MICROSOLAR MISSION REPORT

GALAPAGOS

MISSION MEMBERS: Allan Baer, Alfonso Tovar, Berenice Norris

MISSION SCHEDULE:

Location:	Dates:	Purpose:
Quito:	July 12 – July 16	NASA Satellite Licensing
Galapagos:	July 17 – July 24	Advance Installation Survey
Quito:	July 25 – July 29	NASA Satellite Licensing

July 12 – 13 (Travel: Chelsea, Vermont – Quito, Ecuador)

July 14: (Quito) Meeting with Chasquinet, Attending: Allan Baer (EcoSage), Hernan Plaza (Ministry of Tourism), Klaus Stoll (Chasquinet); Mario Sanchez (National Telecommunications Commission.

1. Chasquinet Foundation is a private, non-profit public benefit corporation in Ecuador specializing in Information and Communications Technology (ICT) development in Latin America; CONATEL is the satellite frequency and ground terminal licensing authority for the Government of Ecuador. Purpose of Meeting:
2. Purpose: Secure support and collaboration for MicroSolar program. EcoSage and Chasquinet agreed to collaborate on the development of the MicroSolar program in the Galapagos. Chasquinet agreed to provide logistical support for equipment purchases in Ecuador, to provide technical assistance for satellite licensing with Government of Ecuador telecommunications authorities, to provide on-going systems maintenance and training in the Galapagos, and to assist with other administrative issues with the Government of Ecuador as required. Key Issue: Legal and technical (engineering) representative for satellite licensing in Ecuador; short-term logistic support. Outcome: EcoSage prepared Authorization Document naming Chaquinet as the legal and technical representative in Ecuador for NASA satellite licensing. EcoSage agreed to provide Chasquinet with fund for the purchase of equipment and shipping in support of EcoSage installation crew in the Galapagos.
3. Purpose: Review satellite and ground terminal licensing requirements. EcoSage and Chasquinet met with the Vice-Minister of Tourism, Hernan Plaza, and a representative from CONATEL, Mario Sanchez, to review licensing application materials and process. Agreement was not reached on the appropriate license category in this meeting. A

meeting was scheduled to meet with Freddy Rodriguez later in the afternoon to clarify licensing categories, fees, and timelines. Key Issues: EcoSage is requesting human development license status, which is a legal status for licensing in Ecuador under CONATEL. No previous license has been granted under this licensing category. EcoSage is also requesting a licensing fee exemption; no fee exemption has been granted previously. Outcome: The requirements for the license application were agreed upon to fulfill license requirement. Meeting was scheduled with Freddy Rodriguez President of CONATEL.

July 14: (Quito) Meeting with CONATEL, Attending: Allan Baer (EcoSage), Hernan Plaza (Ministry of Tourism), Freddy Rodriguez, President (CONATEL).

1. The National Telecommunications Commission (CONATEL) is the telecommunications licensing agency for the Government of Ecuador.
2. Purpose: Clarify issues regarding licensing category and fees. Key Issues: Fee exemption and humanitarian licensing classification. Microsolar program objectives and activities were defined in the context of human capacity building, specifically in the areas of distance education and telemedicine, to clarify the public benefit use of the satellite system. The fee structure was discussed. Freddy Rodriguez explained that all applicants must pay a fee, and that the fee can and "will" be substantially reduced for this project. A fee review will be completed by the Commission after the submittal of the application based on the humanitarian licensing category. Outcome: Humanitarian licensing category was confirmed and license application was requested by CONATEL.

July 15 - 16: (Quito) Working meeting with Chasquinet, Attending: Allan Baer (EcoSage), Karin Delgadillo Poepsel (Chasquinet), Chasquinet technical staff and consultants.

