Narrative

1. Statement of Need

Providing object based, interactive and hands-on learning through exhibits and programs based on Texas science curriculum standards is an integral part of the Museum's mission. The Museum recently broadened its science mission to address a great need voiced by the local educational community for more encompassing science programming than its previous "natural history" focus. School teachers and curriculum coordinators seeking innovative methods to educate and improve scientific knowledge and understanding look to the Museum to complement classroom learning. The exhibit *Voyage: A Journey through our Solar System* will serve as a focal point for community wide science education. It will be a significant complement to Museum exhibits on scientific concepts including such topics as celestial navigation, technology, and cartography. Additional programming provided by national teams of experts in *Journey through the Universe* will captivate the entire community of students, families and educators.

• How the project relates to the mission statement and strategic plan as outlined in the strategic plan summary

The Museum's new mission adopted in 2005 states that "…through innovative programs in science, the museum is committed to enlarging a shared understanding of the impact and importance of science to our lives." One strategic objective is to promote programming and field trips to encourage participation by K-16 school groups. The *Voyage* exhibit can be integrated into school curriculums meeting two major goals of the Museum: 1) create educational programs and exhibits consistent with the Texas Essential Knowledge and Skills (TEKS) guidelines and 2) reach out to all communities in the Corpus Christi area in response to their needs. Consistent with these goals, the Museum is the lead in acquiring the *Voyage* exhibit and partnering with all five Corpus Christi public school districts and local private/parochial/charter schools to pursue the additional *Journey* programming for students, families, educators and the public. The purpose is to address the common goal of seeking innovative approaches to science.

• How the project will serve as an investment in institutional capacity

Voyage exhibit uses the power of models to provide an understanding of Earth's place in the solar system and the Sun's place among the stars. The installation of this exhibit in a publicly accessible area along the seawall fronting Corpus Christi Bay near the Museum will serve both school groups and the general public. Museum programs will include programs on planetary science. Curriculum materials adapted to fit local education standards, activity guides and lesson plans will be available at the Museum and on the Museum's educational website. Partnering with the schools to acquire *Journey* will provide additional opportunities to enhance knowledge and science exploration through public programming, professional teacher training and classroom presentations by national scientists.

• How the institution arrived at its strategic plan, including the planning process and the participants in that process

The Corpus Christi Museum of Science and History, a department of the City of Corpus Christi, was founded in 1957. The audience has always been school children and the general public, primarily families. Facing a series of problems beset by other museums throughout the country, the Museum began to re-evaluate its mission and services to better serve today's audience. The planning process began in 1997 facilitated by staff from Ralph Appelbaum and Associates with a

workshop with Museum leaders and volunteers, followed by a focus group of Museum supporters, then a focus group of community leaders who were not involved with the Museum. After a period to address issues and study changes in the museum community, the Friends of the Museum Board of Directors and the Museum Advisory Committee (City Council appointed) worked together to develop a new mission.

The new mission focuses on South Texas with objectives established to provide innovative programs in science, history and cultural heritage. The goal is to enlarge an understanding of the impact and importance of science in our lives and of our heritage. To further an understanding of science, the Museum will create programs looking at our world, environmental and physical features and resources and how they relate to our lives in the past, present and future. A visualized concept study just completed (September 2007) by Ralph Appelbaum and Associates incorporates the new mission, objectives and goals. It emphasizes the use of technology nodes in exhibit areas that will focus on specific topics of scientific discovery and knowledge.

• Who the intended audience is and how the project will serve this audience

In FY 2006/07, the Museum served a total of 71,283 school students and family visitors. School groups are admitted free and comprised 27.6% of this total. The majority of the students (68%) were from Corpus Christi public schools and other local private/parochial/charter schools. The remaining 32% of student groups came from 69 other communities in South Texas, extending to the Rio Grande Valley. The family audience was 28% local and 72% tourist (48% from Texas).

The *Voyage* exhibit and *Journey* programming will be strong assets for local and regional school districts. State science standards require student participation in observation, investigative activities and using models to impart and support an understanding of our natural world and solar system. Through the *Voyage* exhibit, 3rd through 6th grade students will be able to physically touch a model of the Solar System, a concept that remains abstract to them, making it more meaningful. *Voyage* and *Journey* will directly support science curriculum, lesson objectives and student expectations; it will provide teachers with an active, participatory teaching medium. Students in all school districts will positively benefit by engaging and expanding their scientific conceptual knowledge.

