REPORT TO
LARRY FAULKNER, PRESIDENT
THE UNIVERSITY OF TEXAS AT AUSTIN

THE CHORA OF CHERSONESOS
ON THE BLACK SEA

THE 1998 CAMPAIGN

THE INSTITUTE OF CLASSICAL ARCHAEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN
AND
THE NATIONAL PRESERVE OF TAURIC CHERSONESOS
SEVASTOPOL, CRIMEA, UKRAINE
THE 1998 CAMPAIGN AT CHERSONESOS

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The Chora of Chersonesos
on the
Black Sea

The 1998 Campaign

The University of Texas at Austin
National Preserve of Tauric Chersonesos
For Professor Lucy Shoe Meritt

Archaeologist, teacher, supporter, and lifelong friend.
Frontispiece: X-SAR radar image from the Space Shuttle (Oct 1, 1994) of the Heraclean Peninsula, which the chora of Chersonesos covers. The image has been superimposed onto the Indian Panchromatic Satellite (IRS) image of the peninsula.
Dear President Faulkner:

It is an honor and a pleasure to submit to you this preliminary report on the archaeological research and teaching activities of the University’s Institute of Classical Archaeology and affiliated units during the past year. This is my first report to you, and it continues a tradition begun a quarter century ago, when the Institute became an official Organized Research Unit in the College of Liberal Arts. Our mission was and is to promote the interdisciplinary study of the ancient agricultural territory or chora of Greek and Roman settlements in the Mediterranean, and, since 1992, in the Black Sea area. Our earliest fieldwork was carried out in Southern Italy at the Greek colonies of Metaponto, beginning in 1974, and at Croton, since 1983. Both projects are ongoing and have received international recognition not only for consistent results from excavation and survey, but also for the innovative and highly successful applications of the sciences—paleobotany, archaeozoology, physical anthropology, and geomorphology—to a central problem of ancient social and economic history: the role of the countryside and its population in Greek and Roman civilizations.

Over the years the Institute has involved students and faculty from the Departments of Art History, Anthropology, and Geography, and from the School of Architecture. In recent years—and especially now with the project in Ukraine—the range of disciplines represented by collaborating units and faculty, within the University and outside, has expanded significantly. The projects of site conservation and management and remote sensing draw on the talents of students and faculty in the Historic Preservation Program in the School of Architecture, and at the Center for Space Research. They are collaborating with the Institute and with our counterparts in Ukraine in major efforts, sponsored by government agencies, private foundations including the Kress Foundation and the Trust for Mutual Understanding, by the National Aeronautics and Space Administration (NASA), and by the generosity of individual donors, whose names are gratefully recorded in the front inside cover.
The 1998 field campaign is our 25th devoted to the study of the ancient territory, and our fifth in the chora of the Black Sea colony of Chersonesos. Situated in the extreme southwestern corner of Crimea in Ukraine, the ancient site is in the suburbs of Sevastopol, headquarters of the Black Sea Fleet, and one of the most secret places of the Cold War. It was, in fact, a closed city until 1996, so that a special visa and permission were required to work there. (In 1997 the dispute between Russia and Ukraine over the control of the city and possession of the Fleet was resolved: the Fleet was divided and the city remained Ukrainian.)

In 1992, only months after the dissolution of the USSR and the creation of Ukraine as an independent country, The University of Texas team was invited by the Ukrainian authorities to carry out a joint project in the chora of Chersonesos, in collaboration with the Archaeological and Historical Museum of Chersonesos, (now designated the National Preserve of Tauric Chersonesos). The UT project was thus the first by a foreign institution at a major Greek colony on the Black Sea and the first such project in the newly independent and democratic Ukraine.

Why, you may wonder, was the University’s team drawn to this spot, and why were we singled out by our Ukrainian colleagues for the honor of being “the first”? For years while we worked in the chorai of Metaponto and Croton, I had been studying the chora of Chersonesos. It was and is the best preserved example of an ancient countryside, where many of the stone farmhouses and much of the dense grid of country lanes, dividing the Heraclean Peninsula into some four hundred plots of 60 acres each, still exist. The Russian and Ukrainian scholars working there knew about our work at Metaponto and were equally curious to compare notes, but Cold War politics was a real obstruction to the flow of archaeological information, especially from this sensitive area. We had to content ourselves with brief, out-of-date reports and few, if any, photographs and maps.

The chance to exchange information directly came as the result of fateful meeting at two scholarly confer-
ences: the first organized by Italian authorities at Pantanello, our base at Metaponto; and the second, three months later, in the Museum of Chersonesos. There was a meeting of minds and a realization that so similar were our interests and approaches that we could achieve more by combining forces at Chersonesos, and, hopefully, one day in Italy. Five highly successful field campaigns in Ukraine and other joint projects have followed, and the joint University of Texas-Chersonesos Preserve project is well-established and an important demonstration of what international collaboration and good will can achieve.

A quarter century of research on the chora, and five years at Chersonesos is a lot. We’ve learned a great deal, but much more remains to be done both in Southern Italy and on the shores of the Black Sea. And greater challenges lie ahead.

The 1998 campaign was, indeed, outstanding for a number of new initiatives and challenges undertaken. For the first time this year we emphasized advanced methods of remote sensing in the study of the chora. The Institute of Classical Archaeology and the Center for Space Research were awarded a three-year grant by NASA to develop a project using space based imagery to explore the chora, and monitor the future archaeological park (see Archaeological Park below). We entered into a promising collaboration with Ukrainian specialists in the Ukrainian Committee for Cartography and Geography.

We had our first full excavation campaign at the complex, multi-phased site, Bezymyannaya. Our work there focused on the early Byzantine fortifications—a period later than the familiar Greek and Roman periods, and one which is relatively little-known. As in the past, there was a joint project with the National Preserve, and it included UT graduate students in Classics, Anthropology, and Geography as well as advanced students from the University of Michigan and from Kyiv (the capital of Ukraine), Simferopol (the Capital of Crimea), and Sevastopol as well as from Moscow and St. Petersburg. Undergraduates from UT and Bryn Mawr College participated for the first time.
The first phase of our program in archaeological site conservation, which began with a pilot project in 1996, was brought to a successful conclusion this summer. The team, as in the past, was directed by Professors Jerome and Weiss of Columbia University with graduate students from the Historic Preservation Program at Columbia and from the School of Architecture at UT. It included also a student from the Historic Preservation Program as well as Ukrainian students.

