. Spatial features/assets can also be listed in relevant Location records, including 0000 Site Locations.
Land Use Picnic area, campground, meeting place, cemetery, staff housing area, recreation area, garden, quarry	1300 Parking Area, 3100 Maintained Landscapes, 4100 Buildings, 6300 Marinas, 7100 Monuments, 7300 Fortifications, etc.	n/a	Land Use may translate to Location records, but generally not as Asset records because land-use features are typically defined by Assets inventoried under other characteristics. For example, a campground land use feature could be a 3100 Location record, but the maintained Assets are the mown turf and picnic tables that comprise the feature, which would be inventoried in a CLR/CLI under Vegetation and Small-Scale Features. The relationship of these features to the landscape's Land Use should be explained in their Asset record Long Description field.
Cultural Traditions A lake sacred to Native Americans, the use of adobe as a building material in New Mexico	3100 Maintained Landscapes, 4100 Buildings	n/a	Cultural Traditions may translate to a Maintained Landscape Location record if other Asset Types do not capture the entire feature. Generally, Cultural Traditions do not correspond to a Location or Asset records because they either are unmaintained natural features, or are inventoried only at the characteristic level as non-tangible resources, or tangible resources inventoried under other characteristics, such adobe walls that are part of Buildings and Structures.
Cluster Arrangement A farmstead, crossroads village, series of coastal defensive works	0000 Site, 3100 Maintained Landscapes, 4100 Buildings, 7300 Fortifications	n/a	Cluster Arrangement may translate as a Location record, but is often inventoried only at the characteristic level, with associated features captured under other characteristics. For example, a cluster of coastal defense batteries would be c composed of Location records inventoried in a CLR/CLI under Buildings and Structures. Cluster Arrangement should be described in the Long Description field of the associated Asset records. If a Site record exists, information about the cluster arrangement can be added to the 0000 Site record Long Description field.

SIDEBAR 4 (CONTINUED)

CULTURAL LANDSCAPE CHARACTERISTIC Feature Examples	TYPICAL FMSS ASSET TYPE (Location Record)	NPS ASSET CLASSIFICATION	GUIDANCE ON TRANSLATING CHARACTERISTICS AND FEATURES TO LOCATIONS AND ASSETS
Circulation Road, parkway, driveway, parking lot, scenic pull-off/ overlook, sidewalk, hiking trail, steps, ski trail, railroad, runway	1100 Roads, 1300 Parking Area, 2100 Trails, 3100 Maintained Landscapes, 6400 Aviation Systems, 6500 Railroad Systems	Structure Surface	Circulation translates as Roads, Parking Areas, and Trails Location and Asset records. If they are spurs or driveways, or trails or walks contained within the landscape, they may be associated Asset records of the Maintained Landscapes Location record. Landscape features beyond the engineered cross-section of a road, for example plantings and turf along a parkway, should be Maintained Landscapes Asset records. Trails and walks that extend beyond a Maintained Landscapes Location should be part of a Trails Location record, except those that connect to another Maintained Landscapes Location record. Roads presently used as trails are 2100 Trails.
Topography Terrace, berm, shoulder, drainage ditch, earthen dam, canal prism, defensive earthwork	1100 Roads, 2100 Trails, 3100 Maintained Landscapes, 6100 Dams/ Levees, 6200 Constructed Waterways, 7300 Fortifications	Structure Surface Water Control	Topography typically translates as Assets records of Maintained Landscapes, unless they are within the engineered cross-section of a road (1100), trail (2100), or are part of a dam or levee (6100), constructed waterway (6200); or are part of a defensive earthwork (7300). Topographic features such as terraces and berms often receive no maintenance, as such they may not be documented as an Asset record. Topographic features can also help define boundaries of Maintained Landscapes Location records. For example, a steep slope that meets a flat area in the landscape and creates a clear delineation between areas may form a boundary between two Maintained Landscapes Location records. Topographical information can be added to the Long Description of a location record.
Vegetation Lawn, field crop, pasture, garden plants, foundation shrubs, hedge, vine, orchard, specimen tree, allee, windbreak, forest plantation	3100 Maintained Landscapes, 1100 Roads, 1300 Parking Areas, 2100 Trails, 6200 Constructed Waterways, 6300 Marinas, 7100 Monuments, 7300 Fortifications, etc.	Surface	Vegetation (managed vegetation as opposed to natural systems) generally translates to Asset records of Maintained Landscapes Locations. Cultural landscape data may not inventory turf, crops, or grazing pasture as individual Vegetation features. These may be referenced under other characteristics, such as Land Use or Spatial Organization. Woods, hedgerows, and field grasses that are periodically maintained are often managed as natural "buffer areas" and not as Maintained Landscapes Assets records. Vegetation managed as part of other asset types, such as Roads, Trails, Monuments, and Maintained Archeological Sites, may be captured under those Location records. Turf on a defensive earthwork, or associated camouflage plantings, should be part of 7300 Fortifications records.
Buildings and Structures House, barn, silo, shed, apartment building, barracks, pavilion, bridge, culvert, retaining wall, staircase, stone fence	1700 Road Bridges, 2200 Trail Bridges, 3100 Maintained Landscapes, 3800 Boundary, 4100 Buildings, 4300 Housing, 6300 Marinas, 7100 Monuments, 7300 Fortifications, etc.	Barriers and Fencing Communication Electrical Exhibit Furnishing Liquid & Gas Structure Water Control	Buildings and Structures may translate to Assets of a Maintained Landscapes Location record if they are minor features such as arbors, pavilions, pergolas, retaining walls, decks, or platforms. Most buildings comprise individual 4100 Location records. Structures are classified under a variety of Asset Types, with 1700, 2200, 6300, 7100, and 7300 common in cultural landscapes. Buildings and Structures that are part of functioning mechanical or utility systems, such as a free-standing chimney, should be classified with their appropriate asset type, such as 5300 Heating & Cooling Plants. Those that are no longer part of active mechanical or utility systems may be classified as assets of Maintained Landscapes Location records or 7200 Maintained Archeological Site records.

SIDEBAR 4 (CONTINUED)

CULTURAL LANDSCAPE CHARACTERISTIC Feature Examples	TYPICAL FMSS ASSET TYPE (Location Record)	NPS ASSET CLASSIFICATION	GUIDANCE ON TRANSLATING CHARACTERISTICS AND FEATURES TO LOCATIONS AND ASSETS
Views and Vistas Overlook, panorama, prospect of a distant feature	1100 Roads, 1300 Parking Areas, 2100 Trails, 3100 Maintained Landscapes, or n/a	n/a	Views and vistas typically translate into Assets of Location records, such as a scenic overlook that is an Asset of a 1100 Roads Location record. Views and vistas, such as a system of views along a road, can also be defined as their own Maintained Landscapes Location record. Views and vistas may not translate into Asset records if they are defined by Assets inventoried in cultural landscape data under other characteristics, such as turf (Vegetation) that provides open space of a prospect toward a distant hill. Incidental views that are not specifically managed may be documented only at the characteristic level and have no associated features. The objects of the view or vista, such as a distant church spire or mountaintop, are not captured in FMSS as distinct Asset records if the NPS has no legal interest in them. The object of view should be described in the relevant Long Description field in any case.
Constructed Water Features Swimming pool, reflecting pool, fountain, canal, open reservoir	3100 Maintained Landscapes, 5100 Water Systems, 6200 Constructed Waterways, 7100 Monuments	Exhibit Liquid & Gas Structure Water Control	Constructed Water Features generally translate as Asset records of Maintained Landscape Location records. Active or watered canals are Constructed Waterways, and functioning reservoirs are Water Systems. Pools or fountains associated with a large monument or memorial can be an Asset of the respective 7100 Monument and Memorial Location. If a utilitarian water feature, such as open-water reservoir, is no longer in use but retains water, it may be a 3100 Asset or 7200 Asset.
Small-Scale Features Fence, bench, monument, sign, grave marker, flagpole, water fountain, light standard, planter, bollard, guardrail	1100 Roads, 2100 Trails, 3100 Maintained Landscapes, 3800 Boundaries, 5400 Electrical Systems, 7100 Monuments, 7500 Interpretive Media	Barriers & Fencing Electrical Exhibit Furnishing Liquid & Gas Sculpture Signage & Marking	Small-Scale Features are often Assets of a Maintained Landscape Location record, but may also translate to other Asset types. Benches are generally Maintained Landscapes (3100), while guardrails, streetlights, or traffics signs within the engineered cross-section of a road generally translate to a Roads (1100) Location record. Light standards along a walk or utility poles may be part of electrical systems (5400), while fire hydrants or drinking fountains are part of a water system (5100). Interpretive waysides and similar signs are part of interpretive media (7500). Fences or stone posts that demark boundaries may be classified as Boundaries (3800).
Archeological Sites Building foundation remnant, road trace, grave, remnant fence post, ruins	3100 Maintained Landscapes, 7200 Maintained Archeological Sites, 7300 Fortifications	Archeological	Archeological Sites as landscape features (sites with above-ground resources) may be assets of a Maintained Landscapes Location record if the feature does not receive or require management principally to protect the integrity of the feature as an archeological resource. Most maintained cemeteries and battlefields are classified as Maintained Landscapes Location records, with archeological information noted in Long Description fields. If an archeological site meets National Register Criterion D, it should be documented under Maintained Archeological Sites (7200). Buildings or structures significant primarily for their archeology, such as Native American cliff dwellings, may be classified under 7200.

orders (Sidebars 5, 6: cultural landscape data for FMSS work planning). Depending on the type of landscape, guidance will generally focus on work planning for 3100 Maintained Landscapes Location records and associated Assets, since these are most closely related to cultural landscapes, but should also extend to work orders for other Asset Types that are included in CLR treatment, CLI stabilization measures, or Preservation Maintenance Plan work specifications. These other Asset Types often include 2100 Trails, 7100 Monuments & Memorials, and 7300 Fortifications. While CLRs, CLIs, and Preservation Maintenance Plans can contain core data, they will generally not provide all information that parks need to develop work planning associated with cultural landscapes.

Although FMSS is a powerful tool for cultural landscape work planning, it cannot provide the comprehensive treatment and maintenance guidance that is in CLRs and Preservation Maintenance Plans. CLRs and Preservation Maintenance Plans provide parks with explanation of a comprehensive treatment philosophy and overall landscape treatment and maintenance goals that cannot be readily conveyed through FMSS work planning.

For condition assessments, cultural landscape data will inform facility managers about the specific management objectives for a park's cultural landscapes. Because condition assessments can address the need for both preservation maintenance and treatment, cultural landscape documents provide information necessary to identify issues pertaining to both physical condition and historical integrity (Sidebar 7: translating cultural landscape terms to FMSS work planning). Condition assessments should be undertaken through a team approach, including subject matter experts in landscape management, cultural landscape preservation, and maintenance to work alongside facilities specialists leading the inspections.

There may be disagreement between cultural landscape maintenance/treatment and facilities industry standards of maintenance that inform condition assessments. For example, building conservation standards generally recommend against growth of vines on buildings. At Fairsted, the Frederick Law Olmsted National Historic Site, the vines on the house are a character-defining feature of the cultural landscape, and are therefore not identified as a condition deficiency (fig. 16). Historic features such as worn stone steps, single-glazed windows, and lichen-covered stone walls should not be identified as deficiencies when corrective work to meet industry standards would diminish historic character. Resulting work orders should strive to retain authentic historic qualities and character to the longest extent feasible in keeping with the Secretary of the Interior's Standards for the Treatment of Historic Properties and park-specific preservation goals and objectives.