1. Purpose: Management of technical specifications and preparation of documents for licensing application. Key Issues: Letters of Authorizations for applicant legal and technical representation. Outcome: The Ohio Consortium for Advanced Communications Technology (OCACT / Ohio University) approved the appointment of EcoSage Corporation as co-managing member of OCACT and authorized EcoSage as legal representative for all satellite licensing. EcoSage in-turn, appointed Chasquinet as the representative of EcoSage in Ecuador. Technical specifications were reviewed by engineering consultants in order to identify authorizing engineer for technical review and signature on licensing application.

2. Purpose: Chasquinet technical review team reviewed material and equipment requirements with EcoSage technical staff to determine the availability of local (Quito) suppliers. Outcome: Materials were identified, purchased, and shipped to Galapagos for 1st phase installation crew arriving in San Cristobal on July 21.

July 17 (Galapagos) Allan Baer; Berenice Norris Crespo (EcoSage)

1. Purpose: Preparation for arrival of installation crew. Held planning sessions to establish sequence of stakeholder meetings. Outcome: Weekly schedule planned in coordination with EEPG.

July 18 (Galapagos) Allan Baer; Howard Snell and Leonardo Vivar (Charles Darwin Research Station); EEPG Board of Directors

1. Purpose: Clarify possible technical assistance from Charles Darwin Research Station (CDRS) regarding customs exemption. Key Issue: Darwin Foundation has special exemption status from Government of Ecuador and is willing to utilize this status to assist the MicroSolar project in order to ship the satellite ground terminal and other equipment. Outcome: It would not be feasible to ship the satellite ground terminal(s) utilizing the Darwin exemption for several reasons, the most critical being the long-delay period of 3 months or greater. EcoSage will work with CDRS on all items for which delays will not impact the critical milestones for project installation.

EEPG Board of Directors Meeting

2. Purpose: Review purpose of mission, including schedule and scope of work for the 1st phase installation to include energy monitoring at the Planta de Luz, wireless local loop (WWL) to key installations to include energy monitoring of typical facilities under the ENEL DSM/RUE program (to be determined).

July 19 – 20 Travel to San Cristobal (no meetings on weekend).

July 21 (San Cristobal) Meeting with Galapagos National Park Service (GNPS)

1. Purpose: Information technology staff to review local area network and determine compatibility with planned WWL system. Outcome: GNPS has 802.11b WWL for LAN capacity between Park headquarters on San Cristobal and Interpretation center. EcoSage technical review team will evaluate connection of the GNPS LAN to WLL network.

Meeting with University of San Francisco (Faculty and Administrative Staff)

2. Purpose: Review new facilities including technology lab and evaluate potential collaboration on community-based education for DSM/RUE measures. Outcome: Community-based education for renewable energy is in the planning stages. University of San Francisco (USF) will need technical support with regard to development of renewable energy education program for consistency with e7/EEPG joint venture. Discussions will continue with key USF personnel during proposed ENEL August mission.

3. Purpose: EEPG coordination of survey activities, including installation of monitoring equipment at Planta de Luz and proposed WWL/internet connection. Outcome: EEPG to assign staff to Alfonso Tovar to begin installation of monitoring equipment. EEPG to invite community leaders to introduce WWL installation and discuss possible sites for equipment location.

July 22 Allan Baer, Alfonso Tovar, Berenice Norris Crispo (EcoSage):

1. EEPG Community Meeting. Attending: Monica Mayorga and Wadih Daher Nader (EEPG), Emillo Carrillo (Director, Provencial Education Dept.), Edwin Gomez (GNPS), Celso Bohorquez (Provincial Director of Health), Claudio Teran (CDRS), Rafael Betancourt (INGALA), Hernan Vilema (Governor's Office); Patricio Hinojosa (Commandant). Purpose: Provide community-wide presentation of MicroSolar program and develop community support for cooperation in community-based education programs, including Microsolar, DSM and RUE measures. Outcome: Board-based community leadership support from multiple sectors for MicroSolar program, DSM and RUE measures. NOTE: DSM / RUE was referenced briefly only for the purpose of securing cooperation to identify "typical" facilities by sector in preparation for ENEL mission in August.