The site conservation effort is part of a much larger project to create an archaeological park of the city and chora of Chersonesos. This year for the first time, serious discussions with the Ukrainian museum authorities were begun with this goal in view. After these discussions Professor Jeffrey Chusid, the newly appointed Director of the UT Historic Preservation Program, drafted a preliminary cultural resources management plan for the park. Through our efforts Chersonesos and its chora were listed by the World Monuments Fund in New York as among the 100 most endangered monuments of world cultural significance for three years running (1996-1998). Our contribution and Chersonesos will be featured at the International Conference, “Art, Antiquity, and the Law: Preserving Our Global Cultural Heritage,” at Rutgers University at the end of October of this year. The focus of the conference will be on China, Africa, and Ukraine.

**REMOTE SENSING**

It has been a year of firsts. One of the newest and fastest growing areas of archaeological methods is the use of satellite based imagery and geophysical equipment to explore, in a non-destructive way, archaeological features. The hope is that information gained in this way can be used to extend knowledge of known archaeological areas without recourse to relatively much more expensive and labor intensive excavation, and that it may ultimately prove useful in protecting and monitoring archaeological and culturally important areas and monuments.

**Ground-Penetrating Radar (GPR)**

This year we received grants from the J.M. Kaplan Fund of New York to explore the potential of Ground Pen-
etrating Radar in documenting and rendering in three-dimensional form subsurface features. This aspect of the remote sensing project was entrusted to Dr. Dean Goodman, an internationally recognized expert in the use of radar technology. We rented SIR II equipment from an Austin based firm, and it arrived in Ukraine together with Dr. Goodman and our Geomorphologist, Paul Lehman. Getting US radar equipment of this sophistication into and out of Ukraine with minimum delay was no easy matter and it taxed us, the staff of the US Embassy, and our colleagues at the Chersonesos Museum to the extreme. Adding to the challenge was the fact that the destination of SIR II was the city of Sevastopol. Miraculously, it seemed, the equipment arrived on time and was immediately in use in the field. The results we believe justify the effort. This radar gives an instantaneous image and records the data in digital form so that it can be elaborated the same day and results be made available quickly to the archaeologists in the field.

We employed the radar at our current excavation site, Bezymyannaya, an impressive hilltop site that surveys the whole of the territory of Chersonesos to the north, the valley of Balaklava and the Taurian Mountains to the south. The area is extensive, with settlements of various periods and cultures represented. Aerial photography had indicated buried structures over the whole northern slope and these were confirmed and documented in greater detail by the radar (Fig. 1). A square area one hundred meters on a side on this slope was the first to be covered. Dr. Goodman, using computer software that he developed, generated a series of time slices, which correspond to different levels below the

Figure 1. The Ground Penetrating Radar SIR II in operation on the slope below the fort at Bezymyannaya, where aerial photography indicated the presence of walls and structures. From left to right: Paul Lehman, Professor Melba Crawford, Dr. Dean Goodman, and Michail Nikolaenko.
surface. The linear features that appear in all of them, correspond in their positions to those of the aerial photographs. The radar anomalies are most apparent in the slice at a depth of approximately 90–120 centimeters below the surface (Fig. 2).

We decided next to run the radar over the presumed fortress site on the crest of the hilltop where the excavation was begun in 1997 and was to continue in 1998 (see below). Fortunately we did this early in the season and it helped us to make more economic use of our resources. The radar “time slices” indicated the presence of walls at various levels and excavation by and large confirmed the existence of these walls (Fig. 7). The radar also indicated that there were no prominent linear features on the southern side of the site, a result which saved us precious time. We concentrated the excavation in the northwest.

A kilometer to the west of Bezymyannaya (see Fig. 21) and below in an area known as the Karan Heights an ancient necropolis was discovered and hastily excavated at the beginning of this century. During a reconnaissance in this area in 1997 we observed the clearly vis-

Figure 2. “Time slice” in the 100 square meter area on the slope at Bezymyannaya. At a depth of 90–120 cm linear features, corresponding to those evident in the aerial photograph, are revealed by the Ground Penetrating Radar. The software producing the time slices was developed by Dr. Dean Goodman.
ible outlines of a number of rectangular depressions in the bedrock which had all the appearance of cysts cut into the rock. This impression was heightened because they seemed to cluster together in an organized way. We presumed that if they were indeed tombs, some would already have been explored either by the early excavator or curious villagers. Already in the summer of 1997 a GPR survey of the area was contemplated, and the generosity of the Kaplan Fund made it a reality in 1998.

Two areas of the Karan Heights were chosen for survey with the GPR (Fig. 22). The first was an area of a hectare (100 x 100 meters), adjacent to the clearly visible depressions noted in 1997. Less obvious depressions suggested that this area might have potentially undisturbed tomb structures. The results of the survey were encouraging. Major anomalies were apparent in several areas, indicated on the map (Fig. 22, nos. 1, 2, and 4). They occurred at a depth estimated at from 1.8 to 2.4 meters (Fig. 23). Dr. Goodman suggested that they could be the reflections from the top of a hollow within the rock. The question was were these man-made or natural hollows? We were determined to resolve that question at the earliest opportunity.

A second area, half the size was also explored (Fig. 22). For purposes of comparison the GPR was dragged over a rectangle which included a number of the more visible hollows. A topographical map with .25 m contours was created using the Total Station (Fig. 3), and the precise position of the most promising anomalies were recorded.

**Magnetometer Survey**

During the spring and summer of 1998 a magnetometer survey of Bezymyannaya was continued under the leadership, as in the past, of Mikhail Nikolaenko (Fig. 4). “The goal of these investigations,” writes Nikolaenko, “was to create a map of the magnetic field in the area of the ancient settlement at Bezymyannaya and the necropolis, and to localize any anomalies and, further, to isolate those anomalies that have a man-made origin such as ceramics, hearths, kilns, buried amphorae, and iron objects.” The equipment used was an M-33 Quantum Magnetometer.
The area of the excavation, the presumed fort at Bezymyannaya was first covered using a grid of .5 x .1m. The magnetometer survey correctly predicted the location of two concentrated tile and ceramics deposits which were excavated this season. A particularly strong anomaly in another unexcavated area was surveyed with a much finer grid and Nikolaenko was able to conclude that “the magneto-excitatory” body has a nearly square shape with rounded corners at a depth of approximately 60 cm.” It will be explored in a future campaign. A smaller survey in an area of suspected burials, just below the fort, indicated the presence of ceramic concentrations that were later revealed by excavation, but no intact tombs were found.

The magnetometer reveals the presence of ceramic and metal objects, which give different signals and can be recorded in different colors in a print out. The data they provide is complemented by the GPR, which is sensitive to anomalies in the rock underlying the whole area. We decided to employ, so far as was practical, both of these remote sensing devices in the areas under investigation.

