

**ACTION PLAN TO INTEGRATE HISTORIC PRESERVATION
INTO
HAZARD MITIGATION PLAN UPDATE ANNEX FOR THE
MASHANTUCKET PEQUOT TRIBAL NATION**

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1.0 Purpose of the Tribal Historic Preservation Mitigation Plan

1.1 Introduction

The Mashantucket Pequot Reservation, located in the geographic center of the traditional homeland of the Pequot, is one of the oldest, continuously occupied cultural landscapes in the United States. Archaeological surveys have identified over 293 pre-Contact (i.e. prior to 1600) and post-Contact sites within the boundaries of the 1,633-acre Mashantucket Pequot Reservation since 1983. Within these sites, 703 individual episodes (components) of use/occupation have been identified ranging in age from the Paleo-Indian Period (10,000 B.C. to 1950 A.D.; Table 1).

The importance of integrating historic property and cultural resource considerations into hazard mitigation planning has been made all too apparent as a result of the disasters that have impacted the Mashantucket Pequot Reservation in recent years such as the Northeaster in 2010, hurricanes Carl and Irene in 2011, and Hurricane Sandy in 2012. The effects of these storms were wide-ranging—from human casualties to property damage, and the disruption of governmental, social, and economic activity. Often not considered, however, are the potentially devastating effects of disasters on historic properties, archaeological sites and sites of traditional and cultural importance to the Mashantucket Pequot Tribal Nation (MPTN).

In 2006 a “Preserve America Summit” was organized in New Orleans marking the 40th anniversary of the passage of the National Historic Preservation Act of 1966. The Summit brought together a distinguished group of preservation professionals and advocates from local, state, tribal, and federal governments, as well as non-profit organizations from around the country, to review the historic preservation program as it has evolved since the passage of the National Historic Preservation Act (NHPA) in 1966. The Summit concluded with 13 recommendations for increasing the effectiveness and benefits from the national preservation system. One recommendation identified the need to find ways to “integrate historic preservation, archaeological and cultural resources into emergency management at the local, state and Federal levels”, and proposed a series of action items to assist tribal and non-tribal communities to meet this historic preservation need:

- Step 1: Identify Stakeholders;
- Step 2: Identify the hazards that can affect community and cultural properties;
- Step 3: Assess the impacts and magnitude of and potential impacts to cultural resources;
- Step 4: Inventory the historic properties and cultural resources vulnerable to those hazards, assess the vulnerability of these cultural resources, and establish historic preservation priorities by determining which cultural resources are most valuable to the tribal community.

Historic preservation is an important aspect of the identity, pride, and community revitalization in many tribal communities as it helps to maintain and restore the historic and cultural fabric of tribal communities that have undergone centuries of contact with Europeans, often resulting in cultural and geographic dislocation from their traditional homelands and their places of cultural and spiritual importance. Cultural landscapes like the Mashantucket Pequot Reservation are particularly important in this respect as it has been continuously occupied by the Mashantucket Pequot and their ancestors for 12,000 years. Preservation professionals such as the MPTN Tribal Historic Preservation Office (THPO), MPTN cultural specialists, and the CT State Historic preservation Office (SHPO) can aid this process by being an integral part of preparedness, mitigation, response and recovery efforts regarding cultural resources. These cultural

specialists can partner with planning and emergency preparedness officials to ensure that well-conceived historic preservation planning and mitigation procedures are adopted and implemented that will reduce impacts to culturally significant sites and landscapes.

1.2 Definitions

Historic Preservation

Historic preservation is the process of identifying, evaluating, protecting, preserving, and using historic properties “as a living part of our community life and development in order to give a sense of orientation to the American people” (preamble of the National Historic Preservation Act [NHPA]).

Historic Property

Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (National Register) maintained by the Secretary of the Interior. This definition includes artifacts, records, site or artifactual remains that are related to tribal history and culture. The term includes properties of traditional religions and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register criteria. (NHPA, 1966: 36 CFR Part 800.16 [I] [1]).

Properties of Traditional Spiritual and Cultural Significance

Cultural properties that have historical and ongoing significance to living communities, as evidenced in their traditional cultural practices, values, beliefs, and identity. A cultural resource of traditional cultural significance is associated with cultural practices or beliefs of the tribal community that (a) are rooted in that tribes history, and are important in maintaining the continuity of the cultural identity of the tribe community. This type of significance is grounded in the cultural patterns of thought and behavior of a living community, and refers specifically to the association between their cultural traditions and a historic property.

In this context it is not just sites and places that may be significant but entire landscapes as well such as the Mashantucket Pequot Reservation.

Cultural Resources

Non-living examples of objects acquired and preserved because of their potential value as examples, as reference material, or as objects of artistic, historic, scientific, educational, or social importance, either individually or as a collection. Cultural resources include “moveable heritage,” such as collections of artifacts, statuary, artwork, and important documents or repositories. Often housed in libraries, museums, archives, historical repositories, or historic properties, these resources range from three-dimensional examples such as sculptures, historic furnishings, family heirlooms, or textiles, to two-dimensional examples such as family records, written history or memorabilia, old photographs and maps, and other archival materials

Cultural Landscape

A cultural landscape is a geographic area which encompasses both cultural and natural resources and is associated with a historic event, activity, or person and/or exhibiting other cultural or aesthetic values.

2.0 Culture and Environmental History

2.1 Introduction

This section summarizes available data on the prehistory, history, and ethnohistory of the Mashantucket Pequot Tribal Trust Lands and adjacent fee lands. It also provides a context in which to evaluate the significance of identified sites on both tribal trust lands and fee lands which is an important aspect of Historic Preservation Hazard Mitigation Planning. The historical and environmental significance of the Mashantucket Pequot Reservation is reflected in the more than 700 Pre-Contact (ca. 10,000 B.C. – 1600 A.D.) and Historic Period Pequot or ancestral occupations, cemeteries, and places of spiritual and cultural importance located within the boundaries of the reservation, and the over 100 pre-Contact and Historic Period Euro-American occupations located on fees lands adjacent to the reservation (Figure 2). The continued presence and preservation of ancestral and Pequot sites at Mashantucket are an important aspect of Mashantucket Pequot pride and identity, and attests to the long historical and contemporary cultural history of Mashantucket (Tables 1-4).

The discussion that follows is important for understanding the cultural and historic context of the Mashantucket Pequot Reservation generally, and the significance and specific threats to sites within the reservation.

2.2 Environmental Setting

The Mashantucket Pequot Reservation is situated on the Ledyard Moraine ten miles north of the Long Island shoreline, an extremely rocky landform created around 14,000 years ago during glacial retreat. The reservation is dominated by a 500-acre wetland called the Great Cedar Swamp, a glacial lake basin created around 15,000 years ago. Today, vegetation surrounding the swamp is comprised of a mixed hardwood forest dominated by oak, hemlock and pines. The wooded swamp itself consists primarily of red maple, white pine, hemlock, and white cedar with abundant shrub growth (Thorson and Webb 1991: 19).

