LIMA
-
BEYOND THE PARK
MAS QUE UN PARQUE

SUMMER SCHOOL
-
TALLER DE VERANO

20.2. - 3.3.2012

Chuquitanta
San Martin de Porres

University Stuttgart
Pontificia Universidad Católica del Perú

Booklet Summer
School, Lima 2012
editor: Marius Ege

Booklet taller de verano,
Lima 2012
editado por: Marius Ege

Universität Stuttgart
Germany

ILPÖ

PONTIFICIA
UNIVERSIDAD
CATÓLICA
DEL PERÚ

CENTRO DE
INVESTIGACIÓN DE
LA ARQUITECTURA
Y LA CIUDAD

LiWa

Sto Stiftung

CONTENT

PARTICIPANTS

INSTITUT FOR LANDSCAPE PLANNING AND ECOLOGY, UNIVERSITY OF STUTTGART

INSTITUTO DE PLANIFICACIÓN DE PAISAJE Y ECOLOGIA, UNIVERSIDAD DE STUTTGART

ILPÖ

Prof. Antje Stokman
MSc. Arch. Rossana Poblet
Dipl.-Ing. Eva Nemcova
Xhrstos Antoniou
Andrea Balestrini
Marius Ege
Lisa Gänsbauer
Meike Hammer
Sofia Holder
Nefeli Marilena Kaltsouni
Anna Ilonka Kübler
Maximilian Mehlhorn
Silke Mittnacht
Anna Oelrichs
Julian Winkelhofer
Leonie Wipf
Dessire Velez

CENTER FOR INVESTIGATION OF ARCHITECTURE AND THE CITY, PONTIFICAL CATHOLIC UNIVERSITY OF PERU

CENTRO DE INVESTIGACIÓN DE LA ARQUITECTURA Y LA CIUDAD, PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ

CIAC / PUCP

Arq. Juan Reiser
Pamela Acuña
Tania Barrenechea
Andrea Pérez Fu
Jonathan Lapel
Ricardo Pacheco
Pablo Pajares
Katherine Polo
Rolando Tafur

CENTER OF INVESTIGATION FOR WASTEWATER TREATMENT AND HAZARDOUS WASTE, NATIONAL UNIVERSITY OF ENGINEERING

EL CENTRO DE INVESTIGACIÓN EN TRATAMIENTO DE AGUAS RESIDUALES Y RESIDUOS PELIGROSOS, UNIVERSIDAD NACIONAL DE INGENIERÍA

CITRAR / UNI

Kathya del Pilar Aliaga
Luis Maldonado Cueva
Carolina Espinoza
Danny Paytán Ordoñez
Annie Salvador Rosas
Víctor Huaman Torres

GUESTS/INVITADOS

Bruno Arce (MDMA)
Diego Rios (Artist)

WATER TESTS/
PRUEBAS DE AGUA

Kara McElhinney
(WAREM, Uni Stuttgart)

PARTICIPANTS

participants
participantes

PREFACE

PREFACE

INTRO

EN

An international year is integrated into the Bachelor's program in Architecture and Urban Planning at the University of Stuttgart: students are expected to work on a design project in an international context and spend some time abroad through an exchange program or taking part in an internship or other academic experience.

For the 2011-2012 academic year from October to February, the Institute for Landscape Planning and Ecology (ILPÖ) organized a design studio focused on the lower Chillon river watershed and Chuquitanta, a neighborhood in the municipality of San Martin de Porres in Lima, Peru.

Academic activities were carried out during the winter semester and culminated in a Summer School held in Lima from February 20th through March 3rd in collaboration with the Pontificia Universidad Catolica de Peru (PUCP) and the Municipalidad de San Martin de Porres. Both were supported by StoStiftung and LiWa.

The design studio was focused on the development of strategies for sustainable landscape development along both sides of the Chillón River. Student proposals considered water scarcity, wastewater management, urban agriculture, urban expansion, and similar issues affecting the area.

To complement the design studio, the Summer School organized relevant lectures by guest speakers and field trips with Peruvian students from PUCP. The workshop also integrated input from students in the Faculty of Ambiantal Engineering (FIA) at the Universidad Nacional de Ingeneria in order to allow a multidisciplinary approach to solving the challenges of local landscapes. The studio concluded with the construction of temporary on-site installations in Chuquitanta.

ES

La Universidad de Stuttgart programó un año internacional para los estudiantes que son parte del programa de bachillerato en la facultad de Arquitectura y Planeamiento Urbano: los estudiantes tienen que trabajar en proyectos en un contexto internacional y eventualmente pasar cierto tiempo en el extranjero para programas de intercambio, practicas u otras experiencias académicas.

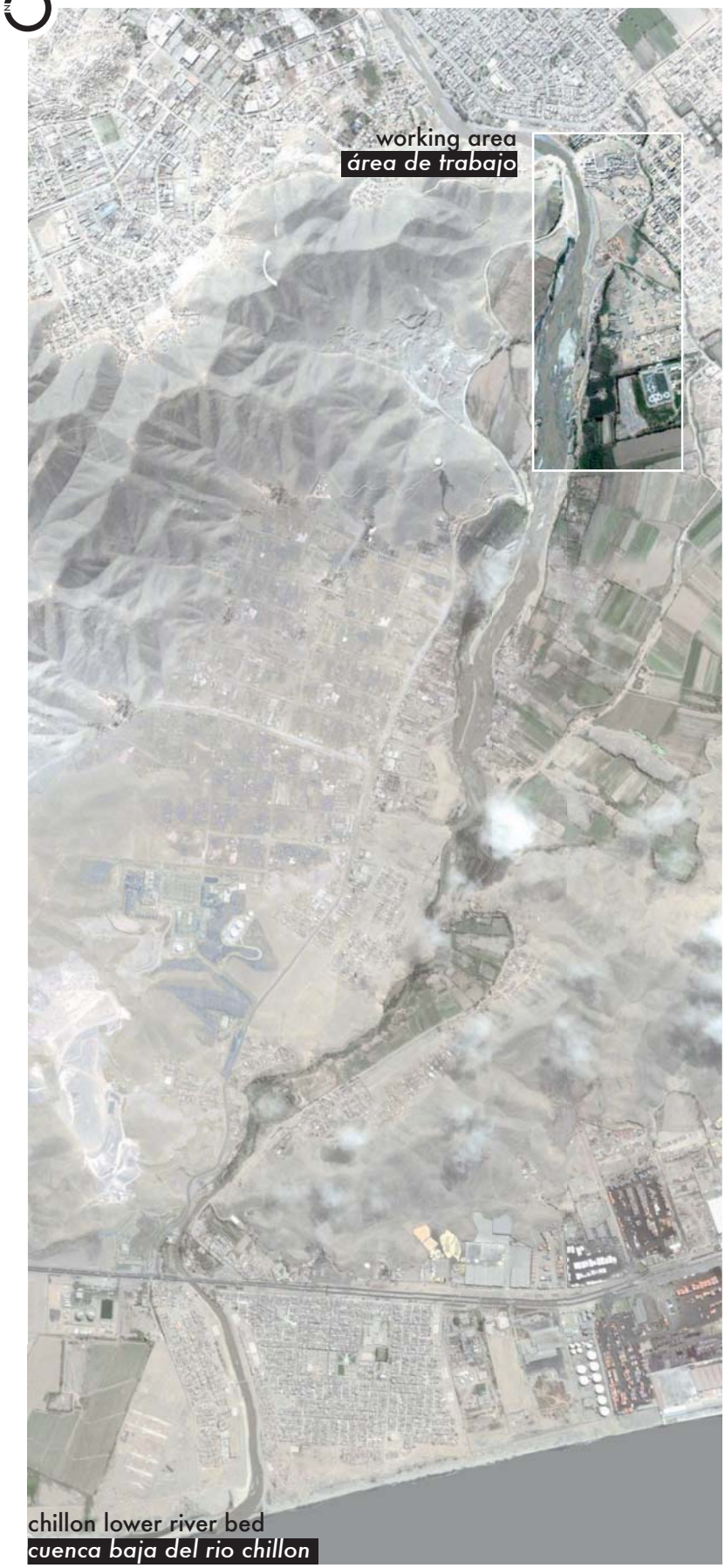
Dentro del marco de este programa, el Instituto de Planeamiento del Paisaje y Ecología (ILPO) propusieron un taller de diseño en Chuquitanta, en el distrito de San Martín de Porres, Lima-Perú. El apoyo de StoStiftung y Liwa acompañaron las actividades académicas a lo largo de todo el semestre hasta su culminación en el taller de verano que se dio en Lima, desde el veinte de febrero hasta el tres de marzo, en colaboración con la Pontificia Universidad Católica del Perú y la Municipalidad de San Martín de Porres.

