

Laguna San Ignacio
Part of the Whale Sanctuary of El Vizcaíno

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1. Introduction

The gray whale is threatened again. In 1994, barely a month after the gray whale was removed from the endangered species list, its breeding and calving grounds on the western coast of Baja California were selected as the site for the world's largest saltworks. The area slated for this massive new industrial facility is Laguna San Ignacio, the last remaining pristine calving lagoon for the species. This new saltworks facility will not be the first disturbance to the whales' few nurseries. A saltworks is already operating in one of the two other calving lagoons, Guerrero Negro, and a 2,000 ha tourist resort development has been proposed for Bahia Magdalena. If Grupo de los Cien, one of Mexico's most prominent environmental groups, had not brought the proposed saltworks to international attention, construction might now be underway. Instead, Mexico is allowing for a new environmental impact statement (the earlier one having virtually ignored the whales' plight) and Mitsubishi has pledged not to proceed with the project "if [it] causes significant environmental damage." The lure of the saltworks for Mexico, however, remains powerful: export earnings and jobs. Without ongoing international attention, it is likely that, after this hiatus, the project will move forward, with unknown consequences for the magnificent gray whale.

2. Background

2.1. The proposed project at Laguna San Ignacio

The gray whale is one of North America's truly shared resources in that it migrates through Mexican, US, and Canadian waters. Over many years, the safe harbors these whales have used to give birth have become filled with human activity and noise. Now an expectant mother whale must travel from the Arctic all the way to Baja California to find a quiet and safe lagoon. At least half the time, she cannot wait until the end of the trip and gives birth in the open sea, often with tragic results. As gray whale nurseries, lagoons constitute essential habitat. Protected waters of a lagoon are warmer and calmer than the open ocean, increasing the success rate of the whales' delivery and the calves' survival. Laguna San Ignacio (Baja California Sur), located on the Pacific Ocean side of the Baja California Peninsula, is a large, undeveloped coastal lagoon and one of three remaining lagoons which form the primary destination for migrating gray whales where they can give birth free from noise, container ships and urban pollution. San Ignacio also provides habitat for numerous marine and terrestrial plant and animal species, many of which are threatened or endangered.

Mexico considers itself a leader in species and habitat protection, and has been committed to protecting whales since the 1930s. San Ignacio is part of Latin America's largest Biosphere Reserve, "El Vizcaíno", formed by Presidential decree in 1988 to protect, among other things, gray whales. The 2,546,790 ha Vizcaíno Biosphere Reserve includes bighorn sheep habitat, the extensive pre-Columbian cave paintings of the Sierra de San Francisco, and portions of the Western Gulf of California shoreline. The declaration of the Reserve established a 363,438 ha core zone, in which human activities are extremely limited or prohibited. In the remaining buffer zone, a few human activities are permitted. Although development activities within the core zones are not permitted, they can be authorized in the buffer zone only if they conform to Mexico's 1988 General Law of Ecological Balance and Environmental Protection. In addition, the Reserve decree stipulates that new human settlements are not permitted anywhere within the Reserve boundaries. The Reserve extends from just south of the lagoon northward to the northern shore of Laguna Ojo de Liebre, and eastward to the Gulf of California, and includes Isla Natividad, Isla Asuncion, and Isla San Roque along the Pacific Coast.¹

The Mexican government and Mitsubishi, through a joint venture known as Exportadora de Sal, S.A. ("ESSA"), are pursuing the construction of a large industrial salt evaporation facility adjacent to Laguna San Ignacio. According to ESSA, the new project will be located in the buffer zone of the Vizcaíno Biosphere Reserve. The project was first proposed in 1994, and rejected in 1995 by the Mexican environmental authorities. They found it was incompatible with the status of the place as a biosphere reserve. On October 3, 1997, Mitsubishi and ESSA announced that the proposed saltworks had been redesigned to address some of the concerns raised by Mexican and international environmental groups.² The project

¹ Excerpt (citations omitted) from Serge Dedina communication dated April 4, 1996 regarding Laguna San Ignacio (copy on file with author).

² Although they have yet to be documented for our review, the design changes described by ESSA are as follows:

- The pumps at the top of the lagoon will be moved 2 kilometers from the lagoon, placing them a full 6 kilometers from the furthest point in the lagoon that, according to ESSA, a whale has ever been spotted. ESSA claims this will get the noise beyond the whale areas. ESSA is also considering electric pumps, although a diesel generator would be needed even in that case. Wind power is also a possibility, as there is already one windmill at Guerrero Negro and ESSA is studying the feasibility of additional units.
- The evaporation and concentration ponds will be pulled back to a full kilometer from the lagoon.
- The crystallization and brine waste storage ponds will be set back 2 kilometers from Estero el Coyote.
- A double dike on the sides of the concentration ponds and the brine waste storage pond facing the lagoon and El Coyote will be added. ESSA claims this ensures the protection of the lagoon and the estuary.

will again go through an environmental impact assessment, which, it is estimated, will require 18 months.³ The stakes are now higher. In addition to meeting Mexico's environmental law requirements, including its EIA standards, the Mexican National Institute of Ecology, with advice from an international scientific panel, has set up additional scientific, economic and social requirements for the proposal to meet (discussed below in section 2.2).

If built, the saltworks may destroy habitat by changing the characteristics of the lagoon and the surrounding area through noise, population growth, physical disturbances and indirect economic development. According to current plans, 6,000 gallons of saltwater per second will be pumped out of the lagoon by a battery of 17 loud diesel engines. Earthen dikes created by earth-moving machinery to contain the 116 square miles of evaporating ponds will radically alter rainfall drainage patterns. A 1.25 mile-long pier for transporting the salt to ocean-going ships will be built in a key abalone and lobster fisheries area, and in the whales' migration paths.