Consistent with the state mandated TEKS curriculum, teachers will use the *Voyage* exhibit as an 'outdoor classroom' to understand the concept of the world and our place in it, as well as, how systems work. Teachers will provide classroom preparation through lessons designed to develop a base of understanding and to rouse interest. The students' visit to *Voyage* will be both fact finding and inquiry. Teachers will facilitate learning as students observe, investigate and use the model to better understand the concept of the Solar System. They will be able to use *Voyage* as a tool, so desperately needed in teaching such an intangible concept, to aid students in better understanding our part of such a vast, abstract system. In addition to the Science concept, *Voyage* will also serve as a springboard to address math skills. Measurement is an objective in which students have not performed well.

Teachers, parents and the general public need to understand how earth, life and the physical sciences provide us with an understanding of the nature of science. Both the *Voyage* exhibit and *Journey* programming provide innovative techniques and skills that can assist teachers and

complement Museum programs and exhibits. Teachers need to engage their students in learning experiences that involve higher order thinking skills based on an understanding of scientific concepts and principles. They need to be adequately prepared to understand the scientific method in addition to specific science content. Science has not been emphasized in Grades K-5 until recently and many elementary teachers do not have strong science backgrounds required to teach the knowledge and skills required in the *TEKS*. Parents who visit *Voyage* and become involved in community and public programming offered in *Journey* will also be able to become more aware of their world and the school curriculum. The Museum will connect the themes of earth and space science with the exhibits, 5th grade program, focus programs and other public programming.

School visits in different grades may well have diverse purposes. A student progressing from one grade to the next will have a different level of understanding, focus and concept objectives. The curriculum provides for scaffolding and increasing the understanding of the concept of systems and our place in the universe. Each visit offers a progressive student learning opportunity and provides a useful teaching tool through active, participatory instruction.

Families as well will benefit from the *Voyage* exhibit and *Journey* programming. A strong home to school relationship is built through recommending educational opportunities available to families that support the classroom. *Voyage* will be an impressive resource for parents to participate in their child's education. Family visits to *Voyage* will afford parents the chance to facilitate direct connections to classroom objectives. Several school districts will encourage parents of Title I students, through campus parent meetings, to access *Voyage* as a free educational resource and as support of student learning and success. Parents will also be encouraged to participate in the community presentations associated with *Journey* programming.

• Area demographics and how this intended audience fits within the institutional strategic Plan

The South Texas Region of public schools {Region 2} includes 42 districts serving more than 102,000 students. Seventy-five percent of the student population is composed of minorities; 69% is Hispanic. Sixty-three percent of the student population is considered by the state to be "economically disadvantaged." Forty-seven percent are considered "at-risk" of dropping out by the Texas Education Agency (mainly based on grades, state assessment scores, or being classified as "limited English proficient"), and 6 percent are in the "limited English proficient" subgroup.

Corpus Christi, with a population of ±280,000, has 5 public school districts. The largest, Corpus Christi Independent School District (CCISD), is one of the largest urban school districts in Texas serving 40,000 students, including 40 elementary, 12 middle and 5 high schools and 5 special campuses. In Region 2, CCISD has a higher percentage of Hispanics (74%), economically disadvantaged (61%) and at-risk (48%) than the entire region.

Student achievement is measured by results of the Texas Assessment of Knowledge and Skills (*TAKS*), the statewide annual test in all core academic subjects. The <u>science</u> *TAKS* is given in Grades 5, 8, 10, and 11. In 2007, 63% of all Region 2 students "met the standard" ("passed" the test) for <u>science</u>. The <u>elementary</u> *TEKS Student Expectation* relevant to this proposal is: "The

student knows that the natural world includes earth materials and objects in the sky and can identify the planets in our solar system and their position in relation to the sun." It requires the use of higher order thinking skills: comprehension, application, analysis, synthesis, and evaluation. These skills are embedded in the K-8 science *TEKS,* which emphasize investigation, scientific inquiry, critical thinking, decision-making, and the use of scientific equipment.

Throughout its 50 year history, the Corpus Christi Museum has always sought ways to collaborate with schools. Museum staff offer grade specific programs, special focus programs, and object laden traveling trunks. These are based on the TEKS, and with exhibits, integrate required concepts and learning tools. All first and fifth grade Corpus Christi ISD students participate in Museum programs. The first grade program covers both science and history, while the 5th grade program focuses on science. Traveling trunks for classroom use target the physical science curriculum. Each trunk comes complete with objects, videos, books, educational activities, equipment, worksheets and PowerPoint presentations. Scientific knowledge is integrated into both science and history exhibits in the Museum. Cartography and early navigation technique programs include interactive features. Hands-on activities and displays focus on celestial navigation, scientific instruments, and types of nautical measurements in early exploration of our world.

