

Border Environment Cooperation Commission

Regional Solid Waste Project for Matamoros and Vallehermoso, Tamaulipas

1. General Criteria

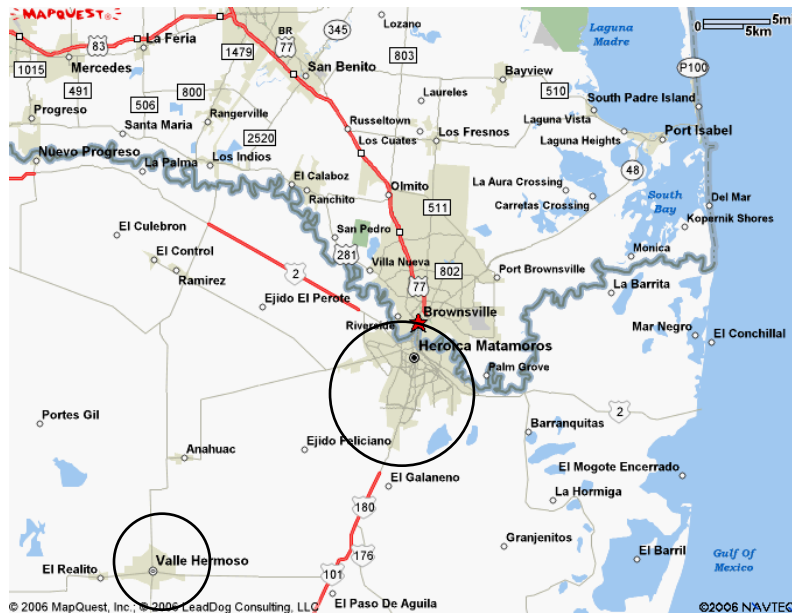
1. Type of Project.

The project includes improving the management and final disposal of municipal solid waste that are generated in Matamoros and Vallehermoso, Tamaulipas, and includes the construction of a regional landfill, three transfer stations and the closure of two open dumpsites and a landfill. This project corresponds to the area of municipal solid waste management, which falls within the priorities of the Border Environment Cooperation Commission (BECC).

The sponsors of the project are the Municipal Governments of Matamoros and Vallehermoso, Tamaulipas.

2. Location of the Project.

The geographic location of the cities of Matamoros and Vallehermoso is shown in the following figure:



The city of Matamoros is located in the northeast part of the state of Tamaulipas. To the north, the city borders the United States of America, across the Rio Grande; to the south, it borders

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the municipality of San Fernando and Laguna Madre lagoon; to the east with the Gulf of Mexico; and to the west with the municipalities of Río Bravo and Vallehermoso.

The municipality of Vallehermoso is located in the northeastern region of the state of Tamaulipas. The north, east, and south parts of the city border the municipality of Matamoros and to the west and south, it borders the Municipality of Río Bravo. The project is located within the 100-kilometer border area.

3. Project Description and Work Tasks

Project Description.

The scope of the project includes the following elements:

- ⇒ Construction of a regional landfill.
- ⇒ Construction of three transfer stations.
- ⇒ Acquisition of machinery and equipment for the operation of the landfill and transfer stations, as well as the transportation of solid waste from the transfer stations to the regional landfill.
- ⇒ Closure of the open dumpsite and of a landfill in Matamoros.
- ⇒ Closure of the open dumpsite of Vallehermoso.

The regional landfill will be built in the municipality of Matamoros. Two transfer stations will be built in Matamoros and one in Vallehermoso. The total cost of the project is estimated at 94.08 million pesos.

Program of Project Tasks.

The project's certification comprises the design and construction of the infrastructure for the management, transportation, and final disposal of municipal solid waste generated in Matamoros and Vallehermoso. The life cycle of the transfer stations and the regional landfill is considered to be fourteen years.

The project also includes the closure of the open dumpsite and the old landfill in Matamoros. The Ministry of Social Development (SEDESOL) will provide technical assistance to the Government of Vallehermoso to close its open dumpsite.

The period of implementation of the transfer stations and the closure of both the open dumpsites and the landfill, will be two years. The following table details the project tasks schedule.

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Task	Year					
	2005	2006	2007	2008	2013	2016
Construction and equipment of Phase I of the regional landfill						
Construction and equipment of Phase II of the regional landfill						
Construction and equipment of Phase III of the regional landfill						
Matamoros' Transfer Stations construction and equipment						
Vallehermoso's Transfer Station construction and equipment						
Closure of open dumpsite and a landfill in Matamoros						
Closure of open dumpsite in Vallehermoso						

Description of the Community

Demographic Information.