Even though the Mexican government owns 51% of the joint venture, Mitsubishi undoubtedly has greater control of the management of the company, because only Mitsubishi has the capital to fund operations and expansion. The Mexican federal government will gain direct revenues from taxes paid by ESSA and from its share of profits from the sale of the salt. However, the economic benefit to Mexico is small in comparison to the main beneficiaries, which are Japan's strategic industry users of salt in chemical compound. While approximately 208 jobs will be created, it is estimated only half will be available to Mexican nationals. Moreover, none of the salt processing jobs will be in Mexico. Also, there will be no direct or indirect jobs for Mexico from Japan's strategic industries that use salt. Finally, there is a suspicion -- denied by ESSA -- that Mitsubishi wants to close ESSA's pre-existing Guerrero Negro saltworks and open a facility instead at Laguna San Ignacio because it would be less expensive to operate. Such an action would result in no net economic benefit to the area, and would have negative environmental results.

While we can celebrate that our efforts have already forced some design changes of the saltworks, and the establishment of the additional scientific

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- The causeway was eliminated from the pier design. It will be entirely structural steel with 34 meters between the pilings for whales to pass through. It will be over eight feet above the ocean to avoid it being swamped or damaged by high waves.

³ Pursuant to Jared Blumenfeld communication with Mitsubishi representatives in Tokyo on 3 December 1998, it may be until late 1999 for the EIA to be issued.

and socioeconomic requirements, the Mexican federal government may still decide the saltworks can proceed. In other words, the majority shareholder in the project will determine whether the project complies with its own environmental laws and is a use consistent with the area's biosphere reserve designation.

2.2. The environmental assessment of the project.

Mexico has more stringent requirements for environmental impact assessments than the United States. Assessments are required more often, and there are four levels of assessments that can be required. In contrast to the U.S. system of command and control, Mexico's system could promote prevention of environmental harm. Properly applied and reviewed, the assessments can be used in a flexible manner to prevent construction of environmentally harmful projects. Unfortunately, as with many regulations, enforcement is not uniform.

The first impact assessment regarding the San Ignacio saltworks, prepared by Centro de Investigaciones Biológicas del Noroeste ("CIB") in 1994, was rejected by the Mexican National Institute of Ecology ("INE") primarily because the project was not appropriate for a buffer zone of a Biosphere Reserve.⁴ Among the many reasons stated, the rejection was because:

1. . . . the project is incompatible with the area's conservation objectives and is also incompatible with land-use zoning and other legal provisions. . . .
3. In the area of the project, one finds plant and animal species under various categories of protection . . . 14 plant species (4 rare, 2 threatened, 2 under special protection and 6 endemic) and 72 animal species (15 rare, 39 threatened, 6 in danger of extinction, 7 under special protection and 5 endemic). These species could be directly or indirectly harmed by habitat alteration and construction and operation of the project in question.
4. . . . it is our opinion that there are no valid reasons which justify the loss of the natural environment in such as extensive area and within a biosphere reserve. . . .⁵

⁴ The over 300 page document contained only 23 lines of information regarding the impact of the project on gray whales.

⁵ Instituto Nacional de Ecología, Environmental impact assessment rejection letter from Gabriel Quadri de la Torre to Juan Bremer Gonzalez. (27 February 1995) at pp. 3-6.

ESSA first appealed the rejection, then decided to prepare a new impact assessment document. In response to allegations of conflict of interest,⁶ Mexico's environmental secretariat, SEMARNAP, created an international science advisory committee to advise INE and ESSA on what to include in the environmental assessment.

In July 1996, the international science advisory committee issued scientific terms of reference (“TORs”) for the new environmental impact assessment. Concurrent with the issuance of these terms, INE issued socioeconomic TORs that must also be addressed by the assessment. The scientific TORs begin with some background and introductory material, including disclaimers that the scientific TORs are not all-inclusive and are very focused on biological and ecological concerns. The scientific TORs call for the following items:

- Maps of the project footprint and impact areas and existing ecosystems.
- A study of the construction phase including the identification of potential harm, as well as plans for environmental protection during and after construction (with a special focus on the pier).
- A study on the solar salt production including chemical/toxic by-products and the effect on water quality.
- A study on pumping from the lagoon including the effect on lagoon salinity, temperature and biotica. This study should also include information on the effects of the noise of the pumps on whales and birds.
- A study on the effects of the dikes and evaporation ponds.
- A study of the affected areas (surrounding the project footprint). This will include information on the use of local fresh water resources.
- A number of studies on land-based and marine flora and fauna (and a separate whale study) which should include inventories of commercial, endangered and indigenous species; a description of mitigation, protection and conservation measures; and a risk evaluation. This section of the report lists many species that must be studied specifically. It also calls for comparisons to be made to the experiences in Guerrero Negro.
- A study on whether the project is consistent with the special nature of the site as a protected Biosphere Reserve.

⁶ Mexico owns 51% of the shares of ESSA, and its Secretary of Commerce is the Chair of the ESSA Board of Directors. Thus, a potential for a conflict of interest was raised by one Secretariat, SEMARNAP, reviewing a project under the direction of another arguably more powerful Secretariat.

Unfortunately, the socioeconomic TORs issued by INE for the environmental impact assessment are not complete.⁷ The TORs do not call for an evaluation of alternative sites for this project, nor do they call for an evaluation of alternative types of activity that might be beneficial for the local economy and be more consistent with the appropriate management of a biosphere reserve. They have numerous other flaws related to improper cost-benefit analysis and scope of analysis. The socioeconomic TORs also do not discuss the potential impacts of opening salt production at San Ignacio on the current activities in Guerrero Negro. If the salt harvesting is more labor intensive at Guerrero Negro than as proposed at Laguna San Ignacio, and if Guerrero Negro will be closed, we can assume a net loss of jobs. It is unclear how many direct, or indirect jobs will be lost. Also unclear is the cost to restore Guerrero Negro if the saltworks there are abandoned. The TORs also do not address the future potential privatization of the project, or the rights over the Lagoon that ESSA/Mitsubishi will garner from the deal.