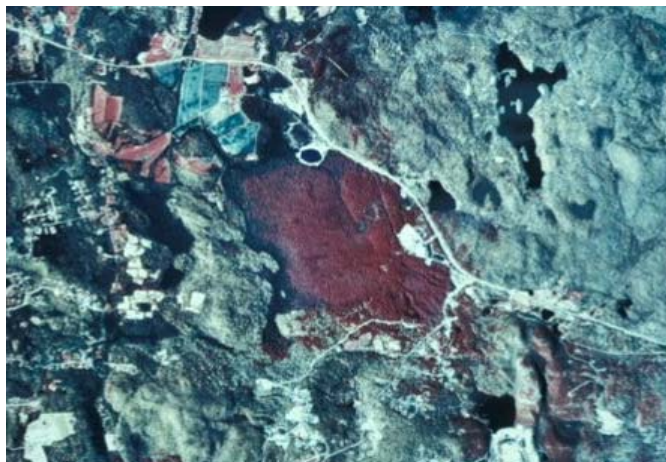


Figure 1: Great Cedar Swamp

Prior to the arrival of Europeans, the Great Cedar Swamp was a focal point of Native American land use and subsistence in southeastern Connecticut. The archaeological record associated with Native people ceases in many areas in New England within a few decades after the arrival of Europeans because of high mortality rates among Native Americans from European-introduced diseases, such as smallpox, as well as from warfare and land loss.

2.3 Prehistoric Context

The nature, diversity and distribution of archaeological sites at Mashantucket are best understood within the environmental context of the paleo-environmental history of the Great Cedar Swamp. Since the swamp was formed by the advance and subsequent retreat of glaciers between 18,000 - 14,000 years ago, it has undergone a complex environmental evolution that has greatly influenced Pre-Contact and Historic Period Pequot subsistence and settlement patterns around the swamp. Detailed analysis of microscopic pollen grains, macroscopic plant remains (e.g. leaves, roots and twigs, and soil sediments (peats) have provided the most detailed paleo-environmental reconstruction of any wetland in the eastern United States. The Great Cedar Swamp has yielded plant (sedge) remains dated to 15,000 years ago – the oldest plant remains identified in southern New England. The swamp began as a glacial lake 18,000 years ago, devoid of vegetation and life until 15,000 years ago. Evidence from between 15,000 and 13,000 years ago suggests a tundra environment around the glacial lake that included sedge, dwarf birch, herbaceous willow, and bilberry which could have supported caribou, the largest animal hunted by Paleo-Indians in southern New England (Figure 3). Around 12,700 years ago warming temperatures and an abrupt drop in glacial lake levels in the Great Cedar Swamp supported an environment characterized by open parklands of spruce, fir, larch, white pine, and birch. The former glacial lake began to develop into a shallow pond that supported a variety of plants in and around the pond including sedges, grass, pond weed and sphagnum.

Between 12,000 and 10,000 years ago, the glacial lake developed into a shallow pond and vegetated swamp. The result was a complex mixture of microenvironments ranging from open water and marsh to a thickly vegetated shrubby bog that supported cattail and water lily. The Hidden Creek site located near the swamp, dates to around 10,500 years ago and has yielded wetland plant remains consisting of cattail, water plantain, blue flag and water lily. The pollen data from the cedar swamp reflect a more temperate environment with ironwood, oak, walnut or hickory, ash, beech, and chestnut growing nearby.



Figure 2: Tundra Environment

Between 10,000 and 8,000 years ago, the Great Cedar Swamp was characterized by a complex mosaic of environments and was probably at its most productive as indicated by the frequency and complexity of archaeological sites found around the swamp. Terrestrial flora growing around the swamp consisted of pine and oak, with lesser quantities of larch, birch and hemlock, and most importantly hazelnut. Portions of the swamp contained a variety of shrubs and water tolerant trees that provided good cover and browse for both large and small game animals. Most importantly, the swamp was a combination of marshy and open water habitats with a broad range and high density of wetland plants, including cattail and other emergent species such as water lily, arrowhead and pickerel weed.



Figure 3: Cattail Swamp

The Sandy Hill site, located near the edge of the swamp has been radiocarbon dated between 9,200 and 8,000 years ago and reflects both the productivity of the swamp during this time and the human response to the increased productivity of the wetland. The presence of semi-permanent structures so early in the human history of the region was a complete surprise to archaeologists, as this pattern reflects a high degree of stability and predictability in the resource base and a high degree of territoriality – developments that are not seen again for thousands of years. The explanation for this unique cultural phenomenon is the result of a highly productivity of the Great Cedar Swamp between 10,000 and 8,000 years ago.

Nonetheless, the Great Cedar Swamp continued to be an important resource and place for the Pequot and their ancestors for the next four to five thousand years. Native occupation and use of the swamp increased. The diversity and abundance of plant remains recovered from Pre-Contact and Historic archaeological sites indicate the Great Cedar Swamp continued to provide for the Pequot in many ways. One of the more unique patterns that emerge from a comparison of plant remains recovered from archaeological sites, whether they are 9,000 years old or 200 years old, is the consistency in plant use and the importance of the Great Cedar Swamp to the Mashantucket people.

2.4 Pre-Contact Archaeological Sites

Seven Paleo-Indian components dating between 9,500 B.C. – 7,500 B.C. have been identified at Mashantucket primarily along the eastern margins of the Great Cedar Swamp. Eleven Early Archaic (10,000 – 8,000 B.P.) occupations have also been identified, the most significant being the Sandy Hill site radiocarbon dated between 9,200 and 8,000 years ago (Jones and Forrest 2003; Table 1; Appendix I).

Thirty-one Middle Archaic components have been identified at Mashantucket. While many are associated with the Great Cedar Swamp and other wetlands, a number of sites are situated in locations that are not in

the immediate proximity of wetlands (Table 1; Appendix I). The majority of the Middle Archaic sites date to the first half of the period (6,000 B.C. – 5,000 B.C.) and relatively few have been found during the later Middle Archaic period (5,000 B.C. – 4,000 B.C.).

A total of 96 Late and Terminal Archaic occupations have been identified at Mashantucket (trust and fee lands), as well as, 14 Early Woodland, 14 Middle Woodland, and 23 Late and elevated terraces adjacent to the cedar swamp and other wetlands (Table 1; Appendix I).

Tables 1 & 2 summarize the number of components identified at Mashantucket and adjacent fee lands based on associated radiocarbon dates, diagnostic projectile points, and in the case of Woodland Period sites, ceramics.

