PROJECT ASSISTANCE COMPLETION REPORT
CARE OPG No. 511-0495

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I. INTRODUCTION

The project supported by this OPG envisioned construction of potable water and sanitary disposal systems (latrines) in thirty-nine rural communities of La Paz Department, in an effort to improve public health conditions in the communities selected. The original grant was for the period March 27, 1979 to March 26, 1982, but this was subsequently amended to extend the completion date to December 31,1982. In addition to construction activity, the project called for training of community members in administration and maintenance of the systems. CARE, its counterpart the Regional Development Corporation of La Paz (CORDEPAZ), and community members were to collaborate on the attainment of these goals.

II. PRESENT STATUS OF THE PROJECT

A. Procurement

Procurement of all materials was completed well within the amended completion date. Political upheavals and economic difficulties in Bolivia during the life of the project caused many delays and required increased financial inputs over the original budget figures.

B. Construction

Thirty-nine potable water systems were built within the amended project completion date (see appendix I). Construction targets for latrine construction (80 per project

for a total of 3120) were not met for a variety of reasons. In the initial two years of project activity, progress was nearly on schedule. Cooperation between CARE and CORDEPAZ was relatively effective, and 15 potable water systems were completed against a target of 21. By the beginning of 1981, however, serious difficulties began to develop between CARE and CORDEPAZ, primarily over the latter's failure to honor its commitments under the inter-institutional agreement to provide financial support for transport and administration. While attempting to normalize relations and operations, CARE was obliged to complete unilaterally three water systems because of commitments made to the communities. A revision of the CARE-CORDEPAZ agreement in 1981 did not provide the expected results of improved cooperation. This forced CARE to request USAID to extend the completion date for this OPG to December 1982. Although CARE and CORDEPAZ managed to complete seven more water systems jointly, relations completely broke down by early 1982, forcing CARE to make the unhappy decision not to renew its agreement with CORDEPAZ after June 1982. This left a total of 14 water systems remaining to be constructed under the OPG by CARE alone, with neither financial nor technical assistance from the counterpart. Increased financial support from CARE headquarters, plus an accelerated effort by both CARE staff and community members, enabled CARE to successfully construct

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these remaining systems within the extension period granted by USAID. The factors described above, combined with political upheavals and local material procurement problems, were the basic causes for failure to reach targets on schedule in this project.

C. Training

Three training courses were held for community members during the life of the project. (The last was actually held in February 1983, two months after the completion date). Two members from each of the project communities attended one of the training sessions. The courses were conducted in cooperation with FONO, the GOB national manpower training organization. In addition to technical subjects on maintenance of the water systems, topics covered were public health and sanitation, cooperativism, community organization, and accounting and administration of funds generated by the water systems (see appendix II, sample syllabus). The courses lasted 21 days each, and generated a great deal of enthusism among community members in attendance.

III. FINANCIAL INPUTS

Appendix III shows inputs by system of CARE/USAID, CORDEPAZ and the communities. The latter two are necessarily rough estimates, as they are based mainly on manpower and locally supplied raw material inputs. Appendix III is an overall financial project summary of contributions made by CARE, USAID, CORDEPAZ, and the

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communities. It should be noted that, for reasons discussed earlier in this report, CORDEPAZ effectively withdrew from this project in early 1982, leaving CARE and the communities to complete the remaining systems and cover the financial shortfall caused by their withdrawal.

IV. PROJECT ACCOMPLISHMENTS

The initially contemplated output of thirty-nine potable water systems in rural communities in La Paz Department was achieved within the amended target completion date of the project, in spite of the fact that this took place during a period of political upheaval, economic difficulties, and ruptured CARE/Counterpart relations. Approximately 13,500 rural villagers benefitted under this program, against an initially estimated target population of 19,500. This apparent shortfall in population reached resulted from an over-estimation of average village populations during the planning stage of the project. It should be noted however, that a number of the systems constructed have already been enlarged by the communities themselves by connecting additional households. As the communities continue to grow, the numbers of beneficiaries reached by the water systems will increase at little additional cost to the communities.

While it is too early to accurately measure the actual impact of supply of safe water on the health of community members, CARE carried out a sample survey of 6 villages covered by the project in the Province of Murillo. (see appendix IV). The results

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on the whole indicate that the project has had a positive impact on the health of children from 0-4 years of age, as well as a salutory effect on the overall hygienic conditions in the villages. The following is a summary of the brief evaluation done for this project.

Quillihuaya. This village is some two hours from La Paz, at an elevation of 3,300 meters. The population of the village is approximately 400, of which 70% have water installed in their homes. The remaining 30% desire to have their homes connected to the system, but claim that they lack the funds to pay for the materials necessary. The monthly quota of $b. 50.oo per household had been regularly paid up to some three months ago. However, due to severe financial conditions coupled with the fact that most villagers have been spending most of their time in the fields during this period, many of the villagers have fallen into arrears. This situation should correct itself once the crops have been harvested next March. The evaluator observed that those interviewed use their water supply for food preparation, personal hygiene, and laundry.

Latrine use is very limited, the reasons given being that villagers spend most of the time in the fields away from the village and custom is to use the open air. Some of the roof sheets have been removed from the latrine huts and used for other purposes.

Results of interviews among those connected to the water system show an estimate of infant (0-4 years) mortality of approximately 100/1000 in the last three years, a figure considerably below the

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national average of 167.5/1000. However, due to the relatively informal nature of this survey, the lack of baseline data. and the absence of knowledge of other factors which might have affected this figure, it is impossible to say that this difference is caused by the installation of the water system.