It is clear that Mitsubishi and ESSA intend to continue to pursue the construction of the proposed saltworks. As noted above, ESSA has redesigned the project. According to ESSA and Mitsubishi, the Autonomous University of Baja California Sur ("UABCS") in La Paz and the Scripps Institute of Oceanography in La Jolla have been retained to undertake the environmental impact assessment of the new design with the assistance of one or more international firms. The original estimate for the completion of the assessment was spring 1999.⁸ According to Mitsubishi, it may now be delayed until late 1999. If the statement is approved by INE and construction begins, it will be 8 years before any salt is produced. At first, the goal will be 1 million tons per year, building up to a production capacity of 7 million tons per year over 30 years. ESSA's

⁷ The socioeconomic TORs (roughly translated and summarized) require:

- A number of economic studies including the world salt market, current economic conditions and how to raise the region's contribution to Mexico's GDP, the regional economy, and local fisheries.
- A number of studies on potential human impacts including direct and indirect employment, population changes and demographic histories.
- An analysis of risks related to the transport and disposal of fossil fuels and related use of machinery.
- A number of studies on social services and infrastructure in the region, including waste management.
- A number of studies on water use and availability.
- A number of reports on stakeholders views, social consequences and alternative designs.
- A number of reports related to the biosphere reserve.
- A set of maps of the reserve, productive areas, zones of economic impact, population, as well as historical, archeological and cultural sites.

⁸ October 3, 1997 press release, "Environmental Study to Begin on Proposed San Ignacio Salt Project," copy on file with author.

Technical Subdirector, Joaquin J. Ardura made it clear that ESSA would not go through with the project, if, after this second EIA process, the project fails to win approval.⁹

2.3. The existing salt evaporation facility in Guerrero Negro.

The process of producing salt takes two years from the time of pumping water from the lagoon until the salt in that water is harvested. There are two main steps, concentration and crystallization. Ocean water enters the lagoon at 3.5% salt and at the far end of the lagoon where the water is pumped out, it is already at 4.0%. The water is then moved through a series of concentration ponds over a period of 18 months using solar and wind evaporation to raise the salt content to 27%. The concentration ponds are separated from one another by gates and separated from the lagoon by dikes. The salt water is then moved to shallow crystallization ponds where it sits for 6 months. Eventually so much water has evaporated that the NaCl (sodium) precipitates and crystallizes. The salt is then harvested and the drain off is brine. The salt is cleaned and loaded onto barges for the 100-Km transshipment to Isla Cedros. On the island, the salt is loaded on ocean going freight ships.¹⁰ According to ESSA, the 7 million-ton per year Guerrero Negro facility has no more room to grow. For this reason, ESSA seeks to open operations at Laguna San Ignacio where very similar conditions exist. Low rainfall, high evaporation rates, little vegetation and impermeable soils make San Ignacio ideal for the saltworks.

Brine is essentially a little NaCl but mostly MgCl (Magnesium Chloride) and other naturally occurring salts. Although brine is naturally occurring, the concern over its toxicity is due to the fact that its concentration of saline is approximately 2-10 times that of normal seawater. As a result of the brine drain-off, some animal species are unable to adapt to the added salinity of the water and therefore, are jeopardized. Brine drain-off also has been known to contaminate aquifers and ground water systems.

Solar salt plants have been associated with several cases of environmentally destructive behavior. One is within the Río Lagaritos Special Biosphere Reserve in the Yucatán. Local fishermen accused a salt company of destroying fisheries, including mangroves that provided breeding grounds for fish and protection for fish fry. The plant was producing 500,000 tons of salt a year and its works were changing the

⁹ Meeting with ESSA Technical Subdirector Joaquin J. Ardura (November 15, 1996). [hereinafter "Ardura Meeting"].

¹⁰ Ardura Meeting *supra* note 9.

hydrology of the estuary and threatening the ecosystem's stability.¹¹ In the summer of 1990, SEDUE (predecessor to SEMARNAP) halted the salt plant's expansion by locking up the pumps to its evaporation ponds. The factory retaliated by shutting off the local community's water supply. The reserve managers opened talks among all concerned. The solution reached was to find ways to alleviate overfishing and to provide "economic alternatives to the salt factory." The alternatives included appropriate agriculture, aquaculture, limited ecotourism, etc.¹²

The small community of Las Lisas, located on a sand strip between the Chiquimulilla canal and the Pacific Ocean in Guatemala, has also been significantly affected by the advent of salt production. In the past 15 years, 20 salt and shrimp factories expanding over thousands of hectares have destroyed 97% of the local mangrove forest.¹³ The forest strip is barely 10-40 meters across at present, and the canal is, as a consequence, much wider and shallower than in 1980. Iguanas, pelicans, fish and numerous other species have been squeezed to extinction as a result of the changes in their habitats. Local fishermen, on whom most of the population depends for survival, now catch only a small fraction of what the canal used to yield in the past. Even though Guatemalan law prohibits the cutting of mangrove, salt and shrimp businesses have acquired permits to destroy huge areas of the forest, allegedly by bribing the responsible officials.

By its own actions, the Mexican Government has indicated that it recognizes that the proposed and existing saltworks pose a danger to the Baja Peninsula lagoons. A July 1998 Mexican Federal Government report documented two spills of toxic brine waste into Laguna Ojo de Liebre near the existing ESSA saltworks. These spills killed 94 endangered black sea turtles - now contested by the salt company - and many fish. The investigation conducted by a Mexican Government inter-agency scientific task force under the direction of the Federal Environmental Procurator (Profepa) also demonstrated extensive harm to the environment because of a history of contamination.¹⁴

¹¹ Sinton, J. & Faust, B. "Let's Dynamite the Salt Factory! Communication, Coalitions and Sustainable Use among Users of a Biosphere Reserve." Presentation for ASEH Conference. Houston, March 1991.

¹² Simonian, L. Defending the Land of the Jaguar: A History of Conservation in Mexico. (University of Texas Press, 1995) at 166-7.

¹³ Tanner, W. & Suominen, K. "Las Lisas: Trouble in Paradise". The Siglo News, January 14, 1998 at 10-11.