2. Project Design

• Project activities and overall goals

Voyage: A Journey through our Solar System is a one to 10-billion scale model of the Solar System that was installed in 2001 on the National Mall in Washington, DC. The exhibition was designed to be replicated and installed at sites around the world. The National Center for Earth and Space Science Education (NCESSE; www.ncesse.usra.edu) is charged with overseeing the replication phase as well as conducting education and public outreach programs in the earth and space sciences, and aeronautics and astronautics.

Voyage includes a scale model Solar System exhibition for permanent installation, a K-13 curriculum, tour brochures, activity guides used with the exhibition and at home, and ongoing access to educational resources—all addressing Solar System science—for community-wide involvement. Also included is a kick-off program for educators and the public. Developed in close partnership with the Smithsonian Institution, the exhibit depicts all planets and moons with a diameter greater than 1,000 km [24 worlds] as 3-dimensional spheres. The Sun is represented as a gold-anodized metal sphere. *Voyage's* 13 aluminum stanchions also contain porcelain enamel storyboards with color imagery and compelling text, providing an up-close view of the planets and moons. In stark contrast, the 3-D models provide the reality of tiny worlds in a vast space. NCESSE is making replicas of *Voyage* available on a <u>strictly</u> full cost-recovery basis, for $179,600 for permanent installation in communities across the nation and around the world.

The *Voyage* exhibit can become the centerpiece of a 'Learning Community Model' for community-wide science education. It will help ensure both a science literate public and a next generation of scientists and engineers. The exhibit is capable of changing how people view the nature of their existence on this tiny planet in a vast space. It not only speaks to science education, but also humbles us in the face of a larger Universe, and drives home that all of us—all life on Earth—share this planet, a small and fragile world worth protecting.

Journey through the Universe programming is an effort by the National Center for Earth and Space Science Education to reach under-served communities. It uses the Earth and space sciences, and aeronautics and astronautics, to captivate *entire* communities, taking students, families, educators, and the public to the frontiers of exploration. To inspire students that reflect groups under-represented in science and technology fields, *e.g.,* minorities and women, classroom visits and public programming by visiting researchers reinforce the science curriculum and recognize the power of role models that can serve as heroes to the next generation.

• Project management, process for corrections and adjustments throughout the project
• Information on partners involved in the project activities (if applicable)
• Evaluation processes
• Outreach plans to reach the intended audience(s)

The Corpus Christi Museum, a department of the City of Corpus Christi, will be the lead institution and will permanently install and maintain the exhibit along the seawall. The Museum will be the focal point for receipt of all materials included with the exhibit and will ensure that appropriate materials are made accessible and distributed to the school districts, classrooms and general public. Materials provided in the purchase of the *Voyage* exhibit include:

- A tour brochure, customized to the community, facilitating a self-guided tour for visitors.
- A tour brochure facilitating a self-guided tour for a class.
- An activity guide of inquiry-based activities and 'experiments' that use the exhibit as a laboratory for Solar System exploration.
- An extensive suite of grades K-2, 3-4, 5-8, and 9-13 lessons that can be used by educators before and after a visit to the exhibit, aligned with curricular requirements as defined by national standards that can be adapted to the community's science curriculum.
- New grade K-13 lessons as they are developed.
- Activities for family and home use.

In addition the exhibit offers:

- A professional development workshop for up to 60 classroom educators, and informal museum educators on the use of the exhibition and the *Voyage* educational materials.
- Ongoing access to NCESSE staff educators and planetary scientists to support community educators
- Ongoing access to *Teachable Moments in the News* and other resources at the program web site.

Journey through the Universe programming provides flexible earth and space science content across grades K-12 that can be customized to curricular needs. It offers professional development workshops, provides science education programs for families and engages thousands of students in the community with real scientists and engineers. *Journey* provides a community with:

- Highly customizable programming delivered by national teams of educators, scientists, and engineers from dozens of research organizations;
- Compendia of grade K-12 lessons that can be adapted to a school district's science curriculum;
- Ongoing access to educational resources and opportunities

Outreach to schools not within the Corpus Christi area regarding the exhibit, its content and associated materials will be through the Region 2 Education Service Center. The Museum will offer weekly programming, focus programs for schools, related topics on astronomy and the solar system for the Museum's lecture series directed towards adults and senior citizens during the winter months and free lectures offered to the general public during the fall and late spring.