The hope in the necropolis area was that signals of ceramics might lead us to burials with ceramic grave goods, but there was another scope as well. The whole ridge overlooking the valley of Balaklava was a major battle ground in the relatively recent wars: the Crimean (1855–1856) and World War II. The German attack of 1942 and the Soviet counterattack and retaking of Sevastopol in 1994 left large amounts of military garbage, not all of which has been removed. In the areas we hoped to test the results of the GPR survey we wanted to be sure that there were no bombs or other dangerous materials. The magnetometer, thus, served a vital practical purpose.

We concluded after this season that both the GPR and Magnetometer are very valuable tools for the archaeologist who must rely on slender resources, as a guide to excavation, but with digging (“ground truthing”) the results will be of limited value. In the area of the fort at Bezymyannaya both surveys were extremely useful. In the area of the necropolis, they have raised questions, which for the moment are without answers. We hope,
in any case, to combine this type of remote sensing approach in future years. As Nikolaenko observes, “special computer software for doing complex depth calculations will be necessary. And it is necessary to note that the expedition’s quantum magnetometer, besides being [near] obsolete, is worn out. Recording measured values on tape, which must be transferred manually to the computer, is extremely inefficient and time-consuming.” For the foreseeable future the new equipment available on the market, is far beyond the financial means of the museum, but not its dreams.

**Satellite and Shuttle Based Imagery**

The potential of airborne imaging devices in detecting the broad patterns of ancient settlement has long been recognized. The ancient land divisions of the territory of Metaponto were first revealed by the study of aerial photographs from the 1940s and 50s. In the past half century the power and sophistication of space based imagery has increased enormously, reflecting Cold War tensions. Now these are waning. In the post Cold War era new applications for these techniques of data collection are being explored.

In the fall of 1997, NASA announced that funds would be made available for a limited number of archaeological projects. The Institute of Classical Archaeology, in collaboration with Professor Melba Crawford of the Center for Space Research at the University of Texas, applied for funding. This spring we were awarded one of these highly competitive three year grants. Work on this aspect of the project began during June of 1998. Professor Crawford visited Kyiv and Chersonesos for two weeks. Professor Crawford writes:

The remote sensing component of the research was initiated in the Spring of 1998 when two students I supervised conducted preliminary analysis of the Indian IRS, SIR-C and X-SAR data. The imagery was geometrically corrected and preliminary classification of the data was performed to provide a prototype result for fieldwork in the summer. In June I conducted a basic reconnaissance study of the sites at the local archeological park as well an extended area...
beyond the Heraclean peninsula for land cover, coastal erosion, and general topographic characteristics of the region. Information derived from this trip is extremely useful in conducting more detailed studies using the imagery as well as in developing the remote sensing based topography map. The trip also proved useful in developing the collaboration between the UT Center for Space Research and the directors of the Park.

Since the trip, the CSR research has focused on conducting exhaustive data searches of the Corona, the Landsat, and the ERS archives. Data have been identified for the first year of the study and are being ordered. I have also been conducting informal weekly seminars for the new members of the team focused on methods for analyzing the remotely sensed data, while a CSR engineer has been working with new researchers from ICA in use of image processing software. We have also updated the classification maps based on information obtained from the summer field studies and are investigating more sophisticated methods for conducting the classification studies.

The NASA Project
The first concrete goal of the NASA-funded project is to observe and map archaeological features using high resolution aerial and space based photography, which has been geographically registered to the Indian IRS imagery. Of particular focus will be the overall pattern of the dividing roads, and of the relationship between the pattern of human settlement and the natural environment – specifically, the historical changes caused by human intervention and those which result from natural forces. This phase of the study will involve the Corona photography and whatever can be acquired from the Ukrainian or Russian archives. The Corona imagery consists of panoramic high
resolution photography taken from satellites. The Corona Program of the Department of Defense which began in 1963, played a major historic role in the reduction of tensions in the Cold War. By executive order of President Clinton at the urging of Vice President Gore, this enormously valuable archive was declassified in 1995 and made available to the public. The imagery will be processed by CSR to enhance features which will be extracted automatically where possible.

We will also acquire historical data from the Landsat satellites. In the early 70s eighty meter data were acquired by the Multi-spectral Scanner (MSS), and in the 80s and 90s by the Thematic Mapper (TM). These data will be processed and analyzed by CSR to map land cover changes through time. Because an adequate topographic map of the peninsula does not exist, synthetic aperture radar (SAR) digital imagery will be acquired from ESA to establish a base digital elevation model (DEM) and then develop a multisensor database of terrain corrected imagery. We will also integrate field information at the site level, including site surveys, and develop maps which are maintained in a digital Geographic Information System (GIS). We will then seek to interpret the information in the context of the archaeological developments of the chora.

Concurrently, under the aegis of the Institute for Classical Archaeology (ICA), we shall be carrying out, as we have for the past five years, joint excavations and campaigns of geophysical prospection and geomorphological research with our Ukrainian and Russian colleagues. This will provide the ground truth for analysis of remotely sensed data. Thus, we hope to achieve our ultimate goal of being able to identify surface and possibly subsurface archaeological features—on the basis of remotely sensed data—both at Chersonesos and in other related ancient
landscapes where field work has not yet been extensive or is impossible for practical considerations, such as limited access for military reasons, recent construction, or limited time and resources.

Funding for cultural projects in Ukraine, it should be noted, has been drastically reduced since independence in 1992. Remote sensing will be a relatively inexpensive means of documenting these sites and could provide critical information in guiding public policy toward them. The results of both the recent research on the chora and that conducted over the past eight decades will be provided to the project thanks to the involvement, as a full partner, of the National Preserve of Tauric Chersonesos (NPTC).

With the help of the UT Visualization Laboratory, results of the scientific investigations proposed under this project will be made available to a broader public through the creation of three-dimensional graphical renditions, in the form of walk-throughs and fly-overs, and they will be made accessible on the Internet and in a video presentation.

The second major aspect of the project will directly confront the problem of the hazards that threaten the chora, and of the management of this extensive culturally and ecologically sensitive area. Because of the deteriorating infrastructure and economic problems of the Ukraine, remote sensing offers the most cost effective, reliable means of monitoring changes in this area brought about by man and nature. By comparing the conditions of the 19th century when the first reliable maps of the area were made, and the 1960s (date of the first available aerial photographs), to the present (when space based imagery is available), it will be possible to map historical change as well as monitoring ongoing conditions of the chora.
The city of Sevastopol is rapidly expanding into the nearby countryside occupied by the ancient Greek farmhouses and roads. The archaeological authorities of Ukraine and the NPTC have taken strong measures to assure the preservation of this historical landscape. In 1996 Chersonesos and its chora were designated a “National Preserve” – the only archaeological site in the country with this designation.