Tanimpata. Located some three hours from La Paz, this Aymara village has apopulation of 400, of whom 51 families (340 people) have their homes connected to the water system. The quota for the water consumption has been set at only $b. 140 per annum. In addition to collecting this amount, the village water committee has ensured that the captation tank is cleaned monthly and that broken pipes have been replaced or repaired. In this village also, latrines are in the main not used by the villagers, the reasons given being custom and unwillingness to clean fouled latrines. Surveys show the infant mortality rate to be 170/1000, a figure marginally higher than the national rate.

Atahuallani. This village is situated 3 1/2 hours from La Paz. at an altitude of 4,3-0 meters. Of the total population of 62 families, 49 or 240 people are connected to the system. The village plans to enlarge the system next year to accomodate other households desirous of obtaining connections. The monthly water rate has not been collected, and the water committee is apparently moribund. However, the two community members who attended the training course continue to maintain and repair the system, and to clean the captation tank monthly. Here in this village, the

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latrines constructed are infrequently used. The survey showed infant mortality to be 100/1000 in the last two years among those interviewed. The interviewer also noted an increased level of personal and household hygiene as a result of the ready availability of water in the home.

Cayimbaya. Some 15 minutes distance from the preceding village, this Aymara villge of 360 has domestic connections for 53 houses. Shortly before the vist of the interviewers, a tractor damaged one of the mains, so that at the time of the interviews only 26 household had running water. However, the committee is purchasing replacement pipe and the entire system should be functioning again soon. Although additional families have requested connections to the system, the committee has as yet not acted upon the requests since they have not been able to decide upon the costs for each new connection. The monthly water rates are $b. 140 with 70% of the users up to date on their payments. The community has established a rotational system to ensure monthly cleaning of the tank and continuous maintenance of the system. Child mortality rate is calculated at 110/1000 for the last two years.

Husi. This system was completed in October 1982, and was constructed without the assistance of CORDEPAZ. The community responded by contributing nearly 50% of the cost of the system. Of the 56 families populating the village, 45 have domestic water connections. However, since the community was required to put up such a large financial input for contruction, they have to date not

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been able to set up a monthly quota system for consumption. Here too, the latrines constructed are rarely used.

Cotaña. About 30 minutes from Husi, this village has some 350 inhabitants, of whom 210 (40 families) are connected to the system. A number of new houses are being constructed within the village nucleus, most of which already have water taps installed under this project. The water committee originally selected had resigned, so monthly quotas have not been collected. As a result, some necessary repairs have not been carried out for lack of funds to purchase materials. Latrines although constructed, are apparently rarely used, with even those constructed at the elementary school being ignored by the children. Infant mortality was calculated at 110/1000.

Summary of evaluation survey:

Prior to installation of the potable water systems, the populations in these villages received their water supplies from streams or open wells. Many, while working in their fields, still drink water from these sources, although some thirty of those interviewed stated that they carried water from their household taps to the fields for health reasons. Since small children often remain at the home during the day, they receive safe water 100% of the time. This is also true of school children, as taps were installed at all elementary schools in the project villages.

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The maintenance of the systems installed varies from village to village, but the surveyor found that there is room for improvement in training, supply of tools, and particularly education and supervision of the water committees in the area of collection of water rates. In two villages, surveyor found that lime cal is being added to the tanks for purification. Latrines were found to be almost uniformly ignored. However, infant mortality among children from 0-4 years appears to be dropping in most of the villages surveyed where systems have been in place for some time. Hygienic habits compared to those in villages without potable water systems, seem to be markedly better. Although lack of baseline studies makes it impossible to prove that these are solely results of the project outputs, it seems safe to assume that a positive impact resulted from the installation of the water systems.

Follow-up Activities

Since CARE continues to work in this region, we intend to strengthen promotional and training activities with a view to making the water committees more reliable and active. Consideration is being given to training more than two members of each community, and to supply basic tools to the water committes. A complete reevaluation of sanitary disposal methods, both technical and educational, is being undertaken in an attempt to deal with the obvious shortfall in this aspect of the project. Ultimately, however, it seems clear that until a

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reliable and energetic local counterpart agency is found which will be responsible for educational and follow-up activities. this component of any future public health activities must be closely scrutinized before any investment is undertaken.

V. PROJECT IMPACT;

Theintent of this project was to improve the public health conditions in thirty-nine rural communities of La Paz Department. Since the collection of baseline data was not contemplated or carried out by the project, it is difficult, particularly at such an early date after completion of construction, to measure the extent to which the project has reduced infant mortality/morbidity, the incidence of water-borne diseases, etc. The fact that analyses of water samples taken from new systems show that the villagers are receiving safe water, leads us to the conclusion that over the long term the incidence of water-borne diseases will be reduced in the villages benefitted. (See Appendix V).

Ancillary benefits which were not specific objectives of the project are frequently visible in the villages where water systems were constructed. Women and children have clearly had their tasks of carrying water from at times long distances reduced and made easier. Small vegetable plots within and adjacent to village compounds have been planted in many villages, using waste water runoff to irrigate them. Water storage in the home, which was previously necessary was clearly a cause of infection, is no longer necessary

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since the houses have their own taps. Finally, and perhaps most important of all, the villages have to an extent discovered a capability to resolve their communal problems with a minor amount of outside assistance.

V. The training of villagers in cooperativism and administration, and the creation of albeit small communal funds which can be used to undertake expansion of the water systems and indeed even other communal activities, have led to an increased awareness and capability on the part of the villagers which should enable them in future to act in concert without outside agents to solve their development needs.

