National Park Service

Cultural Resources Stewardship Training Needs Assessment

Final Report

Preservation Horticulturist

Grant-Kohrs National Historic Site (NHS), Deer Lodge, Montana.

Stephen T. Mather Training Center
National Park Service

Center For Recreation Resources Policy
George Mason University
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BACKGROUND

In 1993, the Government Performance and Results Act (GPRA, 1993) was passed and signed into law. This legislation mandated that the actions of federal agencies be guided through the establishment of concrete goals and measured by performance evaluation.

The following year, the National Leadership Council of the National Park Service (NPS), as its first formal action, approved and adopted the NPS Employee Training and Development Strategy. This Strategy, commensurate with the spirit of GPRA, implemented a competency-based approach to training for all employees Service-wide. Its stated mission is to provide for the professional growth and continuous learning of all NPS employees by providing them with a comprehensive, mission-focused training and development program (NPS, 1995).

Furthermore, the Government Education and Training Act (GETA), enacted in 1958, requires agencies to conduct training needs assessments in order to provide a realistic basis upon which to plan, program, and direct training and development activities toward the achievement of organizational and program goals. As a result, the NPS Stephen T. Mather Training Center entered into a cooperative agreement with the Center for Recreation Resources Policy at George Mason University in 1994 to conduct a training needs assessment for the Interpretation career field (Wright and Makay, 1995).

With the growing momentum of the Strategy, teams of employees and training managers, representing 17 different career fields, began the arduous task of compiling and documenting the "essential competencies" required to guide the professional development of NPS employees, in 225 occupational groups, for the next 10 years. The results of this effort are documented in the NPS Employee Training and Development Career Planning and Tracking Kit.

To begin establishing a baseline of data depicting needs and levels of current performance, the National Park Service, Stephen T. Mather Training Center, entered into an agreement with George Mason University, Center for Recreation Resources Policy, to conduct formal training needs assessments for employees in or associated with the Cultural Resources Stewardship Career Field.

The purpose of this report is to document the procedures and findings associated with the assessment of training needs for Preservation Horticulturists. More specifically, this study was designed to accomplish the following objectives:

1. To determine the perceptions of Preservation Horticulturists regarding the importance of each of the essential competencies outlined in the NPS Employee Training and Development Career Planning and Tracking Kit.

2. To determine the perceptions of Preservation Horticulturists regarding their level of preparedness to perform each essential competency.

3. To diagnostically assess the gaps in existing training, given the importance assigned to competencies and the general level of preparedness to perform critical tasks.
4. To compare the perceptions of employees and their first-line supervisors regarding training needs.

METHODS

Study Population. Given the relatively small number of employees in the Cultural Resources Stewardship Career Field, particularly in some occupational fields (e.g., 15 Museum Conservators), a decision was made to include the total population of employees, rather than survey a proportional sample. Four (4) Entry Level Preservation Horticulturists, eight (8) Developmental Level Preservation Horticulturists, and four (4) Full Performance Level Preservation Horticulturists in NPS parks, offices, and centers were asked to participate in this study.

Development of the Survey Instrument. Essential competencies identified for Preservation Horticulturists were integrated into a mail survey instrument. These competencies, in addition to demographic data pertinent to National Park Service employees, formed the basis for the questionnaire. Respondents were asked to indicate their perceptions of how important essential competencies were to the performance of their present jobs (1 = Not Important, 7 = Extremely Important). Then, given the same list of competencies, they were asked to rate their preparation to perform those tasks (1 = Unprepared, 7 = Fully Competent). A copy of each survey instrument is included as Appendix A-1, A-3, and A-5.

Data Collection. Following standard procedures of social science and survey research, a cover letter, questionnaire, and self-addressed, business reply envelope were mailed to each of the Preservation Horticulturists in May 1999. They were asked to complete the questionnaire during their workday, as part of their official duties. Approximately four weeks later, those persons who had not responded to the initial mailing were mailed a follow-up letter and questionnaire requesting that they complete the questionnaire and return it as soon as possible.

Study participants also were sent a separate questionnaire and cover letter and asked to give it to their first-line supervisor to complete and return. Because some supervisors were responsible for supervising more than one employee, the total population of supervisors is not known. Therefore, no response rate for supervisors will be reported. Data collected from supervisors are reported as an aggregate and used for comparative purposes only.

Response Rates. At the end of the data collection period, a total of four (4) questionnaires for the Entry Level Preservation Horticulturists, four (4) questionnaires for the Developmental Level Preservation Horticulturists, and four (4) questionnaires for the Full Performance Level Preservation Horticulturists had been returned. Unlike surveys of the general population, there were no questionnaires returned as “undeliverable.” Therefore, the effective response rates for this study were as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Response Rate</th>
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<tbody>
<tr>
<td>Entry Level</td>
<td>100%</td>
</tr>
<tr>
<td>Developmental Level</td>
<td>50%</td>
</tr>
<tr>
<td>Full Performance Level</td>
<td>100%</td>
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</table>
Data Analyses. Data were analyzed using the Statistical Package for the Social Sciences (SPSS), a popular software program utilized by social and behavioral scientists. Standard frequency distributions were computed for both the importance assigned to and ability to perform each of the essential competencies.

Moreover, these statistics were combined to identify "training gaps" through a simple Importance-Performance, or gap analysis. For example, competencies in which employees perceived themselves to be unprepared to perform can be viewed relative to their perceived importance to the employees' successful job performance. Competencies experiencing the largest "gaps" (i.e., Competency minus Importance) should receive greater emphasis when planning training. Treatment of the importance and competency (performance) data using Importance-Competency (I-C), or gap analysis, is similar to procedures reported first by Martilla and James (1977). The results are presented in the discussion, table, and figure below.

RESULTS AND DISCUSSION

PRESERVATION HORTICULTURALIST—ENTRY LEVEL

Profile of Respondents. Of the four respondents, three were male (75%). The average age of respondents was 42.5 years of age. They had completed almost 16 years of formal education (x = 15.75 years). See Appendix A-2 for information pertaining to academic degrees held by Entry Level Preservation Horticulturists.

All respondents were White. Half were GS-7's; half were GS-9's. They had been employed by the National Park Service for an average of six years. They had been in their current position for slightly over three years (x = 3.25 years).

Importance of Competencies. As can be seen in Table 1, respondents rated seven different competencies as having the greatest importance to them in their current positions. They were:

(Q1) Basic knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

(Q2) Ability to apply practical horticultural and landscape maintenance knowledge to designed and planned assignments.

(Q3) Ability to apply an understanding of horticulture and allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to assist with project reviews and provide technical assistance and information.

(Q14) Ability to apply modified horticultural procedures, techniques, equipment, materials, and technology to protect and preserve cultural and natural landscape features.

(Q15) Ability to implement landscape treatment and maintenance recommendations and projects.
(Q16) Ability to implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

(Q34) Knowledge of safety requirements for assignments, including potential exposure to hazardous chemicals and mechanical hazards associated with landscape maintenance equipment.

Each of these competencies received a mean importance rating of 6.0 or higher on the 7-point scale. Moreover, of the 34 competencies posed to respondents, 29 were rated as 5.0 or higher. No competencies were rated below 4.75.

Perceived Level of Competency. Respondents reported feeling highly competent regarding only three of the 34 competencies, rating these items as 6.0 or higher on the 7-point scale. They were:

(Q2) Ability to apply practical horticultural and landscape maintenance knowledge to designed and planned assignments.

(Q15) Ability to implement landscape treatment and maintenance recommendations and projects.

(Q16) Ability to implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

Conversely, respondents reported feeling significantly less competent regarding 16 of the 34 items. In each case, respondents rated these competencies as less than 4.0 on the 7-point scale.

(Q4) Familiality with the concepts of origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q5) Familiarity with federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation, and NPS Management Policies and guidelines.

(Q6) Familiarity with current laws, policies, guidelines, standards, and technical information necessary for assisting with project reviews and providing technical assistance and information regarding cultural landscape management.

(Q7) Familiarity with related resource management disciplines, such as history, landscape architecture, archeology, and the natural sciences.

(Q8) Familiarity with the principles related to Section 106 compliance as it applies to historic landscape preservation.

(Q9) Familiarity with current inventory and condition assessment methodologies and techniques.
(Q21) Ability to assist with developing proposals, cooperative agreements, and memoranda of understanding with appropriate organizations to carry out the objectives of the cultural landscape program.

(Q22) Ability to participate in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as a team leader on a project.

(Q23) Ability to assist with review of projects.

(Q24) Ability to assist the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contracts, and construction contracts.

(Q25) Ability to participate in the review of products produced by cooperators and contractors.

(Q26) Familiarity with compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.

(Q27) Ability to assist with preparing articles, presentation of programs, and development of other interpretive projects on horticultural and landscape preservation topics.

(Q29) Ability to use standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

(Q30) Ability to interpret the importance of cultural landscapes to the public.

(Q33) Knowledge of NPS loss prevention regulations and guidelines

Gaps in Cultural Resource Stewardship Training. When analyzed together, the relative ratings of importance and competency provide a diagnostic assessment of training “gaps” in this occupational group. Table 1 provides a ranking of essential competencies producing the largest “I-C gaps.” Twenty-five competencies produced gaps in excess of 1.0. They were, in order of magnitude:

(Q21) Ability to assist with developing proposals, cooperative agreements, and memoranda of understanding with appropriate organizations to carry out the objectives of the cultural landscape program.

(Q29) Ability to use standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

(Q7) Familiarity with related resource management disciplines, such as history, landscape architecture, archeology, and the natural sciences.

(Q26) Familiarity with compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.
(Q33) Knowledge of NPS loss prevention regulations and guidelines.

(Q4) Familiarity with the concepts of origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q8) Familiarity with the principles related to Section 106 compliance as it applies to historic landscape preservation.

(Q24) Ability to assist the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contracts, and construction contracts.

(Q6) Familiarity with current laws, policies, guidelines, standards, and technical information necessary for assisting with project reviews and providing technical assistance and information regarding cultural landscape management.

(Q5) Familiarity with federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation, and NPS Management Policies and guidelines.

(Q1) Basic knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

(Q9) Familiarity with current inventory and condition assessment methodologies and techniques.

(Q22) Ability to participate in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as a team leader on a project.

(Q23) Ability to assist with review of projects.

(Q25) Ability to participate in the review of products produced by cooperators and contractors.

(Q30) Ability to interpret the importance of cultural landscapes to the public.

(Q11) Ability to assist with refining research procedures in order to develop innovative techniques and methods necessary to solve site-specific problems which support cultural landscape preservation maintenance.