The study, which was initiated in August, is currently focusing on developing a base map of the peninsula from the 5 meter resolution IRS panchromatic sensor on the Indian satellite (Frontispiece, and Fig. XXX). A database will be developed in which data from other sensors will be integrated with the IRS data for characterization of land cover and coastal erosion over time. Because of the military significance of the port of Sevastopol, an enormous amount of data were acquired, and because of the near arid climate of the peninsula, much of the data is cloud-free. While the study will be limited somewhat by the data budget, it is believed that a reasonable historical perspective on change in the area is possible.

The remote sensing projects put our Chersonesos project in the forefront of the application of advanced technology to archaeological problems, but what may be even more significant is the strong working relationship in this historical moment in the development of Ukraine between the US and Ukrainian scientists, archaeologists, and those working to preserve our cultural heritage.

**Geomorphology**

While Dean Goodman and Melba Crawford were engaged with their Ukrainian and Russian colleagues with the remote sensing investigation, Paul Lehman, a Ph.D. candidate in the Geography Department at the University of Texas was collecting the geomorphologic evidence that will give real value and substance to some of that imagery. The study of the interrelation of man and landscape over the whole span of the occupation of the
territory is an important goal of the project. Lehman writes:

During the shortened summer field season of 1997 I familiarized myself with the local archaeology and geomorphology, especially the soil and surface geology, both directly around the site and in the entire southwest part of the Crimea. I inspected more than 30 different localities and took more than 100 samples total. During the longer field season of 1998 I built upon this sampling and described in detail more than a dozen of those examined in the past two years. Supplementing and filling out the field observations are the results of laboratory analyses for 6 localities: two reference profiles of soil development near the site of Bezymyannaya, one reference soil profile away from any archaeological site and three profiles of colluvial accumulation below Bysota Gora. More laboratory analyses are in process now.

To be specific, I have two comparative profiles from each of the three main streams draining the Tauric Mountains to the west: The Alma, Kacha, and Belbek; found evidence of paleoflood deposits on the Belbek; continued collection of clay source samples; collected various samples from geomorphic localities to provide baseline quantitative measurements; sketched, described and sampled three complete profiles of ditches on the site, a similar full profile from the immediately adjacent valley bottom for comparative purposes, two further less detailed profiles from nearby valleys for additional spatial and temporal resolution, and finally four soil profiles from the area of Bezymyannaya itself, one from atop the ancient Greek stone quarry, and one from the badly eroded eastern slope, and two from the northwestern colluvial apron.

Taken together, these localities represent a first approximation of the data sources
necessary to assess reliably the impact of prehistoric and ancient populations on the (paleo) environment of the Crimea.

**EXCAVATION**

**Bezymyannaya (“No Name” Hill)**

Excavation this year focused on the hilltop site at Bezymyannaya, which was opened for the first time during a four-week trial season in 1997. This year the team composed of graduate students from Texas and Michigan under the very able leadership of Professor Phil Freeman of the University of Liverpool, with students from Moscow, St. Petersburg and Kyiv (the University of Kyiv and the Kyivo-Mohylians’ka Academy) directed by Dr. Evgeny Rogov, worked together for seven weeks with excellent results. The excavation was made possible for generous grants from the James R. Dougherty Jr. Foundation, the Brown Foundation, and private donors.

The area of the excavation nearly doubled, and the complexity which was already apparent in 1997 increased dramatically as the numerous walls, pavements, hearths and drains were uncovered. We had, on the basis of the dimensions and the apparently ancient ditch and rampart, initially hypothesized that a Roman fort had once occupied the site. Archaeological and documentary evidence for Chersonesos established that parts of Roman legions were garrisoned at Chersonesos from the mid-second century AD to the mid-third century AD before being withdrawn to the western Black Sea to defend the province of Moesia (corresponding to parts of modern-day Bulgaria and Rumania) Furthermore there were large quantities of red gloss pottery typically found on sites of the Roman period. There was, however, much evidence that the site had been occupied over a much longer period, stretching from the Hellenistic (3rd through 1st centuries BC) to the late Roman and early Byzantine periods (4th through 6th centuries AD), and beyond. The site’s strategic position was long recognized, and, as noted above, it was utilized during the Crimean War and World War II. There were artifacts from both these periods. The considerable damage caused by the World War II combatants, and by the 19th century occupants, has hindered the interpretation of the ancient remains.
Professor Freeman, who is working now on the full field report, warned “with remarkable frequency it was discovered that key wall junctions and alignments were often interrupted by later activity (by stone robbing, by bomb damage or by the digging of foxholes and slit trenches).” He adds that “all of the observations that can be made at this time are based on the initial reading of the evidence of walls and surfaces with the assistance of numismatic evidence for the dating.” What follows is a very selective summary of some of the main results of the 1998 campaign. It draws extensively on Professor Freeman’s work and preliminary report of July 1998, but should not be interpreted as reflecting his earlier or his current thinking about the many problems the site poses. His full report, which will incorporate also the evidence of the pottery, is expected to be ready by December.
The excavation campaign began on Monday, June 15, and concluded on Saturday July 25, with an extra week for dealing with specific problems and with the abundant finds. Its principal goals were to determine the nature and extent of the fortifications and their historical context. We wanted to consolidate and expand the excavation begun in 1997. To that goal, some valuable and necessary changes in the recording system were introduced by Professor Freeman. The excavated area grew from 250 to 410 square meters. Twenty new walls were discovered and 100 new contexts explored. The net result of all this is that our thinking about the site has changed fundamentally.

Figure 7. Ground Penetrating Radar coverage of the hilltop fort site at the beginning of the excavation was useful in indicating the presence of walls and structures and helped in deciding where to excavate. In this Figure a plan of walls from the end of the 1998 campaign was laid over a time slice through the site at a depth of 48–96 cm. Though the vertical correspondence is not perfect, the radar accurately predicted the location of walls on the northwest side of the hilltop and indicated their absence on the eastern side. Scale 1:150
It seems almost certain now that the *agger* (rampart) and *fossa* (moat) that appear so clearly in aerial photographs (Fig. 8) and on the topographical survey (illustrated in last year’s report, Fig. 20) which had initially caused us to think that the site was a Roman military camp—are, in fact, post antique. Their outline appears clearly in the great atlas of the Crimean War battlefields published in 1867 by the Russian general, Totleben. The extensive well-preserved stone wall discovered in 1997 under the highest point of the presumed *agger*, though it follows the line of the ancient walls closely, lies on a well-developed soil that formed after these had been in ruins for centuries. It is probably a Crimean War wall, built with stones robbed from the ancient remains on the site. After it had been fully recorded this wall was removed during the 1998 season in order to clarify the relationship between the ancient walls below. Further, the *fossa* which parallels the *agger* seems to cut through ancient structures with apparent disregard. The mutilated and ignored ancient structures in any case can be no earlier than the early Byzantine period.
The Coins

Here the coins have been the crucial evidence. Twelve were discovered in 1998, bringing the total for the two campaigns to twenty. The coins from the “fort” site fall into five chronological groups.