There may be no direct, one-to-one correlation between cultural landscape recommended work (CLR treatment or CLI stabilization measures) and FMSS work orders. A park may often reorganize

Figure 16. Historic vines on Fairsted, Frederick Law Olmsted National Historic Site, 1995. The vines are an example of a cultural landscape feature that does not meet current building facility condition standards, but is an important part of the landscape's historic character. The solution to this issue was to train the vines on a trellis system that keeps the vegetation off the building and allows for removal for inspection and painting. (SUNY ESF)

Sidebar 5: Cultural Landscape Data for FMSS Work Planning: Condition Assessments

CL Data Source		CL Data for Condition Assessments	Guidance on Translating CL Data to Condition Assessments
CLR	Existing Conditions	Summary of condition (physical condition) issues	Parks can use this as baseline documentation for annual and comprehensive condition assessments (CAAs, CACs).
	Analysis and Evaluation	Documentation on landscape features that have lost historic character, or have been removed (see also following Treatment category)	Parks can use this information to identify loss of historic character as a deficiency to be addressed during annual and comprehensive condition assessments (CAAs, CACs). For example, if a walk was historically gravel, its current asphalt surface could be identified as a deficiency; or if a tree was removed after the historic period and not replaced, it could be identified as a deficiency.
	Treatment	Treatment philosophy (or similar narrative) that summarizes the intended appearance of the landscape	The treatment philosophy or similar narrative can give those making condition assessments an overview of the intended condition of the landscape. For example, the treatment philosophy may note that a landscape should have a high level of maintenance, a condition that would be informative for inspectors if the existing physical condition is poor. This information should be added to the Long Description record of all related Location records (not just 3100 Maintained Landscapes).
		Secretary of the Interior's Standards for the Treatment of Historic Properties (If treatment philosophy is not available)	The Standards can give inspectors, particularly those without historic preservation experience, an understanding of how the NPS treats historic properties. For example, the Standards will convey the philosophy that historic materials should be retained where possible, and that repair is preferable over replacement. Pertinent guidance should be entered into the Long Description of the Location record (do not add generic guidance from the Standards).
		Treatment tasks that prescribe reestablishment or enhancement of landscape features	Parks can use this information to identify loss of historic character as a deficiency to be addressed during CAAs and CACs. (See examples under Analysis and Evaluation category above.)
CLI	Condition Assessment	CLI Condition Assessment Explanatory Narrative	This narrative will give an overview of physical condition issues in the landscape to be addressed during CAAs and CACs.
		Impacts to Inventory Unit table	This data will identify specific condition issues in the landscape to be addressed during CAAs and CACs.
		Stabilization Measures	Parks can use the Stabilization Measures to identify loss of historic character as a deficiency to be addressed during CAAs and CACs. (See examples under CLR Analysis and Evaluation category above.)
		Approved Landscape Treatment Explanatory Narrative	The landscape treatment narrative will provide inspectors with a brief overview of the intended appearance of the landscape, as a benchmark for assessing historic character as part of condition assessments. This should be documented in the deficiency work order Long Description field.
PMP	Field Inspection	Field inspection summary sheets	The Field Inspection section in Preservation Maintenance Plan (PMP) provides data on physical condition issues as well as integrity issues (such as missing historic trees) for all types of condition assessments. Depending on the age of the plan, the field inspection may require updating.

For additional guidance, refer to the *Asset Business Practices and Asset Best Management Practices* for each Asset Type, available through http://inside.nps.gov/waso/waso.cfm?prg=190&lv=4. These documents include *Inspection Guidance* and other related documents.

Sidebar 6: Cultural Landscape Data for FMSS Work Planning: Work Orders

CL Data Source		CL Data for Work Orders	Guidance on Translating CL Data to Work Orders
CLR	Treatment	Treatment guidelines narrative (broad recommendations for landscape treatment and maintenance)	Treatment guidelines may align with FMSS work orders for Preventative Maintenance and Recurring Maintenance. For example, the guideline that a landscape be maintained with a well-tended appearance may translate into more frequent hedge shearing that occurs bimonthly (equivalent to Preventative Maintenance), rather than annually (Routine Maintenance).
		Treatment tasks (narrative and graphics)	Identify treatment tasks that align with FMSS work orders. See Appendix 7 for definition of work types. Since CLR treatment is generally developed at the conceptual level, it will likely not provide all data necessary for completion of work orders.
		Prioritized list of treatment tasks	A prioritized list of treatment tasks can help parks understand the work most critically needed to preserve and enhance the landscape's historic character, and develop FMSS work planning accordingly.
CLI	Condition Assessment	Stabilization Measures Description	CLI Stabilization Measures may be directly translated into the FMSS scope of work statement found in the Long Description field of work orders. These generally align with Deferred Maintenance.
		Stabilization Cost information	This information may inform cost estimating data in FMSS work orders. The costs identified under CLI Treatment are generally too broad for FMSS work orders.
PMP	Summary of Work Needed	Work needed information and list of features in need of work, along with field notes, and special considerations for historic appearance, design, or significance	This information can be applied to FMSS through work order creation, mostly in the categories of Facility Operations, Preventative Maintenance, and Recurring Maintenance, but often also Deferred Maintenance for reestablishing or enhancing historic features. Include data on preservation techniques, materials, replacement strategies, and cost estimating to help parks plan for and obtain funding. Depending on the park's Preservation Maintenance Plan record keeping, there may also be data on materials used, time spent, etc. that may inform FMSS work order data fields.
	Feature Data	Feature Data	The feature data can inform FMSS work orders of the relevant Asset record, type, and scope of work. It may include feature name, descriptive characteristics, historical appearance, preservation practices and work procedures, potential problems or pests, and sources of repair/ replacement parks or propagation.
	Calendar	Cyclical Maintenance Activities	The Calendar section of a PMP can be directly associated with creating FMSS work orders for Recurring Maintenance, Preventative Maintenance, and possibly Component Renewal.
For additional guidance, refer to the *Asset Business Practices and Asset Best Management Practices* for each Asset Type, available through http://inside.nps.gov/waso/waso.cfm?prg=190&lv=4. These documents include *Inspection Guidance* and other related documents.			

and redefine treatment tasks to accommodate the operational constraints, materials, costs, and larger park work planning that are taken into consideration when writing a work order. General treatment guidelines, such as those that provide overall guidance on preserving and enhancing historic character, may indirectly inform development of work orders. Preservation Maintenance Plans, since they identify and describe work tasks, generally parallel FMSS work planning more so than CLRs or CLIs (see Sidebar 7). CLI stabilization measures, CLR treatment guidelines and tasks, and Preservation Maintenance Plan tasks can be written to correlate closely with the format of FMSS work orders. This is important as project funding requests for all facility projects must originate in FMSS work orders.

Work orders may be based on historic cyclical in-kind replacement that can be identified as Preventative Maintenance(PM), Recurring Maintenance (RM), or Component Renewal (CR). Examples include replacement of a wood-shingle roof, seasonal removal and replanting of flowering annuals in a garden bed, or renewal of a stone-dust surface on a garden path. Long-term cycles, such as replacement of a 150-year-old tree in advanced decline, may correlate with Deferred Maintenance (DM) or Component Renewal (CR). Such Work Orders should provide for in-kind replacement of materials that perpetuate the historic asset (landscape feature) indefinitely.

Figure 17. The Deferred Maintenance needs of an overgrown historic yew hedge are identified by a multi-disciplinary team at Antietam National Battelfield. (WASO, PHSCL)

Figure 18. The need for stabilization of a historic apple tree at Manzanar National Historic Site that has dead-wood and unbalanced limbs is identified in FMSS as a "DM" work order. (WASO, PHSCL)

Sidebar 7: Translating Cultural Landscape Terms to FMSS Work Planning

Cultural Landscape Term			FMSS Term	Guidance
CLR	CLI	PMP		
Condition Assessment (part of Existing Conditions)	Condition Assessment	Field Inspection	Condition Assessment (RA, CAA, CAC)	Condition should not be confused with "integrity" as used in a National Register or cultural landscape evaluation. A condition assessment may address integrity, such as in identifying missing historic features as deferred maintenance (DM).
n/a	n/a	n/a	Facility Operations (FO)	FO are work activities performed on a recurring basis throughout the year that intend to meet routine, daily park operational needs. Examples include weeding, watering, and lawn mowing. CLR treatment and PMPs may address FO in guidance for the level of maintenance appropriate to the landscape's historic character.
Preservation	Preservation	Routine Maintenance	Preventative Maintenance (PM)	PM involves regularly scheduled minor maintenance such as annual seasonal pruning, irrigation system winterization, and raking gravel walks. PM is typically prescribed in PMPs, not in CLRs or CLIs.
Preservation, Rehabilitation	Preservation, Rehabilitation	Cyclic Maintenance	Recurring Maintenance (RM)	RM is maintenance between 1 and 10 year cycles such as tree pruning or resurfacing stone aggregate walkways. It may be prescribed in all three CL documents, but most detail is in a PMP.
Restoration, Rehabilitation	Stabilization; Restoration, Rehabilitation	Stabilization	Deferred Maintenance (DM)	DM is maintenance that was not performed when it should have been. Continued deferred maintenance results in deficiencies. Examples of DM include replacing a dying tree, rebuilding deteriorated fencing, or repairing a collapsed stone wall. DM correlates to CLR treatment tasks, CLI stabilization, and PMP stabilization. Lost features recommended for reestablishment in a CLR, such as a tree that was removed and never replaced, are DM.
Rehabilitation, Reconstruction	n/a	n/a	Capital Improvement (CI)	CI is new construction such as reestablishing a missing orchard or road. It may be included in CLR treatment as part of a Rehabilitation or Reconstruction treatment, but not in a PMP or CLI.
Treatment Task	Stabilization Measures	Work Needed	Work Order (Parent Work Order)	FMSS Work Orders may be defined directly from CLR treatment tasks, CLI stabilization measures, and PMP "work needed." The scope of work should be captured in the Long Description field.
Treatment Task or Component	n/a	Work Needed	Work Order Task (Child Work Order)	A Work Order Task is a component of a Work Order (Parent Work Order). Work Order Tasks are typically basic steps in completing a job, such as "010 removing existing vegetation," "050 dig holes for new vegetation," etc.
Record of Treatment (CLR Part III)	n/a	Record Keeping	Work Order Tracking	Since few CLR Records of Treatment are completed, FMSS provides an opportunity for parks to consistently track implementation of landscape treatment and preservation maintenance.

3. Addressing FMSS in Cultural Landscape Reports

To facilitate stewardship, it is important for data in CLRs to be easily transferable to FMSS. Modest changes and additions to the content and format of a CLR can help to more effectively transfer cultural landscape data to FMSS Asset inventories and work planning. Development of a CLR with FMSS data requires additional content in the Existing Conditions, Analysis and Evaluation, and Treatment sections (Sidebar 8: sample CLR outline with FMSS data).