According to the last demographic census, the population of Vallehermoso is estimated at 62,000 inhabitants and the population of Matamoros is approximately 462,000 inhabitants.

Municipal Environmental Services

Collection of Solid Waste

The solid waste management service of the two municipalities that form the regional project is provided by the Government of each of these municipalities.

The inadequate disposal of solid waste contributes to pollution of the air, soil, and surface and underground water, as well as to the proliferation of vectors. This has a negative impact on the environment and on the health of the residents of the municipalities considered in the project. The current daily generation of solid waste from the two municipalities is detailed in the following table:

Municipality	Generation of Municipal Solid Waste (Tons/day)
Matamoros	659
Vallehermoso	58.6
Total	717.6

The per capita generation of solid waste of Vallehermoso and Matamoros is 0.91 kg/person-day and 1.39 kg/person-day respectively.

Final Disposal

Currently, the solid waste management utilities of Matamoros and Vallehermoso dispose their municipal solid waste in the Regional Landfill. However, there is still clandestine disposal at the open dumpsites of the two municipalities due to the inadequate closure of the sites. Activities such as indiscriminate burning of garbage and scavenging in

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inadequate conditions are conducted in this site. This problem is impacting water, air, and soil of these communities.

Municipal and commercial solid waste is disposed in open dumpsites due to the lack of control. Also, it is possible that clandestine disposal of industrial and medical waste is occurring at the site. This increases the risk of environmental pollution and hazards to the public health, particularly to the persons working at those dumpsites.

The old landfill is out of operation; however, it has not been properly closed down in accordance with the corresponding regulations.

Project Alternatives

The SEDESOL conducted a technical financial study for the final disposal of municipal solid waste for Matamoros and Vallehermoso considering the following alternatives:

- ⇒ *Construction of a landfill for each of the two municipalities, with two transfer stations in Matamoros.* This alternative was eliminated in favor of a more detail analysis. The alternative examined the experiences and analysis conducted by the SEDESOL for similar projects at the border and in other regions of the country.

- ⇒ *Construction of a regional landfill located in the municipality of Matamoros, two transfer stations in Matamoros and one transfer station in Vallehermoso (proposed alternative).* This alternative was developed comprehensively. The distances between the served communities, the transfer stations and the regional landfill, and the generation of solid waste of the two involved municipalities were considered for the analysis. The average distance range is less than fifty kilometers.

The advantages of a regional scheme over individual municipal projects are: less land surface disturbed, more economical engineering, less investment in infrastructure and equipment, and savings of operation and maintenance costs.

Operation Method for the Regional Landfill

The following alternatives were considered for the operation method of the regional landfill: Trench Landfill Method, Area Landfill Method, and Combined Landfill Method (proposed alternative).

The operation method used in the landfill depends on the topographic conditions, on the soil characteristics, and on the water table. These factors will determine the possibility of extracting the cover material from the landfill area, which is the most economical alternative.

The main characteristics of each of these methods of operation are the following:

Trench Landfill Method

This method is normally used where there is a deep water table, the terrain's slope is slight, and the trenches can be excavated using standard earth-moving equipment.

This method consists in depositing the solid waste on the trench slope (3:1), where the solid waste are spread and compacted with adequate equipment in layers until a cell is formed. Subsequently, this cell will be covered with the material dug out of the trench

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once a day as a minimum frequency. The cover material will be spread over the solid waste and then both solid waste and cover will be compacted.

Area Landfill Method

This method can be used for any type of available terrain, such as abandoned quarry fields, start of stream beds, flat lands, depressions, and polluted marshes. In order for this method to be cost-efficient, the cover material of the landfill must come from a nearby location. The method is similar to the trench method and consists in depositing the solid waste on the slope. These are compacted in inclined layers to form the cell that is subsequently covered with dirt. The cells are built first at the end of the area to fill in, and then they are built toward the other end.

Combined Method

In some cases, when geohydrologic, topographic, and physical conditions of the preferred site for the landfill construction are appropriate, both previous methods can be combined. For instance, the trench method is used to begin the process and then, the area method is implemented for the upper part of the landfill. Another variation of the combined method consists of beginning with the area method, by excavating the cover material from the ramp's base while forming a trench, which later will be filled. The combined methods are considered to be the most efficient because it allows for savings on the transportation of the cover material (as long as it is available at the site) and it increases the life cycle of the site.

Based on the field studies, in which the water table depth was determined to be 2.5 to 3.5 m, of the cationic-exchange features of the soil, of the topography of the terrain, and of the availability of the cover material, it was concluded that the most cost-effective operation method is the combined method.