1) The late Hellenistic Period: two coins of Mithridates VI Eupator, the ruler of the Pontic and Bosporan kingdoms, under whose protection Chersonesos fell at the end of the second century BC.

2) The early to mid-4th century AD: one of the Emperor Constantine the Great, 307–333 AD, and four of Constantius II, 337–361 AD. Chersonesos fought with Constantine in the Danube region against the barbarians and was rewarded with a renewal of its status as a “free city” and exemption from taxes. It received from him the rations to support a detachment of 1000 balisterii, or artillery. Constantinople was founded in this period, and he and his successors attempted to strengthen the defenses of the empire, by reinforcing the fortifications of cities in the Black Sea, and by building new fortifications. Chersonesos was evidently considered to be a key point in this defense.

3) The second half of the 4th century AD: one coin of Julian II, “The Apostate,” 360–363 AD, one of Valentinian I, 364–375 AD, and one issued in Rome, with a portrait of a certain Flaxilla, 379–386 AD. During this period walls were erected in many places against the overwhelming onslaught of the Huns. Chersonesos was the

Figure 9. The excavation of the hilltop site at Bezymyannaya in the first week. A wall is being measured by Sophia Petrovich, graduate student in Anthropology and Dr. Olenka Pevny, as UT students Joseph Carter and Bronwen Wickkiser look on.
only site on the northern coast of the Black Sea to successfully resist them.

4) The second half of the 5th century AD: two coins of Leo I, known as “the Butcher”, 457–474 AD, and one of Zeno, 474–491 AD. Inscriptional evidence shows that Chersonesos made substantial reinforcements to the walls of the city, including the tower of Zeno, which stands well-preserved to this day (and in which were discovered the fabulous series of painted stelai of the Hellenistic period described in our 1994 and 1995 reports).

5) The period of Justinian I, 527-565 AD: four coins of this emperor and one of the period just preceding him were found. The Empire was financially stable and this is known to have been a major period of fort-building in Crimea.

A fact that is immediately apparent from this list is that there are no coins from the period 150–250 AD, when we know from many sources that elements of Roman legions were stationed at Chersonesos, as in many other sites along the northern shore of the Black Sea. They
were withdrawn in the second half of the third century AD, to the western Black Sea to the province of Moesia, to defend the frontier there against the Goths. There is pottery evidence from this period (see below), but no numismatic evidence from the very period when a Roman fort should have existed at Bezymyannaya.

The Red Gloss Pottery

The pottery from Bezymyannaya was studied during this campaign by Denis Zhuravlev of the State Historical Museum in Moscow. Zhuravlev writes:

Despite the fact that all the materials are in a very fragmentary condition, they are very significant. This is the first attempt at scientific research on a group of ceramic materials from the Roman period for this region, and not just for the city, but for a small settlement as well. In the Bezymyannaya excavations we can find the main forms of most types of pottery from the Black Sea region, but we can not say, yet, much about possible centers of manufacture. There are no known kilns in the Northern Pontic area, with pottery in situ.
I am sure that Chersonesos was one of the biggest centers of pottery manufacture in the Black Sea littoral. But for the moment we can only suppose that this was so. There are some finds from last year’s excavation in the city, which are probably “wasters” (discarded defective pots), which means that some pottery at least had to be made in Chersonesos.

In this pottery study we can speak about three main chronological groups:

1) Late Hellenistic (2nd–1st cent. BC): there are some small fragments of red slip dishes and relief mould-made pottery (the so-called “Megarian” bowls). The dishes are probably local, but “Megarian” bowls are imported from different centers.

2) Roman (1st–mid 4th cent. AD): vessels of this period are the most various. There are plates, cups, bowls and jugs of some different shapes. The main part of the vessels have a Pontic or Black Sea origin, but some of them are probably local Chersonesan. There are two fragments of Eastern Sigillata B, one fragment belongs to the group of Candarly. Some fragments of different shapes were also imported from unknown centers. We can not say anything without clay analyses.
3) Late Roman & Early Byzantine (second half of the 4th–first half of the 7th) the vessels can give a terminus post quem for the settlement. Forms 3, 9, and 10 of Late Roman C Ware are the most popular. According to one scholar, all these vessels were imported. For the moment without a large series of clay analyses, all I can say based on what I have seen in museum collections, the main part of material looks Pontic. Black Sea craftsmen seem to have made copies of well-known Mediterranean Shapes.

Stamped amphora handles, another reliable indicator of chronology, show that the hilltop was occupied in the Hellenistic period, as early at least as 200 BC. A coin of that period was found in 1997 in the excavation of a structure on the slope below the fort. Indeed, some masonry, including many blocks reused in later structures, date from this period, as may some wall foundations. There can be little doubt that the site was chosen at this early date for its strategic position, commanding one of the easier land approaches to the city and its territory. The barbarian Taurians and Scythians were close and unpredictable neighbors. The settlement may have been quite extensive, and it could have acted as a phrourion, or fortress, guarding the southern flank of the Chora.

Coin and pottery evidence proves that the site was in use in the late Hellenistic period when Mithradates’ general Diophantes defended the city and its immediately adjacent territory against the Scythians (the vast territories under Chersonesan control in western Crimea had already been lost).

Future excavation at the site will perhaps reveal the nature and extent of the Hellenistic occupation. For now we have to deal with ancient remains of the late Roman and early Byzantine periods, which are the major discovery of this and last year’s campaigns. In this report only several of the more interesting and controversial discoveries can be considered.

Figure 13. The daily routine of washing, sorting by fabric, counting and recording the ceramics from the excavation by context. Bronwen Wickkiser and Mindy Spearman.
Room 7, adjacent to Room 1 (found in 1997), is a new discovery. These two rooms are the best-preserved on the site (see Plan, Fig. 16). Both had two phases, corresponding to the pairs of walls that surround each, and to the two surfaces that can be associated with the walls in Room 7. Professor Freeman has suggested the possibility that both rooms may belong to the Crimean War period and therefore could be associated with Walls I and II (see above). There is a problem, though, the lighter, interior walls (XIV, XV and 3b) follow so closely the line of the exterior ones (VXI, XVII, III) that it is very difficult to believe that one set could have been built at any great distance in time from the first, and the first set seems indeed to belong to the early Byzantine period.