La tarea del taller de diseño fue la de elaborar estrategias para el desarollo sostenible del paisaje a lo largo del río Chillón en Chuquitanta. Las propuestas de los estudiantes lidian con la escacez de agua, el manejo de aguas residuales, agricultura urbana, expansión urbana y otras problemáticas presentes en el lugar. El propósito del taller de verano era el de combinar estos desafios con seminarios referentes a este y viajes de campo en conjunto con los estudiantes peruanos de la PUCP, con el objetivo de construir algunas estructuras temporales en este lugar.

El taller también estaba destinado a ser trabajado en colaboración con estudiantes de la facultad de Ingeniaría Ambiental (FIA) de la Universidad Nacional de Ingeniería, para poder tener un equipo multidisciplinario que pueda enfrentar los desafios del paisaje local.

MAPS


N
chillon lower river bed
cuenca baja del rio chillon
lima
lima


working area
área de trabajo
chillon lower river bed
cuenca baja del rio chillon

MAPS


hill
cerro
spring
puquio
canal
azequia
river
rio
working area
área de trabajo

hill
cerro

spring
puquio

canal
azequia

river
rio

METHODOLOGY

students of UST and UNI
estudiantes de UST and UNI

blanca villafranca - rotaria
blanca villafranca - rotaria

participative work
trabajo participativo

The design studio was intended as both the conclusion to the winter semester design process and as a new approach to the topic based on working and building on-site in Chuquitanta.

Ideas which developed during excursions and lectures were strengthened by the support of the Municipality of San Martin de Porres. Their constant presence in Chuquitanta enabled the students to collect and analyze additional information by directly interviewing local inhabitants and refining initial ideas on-site in the district. The one-day participative workshop revealed the real needs and wishes of the community and allowed students to really design the installations for and with them.

The construction of installations took two days and required that students confront the challenges of the local landscape in person and interact with local people. This experience led in some cases to passionate collaboration and mutual trust with locals, and in others to some conflict.

The exhibition of workshop results took place on two different days and in two locations: posters were presented by each group an installation about the project was made at PUCP, and an opening ceremony involving local inhabitants was carried out at each installation site in Chuquitanta.

METHODOLOGY

The design studio was intended as both the conclusion to the winter semester design process and as a new approach to the topic based on working and building on-site in Chuquitanta.

Ideas which developed during excursions and lectures were strengthened by the support of the Municipality of San Martin de Porres. Their constant presence in Chuquitanta enabled the students to collect and analyze additional information by directly interviewing local inhabitants and refining initial ideas on-site in the district. The one-day participative workshop revealed the real needs and wishes of the community and allowed students to really design the installations for and with them.

The construction of installations took two days and required that students confront the challenges of the local landscape in person and interact with local people. This experience led in some cases to passionate collaboration and mutual trust with locals, and in others to some conflict.

The exhibition of workshop results took place on two different days and in two locations: posters were presented by each group an installation about the project was made at PUCP, and an opening ceremony involving local inhabitants was carried out at each installation site in Chuquitanta.

meeting with representatives of callao
dibujando futuro parque de chuquitanta

meeting with community of smp
reunion con la communidad de smp

1ST WEEK

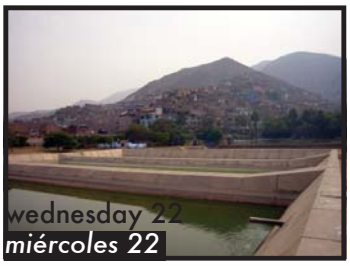
Visit to Chillon watershed, Lima-Canta.

Visita a la cuenca d Chillón, Lima-Canta.

Visit to Chuquitanta, San Martin de Porres and lower Chillon watershed, Callao

Visita a Chuquitant San Martin de Porre y Callao, cuenca baja del Rio Chillon

Visit to Research Center of treated wastewater and hazardous waste, CITRAR-UNI

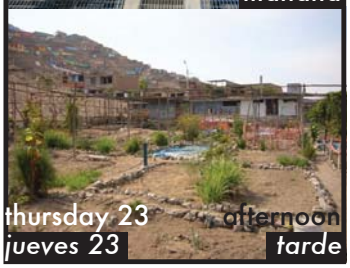


Visita al Centro de Investigación en Tratamiento de Aguas Residuales y Residuos Peligrosos, CITRAR-UNI

Visit to the East and South of the city (WWTP Manchay, Pachacamac river park, Lurin valley)

Visita al Este y al Sur de la ciudad (PTAR Manchay, Pachacamac parque ribereño, Valle de Lurin)

Visit to Villa Maria del triunfo and Villa El Salvador



Vista a Villa Maria del triunfo y Villa El Salvador

Participative design

Trabajo en grupo

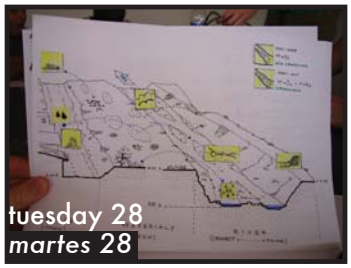
Participative design

Taller participativo

2ND WEEK

Group work, PUCP

Trabajo en grupo, PUCP



Group work, PUCP

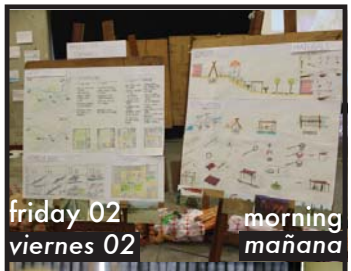
Trabajo en grupo, PUCP

Field work, Chuquitanta

Trabajo de campo, Chuquitanta

Field work, Chuquitanta

Trabajo de campo, Chuquitanta



Final works preparation

Preparación de trabajos finales

Presentation results, PUCP

Presentación de resultados, PUCP

Final presentation in Chuquitanta

Presentación final en Chuquitanta

FIELD TRIPS

Field trips were meant to highlight the connection between sites in Chuquitanta and the Chillón River watershed and to increase student knowledge about urban agriculture and water management.

The first excursion followed the course of the Chillón to the north and allowed exploration of the watershed upstream of Lima. It revealed not only the physical environment which defines the lower Chillón watershed in Canta but also huge urban growth which is occurring on agricultural land between Carabayllo and wetlands in northern Ventanilla at the rivermouth.

Other visits followed which focused on various topics including urban agriculture (community gardens in Villa Maria del Triunfo), water treatment (treatment lagoons at UNI, SEDAPAL WWTP in Manchay), and open space development (Lurín Valley, zonal parks in Villa el Salvador, Parque Maita Capac in San Martin de Porres).

Excursions were supported by guides from local authorities, e.g., the municipal agencies of Chuquitanta and San Martin de Porres. Some lectures were also given to better explain places visited during the field trips, e.g., a talk by Rotaria about constructed wetlands and dry toilets.

visit to chuquitanta
visita a chuquitanta

lower river bed of chillon, callao
cuenca baja del rio chillon, callao

visit to villa el salvador
visita a villa el salvador

FIELD TRIPS

Field trips were meant to highlight the connection between sites in Chuquitanta and the Chillón River watershed and to increase student knowledge about urban agriculture and water management.

The first excursion followed the course of the Chillón to the north and allowed exploration of the watershed upstream of Lima. It revealed not only the physical environment which defines the lower Chillón watershed in Canta but also huge urban growth which is occurring on agricultural land between Carabayllo and wetlands in northern Ventanilla at the rivermouth.

Other visits followed which focused on various topics including urban agriculture (community gardens in Villa Maria del Triunfo), water treatment (treatment lagoons at UNI, SEDAPAL WWTP in Manchay), and open space development (Lurín Valley, zonal parks in Villa el Salvador, Parque Maita Capac in San Martin de Porres).

Excursions were supported by guides from local authorities, e.g., the municipal agencies of Chuquitanta and San Martin de Porres. Some lectures were also given to better explain places visited during the field trips, e.g., a talk by Rotaria about constructed wetlands and dry toilets.

presentation in lurin valley
presentación en el valle de lurin

visit of pumping station, san diego
visita a estación de bombeo, san diego

visit of huaca el paraiso
visita a huaca el paraiso

WATER TESTING

Water quality testing was undertaken by a student of water resources engineering (WAREM) in order to support design development in Chuquitanta. Information about the extent and type of pollution in local waters could be used to refine designs involving water treatment processes by making them more effective and efficient.