¹⁴ Some excerpts from this report are as follows:

- "In addition to the [turtle] organ and tissue samples, 65 samples of water, sediment, phytoplankton, marine grasses, and filter organisms were collected from the Ojo de Liebre and San Ignacio Lagoons, as well as 3 brine samples from the

As for the effect of the proposed salt plant on the gray whales, it should be noted that after ESSA began operations at Guerrero Negro, whales abandoned that lagoon for over a decade. Their disappearance has been attributed to ESSA's dredging of the lagoon's mouth aimed to accommodate salt barge traffic. The whales returned only after ESSA moved its barge operations to the larger Laguna Ojo de Liebre.¹⁵ More specifically, building the saltworks at Laguna San Ignacio will risk introducing three of the four major threats to whales, other than whaling: loss of habitat, accidents involving collision with ships, and the slow but inexorable bioaccumulation of toxics. New human population will be attracted,

Exportadora de Sal, S.A. plant . . . the samples from San Ignacio were taken to establish reference values." (Profepa Technical Report, "The Die-off of Sea Turtles in the Ojo de Liebre Lagoon" 1998: page 6)

- "The phytoplankton samples taken on January 9 and February 18 in the Ojo de Liebre Lagoon showed characteristics that were different from one another. In the first samples, little diversity was found (2 types of dinoflagellata, 3 types of diatoms, and one type of cyanobacteria), as well as reduced biomass. . . . In the sample taken five weeks later, an increase in diversity was found (6 types of dinoflagellata, 7 types of diatoms) as well as an increase in biomass. Even when the observations were not quantitative, the difference in the number of observed organisms was evident." (Profepa 1998: page 8)
- "Marine grasses. - The grasses collected in the Ojo de Liebre Lagoon were found in poor condition, dry and showing no evidence of radicular growth or new shoots. In contrast, the samples of grasses from the San Ignacio Lagoon were abundant and vigorous, with turgid stalks and notable recent growth, making apparent that they were from a healthy environment." (Profepa 1998: page 9)
- "The findings of the laboratory analysis of the [Brine] samples obtained in three sites from the Exportadora de Sal plant presented high mineral concentrations. The minerals present (fluoride, magnesium, mercury, lead, arsenic, potassium, and sodium) impact the health of the diverse organisms which come in contact with the brine." (Profepa 1998: page 10)
- "Using the information from the laboratory analyses performed on the samples of water, sediment, phytoplankton, marine grasses, tissues, and organisms from Ojo de Liebre as a basis, and comparing this information with the findings from the San Ignacio Lagoon and information in existing literature, it is possible to conclude that the common factor in the observed phenomena is the occurrence of a plume of hypersalinity in the area of the Ojo de Liebre Lagoon bordered by the area known as El Chaparrito, the Isla Zacatosa, and the Isla Conchas. . . This phenomenon alone affected the plankton communities, destroying the majority of the organisms least resistant to saline stress, primarily phytoplanktonic organisms. The phenomenon mentioned with relation to the gonadic maturity of the mollusks and the death of a large number of them can also be explained by the presence of a hypersaline shock, as this kills some organisms which are not very resistant and is an effective mechanism used with cultivated mollusks to force spawning." (Profepa 1998: page 13)

¹⁵Sánchez Pacheco, José Angel "Protección y conservación de la ballena gris en México" Sistema Nacional de Información Ambiental (undated), available at <http://www.ine.gob.mx/INE/documentos/gacetas/gaceta40/pag22.htm>. Also see Hoyt, The Whale Watchers Handbook, at 177-8 (1984), and IUCN Technical Evaluation World Heritage Nomination Reserva del Vizcaíno (554BIS, 1993) at 1.

crowding the whales in the lagoon with more boats, noise and waste. Large ocean going vessels will be introduced into the area. Large quantities of toxic substances such as oil, diesel fuel, and brine wastes will be present. For example, as proposed by ESSA, the brine wastes will be dumped into the adjacent Bahía de las Ballenas (Whale Bay).

2.4. The Project in Context

This Eastern Pacific stock of the gray whales is the last one. The Atlantic and Western Pacific stocks are respectively extinct and nearly so. The proposed saltworks is just one of many threats to gray whales and as such must be viewed in context. Habitat degradation and aboriginal whaling constitute cumulative threats to the Pacific Gray Whale. The gray whale is a shared migratory species which is the subject of an extensive whale watching industry which yearly brings in US\$10s of millions of dollars in Canada and the US, and an estimated US\$4 million in Mexico. How well is this industry regulated? What is the current status and potential impact on the gray whale of development in Baja California Sur's Magdalena Bay, Laguna San Ignacio, and Ojo de Liebre (the three remaining nursery lagoons)? What would be the impact of further development in these lagoons? What is the impact of Russian whaling, Makah Indian whaling and Inuit Indian whaling? What would be the impact if the First Nations of Vancouver Island British Columbia also receive permission go whaling? Add to this, alterations to habitat from climate change and the bioaccumulation of toxics and it becomes clear that we must be extremely careful in doing anything that might impact this species.

3. Politics

3.1. International

3.1.1. International Whaling Commission

The International Whaling Commission ("IWC") has helped in previous efforts to restore the gray whale population by agreeing to ban whaling. At its 1995 annual meeting, the IWC helped SEMARNAP put together the International Scientific Committee that prepared the terms of reference for the second environmental impact assessment for the ESSA project. However, there is little else we expect the IWC can or will do regarding the issue. There is substantial opposition, particularly from Japan, toward the IWC acting on anything not related to the regulation of whaling. This said, Art. 6 of the International Convention for Regulation of Whaling allows the IWC to make recommendations on any matters relating

to whales and whaling, and thus the IWC ought to be able to take a position.¹⁶

3.1.2. MAB/UNESCO Biosphere Reserve

In 1994, El Vizcaíno was named a MAB¹⁷/UNESCO Biosphere Reserve. Three parts of the Reserve were named to the list of World Heritage Sites (Sierra de San Francisco, Laguna Ojo de Liebre and Laguna San Ignacio).¹⁸

Unfortunately, according to a recent publication of the Mexican Environmental Secretariat regarding the proposed Laguna San Ignacio saltworks, there is an “absence of an incontrovertible interpretation of the environmental law in terms of the projects that can be authorized in a biosphere reserve.” However, based on a review of international norms and standards, including the UNESCO Statutory Framework, as well as Mexican Federal law, and the Vizcaíno reserve decree and management plan, it is our conclusion that there is an “incontrovertible interpretation” of the environmental law regarding whether the ESSA project can be authorized in a biosphere reserve buffer zone. Under this interpretation of law, Mexico was correct to reject ESSA’s first proposal in 1995, and will be correct to do so again.