On the upper floor of Room 7 (Fig. 15), a hard plastered surface, there were four fairly symmetrically placed circular ash deposits which seem to indicate that the room was heated by braziers. These are well-documented for the ancient period, but not for the 19th century. This floor surface extends to the interior set of walls, but does not go under them. When this upper floor was removed a second surface of broken tiles with many indications of burning was revealed (Fig. 17). This surface went under the interior set of walls, but not - it appears - under the thicker exterior ones. It might thus be considered the fallen roof of the first of the two phases of Room 7, and it had imbedded in it a coin of Constantius II (337-361 BC). (Other areas of the site were covered with...
a layer of burned material, which may be contemporary with the destruction of the earlier phase of Room 7). This first phase then came to an end about the middle of the 4th century AD (at the hands of the Huns?) and was replaced, I would argue, at a date not too much later, considering the close way the two sets of walls fit together. Unfortunately the fill over the upper floor surface was mixed and contained materials of various date, though none, however, of the period of the Crimean War. If, as I believe, it was ancient, a likely period for its construction could have been the second half of the 5th century AD (Zeno) or the early VI century (Justinian). Room 10 (Plan, Fig. 16) has been dated to the period of Zeno or later, by a coin imbedded in Wall Ib. So far the northern wall of Room 7, which should have included the entrance, has not been discovered (nor is it clearly indicated in the GPR survey). The GPR survey indicates an extension of the excavation to the north would be productive, and we can hope, then, in a future campaign to find the northern walls of Room 7 and resolve, definitively, the problem of its dates.

The imposing complex at the south end of the site (Fig. 19) (Plan, Fig. 16) includes at least nine walls, most of

Figure 15. Detail of the excavation of Room 7 at Bezymyannaya. Exposed here is the floor associated with the interior walls enclosing the space. On the pavement were found traces of the presence of four braziers used to heat the room. The date of its occupation is uncertain. The possibilities include the early Byzantine period—the fifth or sixth century AD—or even, possibly, the time of the Crimean War.
which do not seem to relate obviously to the others. Clearly here there was much rebuilding and alteration. The size of some of these walls—Wall XXIII, for example, is two meters or 6 feet wide—would seem to indicate their defensive nature. Much study and further probing will be required to clarify the situation here, but the general impression is that here we have the external wall and entrance into the complex of rooms on the northern part of the site. There is a threshold between Walls X and XVIII. Wall XXII may be the wall of a projecting tower or bastion protecting the entrance, as was typical of better known fortifications of the late Roman and Byzantine periods in the Province of Moesia.

The walls to the left of the entrance and Wall XI in particular are the most carefully built (Fig. 20). The masonry resembles in its technique, of using squared blocks of more or less uniform dimensions, the best masonry of the Hellenistic period. There is in fact the possibility that the later fort reused elements of a pre-existing Hellenistic structure (a fortified farmhouse like our Site 151?), perhaps even its foundation courses, but Wall XI and some of the others in this area clearly reused blocks from one or more Hellenistic buildings, with their distinctive cuttings, and therefore are almost certainly post-Hellenistic (at the earliest, they might belong to the period of Diophantes).

Arguments based on analogy are always open to question, but they can be suggestive. Archaeologists working in the Province of Moesia have noted that the builders of forts there reverted to the Hellenistic tradition of using carefully squared stones in the 5th century AD. Also they note a tendency to narrow gates and entrances to fortifications, at this time, and this may also have been the case here. Wall XVIII does seem to narrow the long passageway that leads into Room 4, but it is premature to say so. We shall await Professor Freeman’s study before drawing any conclusions.

The Byzantine remains of Chersonesos are the best-preserved in the ancient city: the structures of the Greek and Roman period are few and far between. Just the reverse is the situation in the territory. So the structures emerging at Bezymyannaya document a little known
Figure 16. Plan of the Bezymyannaya site at the conclusion of the 1998 campaign. This season’s work revealed an extensive complex of walls of the late Roman and early Byzantine periods. The great thickness of those at the south end of the excavated area reflects their defensive character. A number of finished blocks with cuttings and clamp holes have been reused from a structure of Hellenistic date (third to second century BC).
subject—the Byzantine settlement of the territory and its architecture. Our site, we can say, played its modest role in the defense of the Empire and of the values of the civilization that it embodied and preserved for a millennium.

THE NECROPOLIS

A brief trial excavation under the direction of Dr. Olenka Pevny was carried out in the area of the Karan Heights Necropolis in the last weeks of the campaign. Its express purpose was to discover the nature of the anomalies found during the GPR survey (see above). The site of the “best anomaly,” Anomaly 2 (Fig. 22 and 23) was chosen for the first trial trench, a square 5 x 5 meters which was later enlarged to 5 x 7.5 meters (Fig. 24). At a depth of approximately 40 centimeters below the surface, a large slab of compact bedrock—measuring 2 meters long and over a meter wide—was uncovered on the precise spot where the GPR anomaly occurred. The area around this unusual formation was explored thoroughly, and there were no indications of any disturbances caused by human activity. Thus, it appeared
that explanation of the anomalous radar signal as an indication of an anomaly in nature was the correct one. If this were so, however, why did the signal come from a depth of 2 to 3 meters, as the radargram indicated (see above)? We decided in the very last days of the excavation to discover if there was indeed a hollow at that depth (Fig. 25). A drill was employed, but, unfortunately, the bit reached only the estimated upper limit of the hollow predicted by the radar. So the doubt remains, and the curiosity to discover what it was that the radar found.

Some other problems were made in the area of the Karan Heights Necropolis, in an attempt to understand what the rectangular cuttings that first attracted our attention to the site really were. The hasty excavation, by an amateur archaeologist at the beginning of the century had revealed a structure with various room, cremation burials, pottery, and many objects in metal, including coins. No pottery or any other indication of purpose of these cuttings was discovered during our work, but the cuttings do appear to have been man-made. The necropoleis of the City of Chersonesos have long been known. Those of the territory remain tantalizingly elusive.

**SITE CONSERVATION**

There is another aspect of the overall Chersonesos project which has been growing in importance since

Figure 18. A total of twelve coins were recovered during the 1998 campaign at the hilltop site of Bezymyannaya, bringing the total from the site now to twenty. Among this year’s finds were one of Constantine I (307–337 AD), one of Valentinian I (364–375 AD), one of the mint of Rome with a portrait of Floxillus (379–386 AD), one of Leo I (474–491), two of Justinus (474–491 AD), and one of Justinian I (527–545 AD). Two coins of Mithridates VI Eupator (120–63 BC) issued at Amisos, document the late Hellenistic period, when Chersonesos was under the protection of the Pontic ruler. From the late 3rd century BC are two stamped amphora handles from Sinope.
1996. This is the project to conserve the ancient monuments of Chersonesos and its territory, cultural monuments of world significance that currently face the real possibility of abandonment and eventual destruction.