Samples were taken at each of the water sources in Chuquitanta - the Chillón River, the irrigation canal, the lagoon and the cisterns in Santa Cruz - and at two additional points along the Lower Chillón River - close to the town of Canta and at the border between the municipalities of Lima and Canta - for a preliminary analysis of water quality.

Nitrate (NO3-N), nitrite (NO2-N), ammonium (NO4-N) and phosphate (PO4-P) levels were measured in the samples from Chuquitanta using a portable water laboratory testing kit (with colorimetry) while pH, dissolved oxygen and temperature were measured using a portable multimeter. The portable kit was used to test the two samples taken at the Chillón River for levels of nitrate, phosphate and pH only.

Results for the Chuquitanta samples showed elevated temperatures in all samples (ranging from 26°C to 33°C).

The Chillón River in Chuquitanta, the irrigation canal, the lagoon, and the Chillón River at the Canta/Lima border all contained nitrate at levels well above the Peruvian legal limit for water intended for use in the irrigation of short- and long-stemmed plants. The Chillón River in Chuquitanta and the irrigation canal also contained nitrite at levels well above this limit.

Nitrate levels in the Santa Cruz were at the legal limit for water intended for human consumption. A comparison of the results from the three samples taken along the Chillón River confirmed that water quality generally decreases in the downstream direction.

WATER TESTING

Water quality testing was undertaken by a student of water resources engineering (WAREM) in order to support design development in Chuquitanta. Information about the extent and type of pollution in local waters could be used to refine designs involving water treatment processes by making them more effective and efficient.

Samples were taken at each of the water sources in Chuquitanta - the Chillón River, the irrigation canal, the lagoon and the cisterns in Santa Cruz - and at two additional points along the Lower Chillón River - close to the town of Canta and at the border between the municipalities of Lima and Canta - for a preliminary analysis of water quality.

Nitrate (NO3-N), nitrite (NO2-N), ammonium (NO4-N) and phosphate (PO4-P) levels were measured in the samples from Chuquitanta using a portable water laboratory testing kit (with colorimetry) while pH, dissolved oxygen and temperature were measured using a portable multimeter. The portable kit was used to test the two samples taken at the Chillón River for levels of nitrate, phosphate and pH only.

Results for the Chuquitanta samples showed elevated temperatures in all samples (ranging from 26°C to 33°C).

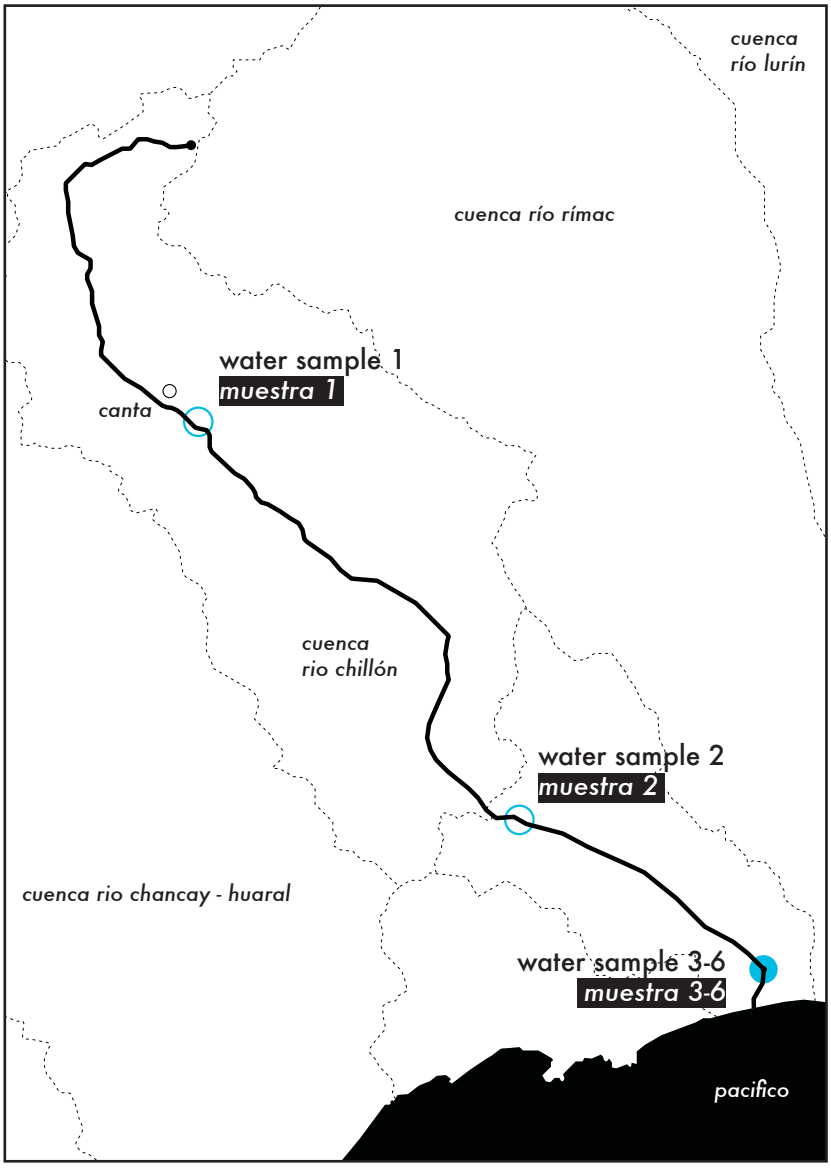
The Chillón River in Chuquitanta, the irrigation canal, the lagoon, and the Chillón River at the Canta/Lima border all contained nitrate at levels well above the Peruvian legal limit for water intended for use in the irrigation of short- and long-stemmed plants. The Chillón River in Chuquitanta and the irrigation canal also contained nitrite at levels well above this limit.

Nitrate levels in the Santa Cruz were at the legal limit for water intended for human consumption. A comparison of the results from the three samples taken along the Chillón River confirmed that water quality generally de-

water test by kara mcelhinney
evaluación de agua por kara mcelhinney

WATER TESTING

chillon greater watershed
cuenca baja del rio chillon



description of icons
descripción de iconos

Description of Sampling Location	Nitrite (NO2-N) (mg/L)
Sampling Start Time	Nitrate (NO3-N) (mg/L)
pH	Ammonia (NH3-N)/ Ammonium (NH4-N) (mg/L)
Tempature (°C)	
Dissolved Oxygen (mg/L)	ortho-Phosphate (PO4-P) (mg/L)

water sampel 1 - lower chillón river, canta province
muestra 1 - cuenca baja del rio chillón, canta provincia

Sample taken at riverbank off „Road 18“, 10 minutes south of Canta City	
4:55 PM	
7.5	
10 !	
0	

! Nitrate level is at Peru's limit for water that can be used for irrigation of short- and long-stemmed plants.

water sampel 2 - boarder of canta and lima province
muestra 2 - frontera entre provincia lima y canta

Sample taken at riverbank, just upstream of Puente Trapiche	
6:40 PM	
7.75	
17 !	
10	

! Nitrate level exceeds Peru's limit for water that can be used for irrigation of short- and long-stemmed

WATER TESTING

hill
cerro

water sampel 1:hill cisterns
muestra 1: cisterns

	Combined sample taken from metal and plastic cistern
	5:15 PM
ph	7.3
	33.3 !
	9.0
	0
	10 !
	0
	0

! Water temperatures are high because cisterns are stored in the sun.

! Nitrate level is at Peru's limit for water that is intended for human consumption.

testing water of cisterns
evaluando agua de cisternas

WATER TESTING

spring
puquio

water sampel 2: spring
muestra 2: puquio

	Sample taken in the middle of the spring, near outlet and shore
	11:00 PM
ph	7.1
	25.9 !
	4.6 !
NO_3	0.025
NO_2	**25 !**
NH_3	0
PO_4	0.5

! Water Temperatures are high but not too high to support aquatic life. pH is slightly basic but is within Peru's limits for water that can be used for irrigation of short- and long-stemmed plants.

! Nitrate and Nitrite levels exceed Peru's limit for water that can be used for irrigation of short- and longstemmed plants.

taking water sample from spring
tomando muestra de agua del puquio

WATER TESTING


canal
azequia

water sampel 3: irrigation channel
muestra 3: azequia

	Sample taken just upstream of group worksite
	4:10 PM
ph	8.0 !
	28.6 !
	8.9
	0.2 !
	25 !
	0
	0.25

! Water Temperatures are high but not too high to support aquatic life. pH is slightly basic but is within Peru's limits for water that can be used for irrigation of short- and long-stemmed plants.