Table 1: Prehistoric Components at Mashantucket

| Component | Period | Count | Percent of Identified Components |
|--------------------------------------|-------------------------|--------------|---|
| Paleo-Indian | 9,500 B.C. – 7,500 B.C. | 7 | 4.2 |
| Early Archaic | 7,500 B.C. – 6,000 B.C. | 11 | 6.5 |
| Middle Archaic | 6,000 B.C. – 4,000 B.C. | 31 | 18.5 |
| Late Archaic Laurentian Tradition | 4,000 B.C. – 2,500 B.C. | 39 | 23.5 |
| Late Archaic Narrow Stemmed | 2,500 B.C. – 1,800 B.C. | 12 | 7.2 |
| Terminal Archaic Susquehanna | 1,800 B.C. – 700 B.C. | 26 | 15.5 |
| Early Woodland | 700 B.C. - 0 A.D. | 12 | 7.2 |
| Middle Woodland | 0 A.D. – 800 A.D. | 10 | 6.0 |
| Late Woodland | 800 A.D. – 1,000 A.D. | 19 | 11.4 |
| Unknown | | 70 | |

Table 2: Prehistoric Components on Fee Lands

| Component | Period | Count | Percent of Identified Components |
|---|-------------------------|--------------|---|
| Paleo-Indian | 9,500 B.C. – 7,000 B.C. | 1 | 2.2 |
| Early Archaic | 7,000 B.C. – 6,000 B.C. | 3 | 6.6 |
| Middle Archaic | 6,000 B.C. – 4,000 B.C. | 12 | 26.6 |
| Late Archaic Laurentian & Narrow Stemmed | 4,000 B.C. – 1,800 B.C. | 14 | 31.1 |
| Terminal Archaic Susquehanna | 1,800 B.C. – 700 B.C. | 5 | 11.1 |
| Early Woodland | 700 B.C. - 0 A.D. | 2 | 4.5 |

| | | | |
|-----------------|-----------------------|---|-----|
| Middle Woodland | 0 A.D. – 800 A.D. | 4 | 9.0 |
| Late Woodland | 800 A.D. – 1,000 A.D. | 4 | 9.0 |

2.5 Historic Context

At the end of the Pequot War of 1636-1637, the Mashantucket band of Pequot was one of many small groups of Pequot survivors that were scattered throughout southern New England. In 1638, the Mashantucket Pequot numbered around 500-800 people residing in five villages at Nameag (New London) along the west bank of the Thames River (McBride 1990). In 1651, the Pequot were given a reservation at Noank, a 500-acre neck of land at the mouth of the Mystic estuary along Long Island Sound. In 1658, only seven years after Noank was established, the Pequot requested that the Connecticut colonial government grant them additional lands as the soils and firewood at Noank were exhausted. In 1666, the Mashantucket Pequot were given a reservation at Mashantucket that consisted of approximately 2,500 acres (McBride 1990). With Mashantucket and Noank the Mashantucket Pequot had a land base exceeding 3,000 acres in the late seventeenth century. The Mashantucket Pequot also had access to hunting territory in northeastern Connecticut and central Massachusetts granted to them for their role in King Philip’s War (1675-1676). Collectively, these lands included a wide range of coastal, estuarine, woodland, and wetland habitats that enabled the Mashantucket Pequot to pursue a traditional mixed economy of maize horticulture, hunting, gathering, and fishing (McBride 2006). Noank had planting fields and provided access to Long Island Sound and the Mystic estuary’s rich supply of fish, shellfish, and migratory waterfowl. Mashantucket contained planting fields, wetlands and woodlands.

Eleven late 17th century (1666 – 1700) sites have been identified at Mashantucket, including two cemeteries (Table 3). The cemeteries are considered especially important as places of traditional ritual and cultural significance. The Monhantic Fort Site is considered particularly highly significant as it represents one of the few completely intact late 17th century fortified villages identified in southern New England.

Historic sources suggest that many of the 17th century and early 18th century communities at Mashantucket were aggregated rather than dispersed, reducing the frequency and visibility of many late 17th century sites. A second village (less aggregated as it was not fortified) was recently identified on the reservation. The remaining 17th century sites at Mashantucket appear to be relatively short term seasonal camps occupied by a single family or small group of families. The rarity and archaeological potential of 17th century sites at Mashantucket and elsewhere add to their significance and high priority for long-term preservation.

Table 3 depicts all of the 18th and 19th century sites identified on trust and fee lands. Almost without exception the 18th and 19th century sites located on fee lands are Euro-American Occupations. The 18th century sites located on trust land (reservation) are all Mashantucket Pequot occupations. The 19th century sites located on the reservation includes a mix of Pequot and Euro-American sites. In the late 18th and early 19th centuries many Native people, including the Mashantucket Pequot, left their reservations to establish Christian Indian farming communities in Oneida New York. As a result tribal overseers began to lease Mashantucket lands to Euro-Americans with the stipulation they improve the lands by constructing or improving dwellings and clearing land and constructing stone walls. Many of the identified and unidentified Historic Period sites on the Mashantucket Reservation are collections of stone walls, stone piles, and stone structures. Some of these have been dated based on the recovery of a couple of fragments

of diagnostic ceramics. These sites are considered significant as they document an important aspect of the history of the reservation and provide a contrast and potential comparative analyses between Euro-American and Pequot lifeways.

Table 3: Historic Period Sites

| Mashantucket | | | Fee Lands | | |
|--|-------|----------------------------------|-----------|-------|----------------------------------|
| Period | Count | Percent of Identified Components | | Count | Percent of Identified Components |
| Seventeenth Century 1666 - 1700 | 11 | 5.0 | | 0 | |
| Eighteenth Century 1700 - 1800 | 83 | 38.0 | | 29 | 43.3 |
| Nineteenth Century 1800-1900 | 83 | 38.0 | | 29 | 43.3 |
| Twentieth Century 1900-1950 | 10 | 4.5 | | 9 | 13.4 |
| Unknown Historic | 32.0 | 18.5 | | N/A | |

The frequency of 18th century Pequot sites on the reservation is seemingly inconsistent with a shrinking land base and population. However, based on an analysis of ceramic assemblages recovered from these sites it appears most sites were only occupied for 5 to 15 years. Few of the Pequot sites are placed on foundations or sills and it appears they were not built to last for more than a few years. This suggests that during the 18th century the reservation population either did not have the means to construct better dwellings or they continued to be fairly mobile, shifting their dwellings often within the confines of the reservation

Despite reduction of on-reservation population and land loss, the number of eighteenth century occupations increase dramatically from the seventeenth century, with over 80 archaeological sites dated between 1720 and 1800. This increase probably reflects both greater visibility (stone foundations and an increase in the number and diversity of material culture) as well as a shift to a more dispersed settlement pattern whose locations were changed every 10-15 years or so. Eighty-three 19th century sites have been identified at Mashantucket, a few of them Euro-American, leased or built by Euro-Americans in the second quarter of the nineteenth century.