The economic situation in Ukraine is serious and cultural monuments and workers in this field are suffering as much or more than most. Since 1996, when Chersonesos and its territory were named to the World Monument Watch’s list of the 100 Most Endangered Monuments of World Cultural Significance, support for the conservation work from the Kress Foundation and the Trust for Mutual Understanding has been crucial.

The 1998 conservation campaign marked the completion of the stabilization of Site 151, a Hellenistic farm-house (dating from the late 4th century to the early 2nd century BC). This structure was excavated between 1994 and 1996 as a joint project by the UT team and the National Preserve of Tauric Chersonesos (as described in the annual reports from these years). It is an impressive structure with a tower, and walls preserved in some cases to over 2 meters (6 feet) and it was found virtually intact and in a good state of preservation. Once ex-
cavated, however, that condition could only deteriorate rapidly unless measures were taken. That was the impetus for the pilot project in 1996.

Professor Jerome writes:

Conservation issues remain the same as in the previous two years: the original mud mortar is easily washed out of the incomplete limestone rubble walls by precipitation, thus loosening the chinking stones which in turn destabilizes the rubble stone construction. The conservation solution implemented has been to point the vertical surfaces of the walls with a cement-modified lime putty-based mortar, and cap the horizontal surfaces with a dry (hydrated) lime-based grout, made hydraulic by the addition of silica fume.

Areas which were conserved in 1997 survived without damage to the original masonry and with only minor distress to the grout cap and pointing. The original mud plaster of the storage bins in Room 1 was treated by backfilling with broken stone but did not survive. The mudbrick step in Room 2, treated with the same method, was found to

Figure 20. The inside north face of Wall XI. This is the finest stonework on the site. It consists of reused blocks of probable Hellenistic date, and it rises above what may have been the remains of a Hellenistic towered farmhouse.
be in good condition. Another successful feature of the 1997 conservation intervention was the regrading of the spoil heap to the east of the structure into a sizable berm in order to catch the uphill runoff water. Over the year, the berm compacted itself and seeded naturally with wild flowers. The grade was raised along the exterior of the east and north walls, successfully preventing the erosion of the soil base. Between the berm and regraded areas, the country road was rerouted to its original, more preferable location, away from the northeast corner of the building.

Unconserved areas of the walls which were left unprotected through the winter suffered collapse in two areas. The collapses occurred on either side of the ancient repaired breach in Wall 15 (approximately 1 meter in length), and the east jamb of Wall 20 at the entrance to Room 6. These were repaired by reconstruction using documentation drawings prepared during the 1995-96 excavation. The remaining walls were

Figure 21. In this detail of the Indian Panchromatic satellite view, the necropolis site and the hilltop fort site have been indicated. The necropolis was discovered at the end of the 19th century. Part of it was hurriedly excavated then, but no systematic investigation has taken place there until this year.
conserved with the methods established during the previous two seasons. Some small changes were necessary, such as a slight variation in the formulation of the grout, and the embedding of broken stone to assist the pointing mortar to span some of the larger joints without cracking.

Broken stone which had been placed in Rooms 1, 2, 3, 5 and 6, was temporarily removed to inspect the condition of coving at the soil base. Treatment of these areas was undertaken by packing the base of the walls with a 3:1 mixture of sifted soil and sand. Broken stone was then embedded in this new surface, and loose broken stone reinstalled around the perimeter of these rooms to assist in drainage. The mudbrick step was covered

Figure 22. The areas of the necropolis where the Ground Penetrating Radar survey was carried out in June 1998 are indicated by the two large rectangles. Necropolis 1 measures 100x100 meters, and Necropolis 2, 50x100 meters. 20x20 meter magnetometer surveys (indicated by the hatched lines) were done in the areas of Necropolis 1 where the GPR indicated anomalies (see Figure 23). A 50x50 meter magnetometer survey covered the north half of Necropolis 2. Scale 1:1500
with a filter fabric coated with the same mud mixture and Room 2 partially backfilled with broken stone. The final step will be to apply a water repellent to the grout cap, once the grout has cured for a minimum of 14 days. This was not undertaken during the previous year. It is anticipated that this step will prevent surface damage to the grout.

The work at Site 151 meets the highest international standards. A very positive sign for the future is that the methods introduced there are this year being applied to conservation at a site in the ancient city by a team of archaeologists and conservators from the National Preserve and the University of Kharkiv.

What next? With the successful completion of the work at Site 151, the conservation team, together with the National Preserve is considering other projects that will further the larger goal of creating an archaeological park of the ancient city and territory of Chersonesos (see Archaeological Park below). The next object may be a monument of the Byzantine period—the possibilities include a church with a unique quatrefoil plan, or a larger basilica in the western part of the city near its walls. In any case, it will require, once again, an international collaborative effort involving archaeologists as well as conservators.

Figure 23. Anomaly 2—one of three especially noteworthy examples in the necropolis area in Necropolis 1—as it appears on the radargram. The radargram indicates that the anomaly is extensive, perhaps 3–5 meters across, and is located at a probable depth of 180–240 cm. The form suggested to Dr. Dean Goodman a hollow in the bedrock or possibly the vaulted ceiling of a tomb.
**ARCHAEOLOGICAL PARK**

The conservation of Site 151 and the work that is being done in the city is part of a larger plan to create an archaeological park. This has long been a dream of the National Preserve. It is the best hope to protect these unique monuments for the future. This year we are taking the first concrete steps to assist in the formulation of a plan for such a park.

**The Site**

The area of the National Preserve comprises the ancient city of Chersonesos and approximately 1500 acres on several discontinuous areas of the Heraclean Peninsula: the southwest corner of the Crimean Peninsula of Ukraine. The central focus is the ancient city, located on the coastline in the suburbs of the city of Sevastopol, which was founded by Greeks in 421 BC, and then survived as a major Roman and Byzantine outpost until destruction by the Tartars in the 14th century. This site is an archaeological preserve, which includes The Museum, outdoor exhibits, extensive conserved ruins, theaters with theatrical performances, as well as boating, swimming, and other recreational activities for local residents and tourists. Adjoining the ancient city is the chora, the agricultural settlements of the Hellenistic era and later. These rural lands (now bordered in many cases by the high-rise dwellings of modern Sevastopol) contain remnants of roads, property walls, farmhouses, vineyards, irrigation structures, necropoleis, and other elements of ancient rural life. The Preserve also contains significant features from other periods, such as sites associated with the introduction of Christianity and the Cyrillic alphabet to the Eastern Slavs, fortifications and settlements from Scythians, Romans, Tartars, Genoese and others of the many peoples who traded and lived in the region, and sites important to the Crimean and Second World Wars. There are over 100 registered archaeological sites within the preserve. Because the region was also home to the Soviet Black Sea Fleet, the area was closed to tourists until 1996, and thus contains a relatively unvarnished and non-touristic glimpse of life under the Soviet Union. It is a unique, fascinating and important site not only locally and nationally, but internationally.

