St. Eustatius Airport Monitoring Project
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Administrative Information

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Cover Photo: Trenches along the landing strip during Phase A of the project (Ruud Stelten)
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1. Project description

1.1 Introduction

The St. Eustatius Center for Archaeological Research (SECAR) monitored excavation and construction efforts at the Franklin D. Roosevelt Airport, St. Eustatius, from April to July 2015. These efforts are part of a large-scale renovation and upgrading of the facilities at the airport. This work was conducted at the request of Rijkswaterstaat, the Ministry of Infrastructure and the Environment, the Netherlands.

This report concludes archaeological research on four phases of construction at the airport: Phase A involved the construction of new lights along the landing strip and three block excavations for concrete blocks; Phase B involved the extension of the apron; Phase C involved the installation of an oil separator; Phase D involved the placing of fences around the airport. In this report, these phases are all considered together. In terms of known archaeological sites, all phases of construction potentially affected cultural resources and should, therefore, be considered concomitantly. Finally, SECAR also conducted an archaeological survey of a new helicopter apron, located to the southwest of the project area. Although this project is separate from the current project, some of its results, interpretations and conclusion are included here as they are part of the same general project area.

Figure 1 Project area showing trenches and blocks (Phase A) and oil separator (Phase C)
Construction efforts were near and on top of known archaeological sites. As these efforts would potentially destroy important information, archaeological monitoring was warranted. In particular, the precolonial Golden Rock site and the historical Concordia Estate are in close proximity. Both sites are significant spatial markers for each time period and have provided valuable information on the people that occupied these locations. The archaeological excavations of Golden Rock still stand out for their importance in precolonial Caribbean archaeology as one of the earliest, large-scale excavations of a village with house structures, burials, caches and other archaeological features. The findings and interpretation are unparalleled in the literature, even though research was done about three decades ago. From this perspective, it is obvious that the excavation efforts required close examination.

SECAR united with Prof. Dr. M.L.P. Hoogland in this project. Prof. Hoogland was part of the excavation team of Golden Rock in the 1980s and is recognized as one of the most important researchers in the Caribbean region. His expertise guided the research. SECAR archaeologists R. Stelten, MA, F. van Spelde, MSc, J. Morsink, Ph.D and R. Cook, MA each participated in the fieldwork at all phases of work. Van Spelde, Stelten and Morsink were responsible for processing artifacts and digitizing data. G. Soetekouw provided vital logistic support. Suzanne Sanders, MA facilitated report writing. Marconi Oranje, who was subcontracted by Van Boekel, was responsible for excavating the trenches and facilitated our efforts in managing cultural resources during the project.

1.2 Previous Research

No previous research had been conducted at the exact locations of the excavation. This monitoring project was constrained by the limitations defined by Rijkswaterstaat. The construction efforts were very strictly connected to a pre-determined time table that did not allow SECAR to conduct any excavations or interfere with ongoing activity at the site. Furthermore, airport access was restricted and no research could be conducted outside the locations where construction took place. As such, the monitoring was the first research that was done at the exact construction locations.

1.3 Cultural Context

Fortunately, the monitoring project did not take place in a void of archaeological information of the area. As mentioned above, large-scale excavations of the Golden Rock site and investigations of the Concordia Estate provide a significant wealth of information on the area. This information provides the cultural context in which this study can be placed.

1.3.1 Golden Rock

Golden Rock is one of the most well-known archaeological sites in the Caribbean region due to the unique features revealed by large-scale excavations between 1984 and 1989. During multiple seasons, Versteeg and Schinkel (1992) exposed large midden areas and part of the habitation area of this precolonial village dating approximately between the 6th and 9th centuries. As only a part of the site was previously excavated and a large area surrounding the previous excavations had not been investigated, the current project gives a new opportunity to take a closer look at the Golden Rock site. A summary of previous research will be discussed here.
The Golden Rock site is first visited by J.P.B. de Josselin de Jong in 1923. As part of a cooperation between the National Museum of Ethnology in Leiden and the National Museum in Kopenhagen, De Josselin de Jong visited islands in the Caribbean region and started the first archaeological fieldwork on the Dutch islands. When he visited St. Eustatius, he described the Golden Rock site as five clusters of dense midden material, including “remarkable red-and-white pottery” (Versteeg and Schinkel 1992:7).

In the 1980s, Jay Haviser, Ph.D. surveyed the island and revisited the Golden Rock site mentioned by De Josselin de Jong. Haviser noted that the construction efforts of the new airport destroyed parts of the site and advocated for research, as he recognized the scientific potential of the area. In 1984, a joint program among Leiden University, the St. Eustatius Historical Foundation and the Institute of Archaeology and Anthropology of the Netherlands Antilles started excavating the site.

Two spatially separated components of the site are recognized: GR-1 and GR-2. GR-1 is located closest to the apron of the airport, whereas GR-2 is located to the north, across the Zeelandiaaweg, as pictured above. Both components seem to be part of one settlement, but very little research has been conducted in the area between the two sites. The location of the landing strip is problematic in this regard, as it disconnects the two settlement nuclei.

The general scheme of pottery traditions in Caribbean precolonial archaeology places Saladoid ceramics between approximately 500 B.C. and A.D. 500/600. However, the radiocarbon dates from the Golden Rock site established that the main occupation occurred between A.D. 500 and 800, maybe even later. This shows that the general schemes of cultural traditions are not strict and that local continuations and deviations exist. Golden Rock was an ultimate stronghold of the people making and using Saladoid pottery.
During the first years of the 1980s excavation, researchers followed a methodology that was the standard in the region. Small-scale areas, 1x1 m or 2x2 m, were slowly excavated using shovels and trowels. Stratigraphic differences were arbitrarily separated in 10 cm levels and all finds were collected. The benefit of this methodology is the detail and high resolution of archaeological data that is recovered. Unfortunately, the method is slow, limiting the total area that can be excavated, and overall features are relatively less visible, as only small areas are open at a time.

Familiar and experienced with Dutch excavation methods, Versteeg and Schinkel (1992) decided to change their fieldwork strategy and initiated a large-scale excavation of the habitation area just outside the midden area. This methodology uses mechanical equipment to strip the topsoil off of a large area to expose the undisturbed soil underneath. In the undisturbed soil, discolorations become visible that cannot be seen in the topsoil. These discolorations are sometimes the product of floral and faunal activity, such as animals digging holes and roots growing in the soil. However, these discolorations can also be the product of past human activity, including digging holes for posts of a house or fence, burying people, and constructing hearths for food preparation.

Large scale excavations were new to the region and Versteeg and Schinkel had an unparalleled success at Golden Rock. The excavation of a larger area lowered the exposure and documentation of a plethora of features, exposing multiple (house) structures that have still not been found elsewhere in the Caribbean archipelago. This site is so unique that many researchers use it as a type-site for the period named after the red-and-white pottery noted by De Josseling de Jong, called Saladoid.

1.3.1.1 Pottery
In total, almost 55,000 sherds of pottery were found at Golden Rock during the previous excavations. In the top layers, 20 percent of all the pottery was decorated. In lower strata, 25 percent was decorated. Most decoration involved red paint, sometimes with white incisions (zone-incised crosshatched or ZIC) and modeling. Most vessel shapes were open bowls with an open orifice. Restricted orifices were also present, but in lower numbers. In addition, a large number of griddle fragments were found with diameters varying between 12 and 66 cm. Finally, cylindrical vessels, possibly used as pot-stands, were found.

The most decorated and complete vessels found at Golden Rock are open bowls and plates. The decoration and vessel shape provide information about its potential use. Open bowls and plates are used to present food or other items. These vessels cannot be used for cooking purposes, for example. Cooking vessels have restricted orifices to reduce evaporation and achieve quicker boiling times. The decoration indicates that these vessels were used in a social setting, where the nicer (more decorative) plates were used at special occasions. The open vessel form and decoration, therefore, suggest that people had communal events where food was presented and shared among a group. These events, like in any anthropological setting, would include feasts, marriages and funerals, among other events.