Biosphere Reserves serve three main purposes (in order of priority): conservation, research, and development. Biosphere Reserves are not like other protected areas because they are intended to promote sustainable use of natural resources and not just preservation. No human activities are permitted in the core of a biosphere reserve other than non-manipulative research and monitoring. Human activities in buffer zones, which surround the cores, are to be closely regulated and limited to those that protect the core, and are consistent with conservation objectives (for example, environmental education, passive recreation and ecotourism, and traditional uses). Surrounding the buffer zones are “transition areas” in which rational exploitation of natural resources may take place in cooperation with local populations.

If the general definitions were applied, there would be fewer questions about the efficacy of the saltworks if it were outside the buffer zone. This said, the proposed Laguna San Ignacio saltworks is not consistent with international, federal or specific biosphere reserve

¹⁶ Personal interview with Ray Gambell, Chair of the IWC (November 1997).

¹⁷ Man and the Biosphere.

¹⁸ Secretaría de Medio Ambiente, Recursos Naturales y Pesca, Sustainable Development Network www page: <http://www.laneta.apc.org/rds> [hereinafter "SEMARNAP Sustainable Development Web Page"].

obligations because it is not a conservation activity, it does not maintain cultural values, it does not protect the core of the biosphere reserve, and it does not come from, aid or educate the local community. In addition, while the ESSA project may constitute an "economic development of natural resources," the major benefits from the resource exploitation will be from the value-added by chemical manufacturers in Japan and will insufficiently benefit the reserve, or the region.¹⁹ The project is too large, it may adversely affect endangered and endemic species habitat, it will serve to deteriorate the reserve's natural beauty, it will flood important parts of the reserve, it will significantly alter hydrological and watershed systems, and it threatens the existing economic base. Finally, the project is being proposed before a reserve management plan is fully articulated and implemented; and before regulations (norms) have been drafted to implement the December 1996 amendments to Mexico's general environmental law.²⁰

3.1.3. The World Heritage Committee

The Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, November 16, 1972) now protects 582 sites of "outstanding universal value," in 114 countries. The intergovernmental World Heritage Committee includes 21 States Parties elected by the General Assembly of the 155 States Parties to the Convention. The Committee is responsible for the implementation of the Convention and determines the inclusion of sites on the World Heritage List.

The Whale Sanctuary of El Vizcaíno (Laguna San Ignacio, Laguna Ojo de Liebre and Laguna Guerrero Negro) in Baja California Sur, Mexico was designated as a whale sanctuary by Mexico in 1976, included within the largest international biosphere reserve in Latin America (the Vizcaíno Biosphere Reserve) in 1988, and listed as a Natural World Heritage Site by the World Heritage Committee in 1993. Mexico justified its request for adding the whale sanctuary to the World Heritage list because: "It is an

¹⁹ While speaking about Guerrero Negro, Juan Bremer, ESSA's General Manager, indicated the Mexican Government returns 33% of its profit to the region. ESSA has recently begun to give some funds and services to the community. However, apparently, Mitsubishi returns none of its after tax profits to the community. Personal conversation with Juan Bremer, July 1997.

²⁰ For more information on the international standards for biosphere reserves, see Furze, Brian, Terry de Lacy, and Jim Birckhead, Culture, Conservation and Biodiversity: The Social Dimension of Linking Local Level Development and Conservation through Protected Areas John Wiley & Sons (1996), at pp. 207 - 17; Price and Humphrey (eds.) Application of the Biosphere Reserve Concept to Coastal Marine Areas UNESCO/IUCN (1993), at pp. 1 - 7; and UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972.

outstanding example representing significant ongoing biological evolution . . . It contains unique and superlative natural features of exceptional beauty . . . [and] It contains the most important and significant habitats where threatened species of plants and animals still survive."²¹ The footprint of the proposed Laguna San Ignacio saltworks would be within the World Heritage Site.

The threats to the Whale Sanctuary had been already been discussed on several occasions by the World Heritage Committee and its advisory Bureau since 1995. On 23 June 1998, in a letter to the World Heritage Committee signed by Pro Esteros, Grupo de los Cien, Centro Mexicano de Derecho Ambiental, the Natural Resources Defense Council, and the International Fund for Animal Welfare, it was requested that the Committee list the Sanctuary as "World Heritage in Danger." These groups asserted that the Sanctuary is in Ascertainable Danger²² as a result of a marked decline in its endangered species, an imminent threat to its beauty and scientific value, as well as verifiable and significant human encroachment. In addition, the groups asserted the Sanctuary is in Potential Danger²³ as a result of proposed development projects (such as the ESSA saltworks) and the lack of a final management plan (or that plan's full implementation). The groups also delivered over 30,000 signed petitions calling on the Committee to act to protect the sanctuary.

In the case of El Vizcaíno, the World Heritage Bureau and the IUCN (the World Conservation Union) recommended, Mexico accepted and the Committee approved an IUCN Mission for 1999 to "prepare an up-to-date state of conservation report on the Whale Sanctuary of El Vizcaíno, and submit it to the twenty-third session of the Committee in 1999."²⁴

3.1.4. NAFTA's Commission for Environmental Cooperation

The Commission for Environmental Cooperation ("CEC") has established a North American Conservation Program. One of the objectives of this program is to encourage communities, NGOs and individuals to participate in the conservation of North America's protected areas such as parks and reserves.²⁵ In addition to the CEC's conservation

²¹ Comisión Nacional de los Estados Unidos Mexicanos para la UNESCO, "Reserva del Vizcaíno" (1992)

²² World Heritage Convention Operational Guidelines Article III.B.

²³ World Heritage Convention Operational Guidelines Article III.B.

²⁴ World Heritage Committee document: WHC-98/CONF.203/8.Rev.

²⁵ Commission for Environmental Cooperation Project Brief (Undated).

program, the CEC also has investigative functions²⁶ and quasi-complaint functions²⁷ which may be helpful in bringing international attention and pressure to bear on resolving the issues related to San Ignacio. The CEC has been kept apprised of the developments regarding the proposed saltworks in Laguna San Ignacio.