(Q12) Familiarity with the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.

(Q20) Ability to assist with coordinating cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management.
(Q10) Ability to participate in field research projects and assist with conducting plant inventories, data analysis, and the preparation of technical reports.

(Q34) Knowledge of safety requirements for assignments, including potential exposure to hazardous chemicals and mechanical hazards associated with landscape maintenance equipment.

(Q3) Ability to apply an understanding of horticulture and allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to assist with project reviews and provide technical assistance and information.

(Q14) Ability to apply modified horticultural procedures, techniques, equipment, materials, and technology to protect and preserve cultural and natural landscape features.

(Q27) Ability to assist with preparing articles, presentation of programs, and development of other interpretive projects on horticultural and landscape preservation topics.

(Q28) Ability to articulate landscape management issues verbally, graphically, and in writing.

In contrast, respondents reported feeling competent regarding their “Ability to apply practical horticultural and landscape maintenance knowledge to designed and planned assignments” (Q2) and regarding their “Ability to implement landscape maintenance programs...” (Q16). Figure 1 presents a graphic depiction of the gaps between importance and competency assigned to each item.

Perceptions of First-Line Supervisors. NOTE: This section is based on the responses of only one supervisor; hence statistics should be viewed cautiously. While the magnitude of the ratings and the gaps reported by the first-line supervisor differed significantly from those of employees, there was considerable agreement between the employees and the supervisor who responded. The supervisor rated 19 competencies as having a gap in excess of 1.0; 15 of these competencies were common to those articulated by employees. They were, in order of magnitude:

(Q28) Ability to articulate landscape management issues verbally, graphically, and in writing.

(Q18) Ability to work effectively with park operations responsible for cultural landscape management in implementing maintenance operations.

(Q3) Ability to apply an understanding of horticulture and allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to assist with project reviews and provide technical assistance and information.

(Q7) Familiarity with related resource management disciplines, such as history, landscape architecture, archeology, and the natural sciences.
(Q10) Ability to participate in field research projects and assist with conducting plant inventories, data analysis, and the preparation of technical reports.

(Q11) Ability to assist with refining research procedures in order to develop innovative techniques and methods necessary to solve site-specific problems which support cultural landscape preservation maintenance.

(Q17) Ability to assist with field inspections and the preparation of reports, plans, and cost estimates to support landscape preservation maintenance operations.

(Q19) Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

(Q21) Ability to assist with developing proposals, cooperative agreements, and memoranda of understanding with appropriate organizations to carry out the objectives of the cultural landscape program.

(Q26) Familiarity with compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.

(Q27) Ability to assist with preparing articles, presentation of programs, and development of other interpretive projects on horticultural and landscape preservation topics.

(Q1) Basic knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

(Q4) Familiarity with the concepts of origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q8) Familiarity with the principles related to Section 106 compliance as it applies to historic landscape preservation.

(Q9) Familiarity with current inventory and condition assessment methodologies and techniques.

(Q12) Familiarity with the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.

(Q14) Ability to apply modified horticultural procedures, techniques, equipment, materials, and technology to protect and preserve cultural and natural landscape features.

(Q20) Ability to assist with coordinating cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management.

(Q33) Knowledge of NPS loss prevention regulations and guidelines.
Table 1. Cultural Resources Stewardship
Training Gap Analysis In Descending Order of Need
Preservation Horticulturist - Entry Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q21. Ability to assist with developing proposals, cooperative agreements, and memoranda of understanding with appropriate organizations to carry out the objectives of the cultural landscape program.</td>
<td>5.250</td>
<td>0.500</td>
<td>2.000</td>
<td>2.000</td>
<td>-3.250</td>
</tr>
<tr>
<td>Q29. Ability to use standard computer software programs and ability to select and develop software applications to improve written and graphic communication.</td>
<td>5.250</td>
<td>0.957</td>
<td>2.000</td>
<td>0.816</td>
<td>-3.250</td>
</tr>
<tr>
<td>Q7. Familiarity with related resource management disciplines, such as history, landscape architecture, archeology, and the natural sciences.</td>
<td>5.000</td>
<td>0.816</td>
<td>2.000</td>
<td>0.816</td>
<td>-3.000</td>
</tr>
<tr>
<td>Q26. Familiarity with compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.</td>
<td>5.500</td>
<td>0.577</td>
<td>2.500</td>
<td>1.000</td>
<td>-3.000</td>
</tr>
<tr>
<td>Q33. Knowledge of NPS loss prevention regulations and guidelines.</td>
<td>4.750</td>
<td>1.258</td>
<td>1.750</td>
<td>0.957</td>
<td>-3.000</td>
</tr>
<tr>
<td>Q4. Familiarity with the concepts of origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.</td>
<td>5.250</td>
<td>0.957</td>
<td>2.500</td>
<td>1.732</td>
<td>-2.750</td>
</tr>
<tr>
<td>Q8. Familiarity with the principles related to Section 106 compliance as it applies to historic landscape preservation.</td>
<td>4.750</td>
<td>1.893</td>
<td>2.000</td>
<td>0.816</td>
<td>-2.750</td>
</tr>
<tr>
<td>Q24. Ability to assist the Contracting Officer's Technical Representative in landscape preservation and maintenance contracts, services contracts, and construction contracts.</td>
<td>5.000</td>
<td>1.414</td>
<td>2.250</td>
<td>1.500</td>
<td>-2.750</td>
</tr>
<tr>
<td>Q6. Familiarity with current laws, policies, guidelines, standards, and technical information necessary for assisting with project reviews and providing technical assistance and information regarding cultural landscape management.</td>
<td>4.750</td>
<td>1.258</td>
<td>2.333</td>
<td>0.577</td>
<td>-2.417</td>
</tr>
</tbody>
</table>
### Table 1. Cultural Resources Stewardship Training Gap Analysis In Descending Order of Need Preservation Horticulturist - Entry Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q5. Familiarity with federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior’s Standards and Guidelines for Archaeology and Historic Preservation, and NPS Management Policies and guidelines.</td>
<td>4.750</td>
<td>1.258</td>
<td>2.500</td>
<td>1.291</td>
<td>-2.250</td>
</tr>
<tr>
<td>Q1. Basic knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.</td>
<td>6.500</td>
<td>1.000</td>
<td>4.500</td>
<td>1.291</td>
<td>-2.000</td>
</tr>
<tr>
<td>Q9. Familiarity with current inventory and condition assessment methodologies and techniques.</td>
<td>5.000</td>
<td>0.816</td>
<td>3.000</td>
<td>1.826</td>
<td>-2.000</td>
</tr>
<tr>
<td>Q22. Ability to participate in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as a team leader on a project.</td>
<td>5.000</td>
<td>1.414</td>
<td>3.000</td>
<td>1.826</td>
<td>-2.000</td>
</tr>
<tr>
<td>Q23. Ability to assist with review of projects.</td>
<td>5.250</td>
<td>0.957</td>
<td>3.500</td>
<td>0.577</td>
<td>-1.750</td>
</tr>
<tr>
<td>Q25. Ability to participate in the review of products produced by cooperators and contractors.</td>
<td>5.250</td>
<td>1.500</td>
<td>3.500</td>
<td>1.291</td>
<td>-1.750</td>
</tr>
<tr>
<td>Q30. Ability to interpret the importance of cultural landscapes to the public.</td>
<td>5.000</td>
<td>1.414</td>
<td>3.250</td>
<td>2.500</td>
<td>-1.750</td>
</tr>
<tr>
<td>Q11. Ability to assist with refining research procedures in order to develop innovative techniques and methods necessary to solve site-specific problems which support cultural landscape preservation maintenance.</td>
<td>5.500</td>
<td>0.577</td>
<td>4.000</td>
<td>0.816</td>
<td>-1.500</td>
</tr>
<tr>
<td>Q12. Familiarity with the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.</td>
<td>5.500</td>
<td>0.577</td>
<td>4.000</td>
<td>1.826</td>
<td>-1.500</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I - C) GAP</td>
</tr>
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</tr>
<tr>
<td>Q20. Ability to assist with coordinating cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management</td>
<td>5.750</td>
<td>0.500</td>
<td>4.250</td>
<td>1.708</td>
<td>-1.500</td>
</tr>
<tr>
<td>Q10. Ability to participate in field research projects and assist with conducting plant inventories, data analysis, and the preparation of technical reports.</td>
<td>5.750</td>
<td>0.500</td>
<td>4.333</td>
<td>1.155</td>
<td>-1.417</td>
</tr>
<tr>
<td>Q34. Knowledge of safety requirements for assignments, including potential exposure to hazardous chemicals and mechanical hazards associated with landscape maintenance equipment.</td>
<td>6.500</td>
<td>1.000</td>
<td>5.250</td>
<td>1.708</td>
<td>-1.250</td>
</tr>
<tr>
<td>Q3. Ability to apply an understanding of horticulture and allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to assist with project reviews and provide technical assistance and information.</td>
<td>6.250</td>
<td>0.957</td>
<td>5.250</td>
<td>0.957</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q14. Ability to apply modified horticultural procedures, techniques, equipment, materials, and technology to protect and preserve cultural and natural landscape features.</td>
<td>6.250</td>
<td>0.957</td>
<td>5.250</td>
<td>1.500</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q27. Ability to assist with preparing articles, presentation of programs, and development of other interpretive projects on horticultural and landscape preservation topics.</td>
<td>4.750</td>
<td>0.500</td>
<td>3.750</td>
<td>1.258</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q28. Ability to articulate landscape management issues verbally, graphically, and in writing.</td>
<td>5.000</td>
<td>0.816</td>
<td>4.000</td>
<td>1.414</td>
<td>-1.000</td>
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<tr>
<td>Q31. Ability to provide assistance related to coordinating and delivering training programs. Ability to provide assistance related to coordinating and delivering training programs.</td>
<td>5.000</td>
<td>0.816</td>
<td>4.250</td>
<td>0.957</td>
<td>-0.750</td>
</tr>
<tr>
<td>Q32. Basic skill in assisting with providing training regarding the application of technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.</td>
<td>5.500</td>
<td>1.291</td>
<td>4.750</td>
<td>0.500</td>
<td>-0.750</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I-C) GAP</td>
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<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Q17. Ability to assist with field inspections and the preparation of reports, plans, and cost estimates to support landscape preservation maintenance operations.</td>
<td>5.500</td>
<td>1.291</td>
<td>5.000</td>
<td>1.633</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q18. Ability to work effectively with park operations responsible for cultural landscape management in implementing maintenance operations.</td>
<td>5.750</td>
<td>1.500</td>
<td>5.250</td>
<td>2.217</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q19. Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.</td>
<td>5.000</td>
<td>0.816</td>
<td>4.667</td>
<td>1.528</td>
<td>-0.333</td>
</tr>
<tr>
<td>Q13. Basic knowledge of horticulture and landscape construction procedures. Ability to implement protective measures and procedures which minimize site disturbance and protect historic an archeological resources during treatment projects and maintenance operations.</td>
<td>5.750</td>
<td>1.258</td>
<td>5.500</td>
<td>1.291</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q15. Ability to implement landscape treatment and maintenance recommendations and projects.</td>
<td>6.250</td>
<td>0.957</td>
<td>6.000</td>
<td>1.414</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q16. Ability to implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.</td>
<td>6.000</td>
<td>0.816</td>
<td>6.000</td>
<td>1.414</td>
<td>0.000</td>
</tr>
<tr>
<td>Q2. Ability to apply practical horticultural and landscape maintenance knowledge to designed and planned assignments.</td>
<td>6.000</td>
<td>1.155</td>
<td>6.250</td>
<td>1.500</td>
<td>0.250</td>
</tr>
</tbody>
</table>
Figure 1. Cultural Stewardship Training Gap Analysis
Preservation Horticulturist - Entry Level