VI. RECOMMENDATIONS

Although this project has been completed, CARE continues to work in the area of potable water and public health programs. Based upon the experience obtained under this grant, we are adjusting our approach in the field of sanitary disposal systems in order to ensure that future project goals will be met. In the technical field of latrine design, in the educational and training aspects, we are actively seeking counterpart(s) who can undertake the necessary educational and follow-up activities at the village level to improve our incursions based upon lessons learned in implementation under this grant.

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APPENDIX I

APPENDIX I

COMMUNITY	PROVINCE	No. OF BENEFICIARIES	DATE BEGUN	DATE COMPLETED	TYPE SYSTEM (G) GRAVITY (P) PUMP	DATE OF TRAINING COURSE
1. COTAÑA	MURILLO	210	Feb. 1980	June 1980	(G)	May 1981
2. CAYIMBAYA	MURILLO	360	Feb. 1980	June 1980	(G)	May 1981
3. ATAHUALLANI	MURILLO	200	Feb. 1980	June 1980	(G)	May 1981
4. TANIMPATA	MURILLO	340	Feb. 1980	June 1980	(G)	May 1981
5. QUILLINUAYA	MURILLO	260	Feb. 1980	June 1980	(G)	May 1981
6. HUANCAPAMPA	MURILLO	450	Feb. 1980	June 1980	(G)	May 1981
7. TIRATA	MURILLO	400	Jan. 1981	Nov. 1981	(G)	May 1981
8. CHEJELAYA	LOS ANDES	340	Nov. 1980	Feb. 1981	(G)	May 1981
9. ZONA CENTRAL	LOS ANDES	505	Nov. 1980	Feb. 1981	(G)	May 1981
10. SANTO DOMINGO	NOR YUNGAS	250	May 1981	June 1981	(G)	June 1982
11. VILLA ELEVACION	NOR YUNGAS	300	May 1981	June 1981	(G)	June 1982
12. LOS ANDES	NOR YUNGAS	300	May 1981	June 1981	(G)	June 1982
13. CENTRO FLORIDA	NOR YUNGAS	210	May 1981	June 1981	(G)	June 1982
14. IQUIACA	LOS ANDES	553	May 1981	June 1981	(P)	May 1981
15. COPANKARA	OMASUYOS	480	Nov. 1981	May 1982	(P)	May 1981
16. PATAMANTA	LOS ANDES	610	Nov. 1980	Feb. 1981	(P)	May 1981
17. CHOJÑA	NOR YUNGAS	246	Mar. 1982	May 1982	(G)	June 1982
18. CHARIA	SUD YUNGAS	350	Aug. 1981	Sep. 1981	(G)	June 1982
19. APA APA	SUD YUNGAS	212	Nov. 1981	Feb. 1982	(G)	June 1982
20. YANAMAYU	SUD YUNGAS	198	Nov. 1981	Feb. 1982	(G)	June 1982
21. CORPA CALA CALA	OMASUYOS	217	Feb. 1982	Mar. 1982	(G)	June 1982
22. MICAYA	AROMA	371	Mar. 1982	May 1982	(G)	June 1982

APPENDIX I

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COMMUNITY	PROVINCE	No. OF BENEFICIARIES	DATE BEGUN	DATE COMPLETED	TYPE SYSTEM (G) GRAVITY (P) PUMP	DATE OF TRAINING COURSE
23. CARA MINA	INQUISIVI	386	Feb. 1982	June 1982	(G)	June 1982
24. PONGO B-2	INQUISIVI	424	Feb. 1982	June 1982	(G)	June 1982
25. SALERA TARQUIANAYA	PACAJES	360	Feb. 1982	June 1982	(G)	June 1982
26. Laquinamaya	PACAJES	643	Apr. 1982	Oct. 1982	(G)	Feb. 1983
27. KASILLUNCA	PACAJES	432	Feb. 1982	Oct. 1982	(G)	Feb. 1983
28. SANTIAGO DE MACHACA	PACAJES	417	Feb. 1982	Oct. 1982	(G)	Feb. 1983
29. JARAPATA	SUD YUNGAS	215	July 1982	Sep. 1982	(G)	Feb. 1983
30. CANLAYA	BAUTISTA SAAVEDRA	210	Sep. 1982	Oct. 1982	(G)	Feb. 1983
31. LAGUNILLAS	BAUTISTA SAAVEDRA	283	Sep. 1982	Oct. 1982	(G)	Feb. 1983
32. HUSI	MURILLO	185	Sep. 1982	Oct. 1982	(G)	Feb. 1983
33. SUCALAYA	MURECAS	400	Sep. 1982	Oct. 1982	(G)	Feb. 1983
34. CHACAHUAYA	BAUTISTA SAAVEDRA	500	Sep. 1982	Oct. 1982	(G)	Feb. 1983
35. SAN PEDRO DE CURVA	BAUTISTA SAAVEDRA	600	Sep. 1982	Nov. 1982	(G)	Feb. 1983
36. QUILASI	SUD YUNGAS	232	Sep. 1982	Nov. 1982	(G)	Feb. 1983
37. CAATA PATA	BAUTISTA SAAVEDRA	175	Nov. 1982	Dec. 1982	(G)	Feb. 1983
38. KOLLAHUAYA	BAUTISTA SAAVEDRA	210	Nov. 1982	Dec. 1982	(G)	Feb. 1983
39. CHACAROPAMPA	BAUTISTA SAAVEDRA	340	Nov. 1982	Dec. 1982	(G)	Feb. 1983

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APPENDIX II

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CURSOS DE CAPACITACION

OBJETIVO.