Table 4: Pre-Contact Site Types

| | Paleo-Indian | Early Archaic | Middle Archaic | Late/Terminal Archaic | Early Woodland | Middle Woodland | Late Woodland |
|------------------------|--------------|---------------|----------------|-----------------------|----------------|-----------------|---------------|
| Temporary Camps | | X | X | X | X | | X |

| | | | | | | | |
|----------------------------------|---|---|---|---|---|---|--|
| Small Seasonal Camps | X | | X | X | X | | |
| Medium Seasonal Camps | X | | | | | X | |
| Large Seasonal Base Camps | | X | | | | | |

Table 5: Mashantucket Pequot Reservation Historic Period Site Types

| | Seventeenth Century | Eighteenth Century | Nineteenth Century | Twentieth Century |
|---|----------------------------|---------------------------|---------------------------|--------------------------|
| Aggregated Village | X | | | |
| Un-aggregated Village | | X | | |
| Fortified Village | X | | | |
| Seasonal Camps | X | | | |
| Framed Structure Domestic Dwelling | | X | X | |
| Wigwam Structure Domestic Dwelling | X | X | X | |
| Cemeteries | X | X | X | X |
| Sites of Traditional Spiritual and Cultural Significance | X | X | X | X |

3.0 Mashantucket Pequot Tribal Nation Historic Preservation Plan

The National Historic Preservation Act (1966 as amended; Public Law 89-665; 16 U.S.C. 470 *et seq.*) directs the Mashantucket Pequot Tribe (MPTN), on behalf of the Bureau of Indian Affairs as overseer of Tribal Trust Lands, to identify, preserve, and protect significant cultural resources situated on Tribal Trust Lands. In 1992 the U.S. Congress adopted amendments to the National Historic Preservation Act (P.L. 102-575) that allow federally recognized Indian tribes to assume more formal responsibility for the preservation of significant historic properties on tribal lands. Specifically, Section 101(d)(2) allows tribes to assume any or all of the functions of a State Historic Preservation Officer (SHPO) with respect to tribal land. In particular, Section 106 requires that the MPTN take into account the effects of tribal undertakings on properties listed on or eligible for the National Register of Historic Places and to afford, when warranted,

the Advisory Council on Historic Preservation an appropriate opportunity to comment on such undertakings.

3.1 Purpose and Scope of the Historic Preservation Plan

The Historic Preservation Plan for Mashantucket Pequot Tribal Nation (MPTN) Trust Lands, fee lands owned by the MPTN and other properties or sites within the ancestral lands of the Mashantucket Pequot Tribal Nation, provides a comprehensive planning approach to historic preservation that will assist in the long-term protection, preservation and management of sites and places of traditional and cultural importance to the Mashantucket Pequot Tribal Nation as well as significant archaeological and historic sites. The Historic Preservation Plan will also help facilitate and strengthen the Mashantucket Pequot Tribal Nation's mission: "...to preserve, protect, and advance the governmental, social, cultural, and economic strength of the MPTN for the benefit of the past, present, and future MPTN people (TCR070705-01)."

The plan includes an ongoing inventory and evaluation of all significant cultural resources identified to date within 1,633 acres of Tribal Trust Lands and approximately 4,535 acres of fee lands. The plan summarizes existing knowledge about these resources (see Chapter 2), provides recommendations for their preservation or treatment through preservation planning policy and procedure; and outlines methods for compliance with the National Historic Preservation Act.

The Historic Preservation Plan identifies provides procedures through which the Mashantucket Pequot Tribal Nation Tribal Historic Preservation Officer (MPTN THPO) will assume some of the administrative and regulatory responsibilities of the Connecticut State Historic Preservation Officer (CT SHPO) and subsequently develop a MPTN-based cultural resource review process for the future protection, preservation and management of sites and places of traditional and cultural importance to the Mashantucket Pequot Tribal Nation including sites of archaeological and historical significance within tribal trust lands (reservation) and fee lands owned by the MPTN and other properties or sites within the ancestral lands of the Mashantucket Pequot Tribal Nation.

The Research Department staff of the MPMRC currently consists of twelve archaeologists, historic researchers, and tribal cultural specialists in addition to the MPTN THPO. All have extensive experience and knowledge in Northeastern Pre-contact and Historic Period archaeology and sites of traditional cultural significance. Since 1998 all archaeological studies on the reservation have been carried out by archaeologists from the Research Department of the MPMRC with qualified archaeological consultants who work under the supervision of MPMRC archaeologists. MPMRC staff archaeologists meet the professional qualification guidelines of the National Park Service for prehistoric and historic archaeology.

3.2 Purpose of MPTN Historic Preservation Plan

The Historic Preservation Plan will assist in satisfying MPTN responsibilities under the National Historic Preservation Act of 1966 (as amended) and its implementing regulations. Specifically, the Historic Preservation Plan:

- Describes applicable historic preservation regulations and guidelines, and relates these regulations and guidelines to Tribal Trust Lands and fee lands owned by the MPTN and well as ancestral lands of the Mashantucket Pequot Tribal Nation;
- Provides an historical overview of pre-Contact and historic land use and settlement within ancestral lands of the Mashantucket Pequot Tribal Nation with a particular emphasis on Tribal Trust Lands and adjacent fee lands owned by the MPTN;

- Describes significant cultural resources within the Tribal Trust Lands including sites and places of traditional and cultural importance to the MPTN as well as significant or potentially significant archaeological and historic sites, and provides survey recommendations for further studies to develop appropriate protection and preservation management guidelines;
- Reviews the existing MPTN land planning and management procedures and historic preservation policies for Tribal Trust Lands and fee lands, and provides recommendations for integrating historic preservation policies and procedures with existing planning and land use policies and procedures;
- Provides recommendations for the preservation of sites and places of traditional and cultural importance including but not limited to archaeological and historic sites and the nomination of significant sites to the National Register of Historic Places; and,
- Establishes a MPTN Tribal Historic Preservation Office and identifies the duties and responsibilities of the Tribal Historic Preservation Officer (THPO) and defines the administrative and regulatory responsibilities that the THPO will assume from the Connecticut State Historic Preservation Office in accordance with Section 103(d)(2) of the National Historic Preservation Act.

3.3 Mashantucket Pequot Tribal Nation Tribal Historic Preservation Office

The MPTN tribal council established the Tribal Historic Preservation Office in accordance with the mission of the Historical and Cultural Preservation Committee who provides for the appropriate participation of the Tribe's traditional cultural authorities and serves as an advisory review board for the THPO. The Tribal Historic Preservation Officer (THPO) and Historical and Cultural Preservation Committee (HCPC) carry out the Tribe's administrative and regulatory responsibilities under the NHPA. The Tribal Historic Preservation Officer and the Historical and Cultural Preservation Committee are responsible for implementing the Historic Preservation Plan, complying with the NHPA, and coordinating preservation actions with respect to the MPTN Historic Preservation Hazard Mitigation Plan, and initiatives and related activities for tribal trust lands, fee lands and ancestral lands of the Mashantucket Pequot Tribe. The Duties and responsibilities of the MPTN Tribal Historic Preservation Officer Include:

- Direct and conduct a comprehensive reservation wide cultural resources inventory and maintain an inventory of historic and culturally significant properties.
- Identify and nominate eligible properties to the National Register and otherwise administer applications for listing historic properties on the National Register
- Develop and implement a comprehensive, reservation-wide historic preservation plan covering historic, archaeological and traditional cultural properties.
- Advise and assist, as appropriate, Federal and State agencies and local governments in carrying out their historic preservation responsibilities.
- Cooperate with the Secretary, the Advisory Council on Historic Preservation, and other Federal agencies, state agencies and local governments, and organizations and individuals to ensure that historic properties are taken into consideration at all levels of planning and development
- Provide public information, education and training, and technical assistance in historic preservation.
- Consult with the appropriate Federal agencies in accordance with Section 106 of the Act on:
 - Federal undertakings that may affect historic and culturally significant properties within the boundaries of the Reservation.

- The content and sufficiency of any plans to protect, manage, or to reduce or mitigate harm to such properties.