In summary, the pottery shows consistency in decoration and form throughout the habitation period of the site. Additionally, the materials from caches, which are objects that would have been purposefully deposited and buried, constitute the most elaborate vessels in the collection, but do not significantly differ from decorations and forms found in the midden area. These caches were likely made during special events, such as feasts and funerals, underlining the interpretation that open bowls and decorated vessels served as containers in communal and social settings.
1.3.1.2 Faunal Remains
The faunal remains from the site, collected during the previous excavations, showed a variety of food resources that were exploited by people on St. Eustatius. As expected, most proteins came from the sea. Fishes, more specifically Carangidae (Jacks family), Scrombidae (Tuna and Mackerel family) and Serranidae (Grouper), were caught and eaten. Other animals included birds such as the Tropic Bird (Phaethonidae phaethon) and Boobies (Sula sp.); reptiles such as Hawksbill turtle (Eretmochelys imbricate) and the Lesser Antillean Iguana (Iguana delicatissima); and mammals including the now extinct rice rat (Oryzomy sp.) and Caribbean Monk Seal (Monachus tropicalis), domestic dog (Canis Familiaris), agouti (Dasyprocta aguti), and dolphin or whale (Cetacean).

One animal deserves special attention. Underneath the midden area, a complete skeleton of a Eretmochelys imbricate or Hawksbill turtle was found. The skeleton was in its original anatomical position, suggesting that the turtle was not eaten, but rather purposefully buried. Only the head was fragmented. These turtles are native to St. Eustatius and the island is still a popular nesting area for turtles, including the Hawksbill turtle, Green Turtle and Leatherbacks. The intentional burial of the turtle is interpreted as a cache. As the specimen is not used as food resource, it can be assumed that the people, in some way, identified with the turtle and decided to dedicate time and energy to its burial. What the exact nature of the relationship was is difficult to assess, but the time invested in the turtle’s burial suggests an important role of turtles in people’s ritual life and worldview. The importance of turtles for indigenous peoples in the Caribbean is also known from historical accounts. For example, in the earliest years of the 16th century, the Spanish record an indigenous origin story on Hispaniola, which describes a turtle that is involved with their culture hero and the creation of a woman (Pané 1999). This story, coupled with the fact that turtles lay large amounts of eggs, suggest that the theme of fertility may have been associated with turtles. The story and association of turtles with fertility might have been part of the symbolic world of the people living at Golden Rock.

Shells collected at the site consisted of many species, but Queen conch (Lobatus gigas) and West Indian Top Snail (Cittarium pica) dominated the samples. Both are very common at other sites in the region and were used for food. Conch is still harvested and eaten on St. Eustatius. The shell of both species was used for tools, including axes and hoes, hammers, scrapers and beads. Other rarer objects include atlatl spurs and three pointers. The atlatl is a throwing spear that is used in Meso- and South America. A threepointer is a ritual item, an objectified spiritual being that was occasionally buried in agricultural fields to promote fertility. Coral was also used for a variety of practices on St. Eustatius, such as grinding and polishing stones, drills and scrapers. Species found at the site are predominantly Acropora palmata (Elkhorn coral), Acropora cervicornis (Staghorn coral), Porites sp. (Stony coral) and Diplora sp. (Brain coral). Other species were found as well, but not in the same quantities, suggesting a cultural preference for certain species as materials for specific tools.

1.3.1.3 Features
During the previous large-scale excavations, many features were exposed. In total, 772 were interpreted as postholes, 113 were interpreted as pits, 4 as caches, 3 as hearths, and 11 as human burials. Although the excavations took place more than three decades ago, the site remains one of the most extensively excavated precolonial villages in the Caribbean. The data generated from this excavation are significant scientific contributions, as little was known previously of house structures and village layouts for this time period. Versteeg and Schinkel’s (1992) new field methodologies led to radical new data and ways to research the past. The postholes in Versteeg and Schinkel’s (1992) study were found in specific spatial configurations. Through similarities in size, depth and color, the plan of 14 structures were
reconstructed, of which eight are interpreted as houses and six as fence or ancillary structures. Until today, no precolonial houses have been excavated that are larger than the houses on Golden Rock. The site is also used by many archaeologists as a type-site for Saladoid living practices. Diachronic social developments often designate early Saladoid living practices as cohabitation by extended families based on the large houses found at Golden Rock. In later periods, family size was reduced to nuclear families that inhabited individual (smaller) dwellings. A temporal development is, however, difficult to assess as relatively few early sites with house structures have been excavated and few studies have been published.

In addition to the large diameter of house structures, some structures also display a fascinating form. According to Versteeg and Schinkel (1992), some of the plans of the houses resemble animals that live in the sea. Two structures resemble a stingray, another one strongly resembles a turtle. Especially the 'turtle house' warrants further attention. This house is characterized by five postholes that were positioned outside the outer ring but were still associated with the structure. If viewed from above, the layout of the structure looks very similar to the carapace of a turtle with legs and head attached. The fact that one of the caches on the site contained the burial of a hawksbill turtle strengthens this interpretation. The exact symbolic connotation that was attached to this structure is impossible to recover, but the association of turtles with fertility could also be linked to the house, where families procreate and expand.

It should be noted that smaller rounded structures were also found. In comparison with the larger houses, it seems plausible that large extended families lived in the large structures and these smaller structures had other functions, such as cooking huts. These smaller structures may have also been used for housing purposes, serving as ancillary dwellings for smaller (nuclear) families. As other houses in the region are often the size of these ‘smaller’ structures at Golden Rock, this option cannot be dismissed.

Yet, the houses with a diameter of 14, 16 and 19 m, are unique in the Caribbean. Only on Guadeloupe have houses of comparative size been found (Morsink 2006). All other houses found in the Caribbean region have been under 12 m in diameter, but mostly range between 7 and 10 meters (Curet 1992; Hoogland and Hofman 1993; Jansen and Dorst 2007; Morsink 2006; Pendergast, et al. 2002; Righter 2002; Samson 2010; Van den Bel and Romon 2010). These house patterns suggest that people were living in larger social groups in Golden Rock than at these other sites.

This change in house patterns is of great significance, as it may point to social organization and kinship patterns unique to the Caribbean region. In the literature, early waves of long-distance colonization, like in the case of the Caribbean as well as the Pacific, often require a matrilocal social organization (Hage and Harary 1996; Keegan 2007, 2010; Morsink 2009; Morsink and Keegan 2010; Schneider and Gough 1961). In patrilocal groups, men are bound to their village and must stay there for most of the year for labor requirements, like agriculture and more localized economic efforts. In long-distance colonization efforts, it is most likely men that did the initial exploration and were in charge of the voyages. In order to have the time and ability to explore these new regions, men were required to be away from the house for long periods of time.

This practice often leads to a change in social organization with kin-related females that stay behind in the village, growing closer and closer to one another. The long absence of men also makes females more dependent upon each other rather than on their husbands, brothers or fathers. Slowly, this process redefines kinship relations to a matrilocal (and matrilineal) situation. In matrilocal groups, men are relatively flexible in their mobility as women arrange most day-to-day activities in and around the village. Cross-cultural patterns have also shown that house patterns of matrilocal groups are much larger than patrilocal groups (Divale 1974, 1977; Ember 1973; Ember and Ember 1971). It seems that kin-related females are more likely to cooperate in larger groups than kin-related men, who are more focused on their own social position within the complex network of kinship relations.
The change of patterns in houses can then possibly be explained by a change from matrilocal to patrilocal residency rules. Houses at Golden Rock, then, would have been occupied by large groups of women that were related through strong bloodlines, while later villages were structured around smaller social units of males with their families. Within this change, the Caribbean might have also been one of the few locations in the world where people organized through avunculocal residency patterns. Avunculocality is defined by young males living together with their maternal uncle. By staying with their maternal uncle, they can maintain their matrilineal organization and define themselves through female bloodlines while bringing together males that are socially connected through kinship ties. The father-son relationship in matrilineal societies is relatively weak compared to a young male’s relation to his maternal uncle, even in matrilocal societies. Although these patterns are sometimes difficult to assess, the Caribbean prehistoric record does show material evidence of these sorts of relations and changes in kinship patterns (Keegan and Maclachlan 1989; Morsink 2009, 2011; Morsink and Keegan 2010). As such, the data Versteeg and Schinkel (1992) unearthed regarding these house structures was of great significance in terms of understanding diachronic housing practices and social relations on Statia, but also throughout the Caribbean region.