Todo sistema de agua potable necesita mantenimiento y cuidado para su buena operación, del éxito de éste dependerá el buen servicio.

Para esto se necesita hombres capaces que puedan llevar a cabo las tareas del cuidado, reparación y mantenimiento, con los conocimientos necesarios para esta tarea (Albañilería, Plomería).

Cuando se tiene un buen sistema de agua potable se disminuyen las enfermedades a través del consumo de agua pura y de alimentos ricos en vitaminas (Salud, Nutrición).

Alrededor de este beneficio se podrán crear organizaciones fuertes que lidericen para alcanzar otras etapas de desarrollo (Cooperativismo) con una cierta organización que garantice la existencia de las mismas (Administración).

COMUNIDADES QUE PARTICIPAN.

Nombre		
1. Jerapata	Sud Yungas	Gravedad
2. Quilasi	Sud Yungas	Gravedad
3. Hussi	Murillo	Gravedad
4. Sucalaya	Muñecas	Gravedad
5. Curva	B. Saavedra	Gravedad
6. Lagunillas	B. Saavedra	Gravedad
7. Canlaya	B. Saavedra	Gravedad
8. Chacahuaya	B. Saavedra	Gravedad
9. Carta Pata	B. Saavedra	Gravedad
10. Chacaropampa	B. Saavedra	Gravedad
11. Kollahuaya	B. Saavedra	Gravedad
12. Iaquinamaya	Ingavi	Bombeo
13. Santiago de Machaca	Pacajes	Bombeo

DURACION DEL CURSO.

El curso tendrá una duración de tres semanas. Comenzará el 1o. de Febrero y terminará el 25 de febrero del presente año.

MATERIAS Y EQUIPO DOCENTE.

a) Operación y Mantenimiento de Sistemas

Albañilería. Lectura de planos, sistemas de captación de agua, construcción de letrinas, construcción de tanque de agua, construcción de tanque séptico, alcantarillado, construcción de piletas públicas, duchas, baño turco, lavandería.

Plomería. Cortado de tubería de F.G. y PVC, roscado de tubería F.G. y PVC, empalme de tubería a rosca, empalme de tubería a campana, montaje de tuberías para almacenamiento y distribución de agua, sistema de captación de agua, tratamiento y cloración, limpieza y mantenimiento de sistemas, montaje de tubería en un cuarto de baño, bebederos, lavanderías, duchas, confección de accesorios de PVC, conexiones domiciliarias, lectura e interpretación de planos, manejo de material de plomo y calamina galvanizada, bombas, mantenimiento, montaje y reparación.

Administración. Solicitudes, recuperación de capital, mesa directiva, junta administradora, renovaciones, entidades de crédito, contabilidad elemental.

Cooperativismo. Qué es una Cooperativa, principios de cooperativismo, tipos y clases, pasos en la organización de una cooperativa, comité organizador, sus funciones y requisitos, responsabilidades de los socios y los directivos, importancia de la educación cooperativa.

b) Salud.

Nutrición. Clasificación de alimentos, alimentos básicos, su valor nutritivo y su importancia.

Salud. Enfermedades de la zona, agentes infecciosos, agentes [illegible] como combatirlos, fiebre, tifoidea, diarrea, enfermedades de la piel, parasitosis.

El equipo docente estará constituído por profesionales de CARE y FOMO, en coordinación con el Hospital de Irupana y el Ministerio de Salud; Academia de Ciencias, etc.

El curso se dictará en el Centro de Formación de Lavi Grande, Irupana, Provincia Sud Yungas.

Los cursos serán divididos en dos paralelos o niveles; se dictarán las siguientes materias:

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brero.

Chulumani - Los participantes seleccionados de Sud Yungas, deberán estar esperando en la plaza de chulumani el día primero de febrero, para ser trasladados hasta Lavi.

Nota. Los participantes seleccionados deberán llevar dos camas, utensillos de aseo (toalla, jaboncillo, cepillo de dientes, etc.). Implementos deportivos e instrumentos musicales.

Martes 1º de febrero

hrs. 13:00 a 14:00	Almuerzo
hrs. 14:00 a 15:30	Planificación de dormitorios y distribución de camas.
hrs. 16:00	Inauguración (sujeto a programa especial)
	FOMO - palabras de introducción)
	CARE -
hrs. 17:00	Retorno de la comisión FOMO - CARE
hrs. 17:00	Té a los participantes (Lavi)
hrs. 17:30 a 19:00	Dinámica de Grupos (técnicas de conocimiento)
hrs. 19:00 a 20:00	Cena
hrs. 20:00	Dinámica de grupos (técnicas de conocimiento)

Del 2 al 12 de febrero

hrs. 07:00	Aseo personal y general de dormitorios
hrs. 07:30 a 08:00	Desayuno
hrs. 08:00 a 10:00	Albañilería grupo "A" y Plomería grupo "B"
hrs. 10:00 a 10:30	Merienda
hrs. 10:30 a 12:15	Administración y Cooperativismo (Social)
hrs. 12:30 a 13:30	Almuerzo
hrs. 14:00 a 16:00	Albañilería grupo "A" Plomería grupo "B"
hrs. 16:00 a 16:30	Té
hrs. 16:30 a 18:30	Albañilería Grupo "A" Plomería grupo "B"
hrs. 18:30 a 19:00	Aseo
hrs. 19:00 a 20:00	Cena
hrs. 20:00	Juegos recreativos

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Albañilería	6 hrs/día (durante 3 semanas)
Plomería	6 hrs/día (durante 3 semanas)
Salud y Nutrición	1 1/2 hrs/día (durante 1.5 semanas)
Administración y Cooperativismo	1 1/2 hrs/día (durante 1.5 semanas)

CONDICION DE PARTICIPACION

Los participantes serán dos personas que trabajen o estén interesadas en trabajar en el mantenimiento del sistema.