July 23 Tour of the School Facilities: Allan Baer, Berenice Norris Crespo.

1. Purpose: Identify strategy for implementation of Microsolar in San Cristobal. Key findings:

    a. Naval School (k-10 grades): Newly installed computer lab contains approximately 20 workstations and overhead LCD projector available to all grade levels. A group of 14 US

school teachers were volunteering at the time of the visit and committed to student exchange program.

b. Humbolt School (High School): Approximately 330 students in grade levels 10 – 13. The existing computer lab has 8 old computers currently in lab. Peace Corps volunteers indicated that the school will receive new computers for the lab in approximately one month. The school has a newly constructed, state-of-the-art English language instruction lab with new computer, LCD projector, and 24 workstations (microphones and headphones only). The computer lab and adjacent classrooms are powered by a 3 kilowatt solar array with battery backup. This system is new and highly reliable. The school also has a new classroom for a second computer lab. No plans exist for computers and furnishing.

c. Ignacio Hernandez (Technical High School): Located near the Planta de Luz, the school has 225 students of which 43 are studying computer science with the support of two full-time computer science teachers. The school has two technology labs. The computer science lab has 8 new, networked computers equipped with Pentium 4 processors. The general school computer lab has an additional 6 computers. The computer science students are developing a web site which is located on a server in Mexico, which is updated infrequently as the students do not have Internet access in school. The school also contains an English language learning lab identical to Humbolt School. The English lab has no materials, so it is used only for watching movies.

d. Allejandro Alveir (Grades pre-K through 10). The school enrolls approximately 460 students. The existing computer lab has 4 old computers. The school is receiving 15 new computers from the US embassy in approx one month. The Ambassador has been out to visit the school. The physical condition of classrooms are poor.

Recommendations: The schools currently have new computers or are expecting to receive new computers within a relatively short time-frame, making the installation of new computers under the MicroSolar program a minimal upgrade by comparison to the recent significant upgrades in nearly all the schools. In this context the WWL and Internet service extended to additional schools becomes a higher value-added service. EcoSage is proceeding with a technical survey and will establish WWL installation priority beginning with the two public high schools. The feasibility of connecting the English

language labs for DSM and RUE training labs will be explored by the EcoSage technical team and school officials. Also, the computer science lab at the Ignacio Hernandez Vocational High School will be an excellent service learning center for data entry on DSM and RUE measures.

Conclusion: EcoSage will begin installing WWL infrastructure and will not extend the WWL service to the priority schools until basic WWL infrastructure is installed and tested. Planning sessions on DSM and RUE education programs will be conducted with ENEL support. MicroSolar budgeted computers will best serve the needs of professional development and training support services, which are to be worked out with school officials. The ability to apply MicroSolar resources to complete an integrate the schools' systems into a large LAN is a much higher value added-resource to the schools than an additional computer lab and will provide substantial human resources to support the DSM and RUE community outreach objectives.

July 24 Departure to Quito (Staff meeting and Monitoring Report Preparation) Alfonso Tovar (EcoSage) to remain in San Cristobal installing Energy Monitoring Devices.

July 25 Chasquinet Allan Baer (EcoSage), Karin Delgadillo Poepsel, Chasquinet Administrative and Technical Staff.

1. Licensing application competed.

July 26-27 (Weekend)

July 28 (Quito) Meeting with CONATEL, Attending: Allan Baer (EcoSage), Hernan Plaza (Ministry of Tourism), Freddy Rodriguez, President (CONATEL), Sandino Torres (SENATEL).

1. Licensing application submitted for Spanish Language translation.
2. Conducted several review meetings with CONATEL and SENATEL officials.
3. Agreement reached with Hernan Plaza, Ministry of Tourism, to be license application team leader with the support of Chasquinet.

July 29-30 Return to Vermont