Transfer Stations

In order to determine the most adequate alternative, two kinds of transfer stations were considered for Matamoros and Vallehermoso involving two types of discharge operation: direct, and indirect. The direct discharge is the proposed alternative.

The direct discharge uses gravity to transfer garbage from the garbage trucks to the transfer vehicles, and the indirect utilizes storage points and mechanized equipment to move the garbage and to feed the transfer vehicles.

The transfer stations proposed for the cities of Matamoros and Vallehermoso use direct discharge with compaction.

Project Justification

Before the end of 2005, the municipality of Matamoros was inadequately disposing its municipal solid waste in an open dumpsite and in a landfill whose operations do not meet existing regulations. In order to solve its final disposal problems, the municipality set up a temporary emergency cell in the site where the regional landfill will be built for adequately disposal of the solid waste.

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Similarly, the municipality of Vallehermoso was inadequately disposing its solid waste in an open dumpsite, and by the end of 2005 it also started disposing its solid waste in the emergency cell of the regional landfill of Matamoros.

Due to the problems related to air pollution, soil and water contamination experienced in the open dumpsite and the old landfill in Matamoros, and consequently the continuous complains from citizens of this city and nearby city, Brownsville; at the end of 2005, the city set up a temporary emergency cell in the same site where the regional landfill will be built. The emergency cell was constructed according to the regional landfill specifications requirements of the final design and the requirements established in the Norm NOM-083-SEMARNAT-2003.

Additionally, the open dumpsite in Matamoros is located at 1.62 kilometers from the city airport, which causes visibility problems due to the continuous burning of solid waste, and the presence of birds represents a risk for the airplanes take-off and landing operations.

The Texas Commission on Environmental Quality (TCEQ) has sent official letters to the SEMARNAT Office in Tamaulipas and to the Direccion General de Medio Ambiente de Tamaulipas, DGMAT (Tamaulipas Environmental Agency), that reassert the problems caused by the smoke produced by burning garbage at the old landfill and at the open dumpsite of Matamoros. These activities have generated complaints from the residents of the neighboring city of Brownsville, Texas.

The implementation of the project contributes to improve health and environment conditions in the northern part of the state of Tamaulipas. The construction of the proposed project will take place exclusively in Mexico and will not impact the United States.

4. Conformance with International Treaties and Agreements.

The project herein falls within the scope of agreements targeted at improving the environment and the quality of life of border residents, which have been signed by Mexico and the United States, such as the La Paz Agreement, the Comprehensive Border Environmental Plan, the Border 2012 Program, and the North American Free Trade Agreement.

2. Human Health and Environment

1. Human Health and Environmental Need.

The main problems of management and final disposal of municipal solid waste in many communities are the following:

- a. Final disposal in open dumpsites, which generate odors, not visually aesthetic, generation of disease vectors and air pollution due to combustion.
- b. Underestimation of the importance of adequate collection and final disposal of solid waste.
- c. Insufficient allocation of financial resources.

These problems occur at the cities of Matamoros and Vallehermoso where there is inadequate disposal in open dumpsites and there is inefficient collection in Matamoros due to the lack of transfer stations.

The burning of garbage at the old landfill and at the open dumpsite in Matamoros, as well as the open dumpsite in Vallehermoso, generates the emission of gases that propitiate a greater incidence of respiratory illnesses among the residents of these two communities.



Due to the complaints presented in the TCEQ's official letters from residents of Brownsville, Texas, in relation to the smoke produced by burning garbage at the old landfill and at the open dumpsite in Matamoros, the DGMAT has requested the Mayor of Matamoros, by means of official letter No. DGMA/273/06 dated September 12, 2006, to implement a program for the closure of the old landfill and the open dumpsite.

Additionally, due to the lack of a controlled entry of solid waste into municipal and clandestine dumpsites, the presence of illegal dumping of industrial and medical waste is possible. This increases the risk for environmental pollution, and endangers the health of the inhabitants of these communities, in particular, the workers at the dumpsites.

Inadequate management of municipal solid waste creates conditions that can bring about the proliferation of disease vectors (rodents), which can carry different types of diseases, such as

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leptospirosis, Hantavirus pulmonary syndrome, murine typhus, bubonic plague, rabies, vesicular rickettsiosis, and Harverhill fever. Also inadequate disposal of municipal solid waste can be a source of air pollution, soil, surface- and underground water contamination.