- Mayor de 17 años
- Socio ó hijo de socio

Los candidatos serán escogidos bajo los criterios de selección establecida por CARE-FOMO.

OBLIGACIONES DE LAS PARTES

FOMO - dotará de monitores (técnicos instructores) en las respectivas ramas, equipo y herramientas necesarias para la realización del curso.

COMUNIDAD - pasajes de ida y vuelta más los viáticos de alimentación (durante el viaje) para los dos participantes que llenen la hoja adjunta de COMPROMISO.

CARE - proporcionará todos los materiales necesarios la alimentación y el alojamiento durante todo el tiempo de duración del curso. Asimismo, los materiales de práctica, textos de consulta y materiales de estudio. Coordinará y supervisará el curso.

FOMO y CARE otorgarán al concluir los cursos los respectivos certificados de asistencia.

COMPROMISO DE LAS PARTES

FOMO y CARE han suscrito convenios de cooperación para realizar labores de desarrollo y capacitación en el área rural. La COMUNIDAD deberá llenar el formulario adjunto de aceptación, debiendo respetar estricramente la fecha de presentación.

PRESENTACION DE LOS PARTICIPANTES

La Paz - Los participantes de las comunidades de Curva, Lagunillas, Canlaya, Chacahuaya, Caata Pata, Chacaropampa, Kollahuaya, Laquinamaya, Santiago de Machaca y Hussi, deberán presentarse en las oficinas de CARE (Av. Arce 2678, esquina Gosalvez), el día lunes 31 de enero en horas de oficina, para recibir instrucciones sobre la hora, lugar y movilidad que deben tomar el martes 1º de fe-

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Del 13 de 24 al febrero

hrs.	07;30	a		Aseo personal y general de dormitorios
hrs.	07:30	a	08:00	Desayuno
hrs.	08:00	a	10:00	Albañilería Grupo "A" Plomería Grupo "B"
hrs.	10:00	a	10:30	Merienda
hrs.	10:30	a	12:15	Salud, Nutrición y Análisis Básico de agua.
hrs.	12:15	a	12:30	Aseo
hrs.	12:30	a	14:00	Almuerzo
hrs.	14:00	a	16:00	Albañilería Grupo "A" Plomería Grupo "B"
hrs.	16:00	a	16:30	Té
hrs.	16:30	a	18:30	Albañilería Grupo "A" Plomería Grupo "A"
hrs.	18:30	a	19:00	Aseo
hrs.	19:00	a	20:00	Cena
hrs.	20:00			Dinámica de Grupo y Recreación

Viernes 23 de febrero

Acto de clausura del Curso sobre Mantenimiento y Manejo de Sistemas de Agua Potable

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CURSOS DE CAPACITACION

OBJETIVO

Todo sistema de agua potable necesita mantenimiento y cuidado para su buena operación; del éxito de este dependerá el buen servicio.

Para esto se necesita hombres capaces de poder llevar a cabo las tareas de cuidado, reparación y mantenimiento con los conocimientos necesarios para esta taréa (Albañilería, Plomería y Sistemas).

Cuando se tiene un buen sistema de agua potable se disminuyen las enfermedades a través del consumo de agua pura y de alimentos ricos en vitaminas (Salud, Nutrición, Huertos).

Alrededor de este beneficio se podrán crear organizaciones fuertes que lidericen para alcanzar otras etapas de desarrollo (cooperativismo) con una cierta organización que garantice la existencia de las mismas (Administración).

COMUNIDADES QUE PARTICIPAN

Primer Grupo

Nombre	Provincia	Tipo
1.Huancapampa	Sud Yungas	Gravedad
2.Quillihuaya	Murillo	Gravedad
3.Atahuallani	Murillo	Gravedad
4.Cayimbaya	Murillo	Gravedad
5.Tanimpata	Murillo	Gravedad
6.Cotaña	Murillo	Gravedad
7.Tirata	Murillo	Gravedad
8.Iquiaca	Los Andes	Bombeo
9.Chejelaya	Omasuyos	Gravedad
10.Zona Central	Omasuyos	Gravedad
11.Patamanta	Los Andes	Gravedad
12.Copankara	Omasuyos	Bombeo
13.Carmen Lipe	Omasuyos	Gravedad

Segundo Grupo

Nombre	Provincia	Tipo
1.Los Andes	Nor Yungas	Gravedad
2.Reserva	Nor Yungas	Gravedad
3.Remolinos	Nor Yungas	Gravedad
4.Chojña	Nor Yungas	Gravedad
5.Santo Domingo	Nor Yungas	Gravedad
6.Villa Elevación	Nor Yungas	Gravedad
7.Villa Centro Florida	Nor Yungas	Gravedad
8.San Miguel de Huachi	Sud Yungas	Gravedad
9.Covendo	Sud Yungas	Gravedad
10.Pongo B-2	Inquisivi	Gravedad
11.Caña Mina	Inquisivi	Gravedad
12.Micaya	Arona	Gravedad
13.Sucalaya	Muñecas	Gravedad

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Tercer Grupo

Estas comunidades no se consideran definitivas, con el transcurso del tiempo son suceptibles de cambio.