In addition to houses and caches, Versteeg and Schinkel (1992) also discovered 113 pits. Pits could have been used for a wide range of purposes, but the lack of distinctive artifacts from these pits makes interpretation very difficult. Caches are relatively similar to pits but, because of their specific content, they are interpreted as specialized depositional structures with a ritual connotation. Besides the aforementioned burial of a Hawksbill turtle, three other caches were found. One cache looked like a posthole, but was characterized by a large slab of coral (35 cm in diameter) placed on its side in an east-west orientation. This object was intentionally placed in this fashion, as its positioning could not have been caused by natural processes. Another cache consisted of four complete, but broken, pottery vessels placed on top of a tuff floor in a round pit. Only the northern half of the pit was used and organic materials were not preserved. A final cache was found underneath the midden area. This final cache is the intentional burial of the skull and some attached vertebrae of a Hawksbill turtle. No other artifacts were associated with this particular cache. The three hearths are all located underneath the midden. This is also the only location in the excavation where hearths were expected. Hearths, made of fine ash, are very susceptible to postdepositional processes and are damaged easily. Outside the midden area, the surface was partially removed and the excavation level is lower than the original floor on which the precolonial peoples walked.

In total, eleven burials were found during these previous excavations. Most burials contained adults, but one 18-year old female, one 14-year old male or female and one child were buried at Golden Rock. There was also evidence of secondary burial practices. In these instances, human bones were found in such positions that they had to have been reconfigured after the individual was fully decomposed. Other rituals associated with burial practices at Golden Rock were the burning of organic substances, as one burial contained charcoal and ashes at the bottom. Some burials contained grave gifts, including pottery vessels and conch tools and beads. In the child’s grave, 81 quartz and three shell beads were found, suggesting that this young individual had a certain status in the community, despite the inability to have accrued status during his/her lifetime.

Most burials are located outside the house structures. However, two burials are located inside house structures. Although it is possible that these burials and houses were constructed in different time periods, the practice of placing individuals within house structures is a common practice in the precolonial Caribbean. These practices connected individuals and structures spatially, establishing a link between the social meaning of group identity and the physical structure and body of the deceased. This practice also ensures that the deceased does not part with the group inhabiting the structure, but remains a participant in the house (Morsink 2006,
In the western world, the realm of the dead is strictly differentiated from the living, placing people in cemeteries away from daily life. In precolonial times in the Caribbean, this distinction was not made and life and death were treated as a continuous process. Furthermore, including deceased members inside the household is also testament to ideas of deep time and a strong emphasis on long-term family traditions. Especially when houses are rebuilt in approximately the same location, a practice that also happened at Golden Rock, the burials stay within the household over multiple generations.

1.3.2 The Concordia Estate
The Concordia estate, also known as the ‘De Graaff’s house’ after its most illustrious owner, is a large estate made up of several buildings, a number of which are still in existence today (Barka 1996, 2001). The estate was the subject of a research program in June 1994, when the existing buildings were doomed to be bulldozed because they were in line of sight between the airport control tower and the runway. A team from The College of William and Mary in Virginia under supervision of Dr. Norman F. Barka mapped the area and documented the buildings. In addition, they excavated twelve small trenches to document the foundations, geological layout and material culture of the site. The results are published in a report (Barka 1996) from which the information here is derived.

One of the major research objectives was to determine whether the estate in question could be definitively linked to Johannes de Graaff, who held the title of Commander (or Governor) from 1776 until 1781 and became the richest man on the island as a planter and merchant (Barka 1996, 2001). After his death in 1813, a probate inventory, which mentions all his possessions (including 133 slaves) and specifies all buildings on his estate, was registered. A unique feature of his estate was his duck pond, which turned out to be one of the key elements from which Barka (1996) could confirm the estate as that of De Graaff. Apart from the pond, the buildings that survived were the main dwelling with an adjacent cistern, a smaller building with unknown function and part of a sugar boiling facility. The main house is located approximately 20 meters south of the present runway. The architectural details of the existing houses were documented and drawn. Fortunately, the destruction of the buildings never took place and the buildings still exist in 2016, albeit in the same (poor) condition they were in 20 years earlier.

The excavation trenches revealed more of the estate’s layout with remains of stone walls and brick pavements in front of the smaller building. Two small trenches located approximately 12 meters south of the runway contained a layer of late-18th/early-19th century ceramics and part of an articulated cow or horse skeleton. Another test trench located approximately 6 meters from the runway contained, *inter alia*, a ‘Willem coin’ dated 1825 and a pendant from Pope Pius IX, who held his position from 1846 to 1876. Trash layers/pits (as encountered in Barka’s trench), facility buildings or slave houses are examples of features which would be expected in the peripheral area of such an estate complex.

1.3.3 General History of Statia
St. Eustatius has a rich and diverse historical background with multiple episodes of habitation by different cultures. For that reason, the significance of Golden Rock and Concordia, located within the present-day project area, can only be understood within the longer/broader history of the island. This section contextualizes these two archaeological sites by summarizing the salient episodes of Statia’s history.

1.3.3.1 Precolonial period
The first evidence for habitation on the island is from the so-called Archaic age. The sites from this period are often associated with scatters of shell and stone tools and people seem to have focused on the sea for their subsistence. Multiple locations have been recognized on the island,
but very little research has been done on this period. This is partially due to the dearth of large artifacts, as pottery is rarely found in these archaeological sites. Radiocarbon dates are lacking from the island, but a site on Saba yielded dates of 1350 B.C. (Hofman, et al. 2006; Hofman and Hoogland 2003). The spatial proximity of Saba to St. Eustatius suggests that sites on both islands were contemporaneous and that finds from St. Eustatius can be dated to the same time period.

After approximately 500 B.C., probably even as early as 800 B.C., a wave of colonists entered the Caribbean islands from South America. The colonists brought a new style of pottery with them, called Saladoid (after the Saladero site in Venezuela). The pottery is characterized by white-on-red and white-on-black paint and relatively thin pottery (Keegan 2000; Rouse 1992). This high quality pottery is found in many different and complex forms, such as platters in the shape of turtles and large storage vessels possibly used for manioc or corn beer. The colonists are associated with the Arawakan diaspora and culture from South America (Heckenberger 2002, 2005; Santos-Granero 2002). In addition to the Arawak language, this diaspora is also characterized by a complex assemblage of cultural features including settled village life, horticulture and institutionalized hierarchy. This complex set of features has been recognized in the archaeological record as being spread over an enormous area in the Amazon region and into the Caribbean islands (Heckenberger 2002, 2005; Santos-Granero 2002).

Although these colonists permanently occupied the northern Lesser Antilles after their arrival (Haviser 1997), they did not settle on St. Eustatius until the 7th century A.D. (Versteeg and Schinkel 1992; Versteeg, et al. 1992). It seems that St. Eustatius did not harbor the resources (economic or social) to establish a permanent village early on. The Golden Rock site was the first permanent settlement on the island. The habitation of Golden Rock ended around the 10th century, and few dates have been found on the island that postdate this site until the Europeans arrive in the Caribbean. Although this might be interpreted as a habitation hiatus, the lack of dates from sites that could be considered post-Saladoid is more likely the reason of this void. It is expected that, with more detailed studies on the island, later precolonial occupations will be found. For instance, the pottery found on the Godet site, on the Caribbean (south) side of the island, has strong indications of post-Saladoid occupation, but exact dates are lacking at present.

1.3.3.2 Colonial period
The story of the first permanent European colonization of St. Eustatius begins with the founding of the Dutch West India Company (WIC). The events leading up to its foundation can be traced back to 1568, when the people of the Seventeen Provinces started the so called “Dutch Revolt” against Philip II, the king of the Spanish empire to which they were subjected. The main reason for this revolt was the persecution of Protestants by the Spaniards during the Protestant Reformation. The revolt resulted in the Eighty Years’ War, started by William the Silent to liberate the Calvinist Dutch from the Catholic Spaniards. In 1581, the northern provinces signed the Union of Utrecht and the Act of Abjuration, which can be seen as a Dutch declaration of independence. The provinces which declared themselves independent of Spain called themselves the Republic of the Seven United Provinces.