The morbidity of the diseases in the municipality of Matamoros related to inadequate management and disposal of solid waste is detailed as follows:

20 main causes of illnesses (morbidity) in Matamoros					
Disease	2002	2003	2004	2005	2006*
Intestinal infections by other organisms	28,576	17,895	15,416	10,063	20,081
Intestinal amibiiasis	2,896	3,475	2,497	1,548	2,110
Other helminthiasis	1,472	575	1,165	586	1,435
Typhoid fever	25		697	863	1,184
Respiratory infections	143,992	48,902	55,299	38,483	62,260

* Note: Partial results to week 39 of 52

SOURCE: Sistema Único de Información Epidemiológica /Dirección General de Epidemiología /SSA

It can be observed from the previous table that there is a significant increase of cases reported from 2005 to 2006. This is without considering that the information for the year of 2006 is partial; including the amount accumulated until the 39th week of the year.

The next table shows the morbidity at the municipality of Vallehermoso related to inadequate solid waste management and disposal.

20 main causes of illnesses (morbidity) in Vallehermoso				
Disease	2003	2004	2005	2006
Intestinal infections by other organisms	3115	3031	3742	4,171
Intestinal amibiiasis	426	449	318	373
Other helminthiasis	125	82		166
Typhoid fever		457	564	739
Respiratory infections	8959	9399	11603	14,528

SOURCE : Sistema Único de Información Epidemiológica /Dirección General de Epidemiología /SSA

People working in the dumpsites could get intestinal infections, respiratory and dermatological diseases, hepatitis and cuts with sharp objects, among other health problems. Paludism, yellow fever, dengue fever, West Nile fever, encephalitis, and meningitis are classified as arboviral diseases, which are transmitted by arthropods, such as mosquitoes which feed from the blood of animals and humans.

In 2006, twenty-six horses and two birds tested positive for West Nile Fever. In 2005, 2,327 persons tested positive for dengue fever in the municipality of Matamoros.

The implementation of this project will contribute to reduce the risk to health and to the environment associated to inadequate management of solid waste in the municipalities of Matamoros and Vallehermoso. The closure of the open dumpsite and the old landfill will eliminate the combustion gases that have affected the residents of Matamoros, Vallehermoso, and the neighboring town of Brownsville, Texas.

2. Environmental Assessment

The location selected to build the regional landfill was evaluated according to the requirements set forth in the Official Mexican Norm NOM-083-SEMARNAT-2003.

Based on the results of the basic preliminary studies, the information provided by the municipal authorities, and a direct investigation, the proposed sites for the design, construction, and operation of the regional landfill and the transfer stations were evaluated. Two approaches were established for the analysis: the elements that meet fully the norm's specifications and the identification of engineering solutions for those elements that do not meet those criteria set forth in NOM-083-SEMARNAT-2003.

An Environmental Assessment (MIA, for its initial in Spanish) was completed for the construction of the regional landfill, as well as a Preventive Report for the Transfer Station in Vallehermoso and a Preventive Report for the two Matamoros' Transfer Stations. As a complement to the Environmental Impact Statement, an Aviary Risk Assessment to Civil Aviation Study was executed pursuant to the requirements of NOM-083-SEMARNAT-2003, with regard to the restrictions of the site location for a landfill.

Tamaulipas's DGMAT evaluated the Environmental Impact Statement for the construction of the regional landfill and issued its Ruling on January 16, 2006, by means of official letter MIA/065//2005. Also, the DGMAT completed the evaluation of the Preventive Reports of the Transfer Station of Vallehermoso and the two Transfer Stations of Matamoros, and issued its Rulings on February 9, 2007, by means of official letters MIA/IP/012/2007 and MIA/IP/015/2007, respectively.

3. Compliance with Applicable Environmental and Cultural Resource Laws and Regulations

The project meets the objectives of the General Law for the Prevention and Management of Waste related to the management and disposal of urban solid waste.

The final design for the regional landfill was developed according to the requirements established in Norm NOM-083-SEMARNAT-2003.

The office of the National Institute of Anthropology and History (INAH), in the state of Tamaulipas, certified that there was no impact on cultural and historical resources in the area of influence of the regional landfill and of the three transfer stations, by means of official documents indicated in the following table.

Certification of Non Impact to Cultural and Historic Resources		
Installation	Document Number	Date
Regional Landfill and Transfer Stations of Matamoros	534/2006	June 30, 2006
Transfer Station of Vallehermoso	845/2006	December 22, 2006

3. Technical Feasibility

1. Appropriate Technology

Project Specifications

The projections of solid waste generated in the city of Matamoros and Vallehermoso are performed taking into consideration the following points:

- Per capita generation of the residential solid waste and other sources.
- Per capita generation increase index of residential solid waste and other sources.
- Projection of Population (2006-2020).