Scholarly or community involvement in content, planning, or execution

Community involvement is comprised of the local and area school districts, science educators and administrators from public and private schools and the Region 2 Education Service Center and private educational foundations. These entities met in a series of discussions to examine the community need for this scientific information, the content of the *Voyage* exhibit and how each saw the relevance to student and public knowledge of our world. Each entity contributed relevant information for this project proposal and will be involved in the subsequent stage of execution. The need for this exhibit emanated from the local educational community who then requested the active participation of the Corpus Christi Museum in its plan, development and implementation. This need was seen as integrating well with the Museum's new mission, its objectives and goals for science education and its plans for innovative approaches in learning associated with current, short and long range plans for science exhibits and programs.

3. Project Resources: Time, Personnel, Budget

It is estimated that customization, fabrication, and shipping the *Voyage* exhibit will require 9 months with 2 months for installation. Curriculum development and integration by the school districts will require 3 months. The teacher training and student field trips and family science activities will be spread out over the first year of program implementation.

• Key staff and consultants

A series of meetings focusing on the effort to obtain the *Voyage* exhibit and the *Journey* programming has been taking place for some months now. Taking the lead for the City of Corpus Christi as Project Director is Museum Director Rick Stryker who has been working in the community on behalf of the Museum for 22 years.

Colleen McIntyre, President of The Island Foundation which operates three charter schools, is project coordinator for the various public and private schools and chairs the corporate/foundation donation solicitation team. She also will work with area charter schools to maximize use of the exhibit, staff development and curriculum materials. The fund raising effort is already underway by a coalition of local education foundations. Coordinating that team is Patricia Drolet, Development Director of the Museum who is working with Sharon Trott of the Tuloso Midway ISD Foundation and Patricia Garcia, Corpus Christi (ISD) Education Foundation.

The classroom education community actively collaborates with the Museum to develop or obtain resources needed to improve education for all south Texas students. Coordinating the curriculum development and integration team and planning committee for community events and teacher workshops and training is Sandra Linderman, Museum Educator at the Museum. Other members of the team include: Sonia Perez, Science Coordinator, Region 2, Education Service Center; Cheryl Gillenwater, Curriculum Coordinator, Calallen ISD; Alicia Needham, Curriculum Coordinator, Flour Bluff ISD; Avery Terry, Principal, West Oso ISD; Holly Alderson, Instructional Specialist, Tuloso

Midway ISD; Charlie McMath, Superintendent, London ISD; Palmer Bell, Headmaster, St. James Episcopal School; Owen Hopkins, Corpus Christi Geological Society; Rene Gonzalez, Catholic Diocese of Corpus Christi; and Carol Scott, Trusteee, Corpus Christi ISD

• Budget allocation to accomplish project activities, including both the applicant's contributions and how the applicant will meet the required 1:1 cost share

Purchase and installation of the *Voyage* exhibit and *Journey* program underwriting will involve several partners soliciting matching funds in addition to this grant request. The Corpus Christi Education Foundation has submitted a grant to the Coastal Bend Community Foundation for $50,000 and received a corporate grant of $10,000 from Wal-Mart with the potential of a similar amount the second year. One private donation of $4,000 has been committed. The Education Foundations of the school districts have formed a committee that is working on this project with the full support of their curriculum staff. Working with the Friends of the Museum are the Corpus Christi Education Foundation, Tuloso Midway Education Foundation, West Oso Education Foundation, Island Foundation, and Flour Bluff Education Foundation.

Each district/school curriculum coordinator and the Regional Education Center and the Museum will contribute materials necessary for the educational/curriculum based programs.

- ***Voyage* Cost and Deliverables (NCESSE) - $179,600**
  Voyage exhibition and the associated educational resources and programming
- **Additional Voyage Costs (through the City of Corpus Christi) - $40,000**
  Site preparation and installation, travel for final inspection and approval of installation prior to shipping, shipping of the exhibition, and first year maintenance costs
- ***Journey* Week programming (NCESSE) – $51,069**
- ***Journey* Family Science Night programming (NCESSE) - $10,189**
- **School District Costs** to implement teacher training and student field trips - **$125,111**
- **Total Project Cost: $405,969**

4. Impact

An evaluation format will be designed by Museum staff and a curriculum development and integration team to determine the use and impact of the *Voyage* exhibit on students and the general public. This will include the number of teachers, classes that integrate the material into the curriculum, types of use of the material and exhibit in curriculum, number of field visits to the *Voyage* exhibit and visits to the Museum. Part of the evaluation process will examine the science scores in relevant grades tested on this particular subject matter. In addition, a longer term review of improvements in the scores on State mandated (TAKS) tests will be monitored to determine correlation between use of the exhibit and improvements in science test scores.