Due to the war that was going on between this newly formed republic and Spain, the Dutch could no longer trade with Spain and its dominions (which also included Portugal). Until this time, the Dutch had distributed goods imported from the overseas colonies of Spain and Portugal. The WIC was a trading company that would increase trade with the West Indies and South America and establish settlements there, which would be used as permanent trading posts. This was, however, not its main goal, since the WIC was an explicit instrument of war against Spain. This was to be, at all times, its main objective. The aim of the Dutch was not so much the occupation and colonization of the many easily available islands as the gathering of
information concerning the movements of the Spanish treasure fleets (Goslinga 1979:21). This information was used to capture the cargoes of Spanish ships, such as the famous silver fleet seized by Admiral Piet Heyn in 1628.

### 1.3.3.2.1 The early years
The English were the first Europeans to settle on St. Eustatius in 1625, but they moved soon after, probably due to unsuccessful agriculture (Alofs et al. 1997:76). In the 1630s, the Dutch began to colonize various Caribbean islands. St. Maarten was colonized in 1631, Curaçao in 1634, Aruba, Bonaire and St. Eustatius in 1636 and Saba around 1640. The first Dutch on the island found the ruins of a deserted bastion, on which they built Fort Oranje. The bastion that Fort Oranje was constructed on was built in 1629 by the French. In this year, they temporarily settled on Statia because they were afraid that the Spanish were going to use the island as a base from which to attack the French settlement on St. Kitts. Insufficient quantities of drinking water made their stay a short one. The Dutch strengthened the French fort with some cannon (Goslinga 1979:79). In 1636, the new population of St. Eustatius consisted of 40-50 people. These were mainly Zeelanders, Flemings and Walloons. They set up tobacco, sugar cane and cotton plantations and called the island “Nieuw Zeelandt.” Coffee and indigo were also grown on the island. As the plantations increased, so did the number of imported African and North American slaves. In 1665 the population had grown to 330 white people and 840 Africans and Native Americans. The yields from the plantations, which by 1650 were even to be found on the slopes of the hills, were exported to Zeeland. Prosperity increased steadily, but it was probably not until the beginning of the eighteenth century that urban development started to take place. Habitation in the seventeenth century most likely consisted of scattered farms around the fort (Purmer 2003).

In 1663, peace was disrupted when the Englishman Robert Holmes sacked the island. The English occupied St. Eustatius in 1665 during the Second Anglo-Dutch War after an attack led by Edward Morgan. In 1667, St. Eustatius was given back to the Dutch after the Treaty of Breda. In 1672, during the Third Anglo-Dutch War, Statia was under English control again but, a year later, the Dutch took over the island. At the Treaty of Westminster in 1674, it was officially returned to the Netherlands, but the English were afraid it would fall into French hands so they held on to it. This was agreeable to the Heren XIX, the board of the West India Company; in this way they did not have to spend any money on the defense of the island (Attema 1976:18). In 1679, it was taken back into Dutch hands. In the same year, the French attacked the island and destroyed the whole settlement. A year later a joint English-Dutch attack placed the island in Dutch hands again.

At this time, the West India Company thought St. Eustatius would be suitable as a transit harbor for slaves. In 1682, the island became completely the property of the Second Dutch West India Company. The Zeeland merchants who had owned the island gave it to the Second WIC, since the constant disruption to planting and trading activities by pirates and privateers proved too difficult for them. In 1689, St. Eustatius was captured by the French during King William’s War. They hauled away a booty close to two million dollars. By 1697, the Dutch found themselves again in possession of the island, after the English recaptured it for them (Goslinga 1979:81). The multiple changes of power and an economic recession led to great poverty on the island at the end of the 17th century (Purmer 2003). Because land was extremely cheap, people from other islands started moving to Statia. Between 1705 and 1715, the population on the island more than doubled from 606 to 1,274 inhabitants.

### 1.3.3.2.2 Forts and batteries
The first record of a fort other than Fort Oranje is found at the end of the 17th century. It was in this period that the Waterfort was built, although the exact year of construction is unclear. It
contained sixteen cannon, but was hardly ever used. As a result, it quickly fell into disrepair. In the late 1680s, a battery was built on Gilboa Hill, overlooking Tommelendijk (Tumble Down Dick) Bay. There were three other batteries in use apart from Fort Oranje: Dolijn, Tommelendijk and a new fort between Tommelendijk and Oranje. Nearly 30 years later, during the command of Isaac Faesch, not much seems to have changed, for the forts were still in a poor state. In 1748, during the command of Johannes Heyliger, the citizens voluntarily raised a sum of money for the building of new coastal forts. Two new forts were built: Hollandia and Zeelandia. The Heren X supplied the forts with cannon, but they neglected to send the cannonballs. Fort Oranje was renovated as well but, by 1755, its condition had again deteriorated. The original plan of Fort Oranje incorporated four bastions, one of which eventually collapsed along the cliff edge. Drawings dating to 1765 clearly depict the current three-bastion design. In the mid-eighteenth century, Commander De Windt built various batteries along the northern coast of the island: Turtle Bay, Concordia, Corriecorrie and Lucie. In the south, he built a battery named after himself: Battery De Windt. By 1781, fourteen military sites were present on the island, all in severe disrepair. At the end of the same year, the French, who had taken over the island, restored the neglected forts and built four new ones: Panga, Jussac, Royal, and Bouille. They also constructed a network of roads linking the forts and batteries. By the end of 1782 Johannes de Graaff mentions that the island had been brought “in a formidable state of defense” (Hartog 1976:97).

Figure 3 Drawing by Jan Veltkamp depicting slaves working on a Statian sugar plantation around 1750. Source: SECAR collection
1.3.3.2.4 Slavery and the slave trade

In the 1630s, the Dutch conquered parts of Brazil and Guinea. From this time on, they improved their position as slave traders. After 1730 everyone was allowed to export slaves from the Dutch West African coast, but had to pay tribute to the WIC to do so. The WIC lost a lot of money to smugglers who did not pay and could offer slaves for a cheaper price. On St. Eustatius these smugglers sold many slaves, since the WIC failed to supply slaves time and time again. Already in 1675, St. Eustatius provided the French, Spanish and English islands with slaves (Hartog 1976:49). By 1725, the Dutch shipped 2,000 to 3,000 slaves per year to the island, almost all for selling to other islands and not for local use (Figure 4). The Statian slaves worked not only on plantations (Figure 3), but also as crewmen on ships, ship workers, porters of goods to and from ships, and as servants. They possibly also helped in making illegally imported raw sugar into rum. The slave trade reached its peak in the early 1770s. Towards the end of the 18th century, people started to protest against this trade. The slave trade in the Dutch colonies was ended in 1814, but it was not until 1863 that the Dutch abolished slavery. In town, slaves lived both in and around the merchants’ homes; various inventories indicate that slave dwellings were part of these properties in addition to other outbuildings.
The economic situation of Statia changed for the better after 1730. By the 1740s, it was no longer possible to expand agriculture, since all arable land was under cultivation. The demand for sugar soared in this decade. A 1742 map of the island shows 88 plantations and/or landholdings. Nearly four decades later, in 1781, this number had diminished to about twenty, indicating an economic shift from agriculture to trade. Besides the residential houses, new warehouses, trade offices and a new weighing house were built. In the latter half of the 18th century, building activities and trade increased, resulting in a strip of an estimated 600 two-story warehouses that stretched for one-and-a-half kilometers along the bay (Figures 6 & 7). After 1760, the number of ships arriving on Statia numbered between 1,800 and 2,700, reaching a maximum of 3,551 ships in 1779. Almost 20,000 merchants, slaves, sailors and plantation owners were crowded on this small island in its heyday (a large proportion of these were temporary residents). In the 1770’s imports exceeded the capacity of the island’s warehouses and sugar and cotton were piled high in the open air (Klooster 1998:96). This was the time at which St. Eustatius reached its greatest prosperity and earned its nickname the “Golden Rock”.