Denote symbols overlapping in Question 16 are due to identical Mean Importance and Mean Competency scores. (No Gap.)
PRESERVATION HORTICULTURALIST – DEVELOPMENTAL LEVEL

Profile of Respondents. Of the four respondents, half were male and half were female. The average age of respondents was slightly less than 42 years of age (\(\bar{x} = 41.75\) years). Respondents had completed 16.5 years of formal education. See Appendix A-3 for information pertaining to academic degrees held by Developmental Level Preservation Horticulturists.

All respondents were White and held the rank of GS-11. On average, respondents had been employed by the National Park Service for 12 years, ranging from a low of three years to a high of 25 years. They reported being in their current position for 6.5 years.

Importance of Competencies. As can be seen in Table 2, respondents rated 22 different competencies as having the greatest importance to them in their current positions. They were:

(Q1) Practical knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

(Q2) Ability to apply practical knowledge to such assignments as assisting with the design and planning of difficult, and occasionally unprecedented, projects.

(Q3) Ability to apply the knowledge acquired through an accredited degree program in horticulture or a related field with an understanding of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to participate with project reviews, assist with contract supervision, and provide technical assistance and information.

(Q4) Knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q6) Ability to apply current policies, guidelines, standards, and technical information necessary to assist with project reviews and provide technical assistance and information regarding cultural landscape management.

(Q7) Ability to incorporate related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program implementation.

(Q9) Knowledge of current inventory and condition assessment methodologies and techniques.

(Q10) Ability to supervise and manage research and inventory, analyze data, and prepare reports.

(Q14) Knowledge and ability in the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.
(Q15) Knowledge of horticulture and landscape construction procedures. Ability in coordinating and incorporating protective measures and procedures which minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.

(Q16) Ability to modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve various problems and protect and preserve cultural and natural landscape resources.

(Q17) Ability to prescribe, coordinate, and implement landscape treatment and maintenance recommendations and projects including contract management.

(Q18) Ability to modify and implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

(Q19) Ability to prepare and coordinate field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.

(Q20) Ability to work effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

(Q21) Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

(Q24) Ability to coordinate cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management.

(Q29) Ability to serve as the Contracting Officer's Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

(Q30) Skill in oversight and technical review of products produced by cooperators and contractors.

(Q31) Knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.

(Q34) Skill in using standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

(Q39) Thorough knowledge of job safety requirements and health considerations for all job assignments.
Each of these competencies received a mean importance rating of 6.5 or higher on the 7-point scale. Moreover, of the 39 competencies posed to respondents, 37 were rated as 5.0 or higher. Conversely, no items were perceived as being relatively unimportant (i.e., less than 4.0).

Perceived Level of Competency. Respondents reported feeling highly competent regarding 17 of the 39 competencies, rating these items as 6.0 or higher. They were:

(Q1) Practical knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

(Q2) Ability to apply practical knowledge to such assignments as assisting with the design and planning of difficult, and occasionally unprecedented, projects.

(Q3) Ability to apply the knowledge acquired through an accredited degree program in horticulture or a related field with an understanding of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to participate with project reviews, assist with contract supervision, and provide technical assistance and information.

(Q6) Ability to apply current policies, guidelines, standards, and technical information necessary to assist with project reviews and provide technical assistance and information regarding cultural landscape management.

(Q14) Knowledge and ability in the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.

(Q15) Knowledge of horticulture and landscape construction procedures. Ability in coordinating and incorporating protective measures and procedures which minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.

(Q16) Ability to modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve various problems and protect and preserve cultural and natural landscape resources.

(Q17) Ability to prescribe, coordinate, and implement landscape treatment and maintenance recommendations and projects including contract management.

(Q18) Ability to modify and implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

(Q19) Ability to prepare and coordinate field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.
(Q20) Ability to work effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

(Q21) Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

(Q24) Ability to coordinate cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management.

(Q29) Ability to serve as the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

(Q30) Skill in oversight and technical review of products produced by cooperators and contractors.

(Q35) Knowledge of the techniques for interpreting the significance and character of cultural landscapes to the public.

(Q39) Thorough knowledge of job safety requirements and health considerations for all job assignments.

While there were competencies in which respondents reported feeling less competent, none were rated below 4.0 on the 7-point scale. The third column of Table 2 presents the mean competencies reported by all respondents.

Gaps in Cultural Resource Stewardship Training. A diagnostic assessment of training “gaps” is provided in Table 2 in descending order of magnitude. Twelve items produced “I-C gaps” in excess of 1.0.

(Q4) Knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q31) Knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.

(Q32) Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.

(Q8) Understanding of the principles related to Section 106 compliance as it applies to historic landscape preservation.

(Q9) Knowledge of current inventory and condition assessment methodologies and techniques.

(Q10) Ability to supervise and manage research and inventory, analyze data, and prepare reports.
(Q11) Skill in designing and conducting a variety of practical experiments, monitoring results, analyzing data, and defining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.

(Q2) Ability to apply practical knowledge to such assignments as assisting with the design and planning of difficult, and occasionally unprecedented, projects.

(Q7) Ability to incorporate related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program implementation.

(Q16) Ability to modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve various problems and protect and preserve cultural and natural landscape resources.

(Q23) Ability to assist in the facilitation of ongoing strategic planning including developing and prioritizing program goals, objectives, and initiatives.

(Q34) Skill in using standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

In contrast, analyses related to three competencies produced positive gaps between the importance of a competency and how well prepared respondents perceived themselves to be. That is, respondents rated their competency relative to these items as being higher than its perceived importance.

(Q3) Ability to apply the knowledge acquired through an accredited degree program in horticulture or a related field with an understanding of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to participate with project reviews, assist with contract supervision, and provide technical assistance and information.

(Q25) Ability to act as a liaison for the cultural landscape program with other offices of the National Park Service, professional organizations, such as the American Association of Botanical Gardens and Arboreta, and the Alliance for Historic Landscape Preservation; academic institutions; and other private/public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.

(Q35) Knowledge of the techniques for interpreting the significance and character of cultural landscapes to the public.

Figure 2 presents a graphic depiction of the gaps between importance and competency assigned to each item.
Perceptions of First-Line Supervisors. While the magnitude of the ratings and the gaps reported by first-line supervisors differed from those of employees, there was slight agreement between the two groups. Ironically, data from supervisors produced fewer gaps in excess of 1.0 than data from employees. Supervisors rated five items as having gaps of 1.0 or higher whereas the employees rated 12. Only Q10 and Q11 were held in common. They were:

(Q12) Ability to prepare reports, plans, specifications, and cost estimates to support planning for cultural landscape preservation based on landscape assessments, cultural landscape reports, field investigations, and data analysis.

(Q10) Ability to supervise and manage research and inventory, analyze data, and prepare reports.

(Q11) Skill in designing and conducting a variety of practical experiments, monitoring results, analyzing data, and defining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.

(Q29) Ability to serve as the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