! Nitrate and Nitrite levels exceed Peru's limit for water that can be used for irrigation of short- and longstemmed plants.


taking water sample from the irrigation channel
tomando muestra de agua de la azequia

WATER TESTING

river
rio

water sampel 4: river
muestra 4: rio

Sample taken from river shoreline adjacent to group worksite

3:00 PM

8.1 !

29.3 !

7.3

0.15 !

25 !

0

! Water Temperatures are high but not too high to support aquatic life. pH is slightly basic but is within Peru's limits for water that can be used for irrigation of short- and

! Nitrate and Nitrite levels exceed Peru's limit for water that can be used for irrigation of short- and longstemmed plants.

testing water of cisterns
evaluando agua de cisternas

RIVER - RIO

Andrea Balestrini (UST)
Marius Ege (UST)
Lisa Gänsbauer (UST)
Meike Hammer (UST)
Jonathan Lapel (PUCP)
Danny Paytán Ordoñez (UNI)
Rolando Tafur (PUCP)

The river is endowed with high landscape potential, but on the other hand it is also a neglected waste depository since contaminated water, sewage discharge and solid waste are regularly directed into it. The river is also a meeting place; as it is the only public open space in the area children play in the riverbed, people use it to cross between neighborhoods during the dry months, etc. People living on the riverside want its banks to act as a green lung; however they are also afraid of flooding and so wish the riverbank be reinforced with concrete walls.

The installation site is located on a dike in Loma del Chillòn. Our analysis led us to consider the riverbank area as a system of "stripes": the houses, the street, the dike, the river and riverbed, and the opposite bank. Water scarcity, the alienation of the river ecosystem from the community, and the needs of local people prompted us to lay out our installation in stripes perpendicular to the ones which already exist, in the hope that this would better connect people with the river.

chillon river bed
cauce del rio chillon

Greywater from nearby houses can be treated in a terraced wetland built on the street side of the dike; through the production of vegetables this urban agriculture zone becomes valuable to the population and intrusion by new settlements is prevented. On the top of the dike, people can find shelter from the sun under a gazebo or relax in dry gardens, all constructed using waste material found on the site.

On the riverbank, a metallic net was formed into a tube and filled with stones to form a gabion. The installation is intended to allow local inhabitants to continue improvement of the riverside and to encourage them to take care of their own stripe in order to gradually turn the dike into a recreation area.

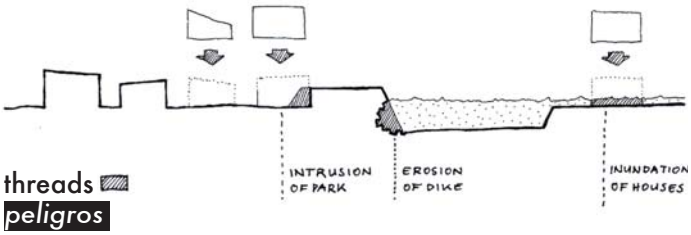
El río ha tenido el regalo de un alto potencial paisajistico, sin embargo también tiene el estatus de ser un botadero de deshechos, agua contaminada, aguas residuales y desperdicios. Además el río es un lugar de encuentro, siendo el unico espacio público abierto en el área: los niños juegan en el lecho del río, las personas lo cruzan en los meses de sequia, etc. Las personas que viven en el lado del río requieren un pulmón verde mientras también tienen miedo a las inundaciones, por lo que desean un reforzamiento con gabiones. El lugar es el dique en la Loma del Chillón: el análisis lleva a aconsiderar el banco del río como un sistema de rayas, los cuales son las casas, la calle, el dique, el lecho del río y el lado opuesto. La escacezde agua, alienación del ecosistema del río por parte de la comunidad y las necesidades de las personas llevo a diseñar el lugar como rayas, pero transversales a las ya existentes, con el fin de conectar las personas con el río. El agua residual de las casas pueden ser tratadas mediante humedales en terrazas en el lado del dique que da a la calle. En la parte alta las personas pueden encontrar lugares donde descansar, bajo toldos o en jardines secos, todos construidos con materiales reciclados encontrados en el lugar. En la rivera del río, una malla metálica fue envuelta y llenada con piedras: un gabión autoconstruido.

existing park on site
parque existente

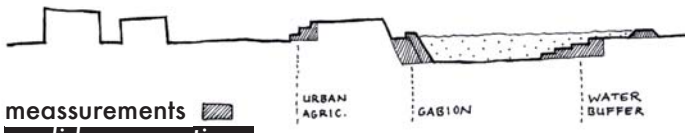
on site materials
materiales del sitio

RIVER

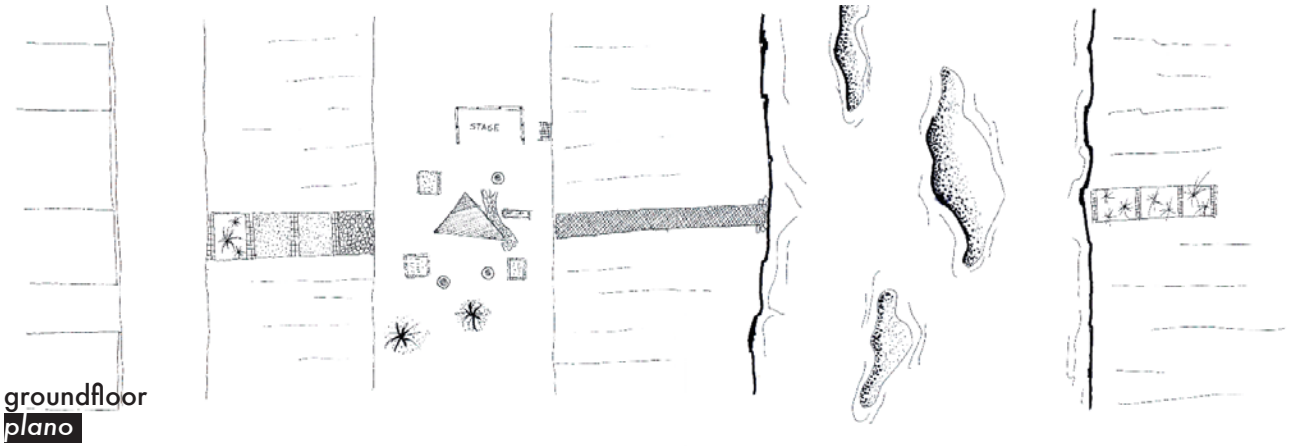
gabion on river bed
gabión en la orilla



threads
peligros

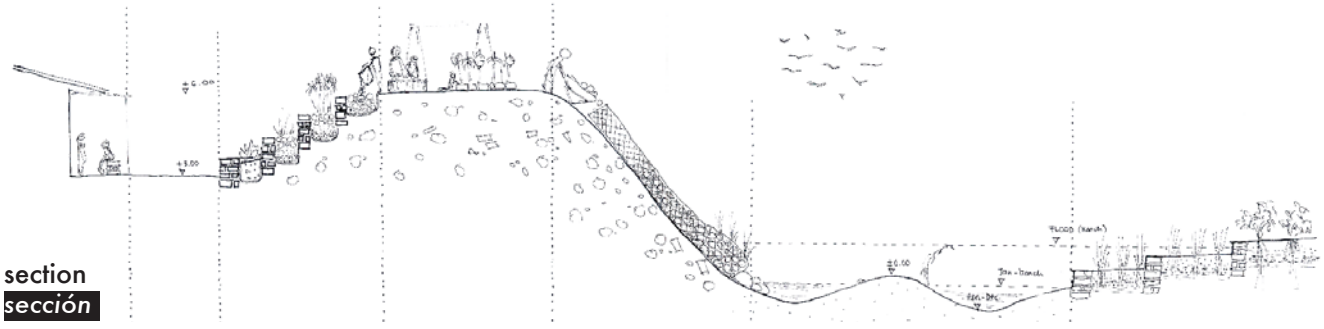


meassurements
medidas correctivas

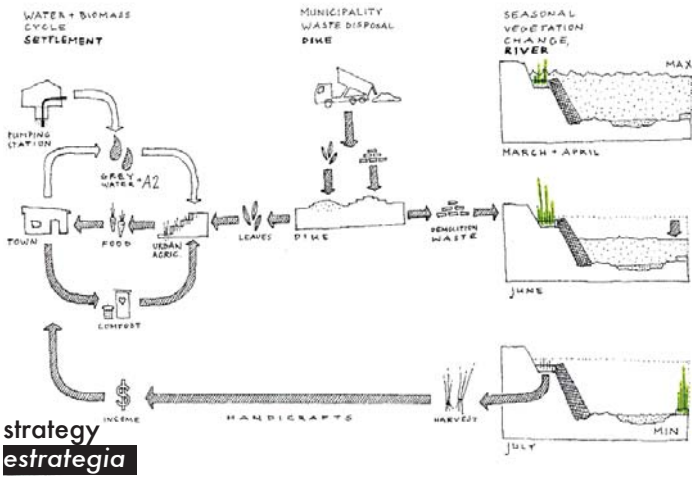


groundfloor
plano

town | street | urban agriculture | dry garden | gabions | river | retention area