The SEDESOL recommends that the annual increments of the per capita generation of solid waste should be established considering the type of location, finding it about 1 to 3%. Minor increments would be assigned to those localities with small growth associated with the developed economic activities.

The projected municipal solid waste generation in Matamoros and Vallehermoso for year 2020 is 1,470 ton/day.

The methodology used to determine the generation of the municipal solid waste generated complies with the Norm NMX-AAA-61-1985.

Technical Process

Regional Landfill

The proposed site for the construction of the regional landfill is located 600 meters past kilometer 21 of highway 101 of the city of Matamoros, Tamaulipas. The following map shows the location of the site with respect to the city of Matamoros and Vallehermoso.



The final design for the regional landfill was developed according to the requirements of the Norm NOM-083-SEMARNAT-2003.

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The following aspects were considered for the regional landfill design and operation in order to select the best operation method.

- Quantity of solid waste to manage daily
- Topographic characteristics
- Soil characteristics
- Availability of cover material
- Water table depth level
- Potential for contamination

According to the analysis of the available methods for the regional landfill operation and the characteristics of the preferred site, it was determined that the best operation method for the landfill is the mechanized combined method. The life cycle projected for the landfill is 14 years.

The evaluation of the preferred site for the regional landfill, in accordance with the Norm NOM-083-SEMARNAT-2003, determined that it is required to install a geosynthetic system for the impermeability of the soil by means of a geomembrane of high density polyethylene.

The regional landfill will include the following installations:

- Geomembrane material for impermeability
- Storm water drainage
- Biogas control system
- Leachate collection system
- Leachate ponds
- Emergency cell
- Environmental monitoring wells
- Control and surveillance booth
- Administrative building
- Weigh Scale area
- Perimeter fence
- Paved access

The equipment that will be utilized for the operation of the landfill is the following:

- Mechanic weigh scale
- Bulldozer Mod D9N or similar
- Water truck with 10 m³ capacity
- Dump truck with 6 m³ capacity
- Front-end loader
- Pick-up truck

Transfer Stations

An analysis was performed to determine the final location of the transfer stations in Matamoros and Vallehermoso, in addition to the station type selection, considering

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transportation distances and volume waste generation. The analysis was performed according to the recommendations specified in the “ Manual Tecnico sobre Generacion, Recoleccion y Transferencia de Residuos Solidos Municipales” developed by SEDESOL. Based on the previous statement, it was determined to divide the urban area of Matamoros into a West Zone and East Zone, each having its own transfer station.

The proposed site for the construction of the West transfer station has a surface area of 1.5 hectares and it is located in the intersection of the Prolongacion Emilio Portes Gil Avenue and 12 de Marzo Avenue bordering north.

The proposed site for the East transfer station has a surface area of 1.5 hectares and also is part of the area of the old landfill.

The transfer station in Vallehermoso will be located at the southeastern part of the city and has a surface area of 2 hectares. The site is situated 2 kilometers from the Luis Echeverria Alvarez Avenue and it can be reached taking the 125 dirt road.

The required equipment for each of the transfer station is the following:

- Weigh Scale
- Discharge hopper
- Static compactor
- Container’s moving system

The transfer station at Vallehermoso will include three containers and one transfer truck. The West station will have 19 containers and 3 transfer trucks. The East station will use 20 containers and 3 transfer trucks.

The final design for closure of the open dumpsites and the old landfill of Matamoros includes the following activities:

- Installation of restrictive signing
- Control access to impede the entry to dumpsite
- Restriction access by means of surveillance and fencing of both final disposal sites
- Control of vectors
- Collection of solid waste dispersed around the areas bordering the site
- Transportation of solid waste from the open dumpsite to the old landfill
- Leveling, compaction and sealing of the solid waste
- Collection and control of biogas
- Collection and control of leachate
- Surface water control system
- Environmental monitoring system
- Complementary Works

2. Operation and Maintenance Plan

The operation and maintenance manual is included in the final design of the regional landfill. According to Norm NOM-083-SEMARNAT-2003, the manuals of operation of landfill shall include the following conditions:

- Access control for personnel, vehicles and materials
- Prohibiting the entrance of hazardous, reactive and unacceptable waste
- Registration of type and quantity of waste coming in
- Operation schedule
- Specific procedures for: quality assurance control, maintenance and environmental monitoring of biogas, leachate and aquifers.
- Safety plans and contingency plans for: fires, explosions, earthquakes, meteorological phenomena, and handling of leachate, explosive flammable and reactive substances
- Organizational charts
- Internal regulations

The landfills shall operate an inventory control system to include:

- Entrance of urban solid waste and materials of special management, vehicles, personnel and visitants
- Sequence of landfill filling
- Generation and management of leachate and biogas
- Contingencies

The city of Matamoros shall developed a biogas monitoring program whose objective is to determine the stabilization grade of the waste in order to maintain the integrity of the final disposal site and to detect migrations outside the property. The program shall define the parameters of composition, explosivity and the biogas flow rate.