(Q33) Ability to make presentations and prepare papers for professional conferences and journals.
<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4. Knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.</td>
<td>6.500</td>
<td>1.000</td>
<td>4.500</td>
<td>2.082</td>
<td>-2.000</td>
</tr>
<tr>
<td>Q31. Knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.</td>
<td>6.500</td>
<td>0.577</td>
<td>4.500</td>
<td>2.380</td>
<td>-2.000</td>
</tr>
<tr>
<td>Q32. Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.</td>
<td>6.250</td>
<td>1.500</td>
<td>4.500</td>
<td>2.887</td>
<td>-1.750</td>
</tr>
<tr>
<td>Q8. Understanding of the principles related to Section 106 compliance as it applies to historic landscape preservation.</td>
<td>6.250</td>
<td>0.957</td>
<td>5.000</td>
<td>1.826</td>
<td>-1.250</td>
</tr>
<tr>
<td>Q9. Knowledge of current inventory and condition assessment methodologies and techniques.</td>
<td>6.500</td>
<td>1.000</td>
<td>5.250</td>
<td>1.500</td>
<td>-1.250</td>
</tr>
<tr>
<td>Q10. Ability to supervise and manage research and inventory, analyze data, and prepare reports.</td>
<td>6.500</td>
<td>1.000</td>
<td>5.250</td>
<td>0.957</td>
<td>-1.250</td>
</tr>
<tr>
<td>Q11. Skill in designing and conducting a variety of practical experiments, monitoring results, analyzing data, and defining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.</td>
<td>6.250</td>
<td>1.500</td>
<td>5.000</td>
<td>1.414</td>
<td>-1.250</td>
</tr>
<tr>
<td>Q2. Ability to apply practical knowledge to such assignments as assisting with the design and planning of difficult, and occasionally unprecedented, projects.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.000</td>
<td>1.155</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q7. Ability to incorporate related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program implementation.</td>
<td>6.500</td>
<td>0.577</td>
<td>5.500</td>
<td>1.000</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q16. Ability to modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve various problems and protect and preserve cultural and natural landscape resources.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.000</td>
<td>1.414</td>
<td>-1.000</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I - C) GAP</td>
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</tr>
<tr>
<td>Q23. Ability to assist in the facilitation of ongoing strategic planning including developing and prioritizing program goals, objectives, and initiatives.</td>
<td>5.750</td>
<td>0.957</td>
<td>4.750</td>
<td>2.630</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q34. Skill in using standard computer software programs and ability to select and develop software applications to improve written and graphic communication.</td>
<td>6.500</td>
<td>1.000</td>
<td>5.500</td>
<td>2.380</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q14. Knowledge and ability in the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.250</td>
<td>1.500</td>
<td>-0.750</td>
</tr>
<tr>
<td>Q33. Ability to make presentations and prepare papers for professional conferences and journals.</td>
<td>5.250</td>
<td>2.872</td>
<td>4.500</td>
<td>3.000</td>
<td>-0.750</td>
</tr>
<tr>
<td>Q1. Practical knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.</td>
<td>6.500</td>
<td>1.000</td>
<td>6.000</td>
<td>1.155</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q5. Knowledge of federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation and NPS Management Policies and guidelines.</td>
<td>5.750</td>
<td>0.957</td>
<td>5.250</td>
<td>1.500</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q6. Ability to apply current policies, guidelines, standards, and technical information necessary to assist with project reviews and provide technical assistance and information regarding cultural landscape management.</td>
<td>6.500</td>
<td>0.577</td>
<td>6.000</td>
<td>1.414</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q17. Ability to prescribe, coordinate, and implement landscape treatment and maintenance recommendations and projects including contract management.</td>
<td>6.750</td>
<td>0.500</td>
<td>6.250</td>
<td>.957</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q18. Ability to modify and implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.500</td>
<td>0.577</td>
<td>-0.500</td>
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<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMP</td>
<td>STANDARD DEVIATION</td>
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</tr>
<tr>
<td>Q19. Ability to prepare and coordinate field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.500</td>
<td>0.577</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q22. Skill in conducting long-range planning and budget formulation based on a knowledge of the NPS budget process.</td>
<td>4.500</td>
<td>0.577</td>
<td>4.000</td>
<td>2.449</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q24. Ability to coordinate cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.500</td>
<td>0.577</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q26. Ability to develop proposals, cooperative agreements, memoranda of understanding, etc., with appropriate organizations to carry out the objectives of the cultural landscape program.</td>
<td>4.750</td>
<td>2.630</td>
<td>4.250</td>
<td>2.363</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q27. Skill in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as team leader on a project.</td>
<td>6.250</td>
<td>0.957</td>
<td>5.750</td>
<td>0.500</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q28. Ability to provide review of complex projects and clearly articulate agency positions and direction.</td>
<td>6.000</td>
<td>0.816</td>
<td>5.500</td>
<td>0.577</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q29. Ability to serve as the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.500</td>
<td>0.577</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q39. Thorough knowledge of job safety requirements and health considerations for all job assignments.</td>
<td>6.500</td>
<td>1.000</td>
<td>6.000</td>
<td>0.816</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q12. Ability to prepare reports, plans, specifications, and cost estimates to support planning for cultural landscape preservation based on landscape assessments, cultural landscape reports, field investigations, and data analysis.</td>
<td>6.000</td>
<td>1.414</td>
<td>5.750</td>
<td>0.957</td>
<td>-0.250</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
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<td>-------------</td>
</tr>
<tr>
<td>Q13. Ability to conduct and supervise cultural landscape research, inventory, documentation, and analysis and evaluation based on accepted methodologies and techniques and developing unprecedented methodologies as appropriate.</td>
<td>5.500</td>
<td>1.732</td>
<td>5.250</td>
<td>1.258</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q15. Knowledge of horticulture and landscape construction procedures. Ability in coordinating and incorporating protective measures and procedures which minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.</td>
<td>6.500</td>
<td>1.000</td>
<td>6.250</td>
<td>0.957</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q20. Ability to work effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.750</td>
<td>0.500</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q21. Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.</td>
<td>6.500</td>
<td>1.000</td>
<td>6.250</td>
<td>0.500</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q36. Ability to coordinate and deliver training programs.</td>
<td>5.500</td>
<td>3.000</td>
<td>5.250</td>
<td>2.872</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q38. Ability to assist as a technical advisor for intern and Entry Level preservation horticulturists, landscape preservation specialists, and preservation gardeners.</td>
<td>6.000</td>
<td>2.000</td>
<td>5.750</td>
<td>2.500</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q30. Skill in oversight and technical review of products produced by cooperators and contractors.</td>
<td>6.750</td>
<td>0.500</td>
<td>6.750</td>
<td>0.500</td>
<td>0.000</td>
</tr>
<tr>
<td>Q37. Skill in providing training regarding the application of technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.</td>
<td>5.500</td>
<td>3.000</td>
<td>5.500</td>
<td>2.380</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 2. Cultural Resources Stewardship
Training Gap Analysis In Descending Order of Need
Preservation Horticulturist - Developmental Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
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<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3. Ability to apply the knowledge acquired through an accredited degree program in horticulture or a related field with an understanding of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to participate with project reviews, assist with contract supervision, and provide technical assistance and information.</td>
<td>6.500</td>
<td>1.000</td>
<td>6.750</td>
<td>0.500</td>
<td>0.250</td>
</tr>
<tr>
<td>Q25. Ability to act as a liaison for the cultural landscape program with other offices of the National Park Service, professional organizations, such as the American Association of Botanical Gardens and Arboreta, and the Alliance for Historic Landscape Preservation; academic institutions; and other private/public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.</td>
<td>5.000</td>
<td>0.816</td>
<td>5.250</td>
<td>1.500</td>
<td>0.250</td>
</tr>
<tr>
<td>Q35. Knowledge of the techniques for interpreting the significance and character of cultural landscapes to the public.</td>
<td>5.750</td>
<td>2.500</td>
<td>6.000</td>
<td>0.816</td>
<td>0.250</td>
</tr>
</tbody>
</table>
Figure 2. Cultural Stewardship Training Gap Analysis
Preservation Horticulturist - Developmental Level

Denote symbols overlapping in Questions 30 and 37 are due to identical Mean Importance and Mean Competency scores. (No Gap.)
PRESERVATION HORTICULTURALIST – FULL PERFORMANCE LEVEL

Profile of Respondents. All four respondents were male, averaging slightly over 46 years of age. Respondents had completed almost 17 years of formal education (16.75 years). See Appendix A-6 for information pertaining to academic degrees held by Full Performance Preservation Horticulturists.

All respondents were White. Most respondents held the rank of GS-12, even though one was a GS-13. They had been employed by the National Park Service for almost 19 years (x̄ = 18.5 years) and in their current position for almost 13 years (x̄ = 12.5 years). One respondent was disabled.

Importance of Competencies. As can be seen in Table 3, respondents rated 12 different competencies as having the greatest importance to them in their current positions. Each of these competencies received a mean importance rating of 6.0 or higher on the 7-point scale. They were:

(Q1) Comprehensive professional knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

(Q2) Skill in applying professional and practical knowledge to such assignments as design and planning of difficult and occasionally unprecedented projects.

(Q3) Skill in applying the knowledge acquired through an accredited professional degree program in horticulture or a related field with knowledge of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to formulate agency positions, conduct project reviews, supervise contracts, and provide technical assistance and information.

(Q4) Thorough knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q16) Expertise to guide, develop, modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve complex problems and issues to protect and preserve cultural and natural landscape resources.

(Q17) Proficiency in prescribing, coordinating, executing, and managing treatment and maintenance recommendations and projects including contract management.

(Q18) Expertise to guide, develop, and manage landscape maintenance programs including site specific preservation maintenance guidelines, calendars, and procedures.
(Q20) Proficient in working effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

(Q21) Expertise to evaluate and mitigate the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

(Q30) Skill in serving as the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

(Q40) Fully capable to serves as a professional mentor and technical supervisor for intern and developing preservation horticulturists, landscape preservation specialists, and preservation gardeners.

(Q41) Ability to identify and correct job safety and health hazards, instruct employees on safety requirements for job assignments, and to report loss incidents in accordance with federal, departmental, and bureau regulations and guidelines.

However, of the 41 competencies posed to respondents, 31 were rated as 5.0 or higher. Moreover, no items were rated as being relatively unimportant (i.e., less than 4.0).

Perceived Level of Competency. Respondents reported feeling highly competent regarding five of the 41 competencies, rating these items as 6.0 or higher on the 7-point scale. They were:

(Q15) Comprehensive knowledge of horticulture and landscape construction procedures. Skill in developing and incorporating protective measures and procedures that minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.

(Q16) Expertise to guide, develop, modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve complex problems and issues to protect and preserve cultural and natural landscape resources.

(Q20) Proficient in working effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

(Q33) Working knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.

(Q35) Skill in delivering formal presentations and preparing papers regarding cultural landscape preservation maintenance for professional conferences and journals.

On the other hand, respondents perceived themselves to be less than competent regarding their “Skill in incorporating resource management disciplines...in project and program management...” (Q8) and in their “Skill in developing proposals, cooperative agreements and
memoranda of understanding, etc., with appropriate organizations” (Q27). These items received a mean competency rating of less than 4.0.

Gaps in Cultural Resource Stewardship Training. Training “gaps” for this occupational group can be seen in Table 3. This table provides a diagnostic assessment of the ranking of the essential competencies producing the largest “I-C gaps.” Six items produced gaps in excess of 1.0. They were, in order of magnitude:

(Q1) Comprehensive professional knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

(Q4) Thorough knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q41) Ability to identify and correct job safety and health hazards, instruct employees on safety requirements for job assignments, and to report loss incidents in accordance with federal, departmental, and bureau regulations and guidelines.

(Q3) Skill in applying the knowledge acquired through an accredited professional degree program in horticulture or a related field with knowledge of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to formulate agency positions, conduct project reviews, supervise contracts, and provide technical assistance and information.

(Q27) Skill in developing proposals, cooperative agreements, memoranda of understanding, etc., with appropriate organizations to carry out the objectives of the cultural landscape program.

(Q32) Working knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.

In contrast, analyses related to nine competencies produced positive gaps between the importance of a competency and how well prepared respondents perceived themselves to be. That is, respondents rated their competency relative to these items as being higher than its perceived importance. They were:

(Q10) Ability to initiate, supervise, and manage research, conduct plant inventories, analyze data, and prepare technical reports.

(Q16) Expertise to guide, develop, modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve complex problems and issues to protect and preserve cultural and natural landscape resources.

(Q26) Skill in acting as a liaison for the cultural landscape program with other offices of the NPS professional organizations such as the American
Association of Botanical Gardens and Arboreta and the Alliance for Historic Landscape Preservation, academic institutions, and other private and public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.