Nombre	Provincia	Tipo
1. Tumumpasa	Iturralde	Gravedad
2. Ixiamas	Iturralde	Bombeo
3. Kalapunku	Muñecas	Gravedad
4. Camata	Omasuyos	Gravedad
5. Sotalaya	Omasuyos	Gravedad

Las 8 comunidades restantes serán escogidas en el transcurso del año 1981.

DURACION DEL CURSO

El curso tendrá una duración de 4 semanas. El primero comenzará el 4 de Mayo y terminará el 30 del mismo mes. El segundo se iniciará el 5 de Octubre y concluirá el 31 del mismo mes.

Estos cursos se realizarán en el presente año y el tercero se llevará a cabo el mes de Junio del año 1982.

MATERIAS Y EQUIPO DOCENTE

a) Operación y Mantenimiento de Sistemas

Albañilería. Excavaciones, conexiones de tuberías, tendido, relleno, compactación, mezclas, encofrados, muros, losas, cajas sanitarias, enlucido de cemento.

Plomería. Herramientas, su uso, uso de tubería de F.G., uso de tubería PVC, construcción de accesorios, conexiones domiciliarias.

Sistemas. Encausamientos, limpieza de toma, limpieza de aducción, desacople favorable de tuberías, limpieza de tanque, frecuencia, cloradores, su uso y objetivo.

Administración. Solicitudes, recuperación de capital, mesa directiva, junta administradora, renovaciones, entidades de crédito, contabilidad elemental.

Cooperativismo. Que es una Cooperativa, Principios de cooperativismo, tipos y clases, pasos en la organización de una Cooperativa, Comité Organizado, sus funciones y requisitos, responsabilidad de los socios y los directivos, importancia de la Educación Cooperativista.

b) Salud

Nutrición. Clasificación de alimentos, alimentos básicos, su valor nutritivo, y su importancia.

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Salud. Enfermedades de la zona - Agentes infecciosos - Agentes transmisores, como combatirlos - Fiebre Tifoidea - Diarrea - Enfermedades de la Piel.

Horticultura. Importancia, elección del terreno, preparación de almácigos, siembras, cuidados culturales, transplante, cultivo, riego y abonamiento, control de plagas, recolección o cosecha, clasificación y empaque.

El equipo docente estará constituído por profesionales de FOMO y CARE en coordinación con IBTA, MACA, Ministerio de Salud.

El primer y segundo curso se dictarán en el centro de Formación de los padres Agustinos en Lavi Grande, provincia Sud Yungas.

Los cursos serán divididos en dos paralelos ó niveles, se dictarán las siguientes materias:

Albañilería	6 hrs/día	- Plomería	6 hrs/día (durante 4 semanas)
Sistemas, Salud y Administración			2 hrs/día (durante 2 semanas)
Huertos, Nutrición y Cooperativismo			2 hrs/día (durante 2 semanas)

CONDICIONES DE PARTICIPACION

Los participantes serán dos personas o más que trabajen ó estén interesados en trabajar en mantenimiento de sistemas.

Mayor de 17 años

Socio o hijo de socio

Los candidatos serán escogidos bajo los criterios de selección establecidos por CARE.

OBLIGACIONES DE LAS PARTES

FOMO - dotará de monitores (técnicos instructores) en las respectivas ramas, equipo y herramientas necesarias para la realización del curso.

COMUNIDAD - Pasajes de ida y vuelta más viáticos de alimentación (durante el viaje) para los dos participantes que llenen la hoja adjunta de "compromiso".

CARE - proporcionará todos los materiales necesarios, la alimentación y el alojamiento durante todo el tiempo de duración del curso. Asimismo los materiales de práctica, textos de consulta y materiales de estudio. Coordinará y Supervisará el curso.

FOMO y CARE otorgarán al concluír los cursos, los respectivos certificados de asistencia.

COMPROMISO DE LAS PARTES.

FOMO y CARE han suscrito el 2 de Febrero de 1981 un convenio de cooperación por dos años para realizar cursos de capacitación. La COMUNIDAD deberá llenar el formulario adjunto de aceptación, debiéndose respetar estrictamente la fecha de presentación.

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INQUISIVI Y SUD YUNGAS

Sábado 2 de Mayo

Hrs. 8	Ultima selección y admisión de candidatos (Salón Parroquial Cooperativa UKAMAU)
Hrs. 16	Concentración en la Plaza de Irupana
Hrs. 17	Partida a Lavi Grande
Hrs. 20:30	Cena y organización dormitorios

Domingo 3 de Mayo

Hrs. 7:30 - 8:00	Desayuno
Hrs. 8:00 - 9:00	Inauguración de cursos
Hrs. 9:00 - 10:00	Misa
Hrs. 10:00 - 10:30	Merienda
Hrs. 10:30 - 12:30	Técnicas de dinámica de conocimiento
Hrs. 12:30 - 13:30	Almuerzo
Hrs. 14:30 - 16:30	Futbol
Hrs. 16:30	Té
Hrs. 17:00	Juegos recreativos
Hrs. 19:00	Cena
Hrs. 20:00	Proyección de películas

Lunes 4 a Jueves 7 de Mayo

Hrs. 7:30 -	Desayuno
Hrs. 8:00 - 9:45	Clases teóricas - Albañilería ("A") y Plomería ("B")
Hrs. 9:45 - 10:15	Merienda
Hrs. 10:15 - 12:15	Clases Albañilería ("A") y Plomería ("B")
Hrs. 12:30 - 13:30	Almuerzo
Hrs. 14:00 - 16:00	Clases Albañilería ("A") y Plomería ("B")
Hrs. 16:00 - 17:00	Té