3.2. Federal

3.2.1. SEMARNAP²⁸

SEMARNAP is a newly formed Secretariat in the Mexican government, which is intended to bring all environmental issues under a single umbrella. The Secretary is Julia Carabias Lillo. Carabias is also in charge of one other independent agency, the Attorney General for the Environment ("Profepa") and the three undersecretariats: Fisheries, Natural Resources, and Planning. The Federal government has exclusive jurisdiction over the proposed saltworks project for two reasons. First, it falls within a federally designated "Protected Natural Area." Second, the exploitation of salt directly from seawater is a federally regulated activity (presumably because the salt and the seawater it is drawn from belong to the people/government of Mexico). For these reasons, ESSA must provide a federal environmental impact assessment on the saltworks project to the National Institute of Ecology (INE).²⁹

So far, SEMARNAP appears to be trying to "do the right thing" regarding San Ignacio. SEMARNAP has asserted "its firm promise" that through INE, the saltworks "project will only be authorized if it complies with applicable environmental regulations."³⁰ It proposed the formation of the International Scientific Committee to act as an advisory group to INE. SEMARNAP asked for IWC cooperation in recruiting the world's top whale experts to serve on the Committee. Most importantly, and despite some flaws, this Committee process is a marked improvement in public participation and transparency in decision-making in Mexico. The Committee received the public's comments and produced terms of

²⁶ North American Agreement on Environmental Cooperation, 32 I.L.M. 1480 (1993), at art. 13.

²⁷ *Id.* at arts. 14-15.

²⁸ Secretaría de Medio Ambiente, Recursos Naturales y Pesca (Secretary of the Environment, Natural Resources and Fisheries).

²⁹ SEMARNAP Sustainable Development Web Page *supra* note 18.

³⁰ Secretaría de Medio Ambiente, Recursos Naturales y Pesca, Informa Los Resultados De Los Primeros Trabajos Realizados Por El Comite Cientifico Que Asesora Al Instituto Nacional De Ecologia, En Relacion Con El Proyecto "Salitrales De San Ignacio" (May 22, 1996) (press release, copy on file with author) [hereinafter "SEMARNAP Press Release"].

reference for the new environmental impact assessment (see section 2.2. above). The Committee will next be called upon to act in an advisory capacity to INE in reviewing the assessment once it is complete.³¹ SEMARNAP has also pursued another form of participatory communication involving the use of Internet web pages for a more static, but still transparent, discussion of the issues surrounding San Ignacio.³² This web site describes the background on the proposed project and the concerns raised by interested parties. It includes verbatim transcriptions from a public hearing, public comments submitted via E-mail, and now the scientific and socioeconomic terms of reference.

3.2.2. INE ³³

A few of INE's relevant functions are planning and environmental impact assessment; environmental regulation; and conservation and ecological exploitation. It is also in charge of international cooperation issues. To carry out these functions, INE has state delegates that deal with local issues. INE rejected the first environmental impact assessment from ESSA, and it will be responsible for reviewing ESSA's second environmental impact assessment.

3.2.3. Protected Areas Management

Ten Presidential decrees issued this century have created 374 protected areas in Mexico. As a result, nearly 60% of the country falls under some form of protection. Unfortunately, many of these decrees disregarded local interests and even disregarded then-existing conditions of development. Most importantly, there have been few funds to administer the protected areas. In 1994, protected areas management responsibilities were transferred to the newly created SEMARNAP/INE, however, because there were still no more funds for administration; the transfer had little impact. The appropriation for protected areas management for 1995 was U.S.\$575,000. It was increased for 1996 to just over U.S.\$1 million. SEMARNAP's request for 1997 was U.S.\$1.7 million. This amounts to only ten cents per hectare.³⁴

In addition, in 1995, INE received some funds from the Global Environmental Facility ("GEF") with which it identified the 10 most

³¹ Advice which SEMARNAP has agreed in writing to follow. See SEMARNAP "Salitres de San Ignacio: Sal y Ballenas en Baja California" Cuadernos(1997) at 9.

³² SEMARNAP Sustainable Development Web Page supra note 18.

³³ Instituto Nacional de Ecología (National Institute of Ecology).

³⁴ Secretaría de Medio Ambiente, Recursos Naturales y Pesca, Programa de Areas Naturales Protegidas de Mexico 1995 - 2000 (1995), at 113.

important protected areas and drafted management plans for these areas. A new agency within INE, the Sistema Nacional de Areas Naturales Protegidas ("SINAP") was put in charge of protected areas management. SINAP is currently restructuring its administration to establish a regional basis, budget and directorships. The biggest and most important reserves are slated to receive more federal appropriations. In addition, and as part of this effort, ECONAP has been established. It has 60 members from many sectors in society and is intended to raise private sector support for the national reserve system. As of 1997, funds will also be available through a nationwide trust for protected areas, the Fideicomiso Nacional para las Areas Naturales Protegidas ("FNANP"). The trust will consist of U.S.\$20 million from the Global Environment Facility, U.S.\$7 million from the World Bank Northern Border Initiative, and an as yet unspecified sum from the Mexican government. The goal is to use the corpus of the trust to generate \$200,000 in annual income per reserve in Mexico.

The Director of the Vizcaíno Biosphere Reserve, Victor Sanchez, is worried about development in general, but most importantly "urban" development. There is no way to provide water to new immigrants to the area, and disposal of wastes has become a monumental problem (in part because of impermeable soils).³⁵ The reserve has 20 employees, including 6 patrol units. In addition, PROFEPA (Mexico's environmental attorney general) is taking an active interest in environmental enforcement in the area. However, a key problem with this reserve is that a very small part of it is federal land. According to an INE map, most of the reserve (all but 20% according to Sanchez) has some other claim as well -- ejidos, private ownership, collective fisheries, or the state. It is thus unlike many other reserves. The "core areas" even overlap existing development and look like gerrymandered congressional districts in their haphazard shape (i.e. an after-the-fact designation of protected areas).³⁶ Much of the reserve's work is funded by ESSA (as Sanchez discussed his many projects, he noted that some were being totally underwritten by ESSA, including a fisheries economy study).³⁷

3.2.4. The Mexican Federal Legislature

On April 30, 1998, the Chamber of Deputies, the lower house of the Mexican Congress, decided to create a "Commission to Investigate the Environmental Impacts of the Operations of Exportadora de Sal (ESSA)" both at its existing facility in Guerrero Negro and the planned saltworks at

³⁵ Meeting with Vizcaíno Biosphere Reserve Director Victor Sanchez (November 14, 1996) [hereinafter "Sanchez Meeting"].