1.3.3.2.5 Growing prosperity and the Golden Era

The economic situation of Statia changed for the better after 1730. By the 1740s, it was no longer possible to expand agriculture, since all arable land was under cultivation. The demand for sugar soared in this decade. A 1742 map of the island shows 88 plantations and/or landholdings. Nearly four decades later, in 1781, this number had diminished to about twenty, indicating an economic shift from agriculture to trade. Besides the residential houses, new warehouses, trade offices and a new weighing house were built. In the latter half of the 18th century, building activities and trade increased, resulting in a strip of an estimated 600 two-story warehouses that stretched for one-and-a-half kilometers along the bay (Figures 6 & 7). After 1760, the number of ships arriving on Statia numbered between 1,800 and 2,700, reaching a maximum of 3,551 ships in 1779. Almost 20,000 merchants, slaves, sailors and plantation owners were crowded on this small island in its heyday (a large proportion of these were temporary residents). In the 1770’s imports exceeded the capacity of the island’s warehouses and sugar and cotton were piled high in the open air (Klooster 1998:96). This was the time at which St. Eustatius reached its greatest prosperity and earned its nickname the “Golden Rock”.

Figure 5 Het Eyland St. Eustasie. View of St. Eustatius in 1759. Cultivated land can be seen extending high up the slopes of the Quill to the right. Source: National Archives, The Hague

Figure 6 View of St. Eustatius from the northwest as it appeared in 1774. The large building in Upper Town is the residence of Jan de Windt. To the left of the church tower is the town hall. The first building (with the blue roof) at the front of Lower Town is the weighing-house. The building behind the weighing-house is the headquarters of the Dutch West India Company. Watercolor by Emants, after a drawing by A. Nelson. Source: SECAR collection
1.3.3.2.6 The turn of the tide

On 16th November 1776, Johannes de Graaff, the commander of St. Eustatius at the time, ordered a return salute to be fired to the *Andrew Doria*, an armed North American brigantine flying the colors of the rebelling thirteen colonies. Although this counter salute was insufficient for a recognition of the sovereignty of a foreign state (not in accordance with protocol) and De Graaff did not have the slightest competency to do such a thing, the act was interpreted by the English as clear recognition of the rebellious colonies. The English felt betrayed by the Dutch as Statia seemingly chose the side of the British enemy (Jameson 1903). The Statians, however, had no idea that Captain of the Navy, Isaiah Robinson, was on the ship, because the *Andrew Doria* did not look like a naval vessel by outward appearances (Hartog 1976:70).
Nevertheless, this event and other factors increased conflict with Great Britain - which declared war on the Republic in December 1780 - and the capturing of the island by Admiral George Brydges Rodney in February 1781 (Jameson 1903). Together with Sir Samuel Hood and General Vaughan, Admiral Rodney arrived on St. Eustatius with 3,000 men in 23 ships of the line, five frigates and a number of smaller ships. He sacked the island (Figure 8). Rodney kept the Dutch flag flying from Fort Oranje for a month in order to seize the cargoes of unsuspecting ships arriving on the island. The warehouses were sealed and all shops had to remain closed. When Rodney landed, the yearly rent on the warehouses totaled £1,200,000. Over £3,000,000 was realized from goods that were auctioned from the warehouses in what the 1783 Annual Register described as “one of the greatest auctions that ever was opened in the universe.” In addition to this sum, over £4,000,000 in bullion was confiscated from island residents. All of these figures are in 18th-century terms. They represent the largest single booty taken in time of war by any nation during the 18th century. The intended destruction of the island, which Rodney called “a nest of vipers which preyed upon the vitals of Great Britain,” did not take place (Attema 1976:40).

Around 1795 the importance of St. Eustatius as a transit harbor declined. The United States had become independent and trade moved to North America. To make matters worse for the island’s economy, the end of the slave trade was looming. In the midst of Statia’s economic turmoil, the French captured the island in 1795. French policies governing trade inhibited the free transactions that built the island’s wealth. These events signaled the end of prosperity on what a mere fifteen years earlier was the richest trading center in the Caribbean. Devastating hurricanes in 1898, 1899, 1900, 1923 and 1928 caused substantial property damage and contributed to the rate of decline. The population decreased from 2,668 people in 1816 to a mere 921 in 1948. The island that was once known as one of the leading ports of the world became an almost forgotten community.

1.4 Research Questions
This outline of St. Eustatius’ history shows that the project area is part of a vast and complex past with many aspects that play an important role in precolonial and historical archaeology of the Caribbean region. At the same time, local historical developments are also physically grounded in the area. The current project, however, is limited to the data that is available from
this particular fieldwork. As this only involved monitoring, and no excavations could take place, the research questions can only focus on relatively local questions, rather than test pan-Caribbean perspectives and theories. In this respect, SECAR’s focus is mainly on local factors and impacts.

1. What is the spatial configuration of artifacts from different time periods in the project area?
2. Is there a spatial relation between GR-1 and GR-2, as described by Versteeg & Schinkel 1992?
3. How was the project area used by people in the precolonial and colonial period?
4. What can be said about the economic activities that took place in the project area?
5. To what extent does the Golden Rock site stretch into the project area?
6. What other archaeological remains of the Golden Rock site can be found?
7. Is there any indication of additional unexcavated structures at the Golden Rock site?
8. Is there any indication of precolonial funerary practices in the project area?
9. Are there any other activity areas related to the Golden Rock site in the project area?
10. To what extent does the Concordia plantation stretch into the project area?

1.5 Methods

The field methods are limited to the monitoring assignment. No excavations or detailed interpretation could be made that would delay the construction process. Prof. Hoogland and SECAR requested that a straight bucket be used on the excavator, rather than a bucket with teeth. The use of a bucket with teeth runs the risk of cutting into subterranean features and exposes rough, rather than planed surfaces, making identification of archaeological features more problematic. Unfortunately, this request could not be met, as a straight bucket was not available, and a bucket with teeth was used by the excavator. As such, observations of postholes and other features in the soil were significantly hindered.

The trenches excavated for the new lights at the project area were approximately 30 cm wide and 80 cm deep. The length was variable. In total, a length of 3,212 m was excavated. At intervals of approximately 60 m, trenches were widened to 75 cm. At these locations, it was possible to record profiles of the geology of the area. In total, profiles in 23 locations were recorded. All profiles were photographed and drawn at 1:10 scale. Trenches and profiles were all recorded with a Trimble Geoexplorer 6000 at an average precision of < 10 cm. Artifacts were collected during excavation, after rains that exposed new materials in the dirt and during the refilling of the trenches. All finds were collected in 10 m intervals to investigate spatial distribution of these artifacts across the project area.

Artifact processing involved the cleaning and washing of the materials. Further, artifacts were recorded in a comprehensive database for collection and research purposes. Ceramic artifacts were further studied and described, including their shape, material, color, weight, dimension and their location in the original vessel (rim, body, bottom, etc.). Rim fragments represent valuable information on the original vessel size and shape and are part of a more specialized analysis. All rim sherds were drawn and digitized. Other categories, including shell, glass and metal, were only collected in small quantities and did not represent a significant part of the assemblage. Therefore, their analysis is limited in this report.
2. Geology

2.1 Introduction
The origins of St. Eustatius are volcanic. St. Eustatius is part of the arc of volcanic islands that stretch between Venezuela and the Greater Antilles. The landscape on St. Eustatius is formed by two volcanoes: the Quill, dominating the landscape to the south, and the Northern Hills. In between these two volcanoes, the ‘Cultuurvlakte’ represents the only flat area on the island. This is the location of the airport and project area.
The Northern Hills are remnants of an extinct volcano, whose last activity likely ended approximately one million years ago. Since then, the volcano collapsed and eroded, leaving the rugged terrain in the north of the island.
The Quill is much younger. Although dormant, there are multiple wells in the neighborhood of the Quill that have warm water inside due to geological warming. The last eruption of the strato-volcano is ±1700 years ago, which left a top volcanic ash deposit across large parts of the island. On the coastal cliffs, Versteeg and Schinkel (1992) observed many buried paleosols underneath the last depositional event. This means that during multiple stages in the volcano’s past, long time intervals separated eruptions. These intermittent stages lasted long enough for soils to develop, indicating temporal gaps at a minimum of multiple decades, if not centuries. The eruptions changed the local landscape drastically. Every episode caused St. Eustatius to grow larger and higher, causing it to become a more prominent island in the Caribbean Sea over time.
The geology of the cultuurvlakte, in which the project area is located, is relatively straightforward. It consists of multiple layers of volcanic ash and airfall deposits. As some volcanic ash deposits show clear signs of buried A-horizons, it means that these were separated by time and should be understood as separated depositional events.
2.2 Profiles