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Hrs.	17:00	- 19:00	Cooperativismo ("A") y Salud ("B")
Hrs.	19:00		Cena y recreación

Viernes 8, Lunes 11, Martes 12, Miércoles 13 de Mayo

Hrs.	7:30		Desayuno
Hrs.	8:00	- 9:45	Clases teóricas Albañilería ("A") y Plomería ("B")
Hrs.	9:45	- 10:15	Merienda
Hrs.	10:15	- 12:15	Clases de Albañilería ("A") y Plomería ("B")
Hrs.	12:30	- 13:30	Almuerzo
Hrs.	14:00	- 16:00	Clases de Albañilería ("A") y Plomería ("B")
Hrs.	16:00	- 17:00	Té
Hrs.	17:00	- 19:00	Administración ("A") y Nutrición ("B")
Hrs.	19:00		Cena y recreación

Jueves 14, Viernes 15, Lunes 18, Martes 19 de Mayo

Hrs.	7:30	-	Desayuno
Hrs.	8:00	- 9:45	Clases teóricas Albañilería ("A") y Plomería ("B")
Hrs.	9:45	- 10:15	Merienda
Hrs.	10:15	- 12:15	Clases de Albañilería ("A") y Plomería ("B")
Hrs.	12:30	- 13:30	Almuerzo
Hrs.	14:00	- 16:00	Clases de Albañilería ("A") y Plomería ("B")
Hrs.	16:00	- 17:00	Té
Hrs.	17:00	- 19:00	Sistemas ("A") y Horticultura ("B")
Hrs.	19:00		Cena y recreación

Miercoles 20 a Viernes 29 de Mayo

Hrs.	7:30	-	Desayuno
Hrs.	8:00	- 9:45	Clases teóricas Albañilería ("A") y Plomería ("B")
Hrs.	9:45	- 10:15	Merienda

../

Hrs.	10:15	- 12:15	Clases de Albañilería ("A") y Plomería ("B")
Hrs.	12:30	- 13:30	Almuerzo
Hrs.	14:00	- 16:00	Clases de Albañilería ("A") y Plomería ("B")
Hrs.	16:00	- 17:00	Té
Hrs.	17:00		Recreación
Hrs.	19:00		Cena y recreación

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APPENDIX III

APPENDIX III

FINANCIAL INPUTS (in US dollars)

ITEM	USAID	CARE	CORDEPAZ	COMMUNITIES	TOTAL
1) Materials and Equipment	242,590	263,258		61,548 (1)	567,396
2) Personnel and Administration	31,645	279,283	41,250 (2)	-	352,178
3) Training courses	17,040 (3)	-	-	-	17,040
4) CARE Administrative Recovery	22,725	-	-	-	22,725
TOTAL	314,000	542,541	41,250	61,548	959,339

(1) includes estimate of value of local materials (stone, sand, wood) and labor, plus financial contributions.

(2) estimate of value of technical support plus transport costs.

(3) does not include value of support from FOMO in form of technical support (instructions).

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APPENDIX IV

APPENDIX IV

A relatively unsophisticated survey of six villages was carried out for CARE by Licenciada Rita Russell, a Bolivian Sociologist. She interviewed 17% of the populations of these villages using the attached questionnaire. She also made direct inspections of water systems and households.

SD/lly

CUESTIONARIO FAMILIAR PARA LA INVESTIGACION
DE IMPACTOS DEL SISTEMA DE AGUA POTABLE

COMUNIDAD.....PROVINCIA.....

GRUPO FAMILIAR

RELACION	EDAD	OCUPACIONES	CAUSA DEL FALLECIMIENTO	ABORTOS	ENFERMEDADES	OBSERVACIONES

OBSERVACIONES:.....

.....

.....

1.- Donde asisten cuando se enferman?

.....

.....

2.- Antes de instalar el agua en su casa de donde sacaban agua?

.....

.....

3.- Opine a cerca del agua despues de terminado el proyecto

.....

.....

4.- Como a participado para la construcción del proyecto?

.....

.....

5.- Que hace con el agua?

.....

.....

6.- Que problemas tiene con respecto al agua?

.....

.....

7.- Como funciona el comité de agua?

.....

.....

8.- Paga por el agua?

Sí.....no.....cuanto?.....

Porqué?.....

9 - Utiliza las letrinas?

Sí.....no.....porque?.....

.....

10.- Alguno de ustedes fué a los cursos de Lavi?

Sí.....no.....quien?.....

11.- Que resultados obtuvo?

.....

.....

12.- La comunidad envío a sus representantes?

Sí.....no.....no sé.....

13.- Ellos trabajan para la comunidad?

Sí.....no.....porque?.....

.....

Observaciones:.....

.....