4.0 Tribal Historic Preservation Mitigation Plan

4.1 The Emergency Planning Process

The responsibility for emergency planning is based on a variety of federal, tribal, state, and local authorities. While the Department of Homeland Security provides extensive guidance, technical assistance, tools and support to tribal, state and local officials, the planning processes themselves are subject to the unique governmental mandates of each tribe, state, and locality. Furthermore, the nature and extent of any plan is largely determined by the nature of the threat and the experience of tribal and governmental officials in responding to past emergencies. Communities regularly subjected to major events (i.e., hurricanes or Northeasters) are generally more experienced in addressing emergency planning and response than those that have rarely, if ever, felt the impact of human-caused or natural disasters.

The Mashantucket Pequot Tribal Nation has the distinct advantage of assembling a highly professional core of professionals experienced in planning, cultural resources management, emergency response and hazard mitigation planning, natural resources, and public works and maintenance, all of who have decades of experience working with archaeologists and cultural specialists on the Mashantucket Pequot Reservation. In addition, the administrative structure defined in the MPTN Historic Preservation Plan integrates cultural specialists from a variety of cultural, archaeological and historical backgrounds in the Historic Preservation process including the MPTN Historical and Cultural Preservation Committee, the MPTN Elders Committee, the MPTN THPO, the MPTN Land Use Commission, and the MPMRC.

Mashantucket Pequot Tribal Nation Historic Preservation Hazard Mitigation plan is a process by which tribal departments and cultural specialists identify policies, activities, and tools to reduce and mitigate damage from natural human caused disasters. Historic Preservation Hazard Preservation Planning provides opportunities to reduce or eliminate long-term risks to significant and potentially significant cultural resources. The process involved five steps: organizing resources, assessing risks, conducting a cultural resources inventory, developing a mitigation plan, and implementing the plan and monitoring progress.

4.2 Resources and Stake Holders

As discussed above the MPTN has a number of stake holders, cultural specialists, committees, and departments that play a critical role in Historic Preservation Hazard Mitigation Planning Process:

- Tribal Community
- Tribal Council
- Historical Cultural and Preservation Committee
- Elders Council
- Tribal Historic Preservation Office
- Cultural Resources Department
- Research Department, Mashantucket Pequot Museum and Research Center
- Police and Fire Departments
- Land Use Commission
- Public Works

4.3 Hazards and Risk Assessment

Hazards are defined as natural events that pose a danger and threat to cultural properties and landscapes. Risks are defined as the likelihood that cultural resources will be impacted by natural hazards based on the nature, intensity, and duration of the hazard. The *Hazard Mitigation Plan Update for the Mashantucket Pequot Tribal Nation* identified several Hazards that could have an impact on the physical landscape and infrastructure at Mashantucket:

4.4 Hazards

Hazard #1 Tree Throws

Tree throws are considered to be one of the biggest hazards to archaeological sites on the reservation. A tree throw (aka. tree-fall, tree-tip, windfall, windthrow, uprooting) is the toppling of a tree and coincident uprooting of its root mass which can be caused by any number of internal and external factors (Figures 5 & 6). When a tree throw occurs, a pit is formed on the windward side of the trunk as soil is torn by the rotating root mass to form uplift. External factors that cause tree throws include duration and intensity of wind, soil type, slope and orientation of landform, level of saturation, weight of snow or ice on tree branches, and the falling of adjacent trees (Langohr 1993; Petraglia et al. 2005: 10-5). Weather events commonly associated with tree throws include summer storms and tornadoes, winter storms and Northeasters.



Figure 4: Tree Throws Mashantucket Pequot Reservation

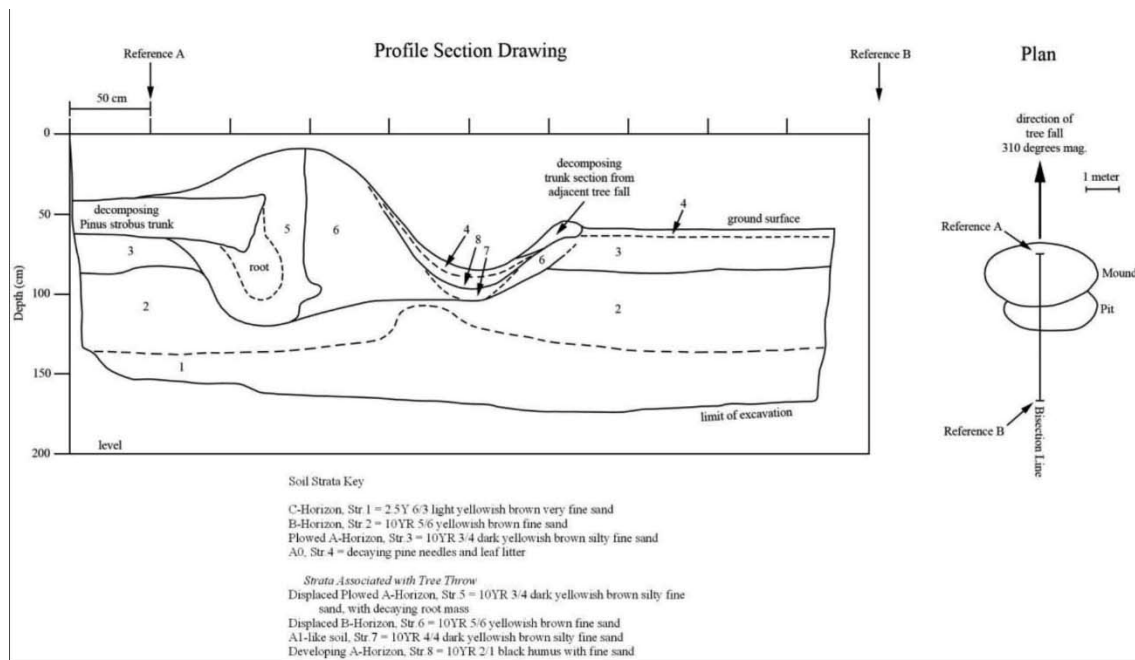


Figure 5: Plan Drawing of Tree Throw

Tree throws result in damage, mixing, or destruction of archaeological strata, features, and artifacts. Burials and cemeteries are at particular risk from tree throws given their significance and rarity. In the case of Historic Period sites, above ground structures such as foundations, root cellars, stone walls, and European stone piles are susceptible as well although the impacts can potentially be mitigated by reconstruction.

Inland Flooding

The Hazard Mitigation Plan Update concluded that there are no notable flooding issues associated with watercourses on the Reservation “as the majority of drainage systems are recent and oversized as compared to the specifications in the Connecticut Department of Transportation Drainage Manual.” The report also identified the four major water bodies on or adjacent to the Reservation (Indiantown Brook, Shewville Brook, Cedar Swamp, and an unnamed swamp that drains to Shewville Brook located west of Cedar Swamp) and concluded that the overflow (flood) risk from these watercourses was less than 1% and therefore impacts to the infrastructure at Mashantucket was very low. However, the majority of the archaeological sites at Mashantucket do not receive any benefit from the drainage systems designed to mitigate impacts to the infrastructure on the reservation. The majority of pre-Contact archaeological sites are within 10 – 20 meters of a stream or wetland placing them at risk from runoff.