During excavations, profiles in 23 locations were recorded during Phase A (Figure 10). An additional profile was recorded during Phase C. The soil profile photographed and recorded during the excavation of the oil separator (Phase C) provided the clearest perspective on general stratigraphy of the area. The first layer, Layer 1, is characterized by volcanic ash deposit with organic material. The texture is loamy sand. This is an A-horizon. Layer 2 is a layer with volcanic ash and small pebbles, likely representing a volcanic ash combined with airfall deposits. The texture of the deposit is loamy sand, identical to the layer on top. This is a C-horizon, as it seems unaltered from the previous layer, except for the lack of organic material. Layer 3 is more compact and its texture is clayey sand. This seems to be a buried A-horizon, as it is compacted by trampling and endured exposure. The dark color is probably the result of organic material. Layer 4 is also clayey sand, although less clayey as in the layer above. This layer represents a C-horizon. Underneath, Layer 5, is a loamy sand with pebbles. This is also less compact, which suggests that this a C-horizon. Layer 6 is similar to Layer 5, but it contains large spots of mixing with Layer 7. Layer 7, the bottom of the profile, is sandy and very lose. It seems that Layers 5 and 7 represent two depositional events within a relatively short time span where mixing occurred, represented by Layer 6. The deposition of Layer 5 and 6 prevented the formation of an A-horizon in Layer 7.
Not surprisingly, this stratigraphy is very similar to the stratigraphy recorded by Versteeg & Schinkel (1992) for the Golden Rock site. The features encountered at the site started in Layer 2 and progressed through the thick and compact tuff layers, described here as Layers 3 and 4, well into the looser substrata (Layers 5, 6 and 7). No features were recorded in the profile, which indicates that no archeologically visible practices took place at this exact location. However, the absence of features does not confirm that the site ended here. It is possible that this location was void of cultural remains, but was still part of the site. The limited size of the oil separator prohibited further insight in the cultural remains in this area.

In reference to past environments, it is important to note that the landscape, including the vegetation, looked radically different at the time Golden Rock was in use. Versteeg & Schinkel (1992) found a plethora of pollen and macrobotanical remains during their investigations, which confirmed that St. Eustatius was heavily forested. Also, the hydrology of the island was different due to the presence of more trees and the investigators estimate that the average groundwater levels were much higher - up to 10 m under the current surface. This indicates that the inhabitants of Golden Rock site were surrounded by a different environment than what can be seen today at the project location. In historic times, however, the area was deforested and cleared for large-scale agriculture, most likely for sugar cane and other high-value crops.

Finally, it must be noted, that during the excavation of the trenches in the northern part of the project area, the subsurface stratigraphy was heavily disturbed. This area was leveled during the original construction of the airport. This disturbed portion of the runway will not have any archaeological materials in their original context and does not require any management in the future.

2.3 Conclusion

In short, geological information from the island, previous excavations and the current monitoring project all confirm that the landscape of St. Eustatius has been relatively stable since the permanent settlement of Golden Rock. No major depositional events or large-scale erosion have taken place. Although humans have made a strong and lasting impact on St. Eustatius’ environment, the geology has been affected little.
3. Pottery

This chapter investigates the pottery assemblage from the monitor project. Pottery is the largest artifact category in this project and is, in general, very helpful for investigating time periods and social phenomena in the past. A general discussion of the pottery assemblage found during this project is followed by a more detailed perspective on specific artifacts. In total, 351 sherds were found for a total of 2098 g. It must be noted here that most artifacts were found after initial excavations. During the project, multiple rains washed away the dirt from the trenches and exposed new materials previously covered by sand. These additional collections emphasized the density of artifact distribution in certain areas over other locations. Furthermore, this also shows that, if possible, future research needs to apply proper archaeological excavation techniques during the first phase of exposing new subsurface layers in the area. The average weight of sherds was 6 g per sherd, which is relatively low. This low average indicates that the assemblage has been subject to numerous factors that have caused the pottery to fragment further after initial deposition. This can be caused by bioturbation, including agitation caused by animals and plants/roots; however, trampling is the most likely post-depositional process affecting the low average weight of the sherds. Although larger sherds are preferred for research purposes, the small sherds recovered in this project still held a wealth of information.

The general distribution of the sherds per trench provides a clear perspective on spatial organization of past activities. Trenches 1, 2, 3, and 4 are all located close to the apron and yielded the most sherds. Although Trench 4 only yielded four artifacts, it is still included here because of the combined collection of surface materials from Trenches 1 and 4 at a later stage of the monitoring. In total, 329 sherds (93.7 percent) were found in these four trenches, as opposed to only 22 sherds in the remaining 31 trenches. This concentration of sherds shows that the southwestern part of the project area is part of an archaeological site, whereas other parts are most likely outside main archaeological activity areas. Previous excavations of the Golden Rock site were situated in close proximity (south) of these trenches and confirm this observation.

Table 1: Pottery findings organized by trench. Note the significant difference between Trenches 1-4 and the rest.

<table>
<thead>
<tr>
<th>Trench</th>
<th>Number of artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helicopter Apron</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>93</td>
</tr>
<tr>
<td>2</td>
<td>95</td>
</tr>
<tr>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>27</td>
<td>5</td>
</tr>
<tr>
<td>29</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>1, 4</td>
<td>4</td>
</tr>
<tr>
<td>2, 3</td>
<td>79</td>
</tr>
<tr>
<td>Grand Total</td>
<td>351</td>
</tr>
</tbody>
</table>
The assemblage can roughly be separated into two time periods; precolonial and colonial. For a number of artifacts, it is difficult to assign a specific time period. This is especially true of undecorated fragments, fired in relatively low temperatures utilizing local clays and other resources. Throughout the Caribbean archipelago, native groups and slaves made their pottery from local sources, did not decorate the vessels and fired them in open fires. This resulted in very similar pottery styles in plainware from precolonial times and Afro-Caribbean wares made by slaves in historical time periods. As colonial wares are also present in the sample, it is difficult to designate a particular time period to these sherds.

However, given the context and the relative abundance of plain wares in comparison to decorated pieces in the Golden Rock site, it seems that most plain wares are associated with the precolonial period. In addition, this project and previous investigations in the area did not yield any evidence of a slave village in the project area, further strengthening the interpretation of these sherds as belonging to the precolonial period. Finally, SECAR has conducted several excavations at slave villages on St. Eustatius (Stelten 2012, 2013) and found that slaves made ample use of colonial wares. Very few Afro-Caribbean sherds were encountered in these context. Although this analysis is cautious about assigning these plain fragments to a specific time period, the argumentation here strongly suggests that these fragments are indeed from a precolonial context.

Table 2 All pottery finds by location, subdivided by time period

<table>
<thead>
<tr>
<th>Trench</th>
<th>historical</th>
<th>In %</th>
<th>precolonial</th>
<th>In %</th>
<th>unknown</th>
<th>In %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>helicopter apron</td>
<td>1</td>
<td>0.3</td>
<td>7</td>
<td>2.0</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>43</td>
<td>12.3</td>
<td>35</td>
<td>10.0</td>
<td>15</td>
<td>4.3</td>
<td>93</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>4.3</td>
<td>77</td>
<td>21.9</td>
<td>3</td>
<td>0.9</td>
<td>95</td>
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<tr>
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<td>51</td>
<td>14.5</td>
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<td>23</td>
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<td>3</td>
<td>0.9</td>
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<tr>
<td>27</td>
<td>5</td>
<td>1.4</td>
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<tr>
<td>1,4</td>
<td></td>
<td></td>
<td>4</td>
<td>1.1</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>2,3</td>
<td>2</td>
<td>0.6</td>
<td>72</td>
<td>20.5</td>
<td>5</td>
<td>1.4</td>
<td>79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
<td><strong>23</strong></td>
<td><strong>247</strong></td>
<td><strong>70.4</strong></td>
<td><strong>23</strong></td>
<td><strong>6.6</strong></td>
<td><strong>351</strong></td>
</tr>
</tbody>
</table>
The table above shows that 247 pottery sherds, or 70.4 percent, could be designated to the precolonial period. Considering that most ‘unknown’ sherds are likely precolonial as well, 77 percent of the assemblage is assumed to be precolonial. The table also highlights the distribution of the precolonial pottery. All but one sherd (Trench 6) were found in the southwest corner near the Golden Rock site. Historical sherds were also found away from this area (Trenches 23, 24, 25, 27, 29 and 35), in the northern and eastern parts of the project area. This is consistent with the location of the Concordia estate that is located in the same general area.