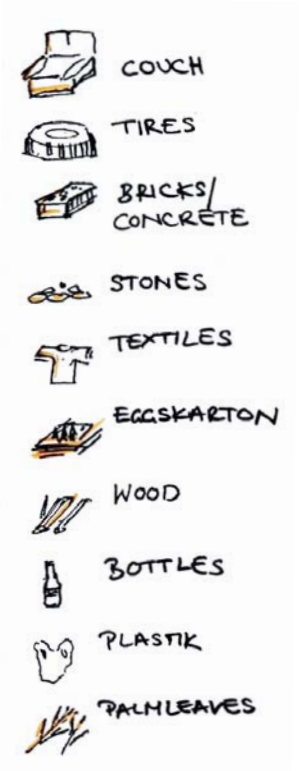


section
sección



strategy
estrategia

urban beach
playa urbana



available materials
materiales disponibles

available materials
materiales disponibles

dry garden
jardin artificial

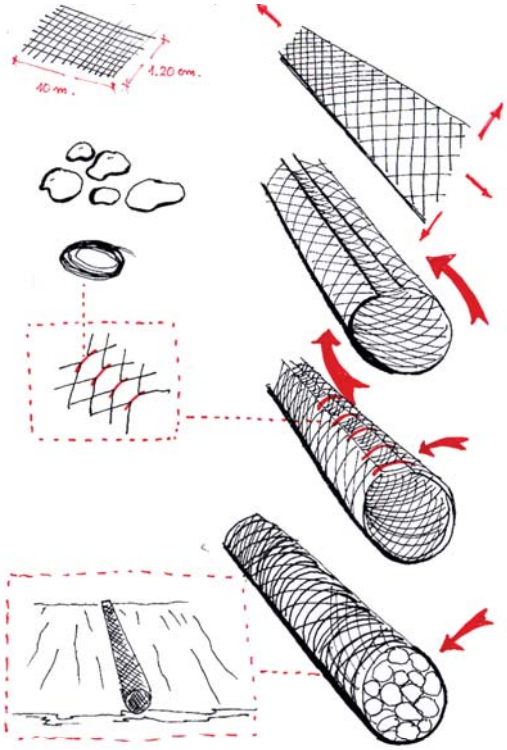
spring garden
jardin de resortes

RIVER

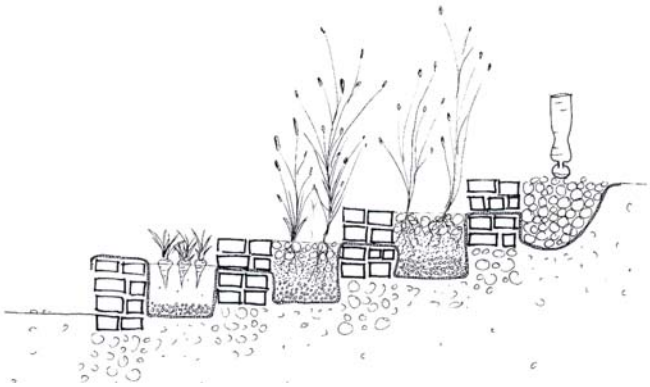
children helping
niños ayudando

constructing the gabion
construyendo el gavión

constructed wetland - urban agriculture
humedal construido - agricultura urbana



manual for gabion
manual para gavión



section wetland
sección humedal

river group
grupo rio

CANAL - ACEQUIA

Xhrstos Antoniou (UST)
Nefeli Kaltsouni (UST)
Anna Kübler (UST)
Luis Maldonado (UNI)
Katherine Polo (PUCP)
Dessire Velez (UST)
Julian Winkelhofer (UST)

From the first moments spent in the field it Chuquitanta, it was obvious that the area had been strongly affected by informal occupation. The land is very dry, mostly sandy, and has very little, if any, vegetation. Local residents have no piped water connection and are supplied by water delivery trucks. The primary water resources in the area are the Chillón River and a system of irrigation channels. Channels are supplied year-round with river water diverted upstream of Chuquitanta, but they are dirty and polluted. The water is not potable, nor is it suitable for irrigation.

Our idea was to create a playground that would also work as a system for cleaning the channel water. The water is lifted out of the channel with the help of a seesaw. Then, sediments are removed as the water moves through a centrifuge in the form of a carousel. Next, the water flows away from the center of the carousel into two containers which are filled with sand and stones for filtration. Next, the water flows into a shallow tank where solar radiation works to remove bacteria. Finally, the water is redirected for use in irrigating local agriculture.

irrigation canal
acequia

Our installation is the first step in the treatment system. The seesaw pumps up water from the channel and simultaneously acts as entertainment for local children. With the help of the children we also created "garbage collectors," nets which can be used to collect the trash from the irrigation channels. Finally, we also constructed a set of stairs and a bridge connecting the two residential areas which the channel separates.

children helping
niños ayudando

En el área de Chuquitanta desde un primer acercamiento se puede ver que ha sido fuertemente afectada por las ocupaciones informales. Durante todo el año los canales son suministrados de agua proveniente de las partes altas del río, pero estas son sucias y contaminadas. El flujo del agua es usado para irrigación de campos de cultivo.

agriculture
agricultura

La idea fue crear un tipo de parque de juego que funciona también como un sistema de tratamiento de agua. El agua es sacada del canal con la ayuda de un subeybaja. Luego el agua pasara a una centrifugadora en forma de carrusel. Luego que los sedimentos son removidos, el agua es sacada del medio del carrusel y circulará en dos contenedores, que estan llenos de piedras y arena. El agua limpia es llevada a un tanque donde es limpiada de bacterias mediante radiacion solar. Finalmente el agua es usada para regar los campos de agricultura de la zona.

Nuestra instalacion es la primera parte del sistema de tratamiento. Simultaneamente pequeñas estructuras como colectores de basura fueron construidos con la ayuda de los niños.Otras construcciones son las escaleras y puentes para conectar las dos áreas divididas por el canal.

natural canal
canal natural

CANAL

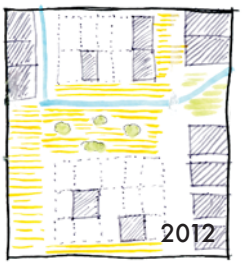
child helping
niño ayudando

children paint stairs
niños pintando escalera

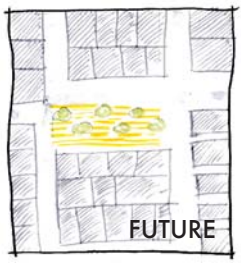
timeline
historia

fields with agriculture
few houses
animal farms
sugar cane - corn
natural canal (clean water)
unpaved paths - not next to canal

soccer fields
more people moved to the area
gardens with papaya and bananas
problem: rats in canal
unpaved paths - not next to the canal

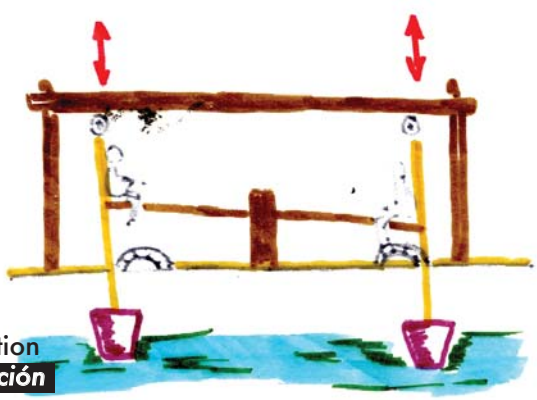


no more agriculture
small gardens with chili, flowers
water is polluted
canal in concrete bed
domestic waste in the canal
no relation between neighbours