The following recommendations for addressing FMSS in a CLR serve as a supplement to *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques (1998).*

Scoping FMSS Assistance in a CLR

Facility Management staff should be included on the CLR project scoping team to determine the desired level of FMSS guidance. Some parks may have little FMSS data for their cultural landscapes and therefore look to the CLR as a primary source. Other parks may ask for limited FMSS input because they already have comprehensive FMSS data, or wish to keep their FMSS database simple. All FMSS recommendations in a CLR need to be made in close consultation with facility managers because cultural landscape data is only one of several factors that parks consider when developing their FMSS Asset inventory and work planning (Sidebar 9: typical roles and responsibilities for integrating FMSS data in CLRs).

Most CLR projects can incorporate basic FMSS guidance without broadening the project scope. This may include preliminary recommendations on integrating cultural landscape data into an FMSS asset inventory and correlating CLR treatment guidelines and tasks with FMSS data. At a minimum, this may include using the Analysis and Evaluation to correlate landscape features with existing park FMSS

Sidebar 8: Sample CLR Outline with FMSS Data

CLR Existing Conditions (CLR Part 1)
Existing FMSS Overview
- Use of FMSS for cultural resource and landscape management
- Existing park FMSS data and how it relates to the cultural landscape
- Existing conditions plan with boundaries of all applicable Location Records

CLR Analysis and Evaluation (CLR Part 1)
Landscape Condition
- Condition with any pertinent Asset information
- Correlation between condition issues and FMSS work types
- Condition assessment guidance on integrating historic character with industry standards

Cultural Landscape Evaluation
- Cultural landscape data for FMSS Asset inventory
- Landscape Type recommendation for each 3100 Location record
- Recommendations for assessing the Cultural Resource Preservation value in the Asset Priority Index (API)
- Recommendations for assessing the Current Replacement Value (CRV) for Location records
- Crosswalk table between CL data and FMSS asset inventory

CLR Treatment (CLR Part 2)
Treatment Guidelines and Tasks
- Using treatment guidelines to define goals and objectives for Preventative Maintenance, Recurring Maintenance, and Deferred Maintenance
- Correlation of treatment tasks as Deferred Maintenance, or other appropriate work types
- Organization of tasks to align with FMSS Location and Asset records
- Existing Location boundaries on graphic treatment plans

Treatment Implementation
- Identification of treatment task priorities
- Identification of additional information needed for FMSS work orders
- Potential FMSS work order costing
- Summary table correlating CLR treatment and FMSS work planning
- Potential NPS funding sources for treatment
- Potential PMIS statements

CLR Record of Treatment (CLR Part 3)
FMSS "actuals" may serve as the CLR Record of Treatment

Sidebar 9: Typical Roles and Responsibilities for Integrating FMSS Data in CLRs

CLR Project Components	Project Scoping	Site History	Existing Conditions	Analysis and Evaluation	Treatment
Objective in Integrating FMSS with Each CLR Project Component	Determine the scope of FMSS recommendations in the CLR Determine what level of effort and time commitment will be needed from park facilities staff to assist with the FMSS aspect of the CLR	n/a	Document existing FMSS data related to the cultural landscape	Organize condition assessment by FMSS Locations Recommend Asset Types that characterize the cultural landscape, along with the Cultural Resource Preservation value in the API and the Current Replacement Value for Location records.	Identify the relationship of preventative maintenance (PM), recurring maintenance (RM), and deferred maintenance (DM), and other work types to landscape treatment guidelines and tasks.
CLR Author's Role and Responsibilities	Facilitate project scoping meeting Develop project scope	n/a	Facilitate discussions Develop existing conditions documentation	Facilitate FMSS hierarchy meeting Undertake condition assessment Write recommendations for addressing cultural landscape values in the FMSS Asset inventory, and assessing the Cultural Resource Preservation value for the API for each Location.	Develop a crosswalk between CLR treatment guidelines and tasks and FMSS work orders Prepare work orders for preservation actions that fall into PM, and, in particular RM and DM (to assist with funding applications for cyclic and repair rehab funding).
Park Staff Participation	Cultural resources staff Facilities staff	n/a	Facilities staff	Cultural resources staff Facilities staff	Cultural resources staff Facilities staff
Park Staff Roles and Responsibilities	Participate in project scoping meeting	n/a	Provide documentation on existing FMSS data Provide GIS-compliant spatial data for Locations and Assets	Participate in condition assessment and determining organization of FMSS, if desired. Participate in developing recommendations for FMSS Location records related to the cultural landscape, and assigning the Cultural Resource Preservation value for the API.	Review and comment on CLR-FMSS crosswalk.

Location and Asset records, and using treatment to identify Deferred Maintenance work needed to preserve and enhance the cultural landscape. CLRs can also readily inform Preventative Maintenance and Recurring Maintenance in treatment guidelines, and provide documentation of historic significance that will influence the rating of the Cultural Resource Preservation criteria of the API and Resource Risk Assessment Code (R-RAC) scoring on work orders.

Advanced FMSS guidance may require additional CLR project funding and coordination with park regional and facilities staff. The additional guidance may include correlating all landscape features with existing or potential Location and Asset records, providing guidance on condition assessments, and translating treatment guidelines and tasks into actual work orders. Advanced guidance may also include helping parks determine particular cost driving aspects for preservation that could be used for adjusting the CRV.

The following recommendations represent advanced FMSS guidance in a CLR, but may be selectively applied to provide baseline recommendations. These are presented for combined CLR Parts 1 and 2 (Site History through Treatment). If a CLR is a stand-alone Part 2 (Treatment), then it should also address the recommendations for Part 1. There is typically little need for FMSS data in a Site History, although including documentation on historic maintenance practices can inform contemporary facilities work.

FMSS in CLR Existing Conditions

Existing Conditions provides an opportunity to document a park's existing FMSS data that is relevant to management of the cultural landscape.

Existing Park FMSS Overview

The following information may be captured in a section devoted to FMSS within a larger discussion of current landscape management:

- Explain how the park uses FMSS to manage the cultural landscape.
- Summarize the park's existing FMSS Asset inventory relevant to the cultural landscape: identify Asset Types that characterize the cultural landscape and existing Location records in the park FMSS data to determine gaps in the Asset list.
- Identify the Landscape Type, complexity, and acreage for existing and proposed 3100 Location records and other Asset Types for use in the Current Replacement Value (CRV) calculator. The CRV is part of the equation that determines the Facility Condition Index (FCI) which assists with work planning in FMSS.

In addition, indicate the boundaries of existing Location records that correlate to the cultural landscape on the CLR existing conditions graphic plan. Verify and revise GIS-compliant spatial data for the Location record boundaries based on mapping of existing features. The plan should be annotated to describe location boundaries where they are not clearly defined or where they correlate to visible delineations (walls, fences, curbing, forest edge, etc.). These boundaries should not graphically obscure the primary purpose of the plan to document the physical character of the landscape.

FMSS in CLR Analysis and Evaluation

A CLR Analysis and Evaluation can provide parks with information on condition of Locations and Assets, including physical condition and deficiencies in historic character, and how cultural landscape characteristics and features inform an FMSS Asset inventory. Because parks must consider multiple factors in developing an Asset inventory (such as classification, age, and construction), a CLR should only make recommendations on how cultural landscape values should be considered in defining Location and Asset records.

Analysis and Evaluation data may be summarized in a cultural landscape evaluation table that correlates landscape features to FMSS data, and includes a summary of historic character and identification of condition deficiencies for use in condition assessments and record Long Descriptions (Sidebar 10: sample crosswalk table).

Landscape Condition Assessment

The following information may be captured in a section of the Analysis and Evaluation that provides an assessment of the physical condition (not historic integrity) of the cultural landscape:

- Organize documentation on the existing physical condition of the cultural landscape according to existing or potential Location records. For example, make separate condition assessments for a 3100 Maintained Landscapes and a 1100 Roads Location record. Locations that only partially comprise the cultural landscape, such as historic light standards (5100 Electrical Systems), should still be documented in the CLR.

- For each Location record, correlate the condition standards in the NPS Cultural Resource Management Guideline (Good-Fair-Poor-Unknown) to deficiencies and identify the FMSS work types (Deferred Maintenance, Recurring Maintenance, etc.) that would be needed to bring the landscape up to good condition.

- Provide direction to Facility Management staff or contractors on taking historic character into account when making condition assessments. This should include a synopsis of the landscape's historic character by Location and Asset records, and identification of any particular conditions that may not meet contemporary facilities industry standards, but which contribute to the historic character of the landscape, such as vines on a building. Explain that a full evaluation of the landscape's historic character is found in the evaluation of cultural landscape characteristics and features.

Cultural Landscape Inventory and Evaluation

The following information may be provided as part of the evaluated inventory of cultural landscape characteristics and features, or in a subsection that follows.

- Correlate cultural landscape characteristics and features to Asset Types and existing Location records (such as Spatial Organization to 3100 Maintained Landscapes), and Asset records (such as Circulation features to 1100 Roads). If identified in the CLR project scope, make recommendations for missing Location and Asset records.

- Where possible, document existing and/or historic details for each landscape feature, such as dimensions, materials, color, species, etc., that can be used to inform specification templates and work orders.

- Recommend an API Cultural Resource Preservation value for existing or proposed Location records that characterize the cultural landscape, such as 1100 Roads, 3100 Maintained Landscapes, and 7100 Monuments. The reasons for the recommended value should be explained based on the definitions in the "API Definitions and Examples" available through the NPS Park Facilities Management Division.

- Provide recommendations for assessing the Current Replacement Value for cultural landscape Location records. The recommendations may not include an actual value, but should identify possible additional costs for preservation work, such as in-kind replacement of unique building mafeeterials or heritage plants, as well as the complexity of the landscape.

SIDEBAR 10: SAMPLE CLR-FMSS CROSSWALK TABLE FOR CLR ANALYSIS AND EVALUATION

CLR Feature Name	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	CLI No.	LCS No.	ASMIS No.	Cultural Landscape Evaluation	Historic Character	Deficiency (Historic)	Additional Guidance
Spatial Organization										
Formal Garden Space	Not applicable	Not applicable	Not applicable	124761	n/a	n/a	Contributing	Square open space enclosed by 8 foot high sheared hedge	Yes	Not a maintained asset; address in Formal Garden Location record Long Description
Circulation										
Main Entrance Drive	Roads (1100)	Estate Roads (13450)	Main Entrance Road surface (28456)	124561	601120	n/a	Contributing	Well-groomed, weed-free gravel drive edged by stone gutters	Yes	Includes loop through porte-cochere
Formal Garden Walks	Maintained Landscapes (3100)	Formal Garden (13456)	Asset record needed	124567	601122	n/a	Contributing	Well-groomed pea-gravel walks with crisp border along lawn and bed edging	No	Facilities staff recommends grouping with C-3, access walk from main house
Vegetation										
Specimen Trees	Maintained Landscapes (3100)	House Grounds (13452)	Asset record needed	124789	n/a	n/a	Contributing	10 deciduous trees (oak, maple), high canopy, and two conifers (Norway spruce) with canopy to ground	Yes	Facilities staff recommends splitting into deciduous and conifer assets
Formal Garden perimeter hedges	Maintained Landscapes (3100)	Formal Garden (13453)	Formal Garden Plantings (28345)	124787	n/a	n/a	Contributing	8 foot high hemlock hedge, canopy to ground, sheared with straight sides, beveled top	Yes	Hedge defines Formal Garden Space
Buildings and Structures										
Main House	Buildings (4100)	Main House (13478)	Outside scope of CLR	n/a	601130	n/a	Contributing	Federal-period house with Colonial Revival modifications	Undet.	
Kitchen Garden Shed	Buildings (4100)	Kitchen Garden (13457)	Potential future asset	n/a	n/a	n/a	n/a	Board and batten shed built in ca.1900, removed in 1972	Yes	CLR Treatment: Reconstruction
Views and Vistas										
River View	Not applicable	Not applicable	Not applicable	124389	n/a	n/a	Contributing	South view of river from formal garden 25' opening framed by specimen trees on east and west sides	Yes	Not a maintained asset; address in formal garden Location record Long Description
Small-Scale Features										
Formal Garden light standards	Electrical Systems (5400)	Location record needed	Asset record needed	124391	n/a	n/a	Non-contributing	Modern park light standards; detract from historic character of the landscape	Yes	
Archeological Sites										
A-1. Historic Dump	Maintained Archeological Sites (7200)	Location record needed	Asset record needed	n/a	n/a	23445	Unevaluated	Mostly subsurface remains of domestic refuse area	Undet.	
Note: Data is fictional										

FMSS in CLR Treatment

CLR Treatment serves as an important source of information for FMSS work planning related to the cultural landscape. Treatment guidelines and tasks can define work orders for Deferred Maintenance (DM) to enhance historic character, as well as Preventative Maintenance (PM) and Recurring Maintenance (RM) to preserve the cultural landscape. While CLR Treatment is often developed at the conceptual level, with some additional information it can help parks further detail FMSS work planning.