### 3.1 Vessel Shapes and Uses

All pottery sherds were also analyzed for their shape. The shape of fragments informs us as to the shape of the original vessel, which can be subsequently used to interpret (economic) activities associated with these vessels. For example, a griddle, a thick, large and round cooking plate, was likely used to bake manioc or corn breads, but would not have been used to store grains or liquids. By considering a large assemblage of pottery sherds, past preferences for the use of pottery can be discerned and inform archaeological investigations on past practices.

Rim fragments are especially important as they are directly related to the overall shape of the original vessel. As shown in the Figure 12, which displays multiple precolonial sherds from this project, the rim provides essential information as to how the original vessel was constructed. Important aspects to consider in this research are 1) whether the orifice of the vessel is open or closed, 2) whether the rim of the vessel points inward or out and 3) how the body is shaped underneath the rim.
In this assemblage, body sherds from unidentifiable vessel forms are the largest category at 67 percent. This is not extraordinary. The largest part of most vessels is the body and, when broken, body sherds often detach from more diagnostic sherds. Especially when the assemblage consists of generally small samples, it is often impossible to assign sherds to specific vessel shapes. However, a number of sherds could be assigned to specific forms. In total, 10 percent of the assemblage were bowl sherds. Bowls are open vessels, ideal for holding and serving liquids. The pepperpot was a main precolonial staple food, which involved the boiling of a liquid with peppers and other foods that were collected such as vegetables, meat and fish, in a large pot. Bowls were likely used by individuals to serve the food and consume it. Plates (5 percent of the assemblage) served similar purposes as bowls, namely serving of food and other items. The flat form, however, prohibits the holding of liquids. Vessels are similar to bowls, but have a restricted orifice. Vessels could be used for a number of purposes, such as storage of liquids and solid materials. In addition, vessels are ideal for cooking and boiling of pepperpot. The rounded surface on the bottom increases the surface area for the transport of heat from the fire to the liquid inside. The rounded form in general is ideal, as it holds the largest volume with the smallest surface area, decreasing the loss of heat. The restricted orifice reduces excessive evaporation, which would reduce the effectiveness of boiling for a long period of time. Although vessels were used for a number of practices, the shape of vessels are perfectly adapted to the preparation of foods such as the pepperpot.

![Figure 12 Drawings of precolonial rim fragments found during this project](image-url)
Griddles (3 percent of the assemblage), as discussed above, were utilized to cook manioc and corn breads, but could also serve as baking plates for fish and other foods (Pagán Jiménez et al. 2015).

Roof tile (9 percent), pipe (1 percent) and brick (<1 percent) are the only three categories that are temporally restricted to the historic period. Roof tiles were placed on top of structures to keep water out of the building. Pipes were used to smoke tobacco. Although tobacco was a native product to the Caribbean, natives in the region did not use pipes to smoke this substance, but rather rolled it in the form of cigars. Bricks were used by Europeans as building materials.

3.2 Classification

In terms of classification, the precolonial pottery can all be ascribed to the Saladoid period. The most diagnostic attribute found on one artifact was a zone-incised-crosshatched design (Fig. 12 Fnr 15.2 and fig 13). This design is very typical of Saladoid pottery and found in many Saladoid assemblages across the Lesser Antilles and Puerto Rico. The curvilinear white-on-red (WOR) painted design (Fig. 12 Fnr 12.3) is also typical and diagnostic of Saladoid pottery. In terms of vessel forms, the bowls, vessels and plates found in this assemblage are all comparative to the vessel shapes in the Golden Rock investigations. In addition, the excavations at Golden Rock yielded a large amount of undecorated, undiagnostic sherds, but could be ascribed to the Saladoid period based on the context in which they were found. This strengthens the assumption that the undiagnostic sherds recovered during monitoring, especially the ones found in close proximity of the Golden Rock site, are also Saladoid sherds. No other pottery category was found for the precolonial period.

Table 5 Categories of historic pottery found during the monitoring project

<table>
<thead>
<tr>
<th>Material</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building material</td>
<td>34</td>
</tr>
<tr>
<td>Earthenware</td>
<td>10</td>
</tr>
<tr>
<td>Iberian ware</td>
<td>5</td>
</tr>
<tr>
<td>Industrial white</td>
<td>8</td>
</tr>
<tr>
<td>Porcelain</td>
<td>2</td>
</tr>
<tr>
<td>Clay pipe</td>
<td>3</td>
</tr>
<tr>
<td>Redware</td>
<td>8</td>
</tr>
<tr>
<td>Stoneware</td>
<td>8</td>
</tr>
<tr>
<td>Whiteware</td>
<td>8</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>86</strong></td>
</tr>
</tbody>
</table>

In terms of historical pottery, a wider variety of categories were found. Earthenware, Iberian ware, industrial white, porcelain, redware, stoneware and whiteware are all part of the assemblage. The largest category, however, was building material. Building materials most likely originate from the Concordia Estate. All these categories of historical materials are typical within a historical context on St. Eustatius. Based on these fragments, the historical activities in the area are mostly confined to the 17th through 19th century. This corresponds with the
expected pattern and the known historical occupation of this part of the island. The relatively low number of historical artifacts implies that the project area was not used for placing buildings or to deposit household waste. Rather, the Concordia Estate was a plantation and was surrounded by agricultural fields. As the current airport is one of the flattest and most fertile areas of the island, the use of the land for cultivation purposes is highly likely. This interpretation is supported by the low density of historical materials despite the fact that this area was heavily used in that time period.

3.3 Conclusion
In summary, the monitoring project yielded valuable information based on the pottery assemblage found during the construction efforts. The distribution of precolonial pottery confirmed that the Golden Rock site was located in the southeastern part of the project area. Furthermore, the presence of the artifacts in the trenches also confirms that parts of the site are still unexcavated and extend underneath the current airport structures. In terms of historical pottery, the assemblage confirms that the area was in use between the 17th and 19th century, which corresponds to historical sources. Furthermore, the relatively sparse distribution across a large part of the project area supports the interpretation of the project area as a former plantation field. Finally, the pottery assemblage also confirms SECAR’s position that large parts of the airport area are important archaeological areas and monitoring is the absolute minimum to mitigate the impact of construction efforts on cultural resources. In fact, especially in the southeastern part of the project area, archaeological excavations are mandatory to adequately manage cultural resources in the area.
4 Artifacts

In terms of other categories, relatively few artifacts were found and all in small quantities. For that reason, all categories, including stone, shell, glass and metal, are considered here in random order.

4.1 Stone

In total, the monitoring yielded 6686 g of stone, of which the vast majority consisted of the estimation of a large flat slab located in Profile 2 (fig. 14). The flatness of the stone indicates possible human use, such as grinding stone, but further information is lacking.

Figure 14 Detail of Profile 2, showing the stone slab in the wall of the profile

Other artifacts include rounded stones, but clear stone artifacts made for specific uses were not found. The rounded stones could be used by humans, but their form is consistent with the materials found on the beaches in St. Eustatius. The cobbles are worn from the waves and the tides, slowly wearing them down and polishing the outside. The fact that these stones are found in the project area suggest human intervention, as these stones do not naturally occur in this part of the island, but no further information on their use or origin can be discerned. A possible function of these stones as tools could entail scraping and polishing the surface of pottery vessels before they were fired, but further information is lacking. Important to note, however, is that all stone objects were recovered in the southeastern part of the project area (Trenches 1,2,3,4 and 35). Their restricted distribution near GR-1 suggests that these were indeed used as artifacts in the past.