APPENDIX V

INSTITUTO NACIONAL DE SALUD OCUPACIONAL
Proyecto Especial del Ministerio de Previsión
Social y Salud Pública

INFORME DE LABORATORIO

Muestra: Agua Nº 6/84

Enviado Por: CARE BOLIVIA

Procedencia: QUILLTHCAVA

Recepción: 31-I-84 Análisis: 30-I al 8-II-84 Muestreo: 27-I-84

Análisis requerido: Físico - Químico

Observaciones en la muestra: Completamente cristalina

RESULTADOS

PH: 6.7 Temp.: 9.5° C

Calcio	56.00	Mgr/lt.	Alcalinidad de bicarbonatos	255.2	Mgr/lt.CaC
Magnesio	32.16	"	Alcalinidad de carbonatos	00.0	" "
Hierro	0.42	"	Alcalinidad total	255.2	" "
Aluminio	9.26	"	Acidez total no mineral	4.00	" "
Manganeso	0.00	"	Dureza permanente	81.60	" "
Cloruro	6.15	"	Dureza temporal	137.62	" "
Sulfato	65.01	"	Dureza total	219.22	" "
			Sólidos en suspensión	29.00	Mgr/lt.
			Sólidos en disolución	325.00	
			Sólidos totales	354.00	

Analizado por: Qco. Carlos Meneses
Qco. Antonio Quisbert

La Paz, Febrero 9, 1984

JEFE DE LABORATORIO

DIRECTOR DEL INSTITUTO NACIONAL DE SALUD OCUPACIONAL

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INSTITUTO NACIONAL DE SALUD OCUPACIONAL
Proyecto Especial del Ministerio de Previsión
Social y Salud Pública

INFORME DE LABORATORIO

Muestra: Agua Nº 3/84

Enviado Por: CARE EN BOLIVIA

Procedencia: CAVIHBAVA

Recepción: 30-I-84 Análisis: 30-I al 8-II-84 Muestreo: 27-I-8

Análisis requerido: Físico - Químico

Observaciones en la muestra: Completamente cristalinas

RESULTADOS

Calcio	4.72	Mgr/lt.	PH: 6.6 Temp. 9° C.		
Magnesio	2.00	"	Alcalinidad de bicarbonatos	40.5	Mgr/lt.CaC
Hierro	0.54	"	Alcalinidad de carbonatos	30.0	" "
Aluminio	0.00	"	Alcalinidad total	49.2	" "
Manganeso	0.00	"	Acidez total no mineral	12.0	" "
Cloruro	6.71	"	Dureza permanente	16.75	" "
Sulfato	15.95	"	Dureza temporal	7.17	" "
			Dureza total	23.90	" "
			Sólidos en suspensión	97.0	Mgr/lt.
			Sólidos en disolución	79.0	
			Sólidos totales	176.0	

Analizado por: Qco. Carlos Meneses
Qco. Antonio Quisbert

La Paz, Febrero 9, 1984

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DIRECTOR DEL INSTITUTO NACIONA
DE SALUD OCUPACIONAL

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INSTITUTO NACIONAL DE SALUD OCUPACIONAL
Proyecto Especial del Ministerio de Previsión
Social y Salud Pública

INFORME DE LABORATORIO

Muestra: Agua Nº 5/84

Enviado Por: CARE BOLIVIA

Procedencia: ATAHUALLANI

Recepción: 30-I-84 Análisis: 30-I al 8-II-84 Muestreo: 27-I-84

Análisis requerido: Físico - Químico

Observaciones en la muestra: Completamente cristalina

RESULTADOS

PH: 7.1. Temp.: 105° C

Calcio	3.95	Mgr/lt.	Alcalinidad de bicarbonatos	39.60	Mgr/lt.CaC
Magnesio	3.1	"	Alcalinidad de carbonatos	00.0	" "
Hierro	0.5	"	Alcalinidad total	39.60	" "
Aluminio	0.26	"	Acidez total no mineral	3.00	" "
Manganeso	0.00	"	Dureza permanente	15.28	" "
Cloruro	5.03	"	Dureza temporal	9.18	" "
Sulfato	12.96	"	Dureza total	24.46	" "
			Sólidos en suspensión	9.00	Mgr/lt.
			Sólidos en disolución	48.00	
			Sólidos totales	57.00	

Analizado por: Qco. Carlos Meneses

Qco. Antonio Quisbert

La Paz, Febrero 9, 1984

JEFE DE LABORATORIO

DIRECTOR DEL INSTITUTO NACIONAL DE SALUD OCUPACIONAL

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INSTITUTO NACIONAL DE SALUD OCUPACIONAL
Proyecto Especial del Ministerio de Previsión
Social y Salud Pública

INFORME DE LABORATORIO

Muestra: Agua NS 4/84

Enviado Por: CARE BOLIVIA

Procedencia: TANIMPATA

Recepción: 30-I-84 Análisis: 30-I-84 al 8-I-84 Muestreo: 27-I-8

Análisis requerido: Físico - Químico

Observaciones en la muestra: Completamente cristalina

RESULTADOS

PH: 6.4. Temp.: 1[illegible] C.

Calcio	20.76	Mgr/lt.	Alcalinidad de bicarbonatos	28.6	Mgr/lt.CaC
Magnesio	5.74	"	Alcalinidad de carbonatos	00.0	" "
Hierro	0.27	"	Alcalinidad total	28.6	" "
Aluminio	0.56	"	Acidez total no mineral	4.00	" "
Manganeso	0.00	"	Dureza permanente	36.37	" "
Cloruro	4.47	"	Dureza temporal	31.68	" "
Sulfato	30.86	"	Dureza total	68.00	" "
			Sólidos en suspensión	104.0	Mgr/lt.
			Sólidos en disolución	126.0	
			Sólidos totales	230.0	

Analizado por: Qco. Carlos Menesses F.
Qco. Antonio Quisbert

La Paz, Febrero 9, 1984.

JEFE DE LABORATORIO

DIRECTOR DEL INSTITUTO NACIONAL
DE SALUD OCUPACIONAL

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