The following recommendations are for Treatment that follows CLR Part 1. If Treatment is a stand-alone Part 2, it should include the existing FMSS summary and conditions assessment recommended for CLR Part 1. An alternative organization of the information as listed below is to combine all FMSS guidance in its own section or as an appendix to the report.

Treatment Guidelines and Tasks

The following information should be incorporated into landscape treatment guidelines and tasks narrative (Sidebar 11: example of a landscape treatment task narrative with FMSS Work Order information).

- Develop treatment guidelines that identify routine maintenance to sustain historic dimensions, form, character, size, color, etc., such as through hedge clipping, mulching, road grading, etc., to inform creation of Facility Operations (FO), Preventative Maintenance (PM) and Recurring Maintenance (RM) work orders in FMSS.

- Consider grouping treatment tasks into project components that correlate to FMSS Parent Work Orders and FMSS Child Work Orders. For example, a treatment project "Restore Formal Garden" would be an FMSS

Sidebar 11: Sample Landscape Treatment Task with FMSS Work Order Information

Treatment Task (FMSS Parent Work Order): Rehabilitate Views to and from East Black Point

Historic Background: East Black Point historically featured screened views through gardens and trees planted in the 1920s on the terreplein and escarpment of the fortifications. Filtered, tree-framed vistas remained through the end of World War II, but abandonment of the gardens and growth of volunteer trees obscured the views in subsequent decades as maintenance of the slope was curtailed.

Facility Work Type/Subtype: Facility Maintenance/ Deferred Maintenance

CLR Treatment Priority: 3 (out of 25 tasks)

FMSS Location: Black Point Slope Landscaped Area (85972).

FMSS Assets: No Asset records have been established for this area.

This treatment task is composed of the following components (FMSS Child Work Orders):

1. Remove invasive trees, including blackwood acacia and rock elm. This will require removing approximately 24 trees and 5,000 SF of saplings, including root grinding of mature trees.

2. Remove invasive shrubs and groundcover, including poison hemlock, cotoneaster, English ivy, blackberry, and poison oak. This will require removing approximately 52,000 square feet of shrubs and groundcover.

3. Undertake slope stabilization planting. This will require approximately 52,000 square feet of shrubs, groundcover, and mulch. Species to be determined. Use a dark natural mulch. Ensure light watering daily until plantings are established.

Recurring Maintenance Needed: Yes. Reapply mulch every 2 to 3 years to suppress weeds. Volunteer woody vegetation should be removed from the slope stabilization plantings on a biannual basis to maintain the views.

Parent Work Order, and individual treatment tasks such as replacing the perimeter hedge and replanting the herbaceous borders may comprise constituent FMSS Child Work Orders.

- Prioritize treatment tasks based on physical condition and historic character.
- Identify Location and Asset records involved with each treatment task/work order.
- Identify the type of work associated with the treatment task. Describe treatment tasks that reestablish historic character and missing historic features as Deferred Maintenance (DM). See Appendix 7 for other work types.
- Identify the Recurring Maintenance (RM) and Preventative Maintenance (PM) that will be required upon completion of the work order. This will assure that the asset will be maintained in the future.
- Provide information on materials/units and units of measure to assist with cost estimating. Also consider other FMSS work order data fields, such as Labor (expertise) and Tools, in consultation with facilities staff.
- Indicate the boundaries of existing FMSS Location records in the cultural landscape on the CLR treatment plan.
- Provide a treatment task summary table that correlates treatment tasks with FMSS work order information (Sidebar 12: sample treatment task summary table).

Treatment Implementation

Include a section in the CLR that provides guidance to parks on implementing treatment through FMSS work planning.

- Describe implementation priorities to assist parks in FMSS work planning. This should summarize the priorities identified under individual treatment tasks based on the goal of retaining contributing features and enhancing historic character, based on consultation with park staff.
- Identify additional information needed to complete FMSS work orders related to cultural landscape preservation.
- Identify potential NPS funding sources for treatment tasks (work orders), such as Cyclic Maintenance, Rec Fee, and Repair/Rehab.
- Identify possible PMIS statements based on treatment tasks/work orders.

FMSS in CLR Record of Treatment

The Record of Treatment (CLR Part 3) provides an accurate account of the implemented treatment for the historical record. The intent is to document treatment actions, not preservation maintenance. In the past, parks have seldom undertaken formal CLR Records of Treatment, although Facility Management records usually contain the necessary documentation.

FMSS has the potential, with future updates, to allow images, such as site plans or photographs of assets, to be incorporated into a Record of Treatment. These could also include files exported from FMSS to document condition assessments, work orders, construction drawings, contracts, completion reports, and actual costs. The files should be organized according to the CLR treatment tasks, and be maintained as an appendix to CLR Treatment (Part 2). Recommendations for completing a Record of Treatment should be addressed in a CLR project scope.

SIDEBAR 12: SAMPLE CLR-FMSS CROSSWALK TABLE FOR CLR TREATMENT

CLR TREATMENT TASK / FMSS PARENT WORK ORDER	PRIORITY	CLR TREATMENT TASK COMPONENT / FMSS CHILD WORK ORDER	FMSS ASSET TYPE	FMSS LOCATION RECORD	FMSS ASSET RECORD	FMSS WORK TYPE / SUB-TYPE	MAINTENANCE NEEDED (PM OR RM)	UNITS	UNIT OF MEASURE
Task 1. Replace Formal Garden Hedges and Install Deer Fence	2/6	1. Remove hedge	Maintained Landscapes (3100)	Formal Garden (13456)	Formal Garden Plantings (28345)	Facility Maintenance / Deferred Maintenance, Preventative Maintenance	Yes (twice-yearly hedge shearing)	120 hemlock, b&b, 6' stock	EA
		2. Plant new hedge						300 (8' high deer fence)	LF
		3. Install deer fence							
Task 2. Replant Missing Specimen Trees on House Grounds	1/6	1. Plant white oak SE of house	Maintained Landscapes (3100)	House Grounds (13452)	House Grounds Specimen Trees Asset record needed	Facility Maintenance / Deferred Maintenance	Not determined	2 (4" caliper trees)	EA
		2. Plant sugar maple N of house							
Task 3. Rehabilitate Main Entrance Drive	4/6	1. Remove weeds and top 4" of road material.	Roads (1100)	Estate Roads (13450)	Main Entrance Road pavement (28456) Main Entrance Road stone gutters (28457)	Facility Maintenance / Deferred Maintenance	Yes (annual grading to maintain even weed-free surface)	1500 (fabric)	SF
		2. Install geotextile fabric and 4" gravel top, grade to even surface						500 (gravel)	CY
		3. Repoint stone gutters							
Task 4. Reestablish River View	3/6	Remove obstructing limbs from adjoining House Grounds grove	Maintained Landscapes (3100)	House Grounds (13452)	House Grounds grove Asset record needed	Facility Maintenance / Deferred Maintenance	Yes (prune trees biannually to maintain view)	2 (trees)	EA
Task 5. Reconstruct Kitchen Garden Shed	5/6	1. Reconstruct building	Buildings (4100)	Location record needed (future)	Asset record needed (future)	Capital Improvement / New Construction	Not determined	60 (building)	SF
		2. Grade and install site drainage				Facility Maintenance / Preventative Maintenance		80 (French drain)	LF
Task 6. Install interpretive signage at Historic Dump	6/6	1. Improve trail to dump	Maintained Landscapes (3100)	Kitchen Garden (12357)	Trail to Dump (C-15) Asset record needed	Facility Maintenance / Deferred Maintenance	Not determined	125 (trail)	LF
		2. Install wayside at dump	Maintained Archeological Sites (7200)	Location record needed	Historic Dump (A-1) Asset record needed	Not determined	Not determined	1 (sign)	EA
Note: Data is fictional									

4. Addressing FMSS in Cultural Landscape Inventories

Since the Cultural Landscape Inventory (CLI) is a set database, authors and parks have limited flexibility on adapting the data to FMSS.

FMSS can be addressed in a CLI in the following manner:

- By ensuring contributing and non-contributing features of landscape characteristics are clearly identified and described in the Analysis and Evaluation;
- By providing sufficient information in stabilization measures to allow for their translation into work orders by Facilities Management staff;
- By completing the FMSS table in the CLI database with Location and Asset record numbers for the cultural landscape; and
- By adding Location and Asset record numbers to GIS-compliant spatial data.

More specific information can be found in the *CLI Professional Procedures Guide*.

5. Addressing FMSS In Preservation Maintenance Plans

Preservation Maintenance Plans provide the greatest opportunity for aligning content and format with FMSS.The reports could be structured to follow the FMSS Location/Asset hierarchy, and the work needed can be aligned with FMSS categories of Deferred Maintenance, Preventative Maintenance, and Recurring Maintenance. Work planning could be presented to align with data fields in FMSS work orders. Such changes to Preservation Maintenance Plans will be addressed in future revisions to the *Guide to Preparing a Preservation Maintenance Plan for a Historic Landscape* (1998).

Conclusion

FMSS can be a powerful tool for enhancing stewardship of cultural landscapes and advancing the NPS Call to Action to preserve America's special places. Because FMSS has the ability to integrate cultural landscape data into facilities work planning, it provides an important opportunity to facilitate communication between the Park Cultural Landscapes Program and Facilities Management, and thereby achieve seamless landscape stewardship from planning through implementation.

Cultural landscape data can help parks develop FMSS in a way that advances their cultural resource preservation mission. Without good cultural landscape data, FMSS may not capture all assets, may not assign the correct Cultural Resource Preservation value to the Asset Priority Index (API), or may assign an inaccurate Current Replacement Value (CRV) due to higher preservation costs. These situations could lead to absence of needed work orders, or creation of work orders that do not adequately preserve and enhance historic assets, or that compete poorly for funding.