4.2 Shell

In total, 2131 g of shell were recovered. Two species of shell were identified: West Indian Top Snail (Cittarium pica) and Queen conch (Lobatus gigas). West Indian Top Snail is a common shell species found in many archaeological contexts in the Caribbean region. This shell is a source of food in both precolonial and historic times. In some cases, people used the shell to make tools, including fish hooks, shell inlays for (wooden) artifacts, scoops and scrapers. In this assemblage, no artifact was found. One remark must be made, however. Local hermit crabs often use West Indian Top Snails as their houses. It is possible that a significant part of the assemblage was introduced by hermit crabs into the project area. Although the shells were also common in the archaeological deposits of Golden Rock, this possibility cannot be dismissed. Queen conch is still collected by local fisherman for food on the island. In precolonial times, Queen conch was also a large part of the diet. However, the large shell is heavy and difficult to transport. In many locations throughout the Caribbean, people eased their burden by removing the meat and discarding the shell into the water or close to the shore before making the trek to
the village. Jones O'Day & Keegan (2001) show that many shells found at sites were also used as tools. Taking all this into consideration, one can expect that Queen conch fragments found at inland sites, such as Golden Rock, were, in fact, artifacts as well. In the assemblage here, two pieces of Queen Conch lip were found (Fig. 15). The Queen conch lip is easily detached from the main shell and is very thick and sturdy. Although the artifacts found in this project are too weathered to make a clear interpretation, other sites yielded beautifully polished artifacts used as axes or adzes made of this material. It is, therefore, possible that the two lips found during this project were used in a similar way.

4.3 Glass
In total, 220 g of glass were found. A significant part of the assemblage, 208 g, was found in a context where modern deposits were mixed with historical artifacts. Although most of the glass was identified as modern, it is still included in the database. The remaining 12 g were mostly of very small fragments and very little information could be discerned from these artifacts.

4.4 Metal
Only one metal artifact, weighing 165 g, was found. This brass artifact has a very distinctive form and could be identified as an arm fragment of a Fairbanks scale, which was used to weigh produce. This artifact is dated to the mid-19th century, which confirms investigations based on historical sources and historical pottery in the area.
5 Conclusion

The monitoring project at the airport of St. Eustatius provided a significant insight into the archaeology of the area. Although many facets of the project hindered archaeological investigations, including the inability to excavate prior to construction efforts and the lack of an excavator bucket without teeth, this report shows that there are valuable contributions made from these types of investigations. Furthermore, the small width of relative shallow trenches proved to have a reduced impact of archaeological resources. Although postholes and other features were likely missed in this project due to the limited visibility, large parts of the area are not impacted by the construction.

The research questions, as described at the beginning of this report, will be answered in order.

1. What is the spatial configuration of artifacts from different time periods in the project area?
   - The spatial configuration is specifically limited to the southeastern part of the project area. All precolonial artifacts were found in this area as well as the majority of historical artifacts. Historical artifacts, however, were also found in sparse quantities across the project area.

2. Is there a spatial relationship between GR-1 and GR-2, as described by Versteeg & Schinkel 1992?
   - The lack of precolonial artifacts on the northern side of the runway indicates that GR-1 and GR-2 are, indeed, physically separated. These sites were likely inhabited at the same time, but must have involved separated communities.

3. How was the project area used by people in the precolonial and colonial period?
   - The high density of precolonial artifacts in proximity of Golden Rock’s previous excavation areas suggests that this part of the project is part the total Golden Rock village. In historical times, the relative lack of materials suggests that this land was used to grow crops for the Concordia Estate.

4. What can be said about the economic activities that took place in the project area?
   - The current study did not produce artifacts to either confirm or deny that conclusion of Versteeg and Schinkel (1992) in reference to economic practices. All artifacts found were consistent with the artifacts found in the 1980s excavations. The assemblage did confirm that economic activities related to the production, preparation and consumption of food were practiced in the area, strongly connecting the project area to Golden Rock’s village. The lack of artifacts from the historical period suggests agricultural economic activities related to the plantation. One artifact might be related to post-production activities, namely the arm of a Fairbanks scale. Plantations administered their production by weighing production from the fields. The scale might have been used for that purpose.

5. To what extent does the Golden Rock site stretch into the project area?
   - The distribution of artifacts, mainly limited to Trenches 1, 2, 3 and 4, indicates that the village of Golden Rock does not extend far into the project and is confined to its southeastern corner.

6. What other archaeological remains of the Golden Rock site can be found?
   - The limited visibility in the trenches restricted investigations to such a degree that possible archaeological remains were likely missed.

7. What other archaeological remains of the Golden Rock site can be found?
   - The density of artifacts in the southeastern part of the project area suggests that the village extends beyond the previous excavation boundaries. Although no further
evidence was found due to the small size of the trenches, it is very likely that more unexcavated structures are present in the project area.

8. Is there any indication of precolonial funerary practices in the project area?
   - No human or animal remains were found in the project area.

9. Are there any other activity areas related to the Golden Rock site in the project area?
   - There is no indication that there are other activity areas related to Golden Rock in the project area that were not already identified in previous investigations.

10. To what extent does the Concordia plantation stretch into the project area?
    - There was no physical evidence of other buildings or other archaeological features related to the Concordia plantation. This investigation suggests that the project area was mainly used for the agricultural production of the plantation.

In summary, the monitoring project provided valuable information with regard to the spatial configuration and distribution of artifacts. The project confirmed that the precolonial village of Golden Rock extends beyond the previously excavated areas and parts of the village are still located in the project area. The project also concludes that, within the boundaries of the current excavations, few activities from the historical period left material traces. This is consistent with the interpretation of the area as a plantation field.

For future projects in the area, SECAR proposes that archaeological research precedes any construction in the southeastern part of the project area. Furthermore, SECAR strongly recommends monitoring of construction activities in other parts of the airport area, except for the far northern part. The northern part is heavily disturbed and cultural resources are not expected. Yet, the proximity of the Concordia estate, GR-1 and GR-2 do warrant additional research when ground-moving activities take place at the airport.
References

Alofs, Luc et al.

Attema, Ypie

Barka, Norman F.


Divale, W. T.

Ember, M.

Ember, M. and C. R. Ember

Goslinga, Cornelis Ch.

Hage, P. and F. Harary

Havisier, J. B.

Hartog, Johan

Heckenberger, M. J.


Hofman, C. L., A. Bright and M. L. P. Hoogland

Hofman, C. L. and M. L. P. Hoogland

Hoogland, M. L. P. and C. L. Hofman

Jameson, Franklin T.

Jansen, R. and M. C. Dorst
2007 Spatial Patterning and Structures of the Multi-Component Ceramic Age Site SAN 1, Manzanilla, Trinidad. Proceedings of the XXlst congress of the International Association of Caribbean Archaeology:315-327. Trinidad and Tobago.

Sharyn Jones O'Day and William F. Keegan

Keegan, W. F.

Keegan, W. F. and M. D. Maclachlan

Klooster, Wim

31

Morsink, J.
2006 (Re-)Constructing Contructions; Quotidian life and social practice at Anse à la Gourde. MPhil, Faculty of Archaeology, Leiden University, Leiden.

Morsink, J. and W. F. Keegan

Pagán Jiménez J.R., Rodríguez Ramos R., Reid B.A., Bel M. van den & Hofman C.L.
2015 Early dispersals of maize and other food plants into the Southern Caribbean and Northeastern South America, Quaternary Science Reviews 123: 231-246.

Pané, F.R.

Pendergast, D., E. Graham, J. Calvera Rosés and J. Jardines Macías
2002 The Houses in which they Dwelt: The Excavation and Dating of Taino Wooden Structures at Los Buchillones, Cuba. Journal of Wetland Archaeology 2:61-75

Purmer, Michiel

Righter, E.

Rouse, I.
1992 The Tainos: Rise and Decline of the People Who Greeted Columbus. Yale University Press, New Haven, CT.

Samson, A. V. M.
2010 Renewing the house: trajectories of social life in the yucayeque (community) of El Cabo, Higüey, Dominican Republic, AD 800 to 1504. Sidestone Press, Leiden.

Santos-Granero, F.
Schneider, D. M. and K. Gough

Stelten, R.

Van den Bel, M. and T. Romon

Versteeg, A. H. and K. Schinkel

Versteeg, A. H., K. Schinkel and S. M. Wilson