³⁶ Sanchez Meeting *supra* note 35.

³⁷ Sanchez Meeting *supra* note 35.

Laguna San Ignacio. The Commission will have twelve members, 7 from the opposition parties and 5 from the PRI. The Commission will initially been given one year to complete its investigation and make a report to the President.

3.3. State

The State of Baja California Sur ("BCS") is pressing for the approval of the saltworks. The governor of BCS, Guillermo Mercado Romero, according to Grupo de los Cien, has expressed strong support for the saltworks project. He is hoping the U.S.\$120 million investment will "jump-start" the local economy.³⁸ Mexican state governments have created agencies or ministries charged with the administration of environmental laws. States are also given many powers in the General Environmental Law of Mexico.³⁹ For example, states and local governments can enact environmental regulations that are more stringent than the federal standard.⁴⁰

3.4. Local

San Ignacio is within the jurisdiction of the municipality of Mulegé, however the local government has played no role in the management of the lagoon.⁴¹ As with many reserves or protected areas throughout Latin America, a key issue in management is how to reconcile the conflict of people living in and using the Reserve, while at the same time achieving its protection. Unfortunately, the Mexican governmental agencies have done a very poor job in public outreach and communications with the local communities.

The people from the area have spoken of their concerns and perspectives, especially problems that have occurred since development of the first saltworks in Guerrero Negro. They have raised strong concerns over the secondary effects of the proposed Laguna San Ignacio saltworks project. Road building will increase access to the lagoon (or if ESSA limits the use of the roads, may prevent those with need for access for fishing to be shut out). The potential secondary effects include the other businesses that have sprung up around the ESSA facility in Guerrero Negro. At the

³⁸ Homero Aridjis, Gray Whales vs. Pesos: Which Should Prevail? L. A. Times, March 12, 1995, at M1.

³⁹ The General Law of Ecological Equilibrium and Environmental Protection, 1988.

⁴⁰ Serge Dedina and Emily Young, Conservation and Development in the Gray Whale Lagoons of Baja California Sur, Mexico (1995) (submitted to Marine Mammal Commission, Washington, D.C., copy on file with author), at 20 [hereinafter "Dedina and Young"].

⁴¹ Dedina and Young supra note 40, at 20.

time the saltworks there were founded the population was about 200. It is now over 12,000. If the pattern of suppliers settling near by, followed by restaurants, hotels, and tour operators is repeated, the secondary impacts could be very serious.

4. Economics.

4.1. Mitsubishi Corporation

Mitsubishi was founded in 1870 as a shipping company. The current Mitsubishi Corporation was established in 1950. Mitsubishi is now one of Japan's leading trading companies and has 230 offices in 85 countries. Few, if any, other companies in Japan have more experience in international trade than Mitsubishi. Worldwide, Mitsubishi is involved in about 73,000 business relationships and has a hand in producing approximately 10,000 different products. Mitsubishi's consolidated assets were U.S.\$91.9 billion at the end of fiscal year 1996. Mitsubishi is a horizontally integrated business (called *keiretsu* in Japan) that allows it to be a producer of raw materials, a manufacturer and a retailer in many sectors. Mitsubishi is comprised of seven groups: Information Systems & Services, Fuels, Metals, Machinery, Foods, Chemicals, and Textiles & General Merchandise. Solar salt manufacturer Exportadora de Sal (ESSA) is part of the Chemical group, along with U.S.-based Aristech Chemical Corporation and methanol manufacturer METOR.⁴²

4.2. The existing economy

The 28th parallel divides the 28,369-square-mile state of Baja California Sur ("BCS") from its northern neighbor Baja California ("BC"). BCS is bounded on the east by the Gulf of California and on the south and west by the Pacific Ocean.⁴³ The State Capitol is La Paz. The population of BCS is 317,764 (1990) with approximately 140,000 in the capitol city itself.⁴⁴ Rapid economic development in the United States - Mexico border region in the 1920's and 1930's led border-area municipal leaders to lobby for the division of Baja California, then one territorial unit, into Northern and Southern territories. Strong growth in the North continued in the ensuing decades, leading in 1952 to the declaration of Baja California as Mexico's 28th state. Meanwhile, the Territory of Southern Baja California saw little economic development in this period due to its

⁴² This information in this section is from the Mitsubishi Corporation www page: <http://mcweb.mitsubishi.co.jp>

⁴³ Instituto Nacional De Estadística, Geografica e Informatica, Anuario Estadístico Del Estado De Baja California Sur: Edición 1995, at 3.

⁴⁴ Id., at 71.

extreme isolation from the rest of Mexico.⁴⁵ The desire to stimulate development in BCS provided the impetus for the construction of the Transpeninsular Highway (Mexico 1). The Highway was completed in 1973, linking Tijuana with Cabo San Lucas. Less than one year later, the population of Baja California Sur surpassed 80,000, and the territory became Mexico's 30th state.⁴⁶ Today, agriculture, fishing, mining and tourism are the main revenue-earners of Baja California Sur. U.S.\$108,339,393.90 worth of mineral products were extracted in BCS in 1994.⁴⁷ ESSA's Guerrero Negro Salt operation accounted for over 60% of this figure.⁴⁸

4.3. History of the Salt Industry in Baja California

Salt was first produced at Guerrero Negro in 1957 by a U.S. firm for export to the Northwest U.S. for use in paper production and industry applications. In that year, 50,000 tons were exported. Other similar solar salt evaporation facilities exist in San Francisco, San Diego, and in the Bahamas and Australia. Other sources of salt are usually from underground mines (e.g. in Texas and Louisiana). In 1960, Guerrero Negro started to export salt to Japan. It now supplies 50% of Japan's needs. Guerrero Negro also exports to the U.S., Canada, New Zealand and various countries in South America.⁴⁹

4.4. A brief analysis of the World Salt Market.

World salt production was approximately 183 million tons in 1995. Worldwide, important uses of salt include its use as a raw material in chemical production; in human and animal nutrition, including food processing; for roadway safety; and in water treatment.⁵⁰ At 43.3 million tons, the United States is the world's largest producer of salt.⁵¹ Mexico is the world's seventh largest producer of salt, and the world's second largest salt exporter. Production has hovered around 7.5 million tons annually during the 1990's.⁵² Most of Mexico's salt comes from ESSA's Guerrero Negro facility, the world's largest solar saltworks. ESSA salt is one of the purest in the world; because of this, a "...major part of all

⁴⁵ Baja California (Lonely Planet Publications, 1994), at 45 [hereinafter "BAJA"].