Park Cultural Landscapes Program staff can use the information in this technical brief to gain an overview of the concepts behind Facilities Management and FMSS, and to adapt CLRs to facilitate integration of data into FMSS. Detailed information on evolving FMSS business practices, best management practices, inspection guidance, and other technical facilities information is available through the NPS Park Facility Management Division.

For Additional Guidance

The Park Facility Management Division of the National Park Service is responsible for developing Asset Tools for each Asset Type in FMSS, available through the Asset Management Toolbox, http://inside.nps.gov/waso/waso.cfm?prg=190&lv=4. These tools contain detailed guidance on entering data in FMSS, making condition assessments, and other technical information formerly in "Business Practices and Inspection Guidance" documents.

Park Facility Management Program Help Desk, fmp_help_desk@nps.gov or (303) 969-2609

Operations and Maintenance: Facility Management Software System (FMSS) Student Manual (2011). http://eppley.org/resources

Endnotes

1. National Park Service, *A Call to Action* (2012).

2. International Facility Management Association, "FM Knowledge Base," http://www.ifma.org/know-base/fm-knowledge-base (accessed February 19, 2014); NPS Director's Order #80 (2006); NPS 28, Cultural Resource Management Guideline (1998).

3. NPS Director's Order #80 (2006).

4. The FMSS hierarchy is defined by geography and not asset type groupings, such as "Roads."

5. Cultural landscape treatment and maintenance may also address another work type, Facilities Operations-Grounds Care. This involves activities that occur on a more frequent basis, such as weekly or monthly, and may include lawn mowing, litter pick-up, and weeding.

6. Refer to 3100 Best Management Practices (Park Facility Management Division) for additional guidance on determining 3100 Maintained Landscapes boundaries and interface with other Asset Types.

References

Coffin, Margaret and Regina M. Bellavia. *Guide to Developing a Preservation Maintenance Plan for a Historic Landscape*, revised edition. Boston, MA: National Park Service Olmsted Center for Landscape Preservation, 1998.

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National Park Service. *PFMD Update: The Official Newsletter of the Park Facility Management Division*, vol 2, issue 1, September/October 2010; volume 2, issue 6, July /August 2011.

Page, Robert R., Cathy A. Gilbert, and Susan A. Dolan. *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques*. Washington, DC: National Park Service, 1998.

Page, Robert R., revised by Jeffrey Killion and Gretchen Hilyard. *National Park Service Cultural Landscapes Inventory Professional Procedures Guide*. National Park Service report, January 2009.

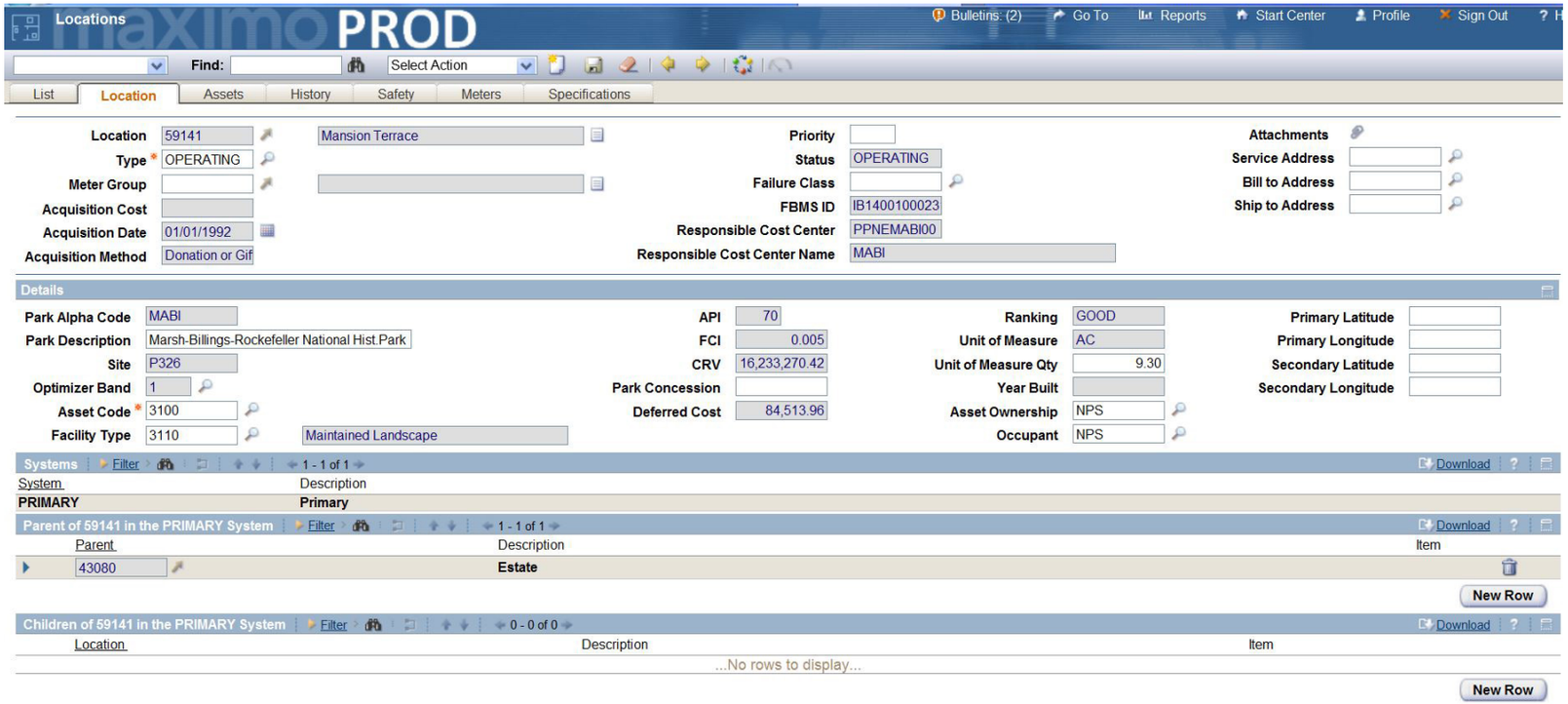
Appendix 1. Common Facilities Management Terms Related to Cultural Landscapes

Source: Operations and Maintenance: FMSS Student Manual (Eppley, 2011) and Olmsted Center for Landscape Preservation

Term	Acronym	Definition
Asset	n/a	A distinct element or separately identifiable part of a Location on which work is performed. Example: A hedge around a formal garden 3100 Maintained Landscapes Location.
Asset Type	n/a	A category used to group like Assets that define a Location; currently 32 Asset Types organized into 8 groups; each defined by a four-digit code. Example: 3100 Maintained Landscapes.
Asset Priority Index	API	An evaluation process that quantifies the value of an Asset in relation to the mission of the park. Performed at the Location level only.
Condition Assessment, Annual	CAA	Inspection of an Asset identifying apparent deficiencies and documenting the condition as measured against the applicable maintenance or condition standards. Basis for annual work plans and budgets.
Condition Assessment, Comprehensive	CAC	Review and validation of the inventory; inspection of an Asset identifying in-depth deficiencies, and documenting the condition as measured against the applicable maintenance or condition standards. Determines DM and FCI. Performed on an Asset every 5 years.
Capital Improvement	CI	Construction that adds to the existing footprint of an Asset, or creates a new asset; or alterations. Example: expansion of a parking lot.
Corrective Maintenance	CM	Unscheduled reactive repairs that are not estimated or planned. Example: replacement of a fence damaged by a falling tree.
Component Classification System	CompClass	An NPS system for classifying Assets according to set types.
Current Replacement Value	CRV	Standard industry costs and engineering estimates of materials, supplies, and labor required to replace a facility at existing size and functional capability. Can be adjusted to address known local costs or historic preservation costs if needed.
Deferred Maintenance	DM	Maintenance that was not performed as it should have been. Example: in-kind replanting of a historic tree that was removed 10 years ago.
Facility	n/a	A term used to encompass land, buildings, other structures, and other real property improvements, including utilities; another term for Location.
Facility Type	n/a	A category used to delineate the class of a facility. Example: Agricultural Field under 3100 Maintained Landscapes.
Facility Condition Index	FCI	A measure of a facility's relative condition at a particular point in time to other similar facilities. FCI is a ratio of the cost of repair of asset deficiencies divided by the current replacement value (CRV). Performed at the Location level only.
Facility Management	FM	The planning, prioritizing, organizing, controlling, reporting, evaluation, and adjusting of facility use to support NPS activities based upon facility needs and NPS mission requirements.
Facility Management Software System	FMSS	An asset-based work identification, management, and analysis program, based on IBM Maximo® platform.
Facility Operations	FO	Work activities performed on a recurring basis throughout the year which intend to meet routine, daily park operational needs.
Location	n/a	Property that the NPS desires to track and manage as a distinct identifiable entity, based on set Asset Types, that require recurring maintenance and/or corrective actions to sustain or return it to an 'industry standard' level of acceptable condition; another term for "facility." Example: A hedge-enclosed flower garden within a residential landscape.
Maintained Landscapes	ML	The Asset Type (3100) comprised of exterior park areas exclusive of other Asset Types. Asset Type most closely aligned with cultural landscapes.
Preventative Maintenance	PM	Regularly scheduled periodic maintenance activities (within a year) on select Assets. Example: annual grading of a gravel road.
Routine Assessment	RA	Identification of minor deficiencies to support recurring maintenance and set short-term work plans.
Recurring Maintenance	RM	Work activities that recur based on normal wear patterns on a periodic cycle of greater than 1 year and less than 10 years. Example: resetting of a bluestone walk.
Work Order	n/a	Process for documenting work needs and collecting information to aid the work scheduling and assignment process.