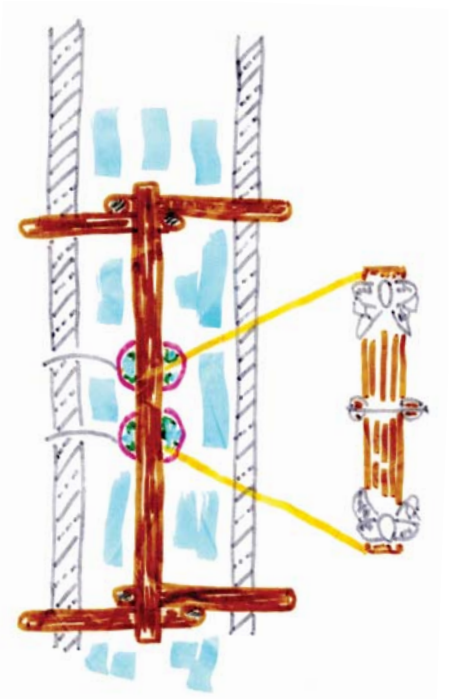
not enough free spaces in the area
lack of open space for agriculture
no playgrounds
whole canal is covered
no clean water for irrigation
canal will become draining canal

manual
manual



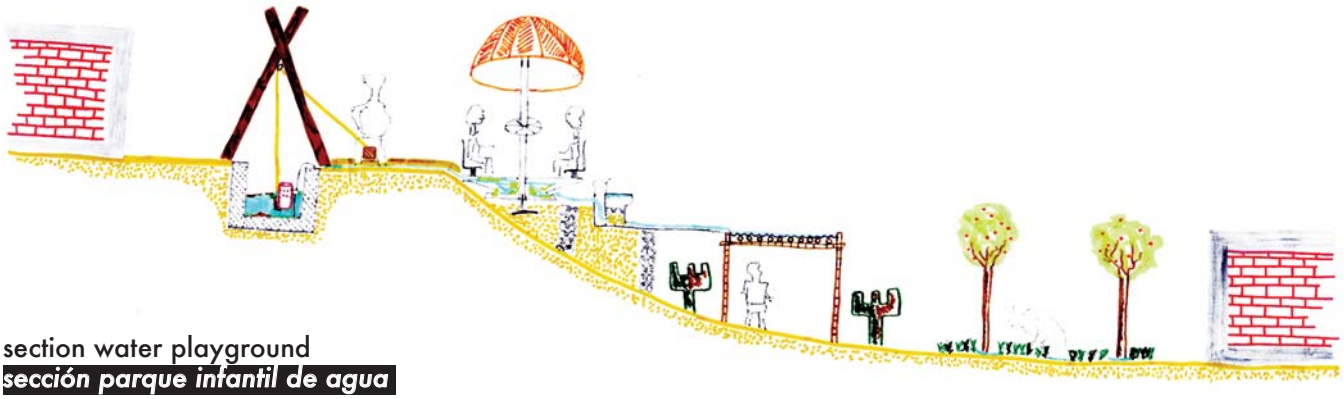
elevation
elevación

constructing sun shade
construyendo sombrilla



floorplan
plano

constructing seesaw
construyendo subeybaja



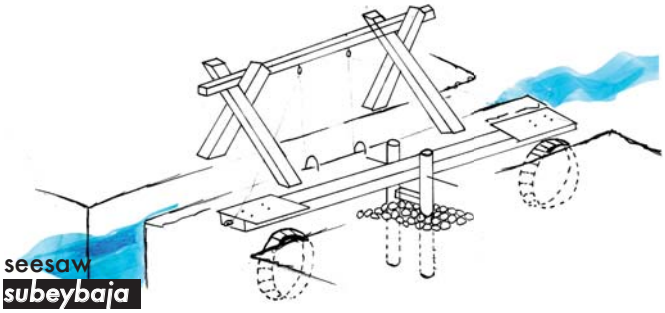
section water playground
sección parque infantil de agua

CANAL

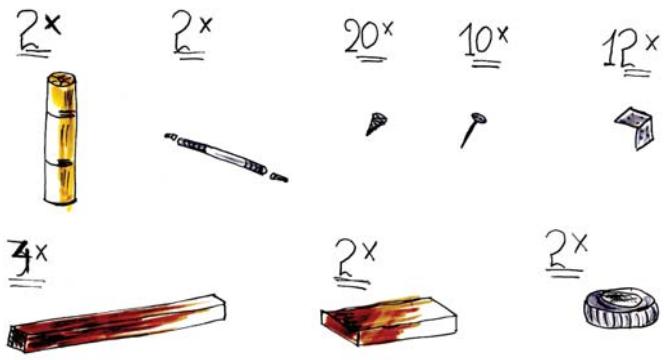
child using the stairs
niños usando la escaleras

canal group
grupo canal

presentation in chuquitanta
presentación en chuquitanta



seesaw
subeybaja



material seesaw
material for subeybaja

final presentation
presentación final

HILL - CERRO

Sofia Holder (UST)
Maximilian Mehlhorn (UST)
Ricardo Pacheco (PUCP)
Diego Rios (ARTIST)
Annie Salvador Rosas (PUCP)
Dessire Velez (UST)

On Santa Cruz Hill, homes are not outfitted with piped water delivery infrastructure, and each family has to buy its potable water from trucks called "aguateros" at a very high price. Because of this, water is a highly valuable resource for all local families, and it should not be wasted. However, after water is used for domestic purposes (cooking, showering, washing clothes, etc.), it is discarded in the street.

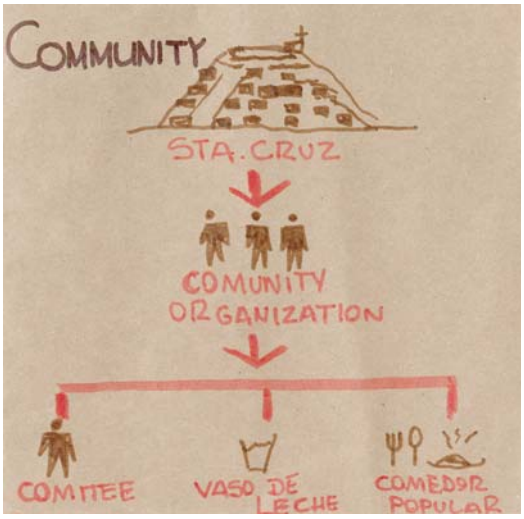
The aim of this proposal is to efficiently use domestic greywater for the irrigation of green areas first by filtering and cleaning it, and then creating a connected system of pipes to redirect it for use in the irrigation of community or family green space. This idea stemmed from the analysis of the problems and opportunities present on Santa Cruz Hill, interaction with local people, and the implementation of participative dynamics. Through our work we discovered the strong organizational structure of the local community (community work) and inhabitants' well-developed ideas about water and the future of their neighborhood, and their desire for green areas. Also worth mentioning is the impact of the construction of the installation.

hill of st. cruz
cerro de santa cruz

Everyone seemed very enthusiastic about the proposal and many were interested in duplicating and extending the installation. This eagerness reflects a change in local consciousness about the value of water, and the potential for easily and cheaply managing it more efficiently.

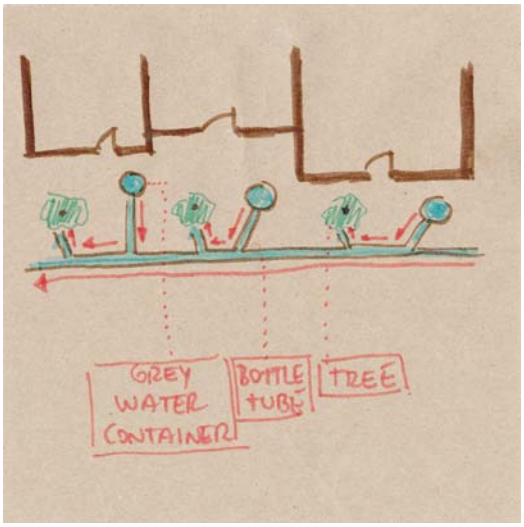
En el cerro Santa Cruz las viviendas no cuentan con acceso a la red de abastecimiento de agua potable. Cada familia debe comprar el agua a camiones aguateros para luego almacenarlos en tanques o grandes baldes, a un precio muy alto. Siendo este un recurso de sumo valor para las familias, el cual no puede ser desperdiciado. Las personas luego de utilizar esta agua en las labores domésticas (como cocinar, bañarse, lavar ropa, etc) la botan a la calle, siendo desperdiciada en su gran mayoría. La propuesta busca encontrar una forma eficiente de aprovechar estas aguas residuales, planteando la reutilización de esta para la irrigación de áreas verdes, pasando por un sistema previo de filtrado, y luego por un sistema interconectado lo que permite generar áreas verdes de caracter familiar, y también de caracter comunitario a lo largo de las calles. Esta propuesta nace luego de analizar las problemáticas y oportunidades, interactuando con los pobladores y mediante dinámicas participativas, de donde destaca la buena organización y apoyo comunitario que cuentan, y los principales deseos e ideas que tienen respecto al agua , al lugar donde viven y del deseo de áreas verdes. Otro punto importante es el impacto de la instalación construida en las personas, todos se mostraron muy entusiasmados con la idea, y dispuestos a replicarla, lo cual creo mayor conciencia sobre el valor del agua, y como puede ser usada eficientemente.