Surface water runoff is generated by rainstorms and its occurrence and quantity are dependent on the characteristics of the rainfall event, i.e. intensity, duration and distribution. There are a number of factors that influence the runoff generating process including; type of precipitation (rain, snow, sleet, etc.), rainfall intensity, rainfall amount, rainfall duration, distribution of rainfall over the watersheds, direction of storm movement, and antecedent precipitation and resulting soil moisture. Physical characteristics of

the landscape that influence the effects of runoff include; land use, vegetation, soil type, drainage area, elevation, slope, topography, orientation of landform, and drainage network patterns.

For example, areas that are de-vegetated, characterized by unconsolidated surface soils, situated atop relatively steep slopes, and in which the local topography channels runoff into a fairly circumscribed area, are at very high risk from erosion. The 18th century Kate Swamp Road, a dirt/exposed gravel road which runs through the center of the reservation is regularly impacted by erosion caused by surface water runoff. The Kate Swamp Road is a significant cultural property in its own right, but continued erosion and down cutting threatens the many historic period archaeological sites that are located adjacent to the road.

A stream flow accumulation network is a watershed model based on the geomorphological properties of drainage to identify the flow path (direction) of a stream and assess the amount of accumulated flow based on stream rank or order. Stream rank is a measure to define the size of a stream based on a hierarchy by which the smallest streams are defined as Rank 1 streams that flow into and "feed" larger streams but do not normally have any water flowing into them. A Rank 2 stream is one in which two Rank 1 streams converge to form a higher rank stream. The highest rank a watercourse can achieve, like the Connecticut River, is Rank 12. The higher a stream's rank the greater the flow and volume of water and therefore higher potential impacts to the surrounding landscape during periods of prolonged heavy rain. The further downstream the site is located adjacent to a stream the greater the potential impacts are.

Figure 7 depicts the dendritic pattern and flow accumulation network at Mashantucket with associated archaeological sites. A cursory examination of the network indicates there are hundreds of Rank 1-4 streams, many with archaeological sites in near proximity.

Heavy and prolonged rainfall during the Nor'easter of 2010, and Hurricanes Carl and Irene in 2011 had modest, but noticeable impacts on many of the smaller watercourses at Mashantucket. The accumulative effects of stream erosion over time will eventually have significant impacts on archaeological sites located along these watercourses. With the intensity and duration of storms expected to increase over the next century these sites are increasingly at risk.

[removed for digital size reasons]

Figure 6: Dendritic Pattern and Flow Accumulation Network at Mashantucket Summer Storms and Tornadoes

Summer storms and tornadoes have the potential to differentially impact any area of the reservation. The greatest hazard from these storms is the intensity of rainfall that can cause flash flooding, and high winds that can uproot trees. A tree throw is the toppling of a tree and coincident uprooting of its root mass, which may be caused by any combination of internal or external factors (see above). Tree throws are the single largest impacts to archaeological sites at Mashantucket.

Winter Storms and Northeasters

Winter storms and northeasters are a significant hazard to the cultural resources on the amount of moisture and rainfall associated with them which can result in highly saturated soils. Winter storms are considered highly likely to occur each year. If the accumulated snowfall is one or more feet, and persists until the arming spring rains, the accumulated effect of saturated soils and prolonged heavy rain can cause high runoff. The combination of these factors will quickly outstrip the ability of streams to carry the runoff causing severe downstream erosion. Saturated soils, combined with the high winds often associated with Northeasters, also significantly reduces the ability of soils to support the root balls of large trees causing a high rate of tree throws.

Earthquakes

Even though four seismic fault lines run through the reservation, earthquakes are considered a minimal hazard do to the infrequency of seismic events. Surficial materials such as sand and unconsolidated till are relatively unstable and can shift during earthquakes. Areas of steep slopes can collapse during an earthquake, collapsing landforms on which archaeological sites are situated and causing landslides burying other sites. There are many archaeological sites on the reservation and adjacent fee situated on high elevations and terraces that could place the sites at risk during a seismic event, but given the low possibility of such events landslides are not a concern on the reservation

4.5 Risk Assessment

The MPTN cannot adequately prepare for natural disasters and their potential impacts to cultural resources until they fully understand the scope and nature of the hazards they face and potential risks to cultural resources. The MPTN is fortunate to have an ongoing program of cultural resource inventory and assessment supported by the MPTN and the MPTN THPO and conducted by the Research Department of the Mashantucket Pequot Museum Research Center (MPMRC). The MPMRC maintains a GIS data base of all sites on trust and fee lands which is continually updated with the MPTN Planning and other departments of the MPTN. The Preserve America Summit called for the creation of a comprehensive state- or tribal-based inventory of the nation's historic, archeological, and cultural resources. The National Park Service (NPS) through its "National Historic Property Inventory Initiative," has a major role in the inventory effort. The "Preparing to Preserve" initiative endorses the NPS mandate to encourage states and tribes to convert paper inventories to digital format, improve inventory quality, and share inventory data as needed to address emergency response. The MPTN has completed a comprehensive survey of all pre-Contact and Historic Period cultural resources that have been located with GPS (Global Positioning Technology) with less than 1-meter accuracy and mapped with current GIS (Geographic Information Technology). This database is compatible with all tribal departments and tribal, town, county, and state emergency preparedness databases and mapping platforms.

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Figure 7: Areas of Vegetation and Grown at Mashantucket and Fee Lands

In order for the MPTN to adequately respond to a natural threat, MPTN cultural resource and emergency preparedness specialists have identified hazards and risks that may impact cultural resources on the reservation. Risk Assessment is the deliberate process of understanding the likelihood that a cultural resource is threatened or vulnerable based on identified parameters, recognizing the severity of foreseeable consequences and then selecting and implementing actions to reduce the risk. The greatest hazards to archaeological sites are those that modify and impact the physical landscape surrounding the site. Heavy and prolonged rains and high winds tend to be the greatest hazards to archaeological sites at Mashantucket. Heavy and prolonged rains saturate soils preventing adequate drainage and runoff causing streams to overflow and undercut stream banks and erode downstream landforms. Saturated soils, combined with heavy winds also result in high rates of tree throws.

Archaeological sites at greatest risk from natural hazards are those situated in areas that are de-vegetated, slopes in excess of 20%, unconsolidated soils, and within 10-20 meters of a water course. Figures 8-11 depict the nature and distribution of the most important variables that place land forms and archaeological sites at greatest risk from storm hazards. Figure 11 is a risk susceptibility map which represents a synthesis of the ranked risks identified in Table. If an area is de-vegetated it was assigned a value of 1 and 0 if it is vegetated (Figure 8). A value of 1 was assigned if a site is situated atop a landform with a slope exceeding 20% and was assigned a value of 0 if the slope is less than 20% (Figure 9). If the site is located within 10 meters of watercourse it was assigned a value of 1 and if located greater than 10 meters it was assigned a value of 0. If the site is situated on coarse unconsolidated soils it was assigned a value of 1 and if situated on consolidated soils it was assigned a value of 0 (Figure 10). The values of the four variables were added together to derive a score between 0 and 4, with a value of 0 representing the lowest risk and a value of 4 representing the highest risk. Table 7 provides information on 206 archaeological sites for which rankings were derived.