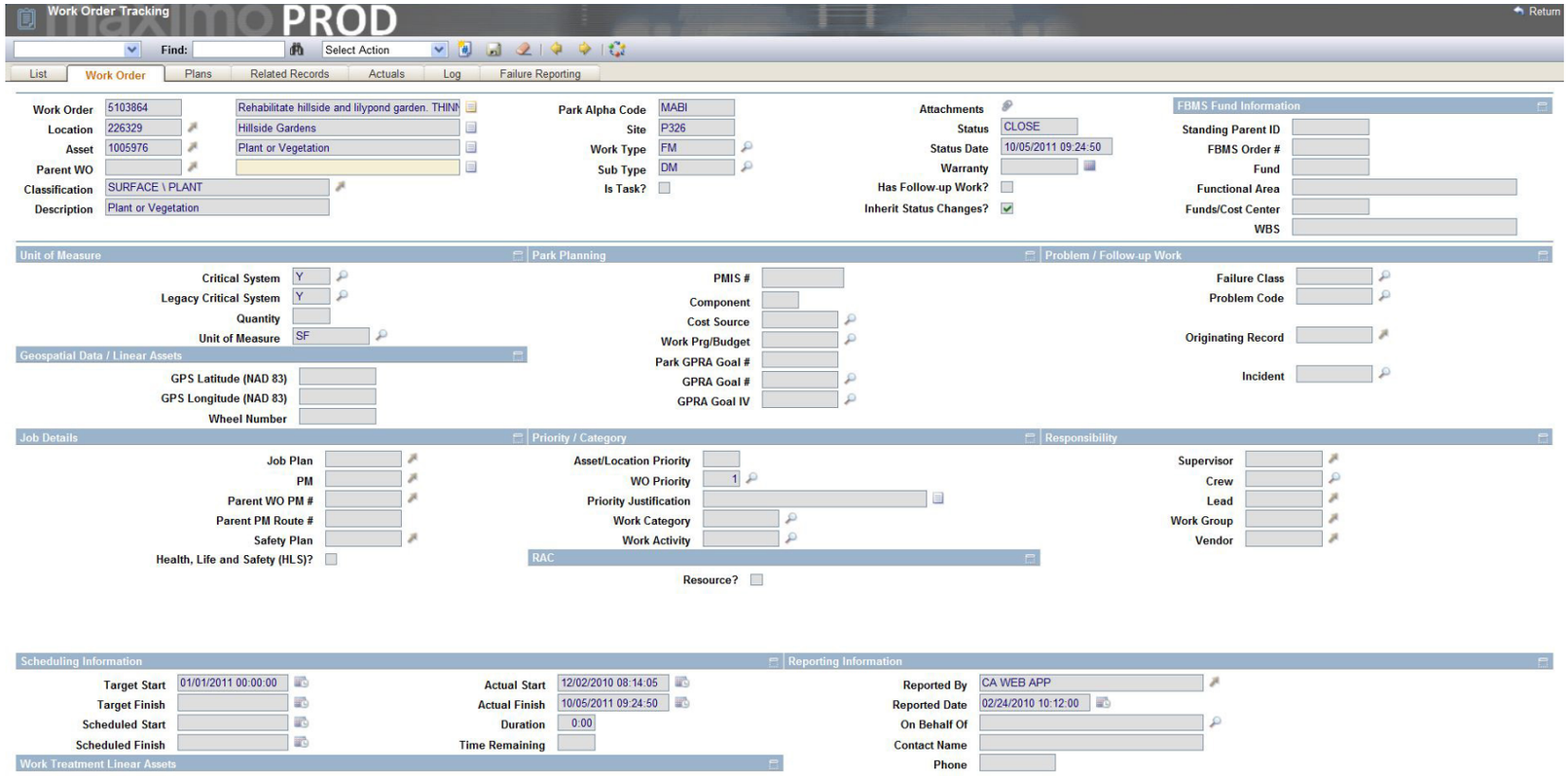
Appendix 2A. FMSS Sample Screen (FMSS version 6.2)

SAMPLE LOCATION RECORD SCREEN



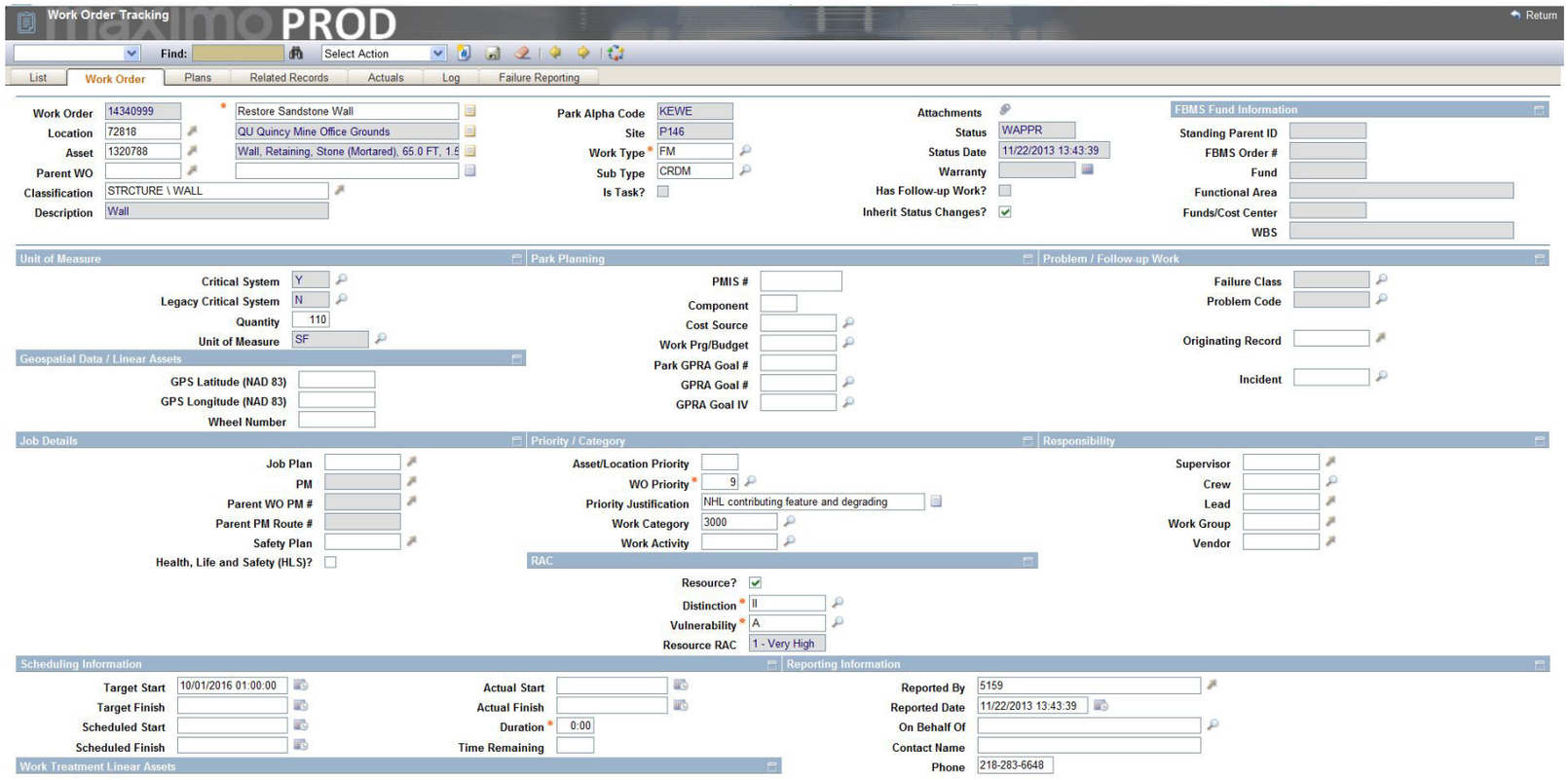
Appendix 2B. FMSS Sample Screen (FMSS VERSION 6.2)

SAMPLE ASSET RECORD SCREEN



Appendix 2C. FMSS Sample Screen (FMSS VERSION 6.2)

SAMPLE WORK RECORD SCREEN



Appendix 3. Asset Codes and Categories for FMSS Location Records

Select List of Codes Common to Cultural Landscapes

Source: FMSS Desk Reference (2013)

SITE/AREA		UTILITY, continued
0000 – Site/Area		5500 – Communication Systems
ROAD		5700 – Fuel Systems
1100 – Roads		5800 – Solid Waste/Recycling Systems
1300 – Parking Areas		MARINE/WATERWAY/WATERFRONT
1700 – Road Bridges		6100 – Dams/Levees/Dikes
1800 – Road Tunnels		6200 – Constructed Waterways
TRAIL		6300 – Marina/Waterfront Systems
2100 – Trails		AVIATION/RAILROAD
2200 – Trail Bridges		6400 – Aviation Systems
2300 – Trail Tunnels		6500 – Railroad Systems
GROUNDS		6600 – Ship
3100 – Maintained Landscapes		UNIQUE ASSET
3800 – Boundaries		7100 – Outdoor Sculptures/Monuments
BUILDING		7200 – Maintained Archeological Sites
4100 – Buildings		7300 – Fortifications
UTILITY		7400 – Towers/Missile Silos
5100 – Water Systems		7500 – Interpretive Media
5200 – Waste Water Systems		7900 – Amphitheaters
5300 – Heating & Cooling Plants		
5400 – Electrical Systems		

Appendix 4. NPS Component Classification Hierarchy (for all Asset Types)

Select List of Components Common to Cultural Landscapes

Source: FMSS Desk Reference (2013)

Parent Classification	Classification Description	Full Classification (Including Sub-Parent Class)
Archeological		
ARCHLOGY	Archeology	ARCHLGCL/ARCHLOGY
Barrier & Fencing		
BARRIER	Fence/Gate	BARRIER/FENCGATE
BARRIER	Railing	BARRIER/RAILING
Communication		
COMMNCTN	Antenna/Trans Tower	COMMNCTN/ANTENNA
Electrical		
ELECTRCL	Lighting	ELECTRCL/LILGHT
ELECTRCL	Substation	ELECTRCL/SUBSTATS
Exhibit		
EXHIBIT	Interpretive Exhibit: Fixed Artillery	EXHIBIT/INTRPRTV/ARTILERY
EXHIBIT	Sculpture: Fountain/Pool	EXHIBIT/SCLPTURE/FNTNPOOL
Furnishing		
FURNISH	Exterior Furnishing	FURNISH/EXTFURN
HVAC		
HVAC	Cooling Tower	HVAC/COOLTOWR
Life Safety & Facility Protection		
SAFETY	Suppression: Fire Hydrant	SAFETY/SUPPRSSN/HYDRANT
Liquid & Gas		
LIQDNGAS	Plumbing: Irrigation Sys	LIQDNGAS/PLUMBING/IRRIGTN
LIQDNGAS	Plumbing: Valve	LIQDNGAS/PLUMBING/VALVE
Signage & Marking		
MARKING	Sign	MARKING/SIGN
MARKING	Traffic Light	MARKING/TRAFLGHT
Structure		
STRCTURE	Abutment	STRCTURE/ABUTMENT
STRCTURE	Wall	STRCTURE/WALL
STRCTURE	Access: Stairs	STRCTURE/ACCESS/STAIRS
Surface		
SURFACE	Land Surface	SURFACE/LANDSURF
SURFACE	Plant or Vegetation	SURFACE/PLANT
SURFACE	Trailer Pad	SURFACE/TRALRPAD
SURFACE	Turfgrass/Pasture Crop	SURFACE/TURFCROP
Water Control		
WTRCNTRL	Constructed Channel	WTRCNTRL/CONSCHAN
WTRCNTRL	Culvert	WTRCNTRL/CULVERT
WTRCNTRL	Drain	WTRCNTRL/DRAIN
WTRCNTRL	Outlet Work	WTRCNTRL/OUTLETWK

Appendix 5. Asset Priority Index (API) Values for Cultural Resource Preservation

Source: NPS Asset Priority Index Criteria (2012)