inefficient use of water
uso ineficiente del agua



class room
sala de clase

participation of community
participación de la comunidad

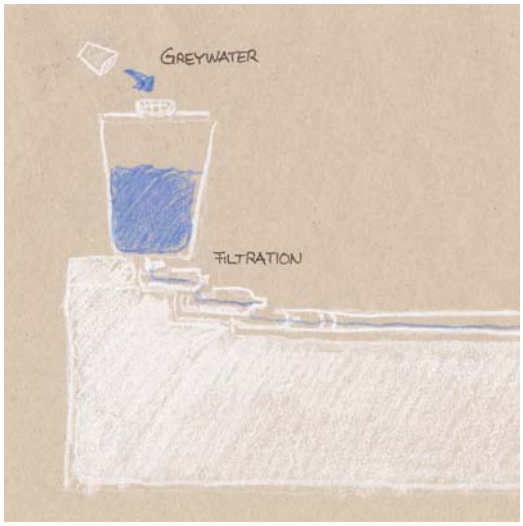


irrigation system
sistema de irrigación

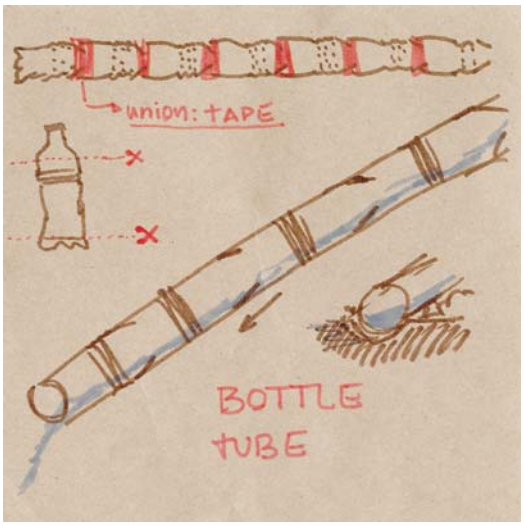
water truck
aguatero

gray water disposal
echando agua gris

collecting gray water
colectando agua gris



water filter
filtro de agua



tube of recycled bottles
tuberia de botellas recicladas

irrigation of plants
irrigación de plantas

final presentation
presentación final

SPRING - PUQUIO

Pamela Acuña (PUCP)
Bruno Arce (URP)
Víctor Huaman Torres (UNI)
Silke Mittnacht (UST)
Anna Oelrichs (UST)
Pablo Pajares (PUCP)
Leonie Wipf (UST)

With its cool, relatively clean water, the lagoon is used by locals for swimming and fishing but also for washing, showering and irrigating nearby agriculture.

Its source is excess groundwater collected in San Diego, a neighborhood in San Martin de Porres, and piped to Ventanilla in Callao, where the lagoon is located. The displacement of the groundwater from its source to the lagoon location causes a conflict about ownership of the water, just as there is a conflict between the locals who use the lagoon for washing and recreation and the owner of the land that uses the water to irrigate his fields. However, this space undoubtedly serves to connect inhabitants from many areas.

The shower helps to reuse washing water to irrigate trees we planted so that no water would be wasted and the nutrients in the detergent might help the trees to grow.

First, we used bamboo sticks and a paint bucket to make a channel that collects the water from the shower for irrigation of the trees. Then we got the local children involved by asking them to collect and color stones so that they could be part of the installation and make it their own.

The people, especially the kids, seem to be very happy about the project. It demonstrates alternative ways to reuse water and the trees provide a lasting element.

spring
puquio

SPRING

Templada temperatura, relativamente limpia y libre de costo, el agua del puquio es utilizada por sus visitantes para nadar y pescar, así también como para lavar ropa, bañarse y regar la agricultura.

Se llena con el agua subterránea sobrante de una tubería que tiene su origen en San Diego, San Martin de Porres y termina en Ventanilla, Callao. Estos dos distritos tienen un conflicto sobre a quién le pertenece el agua, así como las personas que utilizan el puquio y el hombre que lo utiliza para regar su campo, sin embargo este espacio conecta a las personas de áreas aledañas y hasta a personas que viven lejos.

Con nuestra instalación queríamos crear una ducha y reusar el agua de lavado para regar los arboles que hemos plantado como parte de esta intervención, para que esta no se desperdicie y los nutrientes del detergente ayude a los arboles a crecer.

Primero hicimos un canal que traslada el agua de una ducha, hecha por nosotros de bambu y un balde de pintura, para regar los arboles. Luego los niños nos ayudaron a recolectar y pintar piedras para que sean parte de la instalación y formen parte de esta.

Las personas, especialmente los niños, están muy contentos con nuestra intervención. Nosotros creemos que parte de esto se puede utilizar en el futuro pero en la actualidad sirvió para educar a las personas y enseñarles otras formas de tomar ventaja sobre el agua que usan.

children bathing in spring
niño bañando en el puquio

doing the laundry in the spring
lavando ropa en el puqio

SPRING

preparing the irrigation system
preparando el sistema de riego

participative work
trabajo participativo

planting a tree
plantando un arbol

WHAT IS THE LOCAL CONSCIOUSNESS ABOUT WATER?

people know that the water in the river makes them sick and that the water quality in the lagoon is much better

they know that the water is not potable

they know that trash pollutes the water

they know that vendors used to collect the trash but got tired and stopped

WHAT DO THE PEOPLE USE THE WATER FOR?

people wash their clothes in the spring

they take showers

they fish

they swim and relax

WHO COMES TO THE SPRING?

people from Ventanilla, San Martin de Porres and Puente Piedra

some even walk up to 45 minutes from other districts

WHAT DO THE PEOPLE WANT FOR THE AREA?

to make the well a real swimming pool

to have a clean area

to make the area greener

to have shady areas to relax

SPRING

tidy up
limpieza **1**

relax
relaxar **2**

shower
ducha **3**

irrigation
regar **4**

shade - green
sombra - verde **5**

filtration and reuse
filtración y reutilización **6**

stones painted by children
piedras pintadas por niño

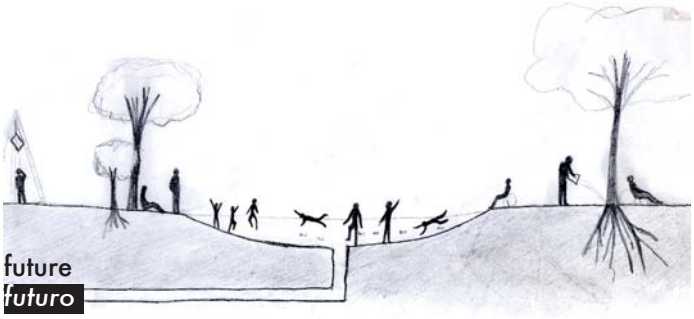
constructing of installation
construyendo la instalación