⁴⁶ Id., at 45.

⁴⁷ All dollar figures in this section are based on the 1994 average exchange rate of 3.3 pesos per dollar.

⁴⁸ Instituto Nacional De Estadistica supra note 43, at 213, and BAJA supra note 45, at 21.

⁴⁹ Ardura Meeting supra note 9.

⁵⁰ The Salt Institute Internet www page: <http://www.saltinstitute.org> [hereinafter "The Salt Institute"].

⁵¹ Dennis S. Kostick, Salt, United States Bureau of Mines Minerals Yearbook (1996).

⁵² The Salt Institute supra note 50.

exports will always be consumed by the chemical industry, and only a fraction will be used as de-icing salt or for nutrition.”⁵³ The salt produced at ESSA’s proposed Laguna San Ignacio operation can be expected to be exported as well because of its purity and the lack of a strategic chemical application within Mexico. The estimated 7 million-ton per year capacity of the San Ignacio saltworks translates into a 3-4% increase in the supply of salt on the world market. Such an increase would undoubtedly have a downward effect on the price of salt unless demand increases proportionately. On the other hand, while there appears to be little current need for the saltworks project, over the long term this may not be the case. It may be quite (economically) reasonable for Mitsubishi to seek to build the facility if it has inside information regarding the salt industry, or if it has calculated that there is a reasonable expectation for growth in the salt market.

Salt is the primary feedstock for the world chemical industry. The chemical sector accounts for over 55 % of world salt consumption, with salt consumption in chlor-alkali manufacture reaching 70 million metric tons in 1996.⁵⁴ For example, the chemical industry is the largest single user of salt in the United States, representing about 42% of total salt consumption. Highway de-icing, subject to large annual fluctuations, accounted for 35%, and food and agricultural applications – for 6% of total US salt consumption in 1996.⁵⁵

In the chlor-alkali industry, electrolysis is used to break NaCl into its component ions and to make chlorine, caustic soda, sodium chlorite and sodium chlorate. Ninety-five percent of salt used by the chemical industry is in the manufacture of chlorine (Cl₂) and caustic soda (NaOH). Chlorine has many uses. It is an effective disinfectant and bleach. Downstream, vinyl chloride and polyvinyl chloride (PVC) and their derivatives are produced from chlorine. Caustic soda, on the other hand, is used in pulp processing and in the making of cellulose chemicals and their derivatives. Other chemicals manufactured from salt are metallic sodium and sodium chlorate. Until 1986, salt was used to produce synthetic soda ash (NaCO₃) in the U.S.

⁵³ Ursula Ewald, The Mexican Salt Industry, 1560-1980 (1985) p.185.

⁵⁴ Pfeifer, S. “Salt Presages Chlorine Growth” (October 15, 1997). Chemical Week, p. 35.

⁵⁵ The Salt Institute supra note 50.

4.5. Ecotourism and Fisheries

While whale watching has been a popular tourist attraction in Laguna San Ignacio for many years, it has only recently become an organized industry. As a result of some training exercises, it is evolving into an instructional ecotourism activity. Initially the industry was unregulated; then the government required tour guide/boat captains to obtain permits from Mexico City and to abide by well-developed whale watching regulations. However, for a long time there was no one on site to enforce or direct activities. The whales there are "friendly"; they will bring their young to the boats to be touched, an apparently learned behavior. In the past, individual boats would stay in the lagoon for 3 days. More recently land-based ecotourism has developed. Locals have been trained in both language and biological information, and local boatmen and fishermen are making money from this.

The fisheries sector of the current economy appears to be sustainable, but at risk from overfishing by non-locals. Views expressed by local fishermen indicate no desire to change their lifestyle. The people in the area want to remain there, fishing, living and growing.⁵⁶

5. Civil society

In general, there has only been a limited group of people in Mexico involved in opposing the San Ignacio saltworks project up until now. For the most part, Mexican environmental groups and the communities near Laguna San Ignacio are the groups that have and can continue to make a difference.

5.1. International Groups

Greenpeace
International Fund for Animal Welfare
Natural Resources Defense Council
RARE Center for Tropical Conservation
The School for Field Studies
World Wildlife Fund

5.2. National Groups

Consejo Para la Defensa de la Costa del Pacifica
Grupo de los Cien
Pro Natura

⁵⁶ Statements of Laura Martinez Ríos of Pro Esteros at the Environment Committee of the San Diego - Tijuana Region monthly meeting (June 7, 1996).

5.3. Baja Peninsula Groups

Pro Esteros	Pro Natura (Baja California Chapter)
Amigos de la Laguna	Kuyima Servicios Ecoturísticos
The fishing cooperatives	Ejido Luis Echeverria Alvarez ⁵⁷
Grupo Sierra de la Laguna	

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⁵⁷ Presumably, this ejido was created as part of the redistribution of land following the 1917 Mexican Revolution. The nation's new constitution established Mexico's ejido system. The creation of this system was intended to achieve agrarian and land ownership reform to eliminate peonage and landlessness. Land expropriated from wealthy families was combined with national and church lands and was redistributed for use by the poor. Once granted an ejido, the recipients could not lose it as long as they were using it. Regardless of how or how well they used it, creditors of any kind could not take it from them. However, they were not given any property rights other than the right to use. Ejidos were not transferable. In 1992, as part of his unilateral preparations for NAFTA, President Salinas amended Article 27 and terminated the ejido redistribution program. Those who occupy them can own the ejido lands. More importantly, they can be sold or taken by creditors. However, because much of the Laguna area is in the "coastal zone", transfers of ownership to foreign buyers are severely limited. Under present law, even if there were a willing seller, Mitsubishi probably can not buy this land.

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