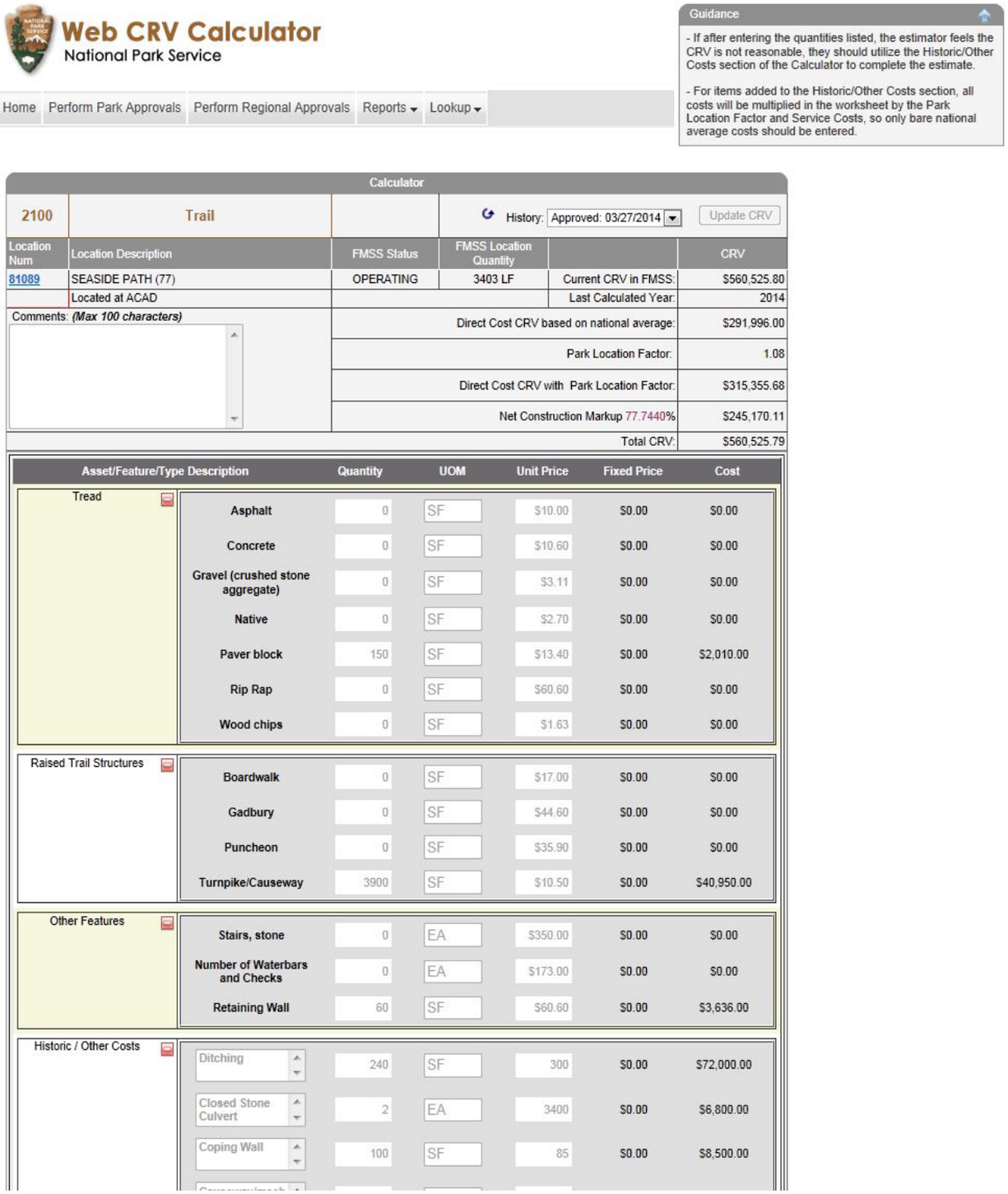
Value	Definition
High	The asset meets at least one of the following criteria: • The asset's preservation is specifically legislated • The asset is key to the park's legislated cultural significance • The asset meets the National Register criteria at the national level of significance • The asset is a National Historic Landmark • The asset is a contributing resource to a National Historic Landmark district or a nationally significant National Register property • The asset is a fundamental resource specified in the park's foundation document or park plans • The asset is a prehistoric asset • The asset directly protects a cultural resource • The asset meets FRP Historic Factor 1
Medium	The asset meets all of the following criteria: • The asset is of state or local significance and meets the National Register criteria individually or as a contributing resource of a property or district • The asset is compatible with the park's legislated significance, and • The asset has a continuing or potential use based on its design and location OR The asset meets at least one of the following criteria: • The asset limits the impacts of visitor use on a cultural resource, where impacts could cause major degradation • FRP Historic Factor 2 or 3
Low	The asset meets at least one of the following criteria: • The asset does not meet the National Register criteria, but a decision has been reached through a park planning process to manage the asset as a cultural resource • The asset meets the National Register criteria at the state or local level of significance, but is incompatible with the park's legislated significance or with the park's management objectives for fundamental resources • The asset meets the National Register criteria at the state or local level of significance, but has no continuing use or potential use, based on its design or location • The asset limits the impacts of visitor use on a cultural resource where impacts could cause limited degradation • FRP Historic Factor 4 or 5
None	Asset has no relationship to cultural resource preservation and meets FRP Historic Factor 6.

Federal Real Property (FRP) Historic Factors:

1. National Historic Landmark
2. National Register Listed
3. National Register Eligible
4. Non-contributing resource of National Historic Landmark or National Register district
5. Not evaluated
6. Evaluated, not historic

Appendix 6A. Sample CRV Calculator Screen (FMSS version 6.2)

SAMPLE CRV CALCULATOR FOR A 3100 MAINTAINED LANDSCAPES LOCATION



Web CRV Calculator
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Guidance

- If after entering the quantities listed, the estimator feels the CRV is not reasonable, they should utilize the Historic/Other Costs section of the Calculator to complete the estimate.

- For items added to the Historic/Other Costs section, all costs will be multiplied in the worksheet by the Park Location Factor and Service Costs, so only bare national average costs should be entered.

Calculator

2100 | Trail | History: Approved: 03/27/2014 | Update CRV

Location Num	Location Description	FMSS Status	FMSS Location Quantity		CRV
81089	SEASIDE PATH (77)	OPERATING	3403 LF	Current CRV in FMSS:	$560,525.80
	Located at ACAD			Last Calculated Year:	2014
Comments: *(Max 100 characters)*				Direct Cost CRV based on national average:	$291,996.00
				Park Location Factor:	1.08
				Direct Cost CRV with Park Location Factor:	$315,355.68
				Net Construction Markup 77.7440%	$245,170.11
				Total CRV:	$560,525.79

Asset/Feature/Type Description		Quantity	UOM	Unit Price	Fixed Price	Cost
Tread	Asphalt	0	SF	$10.00	$0.00	$0.00
	Concrete	0	SF	$10.60	$0.00	$0.00
	Gravel (crushed stone aggregate)	0	SF	$3.11	$0.00	$0.00
	Native	0	SF	$2.70	$0.00	$0.00
	Paver block	150	SF	$13.40	$0.00	$2,010.00
	Rip Rap	0	SF	$60.60	$0.00	$0.00
	Wood chips	0	SF	$1.63	$0.00	$0.00
Raised Trail Structures	Boardwalk	0	SF	$17.00	$0.00	$0.00
	Gadbury	0	SF	$44.60	$0.00	$0.00
	Puncheon	0	SF	$35.90	$0.00	$0.00
	Turnpike/Causeway	3900	SF	$10.50	$0.00	$40,950.00
Other Features	Stairs, stone	0	EA	$350.00	$0.00	$0.00
	Number of Waterbars and Checks	0	EA	$173.00	$0.00	$0.00
	Retaining Wall	60	SF	$60.60	$0.00	$3,636.00
Historic / Other Costs	Ditching	240	SF	300	$0.00	$72,000.00
	Closed Stone Culvert	2	EA	3400	$0.00	$6,800.00
	Coping Wall	100	SF	85	$0.00	$8,500.00

Appendix 6B. Sample CRV Calculator Screen (FMSS version 6.2)

SAMPLE CRV CALCULATOR FOR A 3100 MAINTAINED LANDSCAPES LOCATION

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Guidance

- If after entering the quantities listed, the estimator feels the CRV is not reasonable, they should utilize the Historic/Other Costs section of the Calculator to complete the estimate.

- For items added to the Historic/Other Costs section, all costs will be multiplied in the worksheet by the Park Location Factor and Service Costs, so only bare national average costs should be entered.

Calculator

7100	Outdoor Sculptures/Monu/Interp		History: Approved: 04/29/2014	Update CRV

Location Num	Location Description	FMSS Status	FMSS Location Quantity		CRV
62481	SC29 Scottys Castle Scott s Grave	OPERATING	1 EA	Current CRV in FMSS:	$67,530
	Located at DEVA			Last Calculated Year:	20

Comments: ***(Max 100 characters)***

Direct Cost CRV based on national average:	$28,143
Park Location Factor:	1
Direct Cost CRV with Park Location Factor:	$37,993
Net Construction Markup 77.7440%	$29,537
Total CRV:	$67,530

Asset/Feature/Type Description		Quantity	UOM	Unit Price	Fixed Price	Cost
Sculptures	Stone Statuary: Average	0	CF	$655.00	$0.00	$0.00
	Stone Statuary: Ornate	0	CF	$1,080.00	$0.00	$0.00
	Stone Statuary: Very Ornate	0	CF	$1,510.00	$0.00	$0.00
	Life Size - Bronze Statuary	0	EA	$183,000.0	$0.00	$0.00
	2-1/2 Life Size - Bronze Statuary	0	EA	$458,000.0	$0.00	$0.00
Monuments	Stone Monuments: Average	64	CF	$342.00	$0.00	$21,888.00
	Stone Monuments: Ornate	0	CF	$422.00	$0.00	$0.00
	Stone Monuments: Very Ornate (Detailed cornices)	0	CF	$503.00	$0.00	$0.00
Plaques	20" x 30", up to 450 Letters, Cast Bronze	0	EA	$1,450.00	$0.00	$0.00
	30" x 36", up to 900 Letters, Cast Bronze	0	EA	$2,740.00	$0.00	$0.00
	36" x 48", up to 1300 Letters, Cast Bronze	1.50	EA	$4,170.00	$0.00	$6,255.00
Historic / Other Costs		0		0	$0.00	$0.00
		0		0	$0.00	$0.00
		0		0	$0.00	$0.00
		0		0	$0.00	$0.00

Appendix 6C. Sample CRV Calculator Screen (FMSS version 6.2)

SAMPLE CRV CALCULATOR FOR A 3100 MAINTAINED LANDSCAPES LOCATION

Web CRV Calculator
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Guidance

- The unit of measure RT MI is equivalent to the length (in miles) of a two-lane road. For example, a two-lane, ten-mile road would be 10 RT MI. In contrast, a one-lane, ten-mile road would be 5 RT MI and a four-lane, ten-mile road 20 RT MI.

- Square-Footage (SF) quantities are calculated by multiplying the length of the road in miles by the number of feet in a mile (5,280) and the width of the road. For example: 3.5 miles x 5,280 LF/mile x 11 LF = 203,280 SF

- If after entering the quantities listed, the estimator feels the CRV is not reasonable, they should utilize the Historic/Other Costs section of the Calculator to complete the estimate.

- For items added to the Historic/Other Costs section, all costs will be multiplied in the worksheet by the Park Location Factor and Service Costs, so only bare national average costs should be entered.