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Figure 24. Excavation was undertaken in July at the site of anomaly 2 in Necropolis 1. An unusually large and compact slab of bedrock, clearly distinguished at a depth about 30 cm from the surface. The trench was enlarged to explore for a possible dromos, or approach to a tomb chamber. None was apparent.
A Management Plan for the Future
Professor Jeffrey Chusid of the Historic Preservation Program of the School of Architecture has been working with the Director and the Deputy Director of the National Preserve on the presentation and suggesting approaches to international funding agencies. This has been very much a learning experience for all involved; it has been cordial and productive.

Professor Chusid writes:
The goals are 1) to suggest ways of formulating the project so as to best make a case to funding agencies and organizations, 2) to assist in the development of a realistic process, schedule and budget for implementing the Archaeological Park, and 3) to offer an outside perspective on Interpretative Plans, economic development strategies, and other components of a Treatment and Management Plan for the Park.

As with many historic sites around the world, there are conflicting interests at work at Chersonesos. A particular challenge here is the largely invisible nature of the cultural resources in the Chora, with only a few scattered sites excavated, and even fewer adequately conserved. During the many years it will take to excavate and conserve more structures, produce adequate on-site interpretative materials, and build the proposed reconstructions of landscape and buildings (if and where appropriate), the chora must be protected from encroaching development, looting, and thoughtless or inadvertent abuse. There are also other issues such as the agenda of the renascent Orthodox Church relative to Christian sites such as the baptismal font of Vladimir the Great.

Therefore, one direction for this project should be to try to come up with ways in which the park of the Preserve can be made valuable and interesting to a broad range of locals and visitors during that period. This
may include broadening the initial emphasis to include other periods of the fascinating 5000 year history of the region, including environmental or recreational activities, and linking sites in the chora to other similar sites in the Crimea for tourism.

A second direction for this project should be to prioritize the work which needs to take place. For instance, should time and money be spent first on improving security at the sites, repairing the sea wall, beautifying the museum and its environs, conserving sites which have already been excavated and are now deteriorating, or establishing mutually beneficial connections with other historical sites or tourism agencies in Sevastopol, Kyiv and the Black Sea region?

Towards these ends, I submitted to the museum a fairly lengthy survey containing some 100 question and requests for additional statistical data and information about local conditions. This survey was intended to help with the prioritization of tasks, schedules, and budgets. The survey was also intended to provide a data base which will allow us in the United States to help pursue funding opportunities on behalf of Chersonesos and the Park. It is my hope that in future summers,

Figure 26. Conservation of the Hellenistic farmhouse (4th through 2nd century BC) known as Site 151 was completed during the 1998 campaign. Work by the joint conservation team was directed by Professors Pamela Jerome and Norman Weiss of the Columbia Graduate School of Architecture and included students from the School of Architecture at the University of Texas, and from the Historic Preservation Programs at Columbia and the University of Pennsylvania, together with Ukrainian students from Sevastopol, Simferopol and Kiev, under the supervision of Vera Nikolaenko of the Chersonesos Museum staff.
an ongoing relationship can be forged which will allow the Preservation Program at the University of Texas to work with the National Preserve of Tauric Chersonesos on implementing their plans for an Archaeological Park.

**INTERNATIONAL CONFERENCE AT RUTGERS, OCTOBER 1998**

Dr. Olenka Pevny and I are working together with the Director Leonid Marchenko to prepare a joint presentation at an International Congress to be held at the end of October at Rutgers University. The conference, entitled “Art, Antiquity, and the Law: Preserving our Global Cultural Heritage,” will focus on three major sites, in China, Italy (Pompeii), and Chersonesos in Ukraine. The event will receive national and international coverage.

Much has been accomplished since that first experiment in 1994, but much remains to be done. We are extremely grateful to our donors and sponsors for making these efforts possible.

Joseph Coleman Carter
Austin
October 2, 1998
Figure 27. The first phase of conservation after initial cleaning and preparation was the pointing of the masonry. Working here from left to right is Nathan Riddle (Columbia), Joseph Terry (University of Texas), and Catherine Dewey (University of Pennsylvania).

Figure 28. The second major stage of conservation and consolidation of the walls was the grouting. Technically more involved and difficult, it required the preparation “mortar dams” in order to ensure a uniform resistant crown for the wall.

Figure 29. UT Architecture graduate student Bhaskar Srivastava prepares the grout, using a formula developed by Professor Weiss and students, tested during 1996 and 1997 at Site 151, and improved further in 1998. A number of components were donated and shipped from the US (see donor list).

Figure 30 The grout mixture was applied over prepared limestone chips placed in the mortar dams.
Figure 33. Site 151 in a helicopter view, taken at the end of July when the conservation of the site was completed. To the left of the Hellenistic farmhouse is a modern farm road parallel the earthen berm that deflects rain water run off, from the slope above. To the right is the irregular outline of a structure of probably Roman date discovered in 1996.

Figure 34. An excavated area of the Ancient city of Chersonesos, seen here from the helicopter. The ancient city and the museum complex which occupies a part of the site are the heart of the prepared archaeological park. Founded in the 5th century BC by Greek colonists from Heraclea Pontica on the South Coast of the Black Sea, the city existed for nearly 2000 years, when it was destroyed by the Tartars and abandoned. The surviving structures are mostly of the mid- to late-Byzantine period. No Byzantine city has been so completely preserved. It has been called a "Ukrainian Pompeii." In the center, to the left, are the ruins of the 19th century Cathedral of Vlodymr, which was erected to commemorate the Baptism of Prince Vladimir of Kyiv, the first ruler of Rus’ to embrace the Christian faith.
Figure 35. The monuments of the archaeological park outside the city in the chora or territory include many uniquely well preserved farmhouses of the Greek, Roman, and Byzantine periods. Some areas are threatened by the rapid expansion of the city of Sevastopol.

Figure 36. The 1998 University of Texas team at Chersonesos. Front row (left to right): Paul Lehman, Mindy Spearman, Jessica Trelogan; middle row: Olenka Pevny, Jane Rempel, Maya Milanytch, Jason Lucas; back row: Joe Carter, Phil Freeman, Bronwen Wickiser, Sophia Petrovich
Figure 37. This plan of the Heraclean peninsula indicates the areas that have been set aside as part of the National Preserve. This includes a number of ancient farm sites, including Site 151.
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and

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