The impact on the community, general public and visitors will be evaluated through Museum surveys asking whether they saw the *Voyage* exhibit, and their comments and observations. Interest in the exhibit will also be evaluated by the number of requests for additional information in the form of brochures, additional materials made available at the Museum and visits to the Museum's website. The *Journey through the Universe* program provides baseline assessment for all programming; and will work with the curriculum development and integration team to develop customized assessment of impact on student achievement as measured through benchmark and standardized testing.

BUDGET FORM: Section B, Summary Budget

	$ IMLS	$ Cost Share	$ TOTAL COSTS
1. Salaries and Wages			
2. Fringe Benefits			
3. Consultant Fees			
4. Travel			
5. Supplies and Materials			
6. Services	$150,000.00	$114,705.00	$264,705.00
7. Student Support			
8. Other Costs		$141,264.00	$141,264.00
TOTAL DIRECT COSTS (1-8)			
9. Indirect Costs			
TOTAL COSTS (Direct and Indirect)	$150,000.00	$255,969.00	$405,969.00

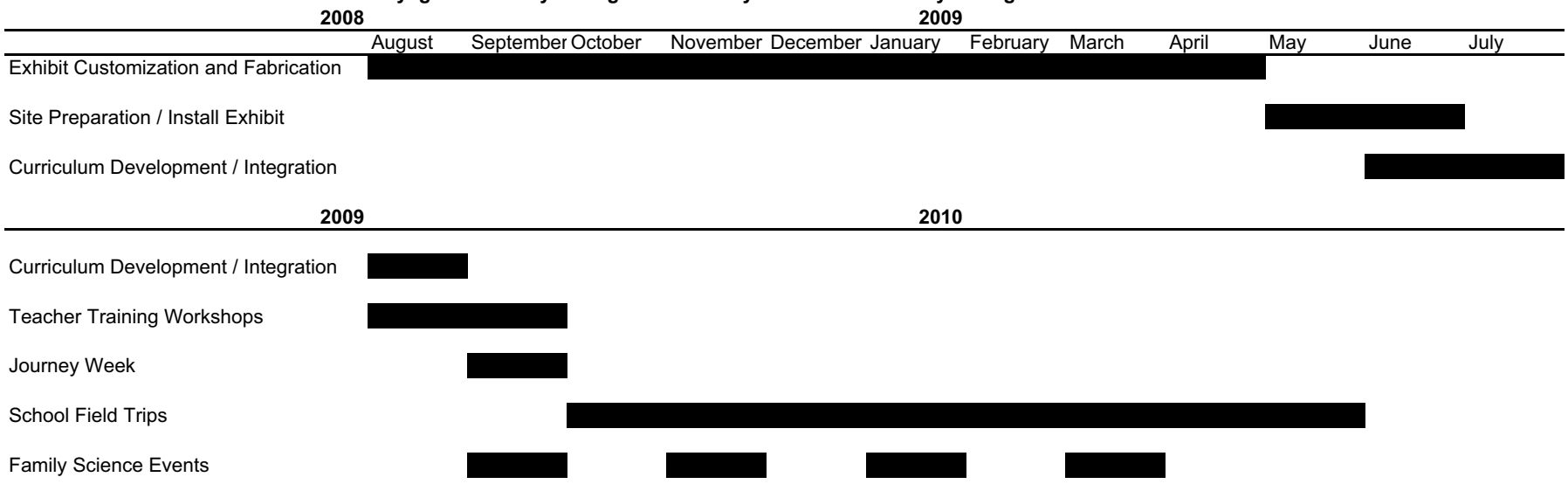
Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	**$150,000.00**
2. Cost Sharing:	
a. Applicant's Contribution	**$120,858.00**
b. Kind Contribution	**$135,111.00**
c. Other Federal Agencies*	
d. TOTAL COST SHARING	**$255,969.00**
3. TOTAL PROJECT FUNDING (1+2d)	$405,969.00
Percentage of total project costs requested from IMLS	**37 %**

*If funding has been requested from another federal agency, indicate the agency's name:

Schedule of Completion

Corpus Christi Museum of Science and History

Timeline

Voyage: A Journey through our Solar System **Journey through the Universe**