Calculator

1100	Roads		History: Approved: 01/24/2014		
Location Num	Location Description	FMSS Status	FMSS Location Quantity		CRV
104483	SB Wash Blvd RAMP to SB GWMP (RT-0508G)	OPERATING	0.68 MI	Current CRV in FMSS:	$6,926,100.68
	Located at GWMP			Last Calculated Year:	2014
Comments: *(Max 100 characters)*				Direct Cost CRV based on national average:	$3,746,800.00
				Park Location Factor:	1.04
				Direct Cost CRV with Park Location Factor:	$3,896,672.00
				Net Construction Markup 77.7440%	$3,029,428.67
				Total CRV:	$6,926,100.67

Asset/Feature/Type Description		Quantity	UOM	Unit Price	Fixed Price	Cost
Paved Roads - by Terrain Type	Flat Terrain - Pavement and Related Components (paved)	0	Route M	$1,060,000	$0.00	$0.00
	Rolling Terrain - Pavement and Related Components (paved)	0	Route M	$1,060,000	$0.00	$0.00
	Mountainous Terrain - Pavement and Related Components (paved)	0	Route M	$2,620,000	$0.00	$0.00
	Urban Terrain - Pavement and Related Components (paved)	0.68	Route M	$5,510,000	$0.00	$3,746,800.00
Unpaved Roads with Native Soil - by Terrain Type	Flat Terrain - Road Bed and Related Components (native)	0	SF	$0.65	$0.00	$0.00
	Rolling Terrain - Road Bed and Related Components (native)	0	SF	$0.65	$0.00	$0.00
	Mountainous Terrain - Road Bed and Related Components (native)	0	SF	$1.04	$0.00	$0.00
	Urban Terrain - Road Bed and Related Components (native)	0	SF	$2.21	$0.00	$0.00
Unpaved Roads with Pit Run Gravel - by Terrain Type	Flat Terrain - Road Bed and Related Components (pit run gravel)	0	SF	$1.54	$0.00	$0.00
	Rolling Terrain - Road Bed and Related Components (pit run gravel)	0	SF	$1.54	$0.00	$0.00
	Mountainous Terrain - Road Bed and Related Components (pit run gravel)	0	SF	$2.47	$0.00	$0.00
	Urban Terrain - Road Bed and Related Components (pit run gravel)	0	SF	$5.25	$0.00	$0.00

Appendix 6D. Sample CRV Calculator Screen (FMSS version 6.2)

SAMPLE CRV CALCULATOR FOR A 3100 MAINTAINED LANDSCAPES LOCATION

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Guidance

- If after entering the quantities listed, the estimator feels the CRV is not reasonable, they should utilize the Historic/Other Costs section of the Calculator to complete the estimate.

- For items added to the Historic/Other Costs section, all costs will be multiplied in the worksheet by the Park Location Factor and Service Costs, so only bare national average costs should be entered.

Calculator

3100	Maintained Landscapes		History: Approved: 06/26/2014	Update CRV	
Location Num	Location Description	FMSS Status	FMSS Location Quantity		CRV
69780	Nashville Pike Cultural Landscape	OPERATING	435.23 AC	Current CRV in FMSS:	$11,509,119.52
	Located at STRI			Last Calculated Year:	2014
Comments: *(Max 100 characters)*				Direct Cost CRV based on national average:	$6,411,000.00
				Park Location Factor:	1.01
				Direct Cost CRV with Park Location Factor:	$6,475,110.00
				Net Construction Markup 77.7440%	$5,034,009.51
				Total CRV:	$11,509,119.51

Asset/Feature/Type Description		Quantity	UOM	Unit Price	Fixed Price	Cost
Agricultural Landscape	Agricultural Landscape - Simple	230	ACRE	$12,900.00	$0.00	$2,967,000.00
	Agricultural Landscape - Moderate	0	ACRE	$50,900.00	$0.00	$0.00
	Agricultural Landscape - Complex	0	ACRE	$106,000.0	$0.00	$0.00
Battlefield	Battlefield - Simple	205	ACRE	$16,800.00	$0.00	$3,444,000.00
	Battlefield - Moderate	0	ACRE	$55,900.00	$0.00	$0.00
	Battlefield - Complex	0	ACRE	$126,000.0	$0.00	$0.00
Structure Building Landscape	Structure Building Landscape - Simple	0	ACRE	$86,300.00	$0.00	$0.00
	Structure Building Landscape - Moderate	0	ACRE	$180,000.0	$0.00	$0.00
	Structure Building Landscape - Complex	0	ACRE	$302,000.0	$0.00	$0.00
Burial Landscape	Burial Landscape - Simple	0	ACRE	$38,000.00	$0.00	$0.00
	Burial Landscape - Moderate	0	ACRE	$149,000.0	$0.00	$0.00
	Burial Landscape - Complex	0	ACRE	$472,000.0	$0.00	$0.00
Campground	Campground - Simple	0	ACRE	$14,600.00	$0.00	$0.00
	Campground - Moderate	0	ACRE	$49,100.00	$0.00	$0.00
	Campground - Complex	0	ACRE	$142,000.0	$0.00	$0.00

Appendix 7. FMSS Work Types and Sub-types Related to Cultural Landscapes

Sources: FMSS Desk Reference (2013); FMSS Student Manual (2013)

Work Type / Sub-Type		Definition
FM	Facility Maintenance	The day-to-day activities as well as the planned work required to preserve facilities (buildings, structures, grounds, and utility systems) in such a condition that they may be used for their designated purpose over an intended service life. Facility maintenance includes all activities not included in Facility Operations and Capital Improvements.
CR	Component Renewal (Recapitalization)	The planned replacement of a component or system that will reach the end of its useful life based on condition and life cycle analysis within the facility's lifetime. Examples include roof replacement, utility upgrades, and repaving.
CM	Corrective Maintenance	Unscheduled reactive repairs that would not be estimated and planned, but are accomplished by local staff or existing service contractors, such as fixing a light standard damaged in an automobile accident.
DM	Deferred Maintenance	Maintenance that was not performed when it should have been, or was scheduled and was put off or delayed. Continued deferment of maintenance will result in deficiencies. Examples include repair of a stone wall that collapsed due to lack of maintenance to the associated drainage system.
DEM	Demolition	Removal of an asset that has been determined to be unsafe or no longer meets mission goals. Removal of an asset is determined by management in conjunction with NPS planning procedures.
EM	Emergency Maintenance	A maintenance task carried out to avert an immediate hazard, or to correct an unexpected failure, such as responding to a rockslide.
LMAC	Legis. Mandate Accessibility	Accessibility, EPA, lead-based paint, etc., deficiencies that must be corrected in response to regulatory requirements. These activities include retrofitting for code compliance and accessibility and removing hazardous materials.
PM	Preventative Maintenance	Regularly scheduled periodic maintenance activities (within 1 year) on selected assets. Examples include lubrication, minor adjustments, and seasonal pruning.
RM	Recurring Maintenance	Work activities that recur based on normal wear patterns on a periodic cycle of greater than 1 year and less than 10 years. Examples include painting, caulking, and replacement of a gravel surface on a walk.
FO	Facility Operations	Work activities performed on a recurring basis throughout the year that are intended to meet routine, daily park operational needs.
GC	Grounds Care	The methods, materials, equipment, and techniques used on a regular basis to sustain an improved landscape and associated features. Lawn mowing and trimming, weed control, pruning trees and shrubs, fertilizing plants, minor grading and mulching, raking leaves or sand, litter and debris pickup, adjusting irrigation systems, etc.
PC	Pest Control	Periodic actions that eliminate or protect facilities from pests which encompasses insects, rodents, nematodes, fungi, weeds, and other forms of terrestrial or aquatic plant or animal life or virus, bacteria, or other form of micro-organism.
SN	Snow/Sand/Debris	Activities performed to ensure safety from unanticipated hazards or obstructions; removal or precautions applied to roads, parking, trails, benches, waterways, and sidewalks.
CI	Capital Improvements	Changes to the interior arrangements or other physical characteristics of an existing facility or installed equipment so that it can be used more effectively for its currently designated purpose or adapted to a new use. Alterations may include work referred to as improvement, conversion, remodeling, and modernization. Such alterations are not maintenance.
LMAC	Legis. Mandate Accessibility	Accessibility, EPA, lead-based paint, etc., deficiencies that must be corrected in response to regulatory requirements. These activities include retrofitting for code compliance and accessibility and removing hazardous materials.
NC	New Construction	Construction that adds to the existing footprint of an asset, or creates a new asset. Examples include expanding a parking lot and replacing portable restrooms with a permanent facility in a frequently visited area.

Appendix 8. Sample FMSS Summary Data Crosswalk Table

Representative Entries from Marsh-Billings-Rockefeller National Historical Park, FMSS Site: Estate

FMSS Location Record	NPS Classification	FMSS Asset Record	CLI #	CLI Feature Name	CLR #	CLR Feature Name	LCS #	Park Structure Name/Number	Evaluation
1100 Roads									
88797 Estate Main Entrance Road	BARRIER/ TRAFFBAR	199506 Traffic Barrier, Steel	131438	Main Entrance Drive	C-1 C-7	Main Entrance Drive Mansion Parking Area	40510	HR-01	Historic Wall, Retaining part of BS-9: Perimeter Stone Wall, BS-9 HLF-05, LCS 40517 (Historic) Steel traffic barrier not inventoried in CLR; not historic
	SURFACE/ TRAFSURF	396786 Traffic Surface, Gravel							
	STRCTURE/WALL	483552 Wall, Retaining, Masonry/Stone							
3100 Maintained Landscapes									
226032 Hill	LIQDNGAS/WELL	188293 Well, Reservoir	111388	Reservoir	BS-25	Reservoir	40529	HS-11 Reservoir	Historic
	FURNISH/ GENFURN	188401 Upper Meadow Corral Horse Trough	131750	Upper Meadow Corral Horse Trough	SSF-31	Upper Meadow Corral Horse Trough	n/a	n/a	Historic
	SURFACE/ TRAFSURF	188298 Traffic Surface (Hill Trails & Paths)	111422	Hill Trails C-31 C-33	C-30	Upper Hillside Path	n/a	n/a	Historic
					Arboretum Path	n/a	n/a	n/a	
					Woodland Garden Path	n/a	n/a	n/a	
59141 Mansion Terrace	BARRIER/ FENCGATE	188279 Upper Summerhouse iron fence	11646	Upper Summerhouse Iron Fence	SSF-2	Upper Summerhouse Iron Fence	n/a	n/a	Historic
	SURFACE/PLANT	188615 Plant or Vegetation, 6.5 FT, 619 FT, 8 FT	131302	Perimeter Hemlock Hedge	V-24	Perimeter Hemlock Hedge	n/a	n/a	Historic
	SURFACE/ TRALRPAD	188350 Summerhouses Path	131454	Summerhouses Path	C-9	Summerhouses Path	n/a	n/a	Historic
4100 Buildings									
43137 Lower Summerhouse	SURFACE/FINISH/ EXTFNSH	359222, Exterior Finish, No Finish	131552	Lower Summerhouse	BS-5	Lower Summerhouse	40526	HS-08	Historic
	SURFACE/ ROOFSURF	355548 Roof Surface, Copper							
87838 Forest Center	Multiple	Multiple	n/a	n/a	n/a	n/a	n/a	n/a	Non-historic; not inventoried in CLR
5400 Electrical Systems									
88164 Electrical Distribution System	ELECTRCL/LIGHT	28343	131658	Lampposts (Rockefeller-installed)	SSF-6	Lampposts	40516	HLF-04	Asset includes both historic and non-historic components

Credits: Reviewers and contributors to this document include: John Auwaerter, Robert Page, Randall Biallas, George W. Curry, Charlie Pepper, Kathleen Fitzgerald, Stephanie Nelson, Christopher Beagan, Cortney C. Gjesfjeld, Susan Dolan, Elizabeth Dodson, Adrienne Anderson, Dan Le May, Jeffrey Morgensen and Julia Yu.

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ISBN 978-0-16-092554-2

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Park Historic Structures & Cultural Landscapes