(Q13) Skill in conducting and supervising cultural landscape research, inventory, documentation, analysis, and evaluation based on accepted methodologies and techniques and developing unprecedented methodologies as appropriate.

(Q34) Skill in articulating complex landscape management issues verbally, graphically, and in writing.

(Q15) Comprehensive knowledge of horticulture and landscape construction procedures. Skill in developing and incorporating protective measures and procedures that minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.

(Q31) Skill in oversight and technical review of products produced by cooperators and contractors.

(Q35) Skill in delivering formal presentations and preparing papers regarding cultural landscape preservation maintenance for professional conferences and journals.

(Q33) Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.

Figure 3 presents a graphic depiction of the gaps between importance and competency assigned to each item.

Perceptions of First-Line Supervisors. There was moderate agreement between supervisors and employees regarding training needs for this occupational group. Supervisors provided data indicating three competencies deserved significant attention in training plans. Each competency produced an “I-C gap” in excess of 1.0. They were:

(Q4) Thorough knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

(Q41) Ability to identify and correct job safety and health hazards, instruct employees on safety requirements for job assignments, and to report loss incidents in accordance with federal, departmental, and bureau regulations and guidelines.

(Q8) Expertise in the preparation and application of Section 106 compliance as it applies to historic landscape preservation.
<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. Comprehensive professional knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.</td>
<td>7.000</td>
<td>0.000</td>
<td>5.000</td>
<td>1.826</td>
<td>-2.000</td>
</tr>
<tr>
<td>Q4. Thorough knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.</td>
<td>6.250</td>
<td>0.957</td>
<td>4.500</td>
<td>1.915</td>
<td>-1.750</td>
</tr>
<tr>
<td>Q41. Ability to identify and correct job safety and health hazards, instruct employees on safety requirements for job assignments, and to report loss incidents in accordance with federal, departmental, and bureau regulations and guidelines.</td>
<td>6.250</td>
<td>0.957</td>
<td>4.750</td>
<td>1.258</td>
<td>-1.500</td>
</tr>
<tr>
<td>Q3. Skill in applying the knowledge acquired through an accredited professional degree program in horticulture or a related field with knowledge of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to formulate agency positions, conduct project reviews, supervise contracts, and provide technical assistance and information.</td>
<td>6.500</td>
<td>1.000</td>
<td>5.500</td>
<td>1.732</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q27. Skill in developing proposals, cooperative agreements, memoranda of understanding, etc., with appropriate organizations to carry out the objectives of the cultural landscape program.</td>
<td>4.500</td>
<td>1.291</td>
<td>3.500</td>
<td>2.082</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q32. Working knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.</td>
<td>5.000</td>
<td>1.414</td>
<td>4.000</td>
<td>1.826</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q8. Expertise in the preparation and application of Section 106 compliance as it applies to historic landscape preservation.</td>
<td>4.500</td>
<td>1.000</td>
<td>3.667</td>
<td>2.309</td>
<td>-0.833</td>
</tr>
<tr>
<td>Q5. Knowledge of federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation and NPS Management Policies and guidelines.</td>
<td>5.750</td>
<td>0.957</td>
<td>5.000</td>
<td>1.414</td>
<td>-0.750</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I - C) GAP</td>
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<tr>
<td>Q6. Understanding of current laws, policies, guidelines, standards, and technical</td>
<td>5.750</td>
<td>1.258</td>
<td>5.000</td>
<td>1.414</td>
<td>-0.750</td>
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<tr>
<td>information necessary to conduct project reviews and providing technical assistance</td>
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<tr>
<td>and information regarding cultural landscape management.</td>
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<tr>
<td>Q17. Proficiency in prescribing, coordinating, executing, and managing treatment and</td>
<td>6.250</td>
<td>.957</td>
<td>5.500</td>
<td>1.291</td>
<td>-0.750</td>
</tr>
<tr>
<td>maintenance recommendations and projects including contract management.</td>
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<tr>
<td>Q18. Expertise to guide, develop, and manage landscape maintenance programs including</td>
<td>6.000</td>
<td>1.155</td>
<td>5.250</td>
<td>1.500</td>
<td>-0.750</td>
</tr>
<tr>
<td>site specific preservation maintenance guidelines, calendars, and procedures.</td>
<td></td>
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<td></td>
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<tr>
<td>Q21. Expertise to evaluate and mitigate the impact of park operations, visitor use,</td>
<td>6.250</td>
<td>1.500</td>
<td>5.500</td>
<td>3.000</td>
<td>-0.750</td>
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<tr>
<td>environmental conditions, site construction and alterations, and maintenance</td>
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<tr>
<td>practices on cultural landscape resources.</td>
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<tr>
<td>Q30. Skill in serving as the Contracting Officer's Technical Representative in</td>
<td>6.250</td>
<td>0.500</td>
<td>5.500</td>
<td>1.291</td>
<td>-0.750</td>
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<tr>
<td>landscape preservation and maintenance contracts, services contract, and</td>
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<td>construction contracts.</td>
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<tr>
<td>Q36. Skill in using standard computer software programs and ability to select and</td>
<td>4.750</td>
<td>1.258</td>
<td>4.000</td>
<td>2.160</td>
<td>-0.750</td>
</tr>
<tr>
<td>develop software applications to improve written and graphic communication.</td>
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<tr>
<td>Q37. Skill in working with team members in the design and implementation of</td>
<td>5.250</td>
<td>1.708</td>
<td>4.500</td>
<td>2.380</td>
<td>-0.750</td>
</tr>
<tr>
<td>programs to interpret the significance and character of cultural landscapes to the</td>
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<td>public.</td>
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</tr>
<tr>
<td>Q38. Proficiency in initiating, managing, and delivering training programs.</td>
<td>5.000</td>
<td>1.155</td>
<td>4.250</td>
<td>2.363</td>
<td>-0.750</td>
</tr>
<tr>
<td>Q39. Expertise in conducting training regarding the application of current standards</td>
<td>5.250</td>
<td>0.957</td>
<td>4.500</td>
<td>2.380</td>
<td>-0.750</td>
</tr>
<tr>
<td>and technical information related to cultural landscape maintenance and</td>
<td></td>
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<tr>
<td>preservation horticulture techniques, procedures, objectives, and methods.</td>
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<tr>
<td>ITEMS RATED/QUESTIONS</td>
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<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I - C) GAP</td>
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</tr>
<tr>
<td>Q40. Fully capable to serves as a professional mentor and technical supervisor for intern and developing preservation horticulturists, landscape preservation specialists, and preservation gardeners.</td>
<td>6.000</td>
<td>1.155</td>
<td>5.250</td>
<td>1.708</td>
<td>-0.750</td>
</tr>
<tr>
<td>Q2. Skill in applying professional and practical knowledge to such assignments as design and planning of difficult and occasionally unprecedented projects.</td>
<td>6.000</td>
<td>1.155</td>
<td>5.500</td>
<td>1.916</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q11. Skill in designing, conducting, and supervising scientific and practical research, monitoring results, analyzing data, and refining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.</td>
<td>5.750</td>
<td>1.500</td>
<td>5.250</td>
<td>0.957</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q23. Skill in conducting long-range planning and budget formulation based on a knowledge of the NPS budget process.</td>
<td>5.250</td>
<td>2.062</td>
<td>4.750</td>
<td>2.062</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q28. Skill in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and the ability to serve as team leader on a project.</td>
<td>5.250</td>
<td>2.062</td>
<td>4.750</td>
<td>2.062</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q29. Skill in providing expert review of complex projects and to clearly articulate agency positions and direction.</td>
<td>4.750</td>
<td>2.217</td>
<td>4.250</td>
<td>2.363</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q7. Skill in incorporating related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program management to ensure their proper consideration in operational planning, treatment, and preservation maintenance.</td>
<td>5.250</td>
<td>0.957</td>
<td>5.000</td>
<td>2.000</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q12. Skill in preparing and supervising the preparation of reports, plans, specifications, and cost estimates to support planning for cultural landscape preservation based on landscape assessments, cultural landscape reports, field investigations, and data analysis.</td>
<td>5.500</td>
<td>1.732</td>
<td>5.250</td>
<td>2.217</td>
<td>-0.250</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
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</tr>
<tr>
<td>Q20. Proficient in working effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.</td>
<td>6.250</td>
<td>0.957</td>
<td>6.000</td>
<td>2.000</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q22. Skill in developing and prioritizing program goals, objectives, and initiatives.</td>
<td>5.750</td>
<td>0.500</td>
<td>5.500</td>
<td>1.732</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q24. Ability to facilitate ongoing strategic planning including developing and prioritizing program goals, objectives, and initiatives.</td>
<td>4.750</td>
<td>1.500</td>
<td>4.500</td>
<td>1.732</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q25. Skill in coordinating cultural landscape program activities with other park operational programs such as historic structures, integrated pest management, and maintenance management.</td>
<td>5.000</td>
<td>1.414</td>
<td>4.750</td>
<td>1.500</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q9. Thorough knowledge of current inventory and condition assessment methodologies and techniques.</td>
<td>5.250</td>
<td>0.500</td>
<td>5.250</td>
<td>1.258</td>
<td>0.000</td>
</tr>
<tr>
<td>Q14. Expertise in the application of cultural and natural resource policies, standards, and guidelines in prescribing treatment and maintenance in a manner that protects both cultural and natural resources.</td>
<td>5.250</td>
<td>1.500</td>
<td>5.250</td>
<td>0.957</td>
<td>0.000</td>
</tr>
<tr>
<td>Q19. Skill in guiding, preparing, and supervising field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.</td>
<td>5.750</td>
<td>0.957</td>
<td>5.750</td>
<td>1.893</td>
<td>0.000</td>
</tr>
<tr>
<td>Q10. Ability to initiate, supervise, and manage research, conduct plant inventories, analyze data, and prepare technical reports.</td>
<td>5.250</td>
<td>0.500</td>
<td>5.500</td>
<td>0.577</td>
<td>0.250</td>
</tr>
<tr>
<td>Q16. Expertise to guide, develop, modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve complex problems and issues to protect and preserve cultural and natural landscape resources.</td>
<td>6.000</td>
<td>1.155</td>
<td>6.250</td>
<td>0.957</td>
<td>0.250</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I - C) GAP</td>
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</tr>
<tr>
<td>Q26. Skill in acting as a liaison for the cultural landscape program with other offices of the NPS professional organizations such as the American Association of Botanical Gardens and Arboreta and the Alliance for Historic Landscape Preservation, academic institutions, and other private and public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.</td>
<td>4.250</td>
<td>1.500</td>
<td>4.667</td>
<td>1.528</td>
<td>0.417</td>
</tr>
<tr>
<td>Q13. Skill in conducting and supervising cultural landscape research, inventory, documentation, analysis, and evaluation based on accepted methodologies and techniques and developing unprecedented methodologies as appropriate.</td>
<td>4.750</td>
<td>1.258</td>
<td>5.250</td>
<td>1.708</td>
<td>0.500</td>
</tr>
<tr>
<td>Q34. Skill in articulating complex landscape management issues verbally, graphically, and in writing.</td>
<td>4.750</td>
<td>0.957</td>
<td>5.333</td>
<td>0.577</td>
<td>0.583</td>
</tr>
<tr>
<td>Q15. Comprehensive knowledge of horticulture and landscape construction procedures. Skill in developing and incorporating protective measures and procedures that minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.</td>
<td>5.750</td>
<td>0.957</td>
<td>6.500</td>
<td>1.000</td>
<td>0.750</td>
</tr>
<tr>
<td>Q31. Skill in oversight and technical review of products produced by cooperators and contractors.</td>
<td>4.750</td>
<td>1.500</td>
<td>5.500</td>
<td>1.291</td>
<td>0.750</td>
</tr>
<tr>
<td>Q35. Skill in delivering formal presentations and preparing papers regarding cultural landscape preservation maintenance for professional conferences and journals.</td>
<td>5.000</td>
<td>1.414</td>
<td>6.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Q33. Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.</td>
<td>4.250</td>
<td>1.258</td>
<td>6.000</td>
<td>1.000</td>
<td>1.750</td>
</tr>
</tbody>
</table>
Denote symbols overlapping in Questions 9, 14, and 19 are due to identical Mean Importance and Mean Competency scores. (No Gap.)
REFERENCES