In addition, a leachate monitoring program shall be developed, including as an objective to identify its characteristics (pH, BOD₅, COD, heavy metals) and to evaluate the alternatives for its treatment.

The closure of the landfill shall consider the following concepts: final sealant cover, final site leveling, maintenance, monitoring procedure, and final site usage for the landfill.

The construction contractor will be required to develop an operation and maintenance manual and training associated with the transfer stations.

3. Compliance with applicable design regulations and standards.

The preceding project components have been developed in accordance with the “Ley General para la Prevencion y Gestion Integral de los Residuos” together with recommendations stated in the “Manual Tecnico sobre Generacion, Recoleccion y Transferencia de Residuos Solidos Municipales”, the “Manual para el Diseño de Rutas de Recoleccion de Residuos Solidos Municipales, and the “Manual para la Rehabilitacion y Clausura de Tiraderos a Cielo Abierto” developed by the Direction of the Infrastructure and Equipment of the SEDESOL.

The final design of the regional landfill complies with the Norms NOM-083-SEMARNAT-2003 and NMX-AAA-61-1985.

4. Financial Feasibility

1. Financial Feasibility

The North American Development Bank (NADB) has reviewed the financial information presented by the Project's Sponsor and, based on it, determined that the financial and structural capacity proposed by the municipalities of Matamoros and Vallehermoso are adequate. The information presented and the financial analysis includes, among other items:

Historic Financial Statements;
 Financial structure of the project;
 Investment budget;
 Budget for operation and maintenance, historic and pro forma; and
 Economic and demographic information of the area of the project.

The detailed analysis of the financial information of the project can be found in the SWEP proposal that will be presented to acquire the authorization of the NADB Council. The following is a summary of the financial analysis.

The total cost of the project is estimated at \$94.08 million pesos, including the costs for construction, equipment, and closing.

Item	Quantity (Millions of Pesos)
Construction of the landfill	21.85
Equipment for the landfill	6.54
Construction of the transfer stations	13.39
Equipment for transfer stations	22.30
Closure of sites	30.00
TOTAL	94.08

The municipalities propose a financial structure that will allow the implementation of the project, as further indicated:

Financial Source	Amount (Millions of Pesos)	%
Vallehermoso / Matamoros	29.00	30.82
State of Tamaulipas	22.00	23.38
Federal Government	21.08	22.42
BDAN's SWEP	22.00	23.38
TOTAL	94.08	100.00

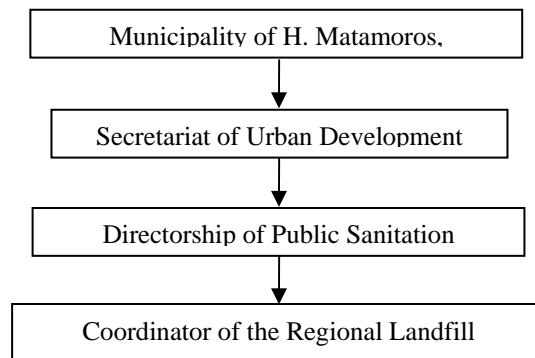
2. Fee/Rate Model

The revenues from both Municipal utilities will cover the operation and maintenance expenses, such as solid waste transportation from the transfer stations to the regional landfill and the operation of the landfill itself.

3. Project Management

The regional landfill is managed by a coordinator from the Environmental Control Department, which in turn depends on the Urban Development Secretariat of the Municipality. This coordination has adequate personnel to manage the proposed infrastructure and the capacity to solve any potential emergency in relation to the operation and maintenance of the works.

This is the organizational chart for the operation of the regional landfill:



5. Public Participation

5.1 Comprehensive Community Participation Plan

A Comprehensive Public Participation Plan was developed and submitted to the BECC on February 21, 2006. The plan was approved on March 7, 2006 by the Commission. The Plan includes the development of a local steering committee, meetings with local organizations to provide information on the project and solicit public support for it; provide public access of the project information and hold at least two public meetings. A summary of the activities held under this Plan are described below.