Table 6: Risk Rankings

| Risks | High Susceptibility | Low Susceptibility |
|--|----------------------------|---------------------------|
| De-Vegetated | 1 | |
| Vegetated | | 0 |
| Greater than 20% Slope | 1 | |
| Less than 20% Slope | | 0 |
| Within 10 Meters of Wetland or Designated flow accumulation Network | 1 | |
| Greater than 10 Meters of Wetland | | 0 |
| Surficial Material Coarse Sands | 1 | |
| Consolidated Surficial Materials | | 0 |

[removed for digital size reasons]

Figure 8: Slope

[removed for digital size reasons]

Figure 9: Unconsolidated Soils
[removed for digital size reasons]

Figure 10: Risk Susceptibility Synthesis

Table 7: Susceptibility Ranking and Percentage of Sites.

| Susceptibility Rank | Number of Sites | Percentage of Sites |
|---------------------|-----------------|---------------------|
| 0 | 163 | 58 |
| 1 | 83 | 29.5 |
| 2 | 31 | 11 |
| 3 | 4 | 1.5 |

As Figure 24 and Table 7 indicate 42% of identified sites at Mashantucket and adjacent fee lands are considered to be at some risk from storm hazards, with 12.5% of sites considered to be at a moderate to high risk. These sites have been carefully monitored to assess present condition and future impacts from major storm events.

5.0 Historic Preservation Mitigation Strategy

The full scope and nature of the cultural resources on the reservation have been identified and assessed. Historic Preservation Mitigation Strategy has been developed. The goal of the strategy is to involve historic preservation specialists and emergency management officials at Mashantucket to find ways to mitigate threats, while at the same time preserving the character and integrity of the cultural resources. To help ensure that the historic integrity of cultural resources are protected during mitigation projects, MPTN historic preservation specialists will undertake training in design review, volunteer to review current plans, and share best preservation practices with emergency management officials. One of the most important aspects of the mitigation process will be to maintain a current list of pre-Contact and Historic period cultural resources at Mashantucket with information on their current condition, significance, and potential threats. Cultural resources designated as significant and under greatest threat from hazards will be assessed immediately after a hazard event as part of the mitigation process.

1. Mashantucket Pequot Tribal Nation Tribal Historic Preservation Office participation in the Emergency Operations Center

MPTN historic preservation and environmental specialists such as the Research Department of the MPMRC and the Natural Resources Department and coordinated by the MPTN THPO, will play an

active role in developing or modifying emergency response plans by identifying historic resources that may require special attention in emergencies and by recommending procedures that can help prevent further damage during response and recovery efforts. The MPTN THPO will take the lead role in these efforts and provide guidance to emergency response teams on preserving the integrity of historic resources during restoration and repair efforts.

Every official emergency preparedness plan includes the activation of an Emergency Operations Center (EOC). The personnel assigned to the center—drawn from many departments within the MPTN include The Natural Resources Protection & Regulatory Affairs Department, Public Safety Departments (Police, Fire & Emergency Services, Security, and Dispatch) and the Public Works, Community Planning and Property Management Department oversee both the response and immediate recovery efforts following hazard events. The MPTN THPO is an integral part of the EOC team to support the EOC's work by identifying historic resources that have been affected, providing professional staff from the MPMRC and trained volunteers for damage assessment teams, evaluate damage reports, and consult on site-specific recovery efforts, especially in historic areas or in areas of traditional cultural and spiritual significance that may require special treatment.

2. Conduct comprehensive damage assessments of at risk cultural resources

Once life and safety issues have been addressed, there will be an urgent need for comprehensive damage assessments to at risk cultural resources. Teams of historic preservation and cultural specialists from the MPTN THPO, Research Department of the MPMRC and MPTN Cultural Resources Department will be sent out to survey conditions and impacts to at risk cultural resources, determine the nature and scope of impacts, and suggest mitigation procedures in the form of stabilization, reconstruction, or mitigation through data recovery.

3. Recruit and train qualified historic preservation professionals to serve on damage assessment teams

Under the guidance of the MPTN THPO procedures and a data base will be developed to assess damage to cultural resources designed to address cultural, archaeological and architectural characteristics and qualities that may require special treatment as well as traditional cultural and historic considerations. Ideally, this process would be compatible with and linked to a comprehensive survey database maintained by the State Historic Preservation Office, so that determinations made during the assessment would automatically become part of the database.

4. Develop damage assessment forms and processes that take into consideration the special - m

Emergency response actions that take place after a disaster can cause extensive damage and even destruction to cultural resources. Under the guidance of the MPTN THPO guidelines will be developed on documentation, salvage, and other post-disaster procedures for historic resources. The MPTN THPO will ensure that local building and emergency officials are aware of the procedures outlined in the Historic Preservation Hazard Mitigation Plan and allow time to properly evaluate damage and explore preservation solutions.

5. Coordinate with MPTN Departments to develop a post-disaster demolition or repair permitting process that encourages a preservation ethic and allows for the evaluation of damaged cultural resources by historic preservation experts.

The MPTN Tribal Council, Historic Cultural and Preservation Committee, Elders Council, and the Tribal Historic Preservation Office and other regulatory review bodies at the MPTN such as the Land Use Commission will develop protocols and procedures regarding mitigation of impacted cultural

resources to follow in the wake of disasters. In the aftermath of a severe storm event the impacts to personal property and infrastructure will be significant. The initial reaction will be to immediately restore and reconstruct property and infrastructure which may unknowingly result in impacts to cultural resources. The MPTN THPO will play a lead role in the post-disaster planning mitigation process to ensure that procedures to assess the evaluation and appropriate mitigation of cultural resources are followed.

6. Ensure that qualified preservation professionals will take part in deliberations regarding post-disaster assessment and mitigation procedures and activities.

First responders receive on-going training in life safety and recovery techniques during disasters. Emergency management planners are skilled in developing comprehensive mitigation, response, and recovery plans for infrastructure and the built environment. However, Emergency response specialists and planners receive little or no training and guidance with respect to the assessment, protection, and mitigation of significant and potentially significant cultural resources, as well as the unique characteristics and requirements of historic and cultural resources. The MPTN THPO and other historic and cultural specialists as designated by the MPTN THPO will develop protocols, guidelines, and training for planners and responders who will need to consider historic resources before, during, and after a disaster

7. Develop a training course that addresses the planning, response and recovery needs of historic resources for emergency management planners and first responders.

The MPTN THPO will develop a training course for historic preservation, cultural specialists, and emergency reaction specialists to train them in post-disaster assessment, planning, and mitigation procedures. The MPTN THPO and other historic preservation and cultural specialists as designated by the MPTN THPO will take part in Community Emergency Response Team (CERT) training. CERT training is primarily focused on life safety and incident stabilization as CERT teams are among the first on-site responders during a disaster. CERT training offers historic preservationists the opportunity to gain first-hand knowledge of how emergency response and recovery is undertaken and to build relationships with emergency officials in their communities. Conversely, CERT training would greatly benefit by having team members such as MPTN THPO with knowledge and expertise about historic preservation and cultural resources on the Mashantucket Pequot Reservation.