National Park Service
Cultural Resources Stewardship Needs Assessment
Preservation Horticulturist - Entry Level

In the performance of your present job as a preservation horticulturist, how important are the following professional competencies? The essential competencies for preservation horticulturist can be found in the NPS Tracking Kit at the “Learning Place” web site: www.nps.gov/training/npsonly/npsescom.htm. Please check the most appropriate response for each item.

Professional Discipline

1. Basic knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

2. Ability to apply practical horticultural and landscape maintenance knowledge to designed and planned assignments.

3. Ability to apply an understanding of horticulture and allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to assist with project reviews and provide technical assistance and information.

Preservation Law, Philosophy and Practice

4. Familiarity with the concepts of origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.
5. Familiarity with federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation, and NPS Management Policies and guidelines.

6. Familiarity with current laws, policies, guidelines, standards, and technical information necessary for assisting with project reviews and providing technical assistance and information regarding cultural landscape management.

7. Familiarity with related resource management disciplines, such as history, landscape architecture, archeology, and the natural sciences.

8. Familiarity with the principles related to Section 106 compliance as it applies to historic landscape preservation.

Research and Inventory

9. Familiarity with current inventory and condition assessment methodologies and techniques.

10. Ability to participate in field research projects and assist with conducting plant inventories, data analysis, and the preparation of technical reports.

11. Ability to assist with refining research procedures in order to develop innovative techniques and methods necessary to solve site-specific problems which support cultural landscape preservation maintenance.
Treatment and Preservation Maintenance

12. Familiarity with the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.

13. Basic knowledge of horticulture and landscape construction procedures. Ability to implement protective measures and procedures which minimize site disturbance and protect historic and archeological resources during treatment projects and maintenance operations.

14. Ability to apply modified horticultural procedures, techniques, equipment, materials, and technology to protect and preserve cultural and natural landscape features.

15. Ability to implement landscape treatment and maintenance recommendations and projects.

16. Ability to implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

17. Ability to assist with field inspections and the preparation of reports, plans, and cost estimates to support landscape preservation maintenance operations.

18. Ability to work effectively with park operations responsible for cultural landscape management in implementing maintenance operations.
19. Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

**Project and Program Management**

- **Program Management**-

20. Ability to assist with coordinating cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management

21. Ability to assist with developing proposals, cooperative agreements, and memoranda of understanding with appropriate organizations to carry out the objectives of the cultural landscape program.

- **Project Management**-

22. Ability to participate in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as a team leader on a project.

23. Ability to assist with review of projects.

24. Ability to assist the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contracts, and construction contracts.

25. Ability to participate in the review of products produced by cooperators and contractors.
26. Familiarity with compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.

Writing and Communication

27. Ability to assist with preparing articles, presentation of programs, and development of other interpretive projects on horticultural and landscape preservation topics.

28. Ability to articulate landscape management issues verbally, graphically, and in writing.

29. Ability to use standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

30. Ability to interpret the importance of cultural landscapes to the public.

Training

31. Ability to provide assistance related to coordinating and delivering training programs.

32. Basic skill in assisting with providing training regarding the application of technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.

Safety

33. Knowledge of NPS loss prevention regulations and guidelines.
34. Knowledge of safety requirements for assignments, including potential exposure to hazardous chemicals and mechanical hazards associated with landscape maintenance equipment.
Cultural Resources Stewardship Needs Assessment
Preservation Horticulturist - Entry Level

The National Park Service has the responsibility of providing meaningful training and education for its employees. The purpose of this training is to ensure the basic missions of the Service and its individual units are met, while allowing employees to reach their personal career goals.

Please look at the same list again. This time consider how you rate your overall preparation (all sources) for these aspects of being a preservation horticulturist. Please check the most appropriate response for each item. If the training competency does not apply to your present position, check the first box - N/A.

Professional Discipline

35. Basic knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

36. Ability to apply practical horticultural and landscape maintenance knowledge to designed and planned assignments.

37. Ability to apply an understanding of horticulture and allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to assist with project reviews and provide technical assistance and information.

Preservation Law, Philosophy and Practice

38. Familiarity with the concepts of origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

40. Familiarity with current laws, policies, guidelines, standards, and technical information necessary for assisting with project reviews and providing technical assistance and information regarding cultural landscape management.

41. Familiarity with related resource management disciplines, such as history, landscape architecture, archeology, and the natural sciences.

42. Familiarity with the principles related to Section 106 compliance as it applies to historic landscape preservation.

**Research and Inventory**

43. Familiarity with current inventory and condition assessment methodologies and techniques.

44. Ability to participate in field research projects and assist with conducting plant inventories, data analysis, and the preparation of technical reports.

45. Ability to assist with refining research procedures in order to develop innovative techniques and methods necessary to solve site-specific problems which support cultural landscape preservation maintenance.
Treatment and Preservation Maintenance

46. Familiarity with the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.

47. Basic knowledge of horticulture and landscape construction procedures. Ability to implement protective measures and procedures which minimize site disturbance and protect historic and archeological resources during treatment projects and maintenance operations.

48. Ability to apply modified horticultural procedures, techniques, equipment, materials, and technology to protect and preserve cultural and natural landscape features.

49. Ability to implement landscape treatment and maintenance recommendations and projects.

50. Ability to implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

51. Ability to assist with field inspections and the preparation of reports, plans, and cost estimates to support landscape preservation maintenance operations.

52. Ability to work effectively with park operations responsible for cultural landscape management in implementing maintenance operations.

53. Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.
Project and Program Management

-Program Management-

54. Ability to assist with coordinating cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management

55. Ability to assist with developing proposals, cooperative agreements, and memoranda of understanding with appropriate organizations to carry out the objectives of the cultural landscape program.

-Project Management-

56. Ability to participate in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as a team leader on a project.

57. Ability to assist with review of projects.

58. Ability to assist the Contracting Officer’s Technical Representative in landscape preservation and maintenance contracts, services contracts, and construction contracts.

59. Ability to participate in the review of products produced by cooperators and contractors.

60. Familiarity with compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.
Writing and Communication

61. Ability to assist with preparing articles, presentation of programs, and development of other interpretive projects on horticultural and landscape preservation topics.

62. Ability to articulate landscape management issues verbally, graphically, and in writing.

63. Ability to use standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

64. Ability to interpret the importance of cultural landscapes to the public.

Training

65. Ability to provide assistance related to coordinating and delivering training programs.

66. Basic skill in assisting with providing training regarding the application of technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.

Safety


68. Knowledge of safety requirements for assignments, including potential exposure to hazardous chemicals and mechanical hazards associated with landscape maintenance equipment.
Demographics

69. Age (years):_____

70. Gender: □ Female  □ Male

71. Race/National Origin:

□ American Indian or Alaskan Native  □ Hispanic
□ Black (Not of Hispanic Origin)  □ Asian or Pacific Islander
□ White (Not of Hispanic Origin)  □ Other (Please Specify):

72. Do you have a disability? □ Yes  □ No

73. Current GS level_____

74. Number of years served in the National Park Service?_____

75. Number of years in current position?_____

76. Education (Circle the highest number of years of formal education completed)

<12 12 13 14 15 16 17 18 18+

77. If you hold a college degree(s), please complete the following questions regarding the type of degree(s) and major field(s) of study:

Bachelor’s:
Type of Degree (i.e., B.S., B.A., etc.)___________________________
Major Field of Study_________________________________________

Master’s:
Type of Degree (i.e., M.S., M.A., etc.)___________________________
Major Field of Study_________________________________________

Doctorate:
Type of Degree (i.e., Ph.D., Ed.D., etc.)_________________________
Major Field of Study_________________________________________
APPENDIX A-2

The following list of degrees, as reported by the respondents, has been condensed for the ease of compilation. Some specific degree titles do not appear due to categorization under a more general term.

**PRESERVATION HORTICULTURIST – ENTRY LEVEL**

**UNDERGRADUATE [A.S., B.S. & B.A.]**

- Anthropology 01
- Plant Science 01
- Tropical Horticulture 01

**GRADUATE [M.S. & M.A.]**

- Near Eastern Language & Literature 01
National Park Service
Cultural Resources Stewardship Needs Assessment
Preservation Horticulturist - Developmental Level

In the performance of your present job as a preservation horticulturist, how important are the following professional competencies? The essential competencies for preservation horticulturist can be found in the NPS Tracking Kit at the “Learning Place” web site: www.nps.gov/training/npsingly/npsescom.htm. Please check the most appropriate response for each item.

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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>1. Practical knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.</td>
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<tr>
<td>2. Ability to apply practical knowledge to such assignments as assisting with the design and planning of difficult, and occasionally unprecedented, projects.</td>
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<tr>
<td>3. Ability to apply the knowledge acquired through an accredited degree program in horticulture or a related field with an understanding of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to participate with project reviews, assist with contract supervision, and provide technical assistance and information.</td>
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<table>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.</td>
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APPENDIX A-3


6. Ability to apply current policies, guidelines, standards, and technical information necessary to assist with project reviews and provide technical assistance and information regarding cultural landscape management.