Local Steering Committee

The Local Steering Committee was formed on December 1, 2005 involving citizens from both municipalities. The Matamoros delegation includes David Gonzalez Dueñez, Committee President; Oswaldo N. Mayo; Julio Ceballos Sanchez; Angelina Mayo Garcia; Maria Guadalupe Silva Arredondo; Carlos Castañeda Garza; Mercedes Rodriguez Fuentes and Elsa Aguirre. Members from Vallehermoso were, Marco Antonio Ramos del Bosque, Steering Committee Secretary; Rafael Lopez Martinez; Juan Jose Aranda Martinez; Juan Carlos Sanchez Borrego; Jesús Hernandez; and Armando Garcia Garcia.

The Committee had the support of a Technical Team whose members included Jorge Leal Tobias, Matamoros Environmental Control Department Director; Cesar Vargas, Vallehermoso Director of COPLADEM; Jose Magdaleno Anguiano, Matamoros Solid Waste Landfill Coordinator; Ivonne Villafranca Barrera and Teresa Treviño of the Matamoros Environmental Control Department. The Matamoros – Vallehermoso Committee designed a public consultation program called *Adequate Disposal of Waste (Disposición Adecuada de Residuos)*, and its slogan, *For a Cleaner Region (Por Una Región Más Limpia)*, under which all Public Participation Plan activities were organized.



Meetings with Local Organizations

The Technical Team and Steering Committee held meetings with business, and community organizations to provide information on the project and solicit their support. These groups included the Maquiladora Association of Matamoros; the Chamber of Civic Organizations (which includes 20 organizations); the National Transformation Industry Chamber (CANACINTRA, in Spanish); the National Chamber of Commerce (CANACO); the Confederation of Employers of Mexico (COPARMEX); the Food and

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Restaurant Industry (CANIRAC): the Mexican Institute of Civil Engineers (IMIC); the Economic Development Council of Matamoros (CODEM); and the Canadian Chamber of Commerce – Matamoros Chapter. Letters of support for the project were received from CODEM, CANIRAC, CANACINTRA, COPARMEX and the Canadian Chamber of Commerce. From Vallehermoso the local organizations that were contacted are: Regional Education Department of Vallehermoso, Universidad Autónoma de Tamaulipas en Vallehermoso, Teachers Association of Vallehermoso, Professionals Association of Vallehermoso, Farmers Association of Vallehermoso, Commerce and Restaurants Association of Vallehermoso. Letters of support were received from two local organizations from Vallehermoso and five local organizations from Matamoros.

Public Access to Project Information

A broad public information program was implemented to inform the public of the human health and environmental problems associated with solid waste, such as the uncontrolled burning at the open air dumpsters in both municipalities, and the proposed solutions associated with the project. The project's Facility Plan and the Public Participation Plan were available for public review in the Vallehermoso and Matamoros City Halls at least 30-days before the public meetings, and posted in the City of Matamoros web page. The public meeting notices were posted in the local newspapers who gave coverage to the project with several articles.

Public Meetings

The first public meeting was held on April 6, 2006 in Vallehermoso attending an approximate of 71 people. The second public meeting was held in Matamoros on January 15, 2007, with approximately 233 people in attendance. Exit surveys held at the public meetings demonstrated that a total of 222 surveys were submitted, all of them in support of the project.

5.2 Report Documenting Public Support

The Final Public Participation Report was submitted to BECC per certification requirements on March 2, 2007.

6. Sustainable Development

1. Definition and Principles

The Regional Solid-Waste Project for Matamoros and Vallehermoso, Tamaulipas complies with the definition of sustainable development that promoted by the BECC: “Conservation oriented social and economic development that emphasizes the protection and sustainable use of resources, while addressing both current and future needs, and present and future impacts of human actions”.

The objective of the project is to improve the existing infrastructure for the management and final disposal of the solid waste generated in the cities of Matamoros and Vallehermoso.

In general, the project proposes important benefits to the environment, human health and social concerns, while implementing the following feasible objectives:

- Closure of the open dumpsites and landfill, which represent environmental pollution in the air, water, soil, and consequently impacting human health.
- Increase the efficiency of management and transportation of solid waste in Matamoros and Vallehermoso, by means of transfer stations and improvement of collection routes.
- Assisting the city of Vallehermoso, which has less financial capacity to adequately dispose its solid waste in a regional landfill that complies with the requirements of Norm NOM-083-SEMARNAT-2003, without having to construct its own landfill.