Appendix I. Archaeological Sites by Time Period and Condition

| Site # | Paleo | EarlyArch | MiddleArch | Laurentian | Narrow Stemmed | TermArch | EarlyWood | MiddleWood | LateWood | SevenCent | EightCent | NineCent | TwentyCent | Unknown Prehistoric | Unknown Historic | NationalReg | Undisturbed | Good | Fair | Destroyed | Excavated |
|--------|-------|-----------|------------|------------|----------------|----------|-----------|------------|----------|-----------|-----------|----------|------------|---------------------|------------------|-------------|-------------|------|------|-----------|-----------|
| 72-26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-29 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 72-30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 72-31 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 72-32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 72-33A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 72-34A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 72-34B | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |

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|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 72-34C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 72-34D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 72-37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 72-38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 72-39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-42A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 72-42B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 72-42C | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 72-42D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 72-42E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 72-42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 72-43 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-44 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 72-48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| 72-51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

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| 72-52 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | |
| 72-53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-54 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-55A | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-55B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-55C | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-55D | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-55E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 72-59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-62 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-66 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-68 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-70A | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-70B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |

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|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 72-71 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-74A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-74B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-74C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-74D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-76 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-77 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 72-79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 72-83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-88 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-89A | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-89A | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

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| 72-89B | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-89C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-91 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 72-93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 72-94 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-97C | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-97S | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-97 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-99 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 72-106 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-108 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-109 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |

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| 72-112 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-121 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-122 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-123 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 72-124 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 72-125 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-126 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-128 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-129 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-131 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-132 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-133 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 72-134 | | | | | | | | | | | | | | | | | | | | | |
| B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-134 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-136 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-137 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-161 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-162 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 72-163 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

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| 72-164 | | | | | | | | | | | | | | | | | | | | |
| A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-164 | | | | | | | | | | | | | | | | | | | | |
| B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-164 | | | | | | | | | | | | | | | | | | | | |
| C | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-165 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-166 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-168 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 72-169 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-170 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-171 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-172 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-173 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-174 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-175 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-176 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-177 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-178 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-179 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 72-180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 72-181 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 72-182 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 72-183 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |

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| 72-184 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-186 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-187 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-188 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-189 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 72-190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-196 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-198 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-199 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 72-207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-208 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 72-209 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-210 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-212 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-213 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-218 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72-219 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 72-220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 72-222 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |

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| 72-223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 72-224 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 72-225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 72-226 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-227 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-228 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-230 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-231 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-232 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-233 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-234 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-235 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-236 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-237 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-238 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 72-239 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-241 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-242 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-243 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 72-244 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 72-245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72-246 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

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| 72-247 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-248 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-249 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-251 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-252 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 72-264 A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 72-264 B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 72-264 C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-264 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-265 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-266 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-267 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 72-268 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-269 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-270 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72-271 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-272 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-274 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-275 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72-276 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

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| 72-277 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 72-278 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 72-282 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | |
| 72-283 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | |
| 72-284 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 72-285 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 72-288 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 102-33A | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 102-33B | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 102-33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 102-40 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 102-41 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-44A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-44B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-44C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 102-45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-47 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-48 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-49B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 102-49 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

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| 102-51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-56 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-57 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-61 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-63 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-68 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-69 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-83 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 102-84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

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| 102-85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 102-86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 102-87 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 102-88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 102-89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 102-90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 114-40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 114-41 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 114-42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 114-43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 114-44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 114-45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | |
| 114-91 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 114-92 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 114-93 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 114-94 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 114-95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 114-98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 114-106 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 114-144 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 114-145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 114-146 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

Bibliography

- Forrest, Daniel. "Beyond Presence and Absence: Establishing Diversity in Connecticut's Early Holocene Archaeological Record." *Bulletin of the Archaeological Society of Connecticut* 62 (1999):79–100.
- Jones, Brian D., and Daniel T. Forrest. "Life in a Postglacial Landscape: Settlement-Subsistence Change during the Pleistocene Holocene Transition in Southern New England." *Geoarchaeology of Landscapes in the Glaciated Northeast*, 75-89. David L. Cremeens and John P. Hart, eds. Albany, NY: University of the State of New York, Albany, 2003.
- Jones, Brian D. "The Late Paleoindian Hidden Creek Site in Southeastern Connecticut." *Archaeology of Eastern North America* 25 (1997): 45-80.
- . "The Middle Archaic Period in Connecticut: The View from Mashantucket." *Bulletin of the Archaeological Society of Connecticut* 62 (1999):101–124.
- Jones, Brian D. and Kevin A. McBride. "Indigenous Archaeology in Southern New England: Case Studies from the Mashantucket Pequot Reservation." *Cross-Cultural Collaboration: Native Peoples and Archaeology in the Northeastern United States* (2006): 265-280. Jordan E. Kerber, ed. University of Nebraska Press.
- McBride, Kevin A. and Robert S. Grumet. "The Mashantucket Pequot Indian Archaeological District: A National Historic Landmark." *Bulletin of the Archaeological Society of Connecticut* 59 (1996): 15-26. Kenneth L. Feder and David A. Poirier, eds.
- McBride, Kevin A. "The Historical Archaeology of the Mashantucket Pequot." *The Pequots: The Fall and Rise of an American Indian Nation* (1990): 96-116. Laurence Hauptman James Wherry, eds. University of Oklahoma Press, Norman.

- . “Ancient and Crazier: Pequot Lifeways During the Historic Period.” *Annual Proceedings (Dublin Seminar for New England Folklife)* 16 (1991): 63-75.
- . “Prehistoric and Historic Patterns of Wetland Use in Eastern Connecticut.” *Man in the Northeast* 43 (1992): 10-23.
- . “The Legacy of Robin Cassacinamon: Mashantucket Leadership in the Historic Period.” *Northeastern Indian Lives, 1632-1816* (1996): 74-93. Robert Grumet ed. University of Massachusetts Press.
- . “Mohantic Fort: The Pequot’s in King Philip’s War.” *Native Forts of the Long Island Sound Area*, 2 (2006): 321-334. Readings in Long Island Archaeology & Ethnohistory, Volume VIII. Gaynell Stone, ed. Stony Brook, NY: Suffolk County Archaeological Association, 2006.
- McWeeney, Lucinda. *Archaeological Settlement Patterns and Vegetation Dynamics in Southern New England in the Late Quaternary*. Ph.D. dissertation, Yale University. University Microfilms, Ann Arbor, 1994.
- . “A Review of Late Pleistocene and Holocene Climate Changes in Southern New England.” *Bulletin of the Archaeological Society of Connecticut* 62 (1999): 3-18.
- NHPA. “800.16 Definitions.” In *36 CFR PART 800. Protection of Historic Properties*. Retrieved from, <http://webcache.googleusercontent.com/search?q=cache:P50iYE8jYGMJ:www.fws.gov/mounta in-prairie/refuges/refugesupdate/documents/Link%25202%2520-%2520NHPA%2520-%2520The%2520Regs.doc+&cd=3&hl=en&ct=clnk&gl=us>, 2004.
- Thorson, R. M. and R. S. Webb. “Postglacial History of a Cedar Swamp in Southeastern Connecticut.” *Journal of Paleolimnology* 6 (1991): 17-35.