7. Ability to incorporate related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program implementation.

8. Understanding of the principles related to Section 106 compliance as it applies to historic landscape preservation.

**Research and Inventory**


10. Ability to supervise and manage research and inventory, analyze data, and prepare reports.

11. Skill in designing and conducting a variety of practical experiments, monitoring results, analyzing data, and defining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.
12. Ability to prepare reports, plans, specifications, and cost estimates to support planning for cultural landscape preservation based on landscape assessments, cultural landscape reports, field investigations, and data analysis.

13. Ability to conduct and supervise cultural landscape research, inventory, documentation, and analysis and evaluation based on accepted methodologies and techniques and developing unprecedented methodologies as appropriate.

**Treatment and Preservation Maintenance**

14. Knowledge and ability in the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.

15. Knowledge of horticulture and landscape construction procedures. Ability in coordinating and incorporating protective measures and procedures which minimize site disturbance and protect historic and archaeological resources during the implementation of treatment projects and maintenance operations.

16. Ability to modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve various problems and protect and preserve cultural and natural landscape resources.

17. Ability to prescribe, coordinate, and implement landscape treatment and maintenance recommendations and projects including contract management.
18. Ability to modify and implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

19. Ability to prepare and coordinate field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.

20. Ability to work effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

21. Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

**Project and Program Management**

- Program Management-

22. Skill in conducting long-range planning and budget formulation based on a knowledge of the NPS budget process.

23. Ability to assist in the facilitation of ongoing strategic planning including developing and prioritizing program goals, objectives, and initiatives.

24. Ability to coordinate cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management.
25. Ability to act as a liaison for the cultural landscape program with other offices of the National Park Service, professional organizations, such as the American Association of Botanical Gardens and Arboreta, and the Alliance for Historic Landscape Preservation; academic institutions; and other private/public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.

26. Ability to develop proposals, cooperative agreements, memoranda of understanding, etc., with appropriate organizations to carry out the objectives of the cultural landscape program.

-Project Management-

27. Skill in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as team leader on a project.

28. Ability to provide review of complex projects and clearly articulate agency positions and direction.

29. Ability to serve as the Contracting Officer's Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

30. Skill in oversight and technical review of products produced by cooperators and contractors.

31. Knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.
Writing and Communication

32. Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.

33. Ability to make presentations and prepare papers for professional conferences and journals.

34. Skill in using standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

35. Knowledge of the techniques for interpreting the significance and character of cultural landscapes to the public.

Training

36. Ability to coordinate and deliver training programs.

37. Skill in providing training regarding the application of technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.

38. Ability to assist as a technical advisor for intern and Entry Level preservation horticulturists, landscape preservation specialists, and preservation gardeners.

Safety

39. Thorough knowledge of job safety requirements and health considerations for all job assignments.
Cultural Resources Stewardship Needs Assessment
Preservation Horticulturist - Developmental Level

The National Park Service has the responsibility of providing meaningful training and education for its employees. The purpose of this training is to ensure the basic missions of the Service and its individual units are met, while allowing employees to reach their personal career goals.

Please look at the same list again. This time consider how you rate your overall preparation (all sources) for these aspects of being a preservation horticulturist. Please check the most appropriate response for each item. If the training competency does not apply to your present position, check the first box - N/A.

### Professional Discipline

40. Practical knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

41. Ability to apply practical knowledge to such assignments as assisting with the design and planning of difficult, and occasionally unprecedented, projects.

42. Ability to apply the knowledge acquired through an accredited degree program in horticulture or a related field with an understanding of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to participate with project reviews, assist with contract supervision, and provide technical assistance and information.

### Preservation Law, Philosophy, and Practice

43. Knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.
44. Knowledge of federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation and NPS Management Policies and guidelines.

45. Ability to apply current policies, guidelines, standards, and technical information necessary to assist with project reviews and provide technical assistance and information regarding cultural landscape management.

46. Ability to incorporate related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program implementation.

47. Understanding of the principles related to Section 106 compliance as it applies to historic landscape preservation.

**Research and Inventory**

48. Knowledge of current inventory and condition assessment methodologies and techniques.

49. Ability to supervise and manage research and inventory, analyze data, and prepare reports.

50. Skill in designing and conducting a variety of practical experiments, monitoring results, analyzing data, and defining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.
51. Ability to prepare reports, plans, specifications, and cost estimates to support planning for cultural landscape preservation based on landscape assessments, cultural landscape reports, field investigations, and data analysis.

52. Ability to conduct and supervise cultural landscape research, inventory, documentation, and analysis and evaluation based on accepted methodologies and techniques and developing unprecedented methodologies as appropriate.

**Treatment and Preservation Maintenance**

53. Knowledge and ability in the application of cultural and natural resource policies, standards, and guidelines for historic landscape treatment and maintenance which protects both cultural and natural resources.

54. Knowledge of horticulture and landscape construction procedures. Ability in coordinating and incorporating protective measures and procedures which minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.

55. Ability to modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve various problems and protect and preserve cultural and natural landscape resources.

56. Ability to prescribe, coordinate, and implement landscape treatment and maintenance recommendations and projects including contract management.
57. Ability to modify and implement landscape maintenance programs including site-specific preservation maintenance guidelines, calendars, and procedures.

58. Ability to prepare and coordinate field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.

59. Ability to work effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

60. Ability to assist with evaluating and mitigating the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

**Project and Program Management**

-Program Management-

61. Skill in conducting long-range planning and budget formulation based on a knowledge of the NPS budget process.

62. Ability to assist in the facilitation of ongoing strategic planning including developing and prioritizing program goals, objectives, and initiatives.

63. Ability to coordinate cultural landscape program activities with other park operational programs, such as historic structures, integrated pest management, and maintenance management.
64. Ability to act as a liaison for the cultural landscape program with other offices of the National Park Service, professional organizations, such as the American Association of Botanical Gardens and Arboreta, and the Alliance for Historic Landscape Preservation; academic institutions; and other private/public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.

65. Ability to develop proposals, cooperative agreements, memoranda of understanding, etc., with appropriate organizations to carry out the objectives of the cultural landscape program.

-Project Management-

66. Skill in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and ability to serve as team leader on a project.

67. Ability to provide review of complex projects and clearly articulate agency positions and direction.

68. Ability to serve as the Contracting Officer's Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

69. Skill in oversight and technical review of products produced by cooperators and contractors.

70. Knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.
### Writing and Communication

71. Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.

72. Ability to make presentations and prepare papers for professional conferences and journals.

73. Skill in using standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

74. Knowledge of the techniques for interpreting the significance and character of cultural landscapes to the public.

### Training

75. Ability to coordinate and deliver training programs.

76. Skill in providing training regarding the application of technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.

77. Ability to assist as a technical advisor for intern and Entry Level preservation horticulturists, landscape preservation specialists, and preservation gardeners.

### Safety

78. Thorough knowledge of job safety requirements and health considerations for all job assignments.
Demographics

79. Age (years):_____

80. Gender:  □ Female  □ Male

81. Race/National Origin:
   □ American Indian or Alaskan Native  □ Hispanic
   □ Black (Not of Hispanic Origin)  □ Asian or Pacific Islander
   □ White (Not of Hispanic Origin)  □ Other (Please Specify):

82. Do you have a disability?  □ Yes  □ No

83. Current GS level ______

84. Number of years served in the National Park Service? ______

85. Number of years in current position? ______

86. Education (Circle the highest number of years of formal education completed)

   <12  12  13  14  15  16  17  18  18+

87. If you hold a college degree(s), please complete the following questions regarding the type of degree(s) and major field(s) of study:

   Bachelor’s:
   Type of Degree (i.e., B.S., B.A., etc.)________________________
   Major Field of Study_____________________________________

   Master’s:
   Type of Degree (i.e., M.S., M.A., etc.)______________________
   Major Field of Study_____________________________________

   Doctorate:
   Type of Degree (i.e., Ph.D., Ed.D., etc.)____________________
   Major Field of Study_____________________________________

A3-13
The following list of degrees, as reported by the respondents, has been condensed for the ease of compilation. Some specific degree titles do not appear due to categorization under a more general term.

**Preservation Horticulturist – Developmental Level**

**Undergraduate [A.S., B.S. & B.A.]**

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<td>Ornamental Horticulture</td>
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<td>Urban Forestry</td>
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**Graduate [M.S. & M.A.]**

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<td>Horticulture &amp; Education</td>
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National Park Service  
Cultural Resources Stewardship Needs Assessment  
Preservation Horticulturist - Full Performance Level

In the performance of your present job as a preservation horticulturist, how important are the following professional competencies? The essential competencies for preservation horticulturist can be found in the NPS Tracking Kit at the “Learning Place” web site: www.nps.gov/training/npsonly/npsescom.htm. Please check the most appropriate response for each item.

Professional Discipline

1. Comprehensive professional knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

2. Skill in applying professional and practical knowledge to such assignments as design and planning of difficult and occasionally unprecedented projects.

3. Skill in applying the knowledge acquired through an accredited professional degree program in horticulture or a related field with knowledge of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to formulate agency positions, conduct project reviews, supervise contracts, and provide technical assistance and information.

Preservation Law, Philosophy, and Practice

4. Thorough knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.

6. Understanding of current laws, policies, guidelines, standards, and technical information necessary to conduct project reviews and providing technical assistance and information regarding cultural landscape management.

7. Skill in incorporating related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program management to ensure their proper consideration in operational planning, treatment, and preservation maintenance.

8. Expertise in the preparation and application of Section 106 compliance as it applies to historic landscape preservation.

Research and Inventory

9. Thorough knowledge of current inventory and condition assessment methodologies and techniques.

10. Ability to initiate, supervise, and manage research, conduct plant inventories, analyze data, and prepare technical reports.

11. Skill in designing, conducting, and supervising scientific and practical research, monitoring results, analyzing data, and refining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.
12. Skill in preparing and supervising the preparation of reports, plans, specifications, and cost estimates to support planning for cultural landscape preservation based on landscape assessments, cultural landscape reports, field investigations, and data analysis.

13. Skill in conducting and supervising cultural landscape research, inventory, documentation, analysis, and evaluation based on accepted methodologies and techniques and developing unprecedented methodologies as appropriate.