construction site
obras

SPRING

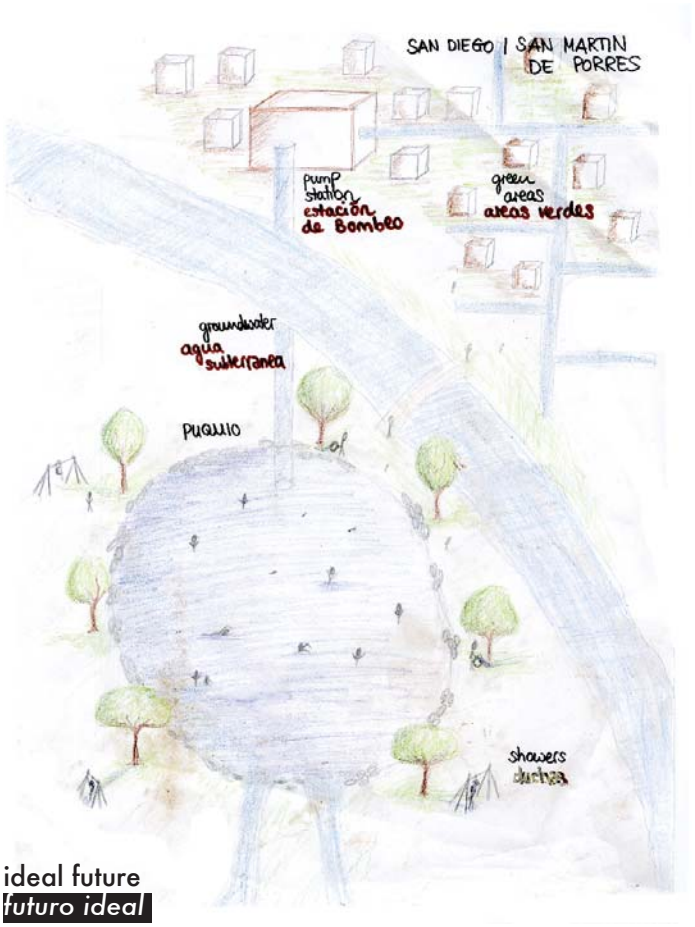
working together
trabajando juntos

present
presente



future
futuro

presentation in PUCP
presentación en PUCP



ideal future
futuro ideal

presentation in chuquitanta
presentación en chuquitanta

spring - private property
puquio - propiedad privada

EN

The summer school „Lima: Beyond the Park" organized by the Institute of Landscape Planning and Ecology, Faculty of Architecture and Urban Planning, University of Stuttgart, supported by Sto Stiftung and done as part of the project LiWa „Sustainable Water and Wastewater Management in Urban Growth Centres Coping with Climate Change - Concepts for Lima Metropolitana (Peru) - (LiWa)", had as main aim to present proposals about two important topics, which are mostly not connected with the urban landscape development of metropolitan Lima: the urban water cycle and its relation with open spaces. Knowing this situation we have travelled from Stuttgart to Lima and have chosen the lower Chillón River watershed in the area of Chuquitanta as the site for investigation. New approaches have been developed of how to reconnect the people with their natural environment and their water sources in a challenging area with high rate of extreme poverty, separated by geographic, economic, political and administrative differences. On the other hand it is kept in the collective memory the springs, fish in the river, shrimps, and crystal water going through the river and the agriculture fields. That collective memory is already gone in the reality and has been replaced by social fragmentation, environmental degradation that affects many districts of Lima and Callao. For this reason students of architecture from University of Stuttgart (ILPÖ) and the Pontifical Catholic University of Peru (CIAC) and students of sanitary engineering from the National University of Engineering (CITRAR) were part of an intensive program of visits and activities where they had contact with different authorities, local community and professionals. All this generated the possibility of creating innovative solutions considering water sensitive urban design according to local water sources for different spatial situations.

Students had the experience of working with local community, facing many problems and finding new opportunities. They explained the principals related to the urban water cycle and the relation with the open spaces of the four selected working areas: the spring, the hill, the irrigation channel and the marginal strip of the Chillón River. The design process was supported by water quality tests of water sources in each of the four areas. After the first meeting, there were different reactions, in some cases there was a partial rejection caused by informal use of land and water, occupied areas in the river, etc. But in other cases ideas were instantly welcomed by the local community, creating a real stage of mutual learning, for the students, local community and authorities. The results of the workshop were presented in the PUCP and in Chuquitanta, creating an academic experience about landscape architecture planning, since the career of Landscape architecture does not exist in Peru.

Rossana Poblet

Staff académico
Equipo ILPÖ

ES

La escuela de verano "Lima: Más que un Parque" organizado por el Instituto de Planificación del Paisaje y Ecología (ILPE) de la Facultad de Arquitectura y Urbanismo de la Universidad de Stuttgart, auspiciado por Sto Stiftung y realizado dentro del marco del proyecto LiWa "Gestión sostenible del Agua y las Aguas residuales en centros de crecimiento urbano afrontando el cambio climático - Conceptos para Lima Metropolitana (Perú)"-, tuvo como objetivo principal reflexionar y presentar propuestas sobre dos temas importantes y relacionados pero casi no conectados en el desarrollo urbano y paisajístico de Lima metropolitana: el ciclo urbano del agua y su relación con los espacios abiertos en la ciudad. Por dicho motivo viajamos de Stuttgart a Lima y nos concentramos dos semanas en la cuenca baja del Río Chillon y Chuquitanta tratando de buscar posibilidades para reconectar a la población con su habitat natural y sus fuentes de agua, en un área caracterizada por pobreza extrema y bordes a nivel político, administrativo, geográfico, hidrológico, económico, social, etc., y a la vez con una memoria colectiva de manantiales, peces y camarones y aguas cristalinas de río recorriendo los campos. Esa memoria colectiva practicamente ha desaparecido y ahora el área es relacionada con degradación ambiental y fragmentación social que afecta varios distritos, dos provincias y a la vez regiones, Lima y Callao.

Por dicho motivo los alumnos de arquitectura de la Universidad de Stuttgart y de la Pontificia Universidad Católica del Perú y de ingeniería del Centro de Investigación en Tratamiento de Aguas Residuales y Residuos Peligrosos -CITRAR de la Universidad Nacional de Ingeniería cumplieron un intenso programa de visitas y actividades donde tuvieron el contacto directo con diversas autoridades, comunidad local y profesionales vinculados al tema, contribuyendo dichos encuentros a generar propuestas innovadoras considerando diseños sensibles al agua de acuero a las diversas fuentes, incluyendo estudios sobre calidad y cantidad del mismo, y el contexto físico que incluí áreas de cerros, valles, desiertos, ríos, oceano, etc.

Así mismo, los alumnos tuvieron la experiencia de generar diversas reacciones de la población con sus propuestas teniendo que poner en práctica procesos de negociación. Esto les permitió enfrentarse a la realidad pasando de "observadores a observados", explicando sus proyectos, escuchando las observaciones de expertos y potenciales usarios y tratando de reflexionar más allá de lo visible tratando de generar un entendimiento común. Es así que se explicaron los principios relacionados al ciclo urbano del agua y la relación con los espacios abiertos de los cuatro lugares seleccionados (puquio, cerro, canal Josefina y faja marginal del Río Chillon). Después del primer encuentro se generaron alianzas y también rechazos parciales en algunos casos debido a conflictos relacionados con usos informales del suelo y agua, ocupaciones sobre la faja marginal, etc. Es así que algunas ideas fueron inmediatamente acogidas por la población generándose un escenario real de aprendizaje mutuo, tanto para los alumnos como para la población y las autoridades del lugar. Cabe resaltar que cada área de trabajo fue in-

tensamente analizada y estudiada y las propuestas fueron vivamente presentadas en la PUCP y en Chuquitanta generándose por primera vez una experiencia académica sobre planificación y arquitectura paisajística a nivel científico ya que en el caso de Perú no existe la carrera de Paisajismo, entendida como disciplina basada en el estudio de los ecosistemas, que incluye el diseño y planificación de paisajes o espacios abiertos, siendo el diseño de dichos espacios desarrollados de manera parcial ya que el tema es principalmente entendido a nivel estético no potenciándose aún su estudio, existiendo esfuerzos aislados para tomar el protagonismo que merece. Por dicho motivo este esfuerzo académico conjunto realizado dentro del proyecto LiWa, contribuye a la construcción de capacidades de estudiantes y profesionales peruanos y alemanes de diversas disciplinas, interesados en el mejoramientos de las condiciones ambientales dentro del espacio urbano considerando el espacio urbano degradado por años de informalidad, expansión urbana descontrolada y procesos de planificación no implementados. Esta experiencia trata de ver posibilidades de implementar propuestas de diseño urbano considerando el agua basado en la estrategia de infraestructura ecológica para Lima la cual debería ayudar a ordenar la ocupación urbana para contribuir a un desarrollo urbano hidro-sensible. ILPE espera seguir contribuyendo a la discusión del tema en Lima y otras ciudades con similares características y por dicho motivo pensamos que la experiencia se debe repetir con el mismo enfoque multidisciplinario que permita involucrar estudiantes y profesionales con diversas experiencias vinculadas al tema. Agradecemos a los que hicieron posible la realización del primer taller de verano en "Lima: Más que un Parque" y esperamos que hayan posibilidades para seguir proponiendo cambios de paradigmas a nivel del paisaje urbano y del agua.

Rossana Poblet

Staff académico
Equipo ILPÖ

CONCLUSION