2. Institutional and Human Capacity Building

The proposed and feasible activities that contribute to the Institutional strengthening of the solid waste management department of Matamoros and Villahermoso are the following:

- Improve the infrastructure required for the solid waste management department in the areas of management and final disposal (transfer stations and regional landfill)
- Develop better collection routes
- Operate a landfill that complies with the corresponding regulations
- Training of operating personnel

3. Conformance with Applicable Local and Regional Conservation and Development Plans

El project conforms to the Municipal Development Plans of the Administration 2005-2007 of the cities of Matamoros and Vallehermoso. These include activities such as the improvement of management and final disposal of the municipal solid waste.

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The project agrees with the Mexico-United States Environmental Program Border 2012, Objective 3: “Reduce Soil Contamination”, and Goal 1 that establishes the following:

Goal 1. For year 2004, identify the needs and develop an action plan focused on the improvement of the institutional and infrastructure capacity of solid waste and pollution prevention related to solid and hazardous waste and toxic substances in the border of Mexico and the United States. In 2005, the action plan will be implemented and terminated in 2012.

4. Natural Resource Conservation

The implementation of the project, which includes the regional landfill and the closure of both the open dumpsites and the old landfill, will reduce substantially the contamination of ground and underground water bodies, soil and air.

5. Community Development

The purpose of the project is to provide adequate services for management and final disposal of the municipal solid waste to all the population of the regions of Matamoros and Vallehermoso.

The implementation of the project will improve the welfare of the communities given that the habitants will enjoy a permanent and systematic manner of management and an adequate and safe disposal of municipal solid waste.

In the long term, it is expected to cause an effect on the communities of Matamoros and Vallehermoso that will modify the habits of generation and management of municipal solid waste, impacting positively the quality of life and environmental education of all the population in the region.

Project available documents (only in Spanish)

- “Proyecto Ejecutivo de Relleno Sanitario Regional para Matamoros y Vallehermoso, Tamaulipas”, ETEISA, 2006
- “Proyecto Ejecutivo de Clausura de Tiradero a Cielo Abierto y de Relleno Sanitario Antiguo de Matamoros, Tamaulipas”, SEPSA, 2007
- “Proyecto Ejecutivo de Estación de Transferencia de Residuos Sólidos Oeste para Matamoros, Tamaulipas”, ETEISA, 2006
- “Proyecto Ejecutivo de Estación de Transferencia de Residuos Sólidos Este para Matamoros, Tamaulipas”, ETEISA, 2006
- “Proyecto Ejecutivo de Estación de Transferencia de Residuos Sólidos para Vallehermoso, Tamaulipas”, ETEISA, 2006
- “Manifestación de Impacto Ambiental Modalidad General para el Proyecto Regional de Relleno Sanitario en Matamoros”, Dirección de Control Ambiental, Secretaría de Desarrollo Urbano y Ecología del Municipio de Matamoros, 2005
- “Estudio de Riesgo Aviario para la Aeronáutica Civil por el Proyecto de Relleno Sanitario del Municipio de Matamoros, Tamaulipas”, Dirección de Control Ambiental, Secretaría de Desarrollo Urbano y Ecología del Municipio de Matamoros, 2005
- “Informe Preventivo de Impacto Ambiental del Proyecto Ejecutivo de Estaciones de Transferencia de Residuos Sólidos Oeste y Este para Matamoros”, ETEISA, 2006
- “Informe Preventivo de Impacto Ambiental del Proyecto Ejecutivo de Estación de Transferencia de Residuos Sólidos para Vallehermoso”, ETEISA, 2006
- “Dictamen de la Manifestación de Impacto Ambiental Modalidad General para el Proyecto Regional de Relleno Sanitario en Matamoros”, Dirección General de Medio Ambiente, Secretaría de Obras Públicas, Desarrollo Urbano y Ecología de Tamaulipas, 2006
- “Dictamen del Informe Preventivo de Impacto Ambiental del Proyecto Ejecutivo de Estación de Transferencia de Residuos Sólidos para Vallehermoso”, Dirección General de Medio Ambiente, Secretaría de Obras Públicas, Desarrollo Urbano y Ecología de Tamaulipas, 2007
- “Dictamen del Informe Preventivo de Impacto Ambiental del Proyecto Ejecutivo de Estaciones de Transferencia de Residuos Sólidos Oeste y Este para Matamoros”, Dirección General de Medio Ambiente, Secretaría de Obras Públicas, Desarrollo Urbano y Ecología de Tamaulipas, 2007