**Treatment and Preservation Maintenance**

14. Expertise in the application of cultural and natural resource policies, standards, and guidelines in prescribing treatment and maintenance in a manner that protects both cultural and natural resources.

15. Comprehensive knowledge of horticulture and landscape construction procedures. Skill in developing and incorporating protective measures and procedures that minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.

16. Expertise to guide, develop, modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve complex problems and issues to protect and preserve cultural and natural landscape resources.

17. Proficiency in prescribing, coordinating, executing, and managing treatment and maintenance recommendations and projects including contract management.
18. Expertise to guide, develop, and manage landscape maintenance programs including site specific preservation maintenance guidelines, calendars, and procedures.

19. Skill in guiding, preparing, and supervising field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.

20. Proficient in working effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

21. Expertise to evaluate and mitigate the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

**Program and Project Management**

- Program Management -

22. Skill in developing and prioritizing program goals, objectives, and initiatives.

23. Skill in conducting long-range planning and budget formulation based on a knowledge of the NPS budget process.

24. Ability to facilitate ongoing strategic planning including developing and prioritizing program goals, objectives, and initiatives.

25. Skill in coordinating cultural landscape program activities with other park operational programs such as historic structures, integrated pest management, and maintenance management.
26. Skill in acting as a liaison for the cultural landscape program with other offices of the NPS professional organizations such as the American Association of Botanical Gardens and Arboreta and the Alliance for Historic Landscape Preservation, academic institutions, and other private and public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.

27. Skill in developing proposals, cooperative agreements, memoranda of understanding, etc., with appropriate organizations to carry out the objectives of the cultural landscape program.

-Project Management-

28. Skill in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and the ability to serve as team leader on a project.

29. Skill in providing expert review of complex projects and to clearly articulate agency positions and direction.

30. Skill in serving as the Contracting Officer's Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

31. Skill in oversight and technical review of products produced by cooperators and contractors.

32. Working knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.
Writing and Communication

33. Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.

34. Skill in articulating complex landscape management issues verbally, graphically, and in writing.

35. Skill in delivering formal presentations and preparing papers regarding cultural landscape preservation maintenance for professional conferences and journals.

36. Skill in using standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

37. Skill in working with team members in the design and implementation of programs to interpret the significance and character of cultural landscapes to the public.

Training

38. Proficiency in initiating, managing, and delivering training programs.

39. Expertise in conducting training regarding the application of current standards and technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.

40. Fully capable to serves as a professional mentor and technical supervisor for intern and developing preservation horticulturists, landscape preservation specialists, and preservation gardeners.
Safety

41. Ability to identify and correct job safety and health hazards, instruct employees on safety requirements for job assignments, and to report loss incidents in accordance with federal, departmental, and bureau regulations and guidelines.
Cultural Resources Stewardship Needs Assessment
Preservation Horticulturist - Full Performance Level

The National Park Service has the responsibility of providing meaningful training and education for its employees. The purpose of this training is to ensure the basic missions of the Service and its individual units are met, while allowing employees to reach their personal career goals.

Please look at the same list again. This time consider how you rate your overall preparation (all sources) for these aspects of being a preservation horticulturist. Please check the most appropriate response for each item. If the training competency does not apply to your present position, check the first box - N/A.

**Professional Discipline**

42. Comprehensive professional knowledge of the theories, principles, practices, and techniques within the science and profession of horticulture and landscape management as they apply to the preservation of cultural landscapes.

43. Skill in applying professional and practical knowledge to such assignments as design and planning of difficult and occasionally unprecedented projects.

44. Skill in applying the knowledge acquired through an accredited professional degree program in horticulture or a related field with knowledge of allied fields such as landscape architecture, plant pathology, entomology, soil science, archeology, and botany to formulate agency positions, conduct project reviews, supervise contracts, and provide technical assistance and information.

**Preservation Law, Philosophy, and Practice**

45. Thorough knowledge of the origins, theories, principles, laws, practices, and techniques of historic preservation, particularly as they apply to the preservation of cultural landscapes.
46. Knowledge of federal cultural resource preservation legislation, policies, guidelines, and standards, particularly the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation and NPS Management Policies and guidelines.

47. Understanding of current laws, policies, guidelines, standards, and technical information necessary to conduct project reviews and providing technical assistance and information regarding cultural landscape management.

48. Skill in incorporating related resource management disciplines such as history, landscape architecture, archeology, and the natural sciences in project and program management to ensure their proper consideration in operational planning, treatment, and preservation maintenance.

49. Expertise in the preparation and application of Section 106 compliance as it applies to historic landscape preservation.

Research and Inventory

50. Thorough knowledge of current inventory and condition assessment methodologies and techniques.

51. Ability to initiate, supervise, and manage research, conduct plant inventories, analyze data, and prepare technical reports.

52. Skill in designing, conducting, and supervising scientific and practical research, monitoring results, analyzing data, and refining procedures in order to develop innovative techniques and methods necessary to solve site-specific problems in support of cultural landscape preservation maintenance.
53. Skill in preparing and supervising the preparation of reports, plans, specifications, and cost estimates to support planning for cultural landscape preservation based on landscape assessments, cultural landscape reports, field investigations, and data analysis.

54. Skill in conducting and supervising cultural landscape research, inventory, documentation, analysis, and evaluation based on accepted methodologies and techniques and developing unprecedented methodologies as appropriate.

**Treatment and Preservation Maintenance**

55. Expertise in the application of cultural and natural resource policies, standards, and guidelines in prescribing treatment and maintenance in a manner that protects both cultural and natural resources.

56. Comprehensive knowledge of horticulture and landscape construction procedures. Skill in developing and incorporating protective measures and procedures that minimize site disturbance and protect historic and archeological resources during the implementation of treatment projects and maintenance operations.

57. Expertise to guide, develop, modify, apply, and adapt horticultural procedures, techniques, equipment, materials, and technology to resolve complex problems and issues to protect and preserve cultural and natural landscape resources.

58. Proficiency in prescribing, coordinating, executing, and managing treatment and maintenance recommendations and projects including contract management.
59. Expertise to guide, develop, and manage landscape maintenance programs including site specific preservation maintenance guidelines, calendars, and procedures.

60. Skill in guiding, preparing, and supervising field inspections, reports, plans, specifications, and cost estimates to support landscape preservation maintenance operations.

61. Proficient in working effectively with park operations responsible for cultural landscape management in developing treatment and maintenance solutions.

62. Expertise to evaluate and mitigate the impact of park operations, visitor use, environmental conditions, site construction and alterations, and maintenance practices on cultural landscape resources.

**Program and Project Management**

-Program Management-

63. Skill in developing and prioritizing program goals, objectives, and initiatives.

64. Skill in conducting long-range planning and budget formulation based on a knowledge of the NPS budget process.

65. Ability to facilitate ongoing strategic planning including developing and prioritizing program goals, objectives, and initiatives.

66. Skill in coordinating cultural landscape program activities with other park operational programs such as historic structures, integrated pest management, and maintenance management.
67. Skill in acting as a liaison for the cultural landscape program with other offices of the NPS professional organizations such as the American Association of Botanical Gardens and Arboreta and the Alliance for Historic Landscape Preservation, academic institutions, and other private and public groups to share and obtain state-of-the-art information on cultural landscape preservation maintenance and professional practice.

68. Skill in developing proposals, cooperative agreements, memoranda of understanding, etc., with appropriate organizations to carry out the objectives of the cultural landscape program.

-Project Management-

69. Skill in interdisciplinary team work with professionals in allied fields such as planning, architecture, archeology, and the natural resource sciences and the ability to serve as team leader on a project.

70. Skill in providing expert review of complex projects and to clearly articulate agency positions and direction.

71. Skill in serving as the Contracting Officer's Technical Representative in landscape preservation and maintenance contracts, services contract, and construction contracts.

72. Skill in oversight and technical review of products produced by cooperators and contractors.

73. Working knowledge of compliance laws, regulations, and procedures with ability to oversee and conduct compliance procedures.
Writing and Communication

74. Ability to prepare articles, present programs, and develop other interpretive projects on horticultural and landscape preservation topics for professional conferences.

75. Skill in articulating complex landscape management issues verbally, graphically, and in writing.

76. Skill in delivering formal presentations and preparing papers regarding cultural landscape preservation maintenance for professional conferences and journals.

77. Skill in using standard computer software programs and ability to select and develop software applications to improve written and graphic communication.

78. Skill in working with team members in the design and implementation of programs to interpret the significance and character of cultural landscapes to the public.

Training

79. Proficiency in initiating, managing, and delivering training programs.

80. Expertise in conducting training regarding the application of current standards and technical information related to cultural landscape maintenance and preservation horticulture techniques, procedures, objectives, and methods.

81. Fully capable to serves as a professional mentor and technical supervisor for intern and developing preservation horticulturists, landscape preservation specialists, and preservation gardeners.
Safety

82. Ability to identify and correct job safety and health hazards, instruct employees on safety requirements for job assignments, and to report loss incidents in accordance with federal, departmental, and bureau regulations and guidelines.
Demographics

83. Age (years):_____

84. Gender:  □ Female  □ Male

85. Race/National Origin:
   □ American Indian or Alaskan Native  □ Hispanic
   □ Black (Not of Hispanic Origin)     □ Asian or Pacific Islander
   □ White (Not of Hispanic Origin)    □ Other (Please Specify):

86. Do you have a disability? □ Yes  □ No

87. Current GS level ______

88. Number of years served in the National Park Service?_____

89. Number of years in current position?_____

90. Education (Circle the highest number of years of formal education completed)
   <12  12  13  14  15  16  17  18  18+

91. If you hold a college degree(s), please complete the following questions regarding
   the type of degree(s) and major field(s) of study:

   Bachelor's:
   Type of Degree (i.e., B.S., B.A., etc.)________________________
   Major Field of Study________________________________________

   Master's:
   Type of Degree (i.e., M.S., M.A., etc.)________________________
   Major Field of Study________________________________________

   Doctorate:
   Type of Degree (i.e., Ph.D., Ed.D., etc.)_______________________
   Major Field of Study________________________________________
APPENDIX A-6

The following list of degrees, as reported by the respondents, has been condensed for the ease of compilation. Some specific degree titles do not appear due to categorization under a more general term.

**PRESERVATION HORTICULTURIST – FULL PERFORMANCE LEVEL**

**UNDERGRADUATE [A.A.S., B.S. & B.A.]**

<table>
<thead>
<tr>
<th>Program</th>
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<tr>
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<tr>
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<td>01</td>
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<tr>
<td>PLANT SCIENCE</td>
<td>01</td>
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