WATER TRANSVERSAL NETWORK
COLLECTIVE WORK

PROBLEM STATEMENT

HYPOTHESIS

RESEARCH QUESTION

AIMS

ANALYSIS

STRATEGIES
### Urban growth

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1321</td>
</tr>
</tbody>
</table>

### Lake withdrawal

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>1521</td>
</tr>
</tbody>
</table>
UNITARIAN URBAN STRATEGY
PRECEDENCES

NICO TILLIE, ROTTERDAM WATER CITY 2035

ECATEPEC DE MORELOS, FABRICA DE AGUA 2008-2010
PROBLEM STATEMENT

Water shortage and superficial water pollution problems causing great economical, environmental and social losses.
POTABLE WATER SUPPLY

NATIONAL SUPPLY
SUPPLIED: 32 M³ /Sec
REQUESTED: 35.5 M³ /Sec
DEFICIT: 3.5 M³ /Sec

MUNICIPAL SUPPLY
SUPPLIED: 4,962 Liters /Sec
REQUESTED: 6,900 Liters /Sec
DEFICIT: 1,938 Liters /Sec

- 30% during summer

82% population receives indoor running water
This percentage drops to 50% in irregular settlements
POLLUTION OF SUPERFICIAL WATER

NACIONAL
AGUA CONTAMINADA

Agonizan Cuencas

Inició el congreso Vuelt a la ciudad lacustre
Del agua sólo nos defendemos, no la manejamos: González de León

La cultura debe anular a la sociedad, dijo Alejandro Aura

Angélico Vargas. Al discurrir su lengua, nos acercamos a la historia del Valle de México. Desde tiempos antiguos, ha habido una relación estrecha entre el agua y la vida en el valle. Pero, ¿qué tiene que ver la cultura con esto? La respuesta se encuentra en las raíces de la historia del Instituto de Cultura de la Ciudad de México (ICOM). Alejandro Aura. "La función protectora de la cultura tiene la obligación de anular a la sociedad en la búsqueda de nuevas formas de vida."

Así, gracias a la labor del Instituto, la ciudad de León, portadora del patrimonio artístico, cultural y arquitectónico de la antigua Cidade de México, se ha convertido en un referente cultural para el país. Si bien el ICOM no es el único en desarrollar proyectos culturales, sus actividades son tan relevantes para la sociedad que se han convocado a una serie de eventos para celebrar la cultura en el valle de México.
HYPOTHESIS

Investigating the process of water I will be able to affect built and social environment.

Research Questions

Which are the possible water supply?
Which is the level of different interventions?
Which are the actors involved?
Which effects will have my project?
AIMS

Environmental Achievements
1. Sierra de guadalupe (protect natural reserve)
2. El Caracol (solve sanitary problems and make it productive)

Public space system
1. street/sewage/water infrastructures
2. regularize housing by incrementing standards
3. Promotion of interaction and education

Commerce/Local production
1. use water to improve people's lives
2. promote local modes of production
3. facilitate private initiatives

Water collection
1. Legislation and funding for water and waste collection
2. Studies and techniques
3. Improving everyday life with technologies facilities
4. Collection of water in the basin
5. Provision of tubes and dams
6. N.G.O. collaboration for local water management
7. Water system monitoring
8. Water consumption reduction
9. Clean water
10. Space for recycling and collection of water
11. Alternative to municipal incentives
WATER ELEMENTS

CANAL
WATER TREATMENT PLANTS & DRAINAGE NETWORK

POTABLE WATER SYSTEM & SOURCES OF SUPPLY

SEASONAL RIVERS & STORAGE CAVES
CANALS

FOTO CANAL GRANDE
CANAL’S WATER TREATMENT

NOT AFFORDABLE SOLUTION!
SEASONAL RIVER (BARRANCA)

AMOUNT OF RAINY WATER
700 MM/YEAR AT NATIONAL LEVEL
ENOUGH FOR POTABLE WATER AND AGRICULTURE

ECATEPEC AVERAGE RAIN WATER 807 MM
ANALYSIS
HAZARDS

LEGENDA
- HIGH VULNERABILITY
- MEDIUM VULNERABILITY
- AVALANCHES ZONES
- BARRANCAS
- HIGH VOLTAGE LINES
- SLOPE +25%

HAZARDS

HIGH VULNERABILITY
MEDIUM VULNERABILITY
AVALANCHES ZONES
BARRANCAS
HIGH VOLTAGE LINES
SLOPE +25%
houses consolidation along the existing wall
houses consolidation in avalanches area
houses implementation along the barranca
houses implementation along main transit
houses in risks areas

house blocks involved in the plan
URBAN PATTERNS

2418 dws in avalanches and hazard areas
10,000 inhabitants

HOUSING TYPOLOGIES

IRREGULAR HOUSING
Density 30 dw/ha

REGULAR HOUSING
Density 60 dw/ha

PRIVATE DEVELOPMENT
Density 99 dw/ha
CONCLUSIVE OVERLAY

GEOGRAPHY
SLOPE
BARRANCA AREAS

WATER FLOW
POTABLE WATER AND
DRAINAGE NETWORKS

SECONDARY ROADS
VIABILITY

CITY EXPANSION
WALL BORDER
SERVICES

RISKS AREAS
SLOPE
STRATEGIES
STRATEGY:
To preserve natural reserve in order to insure water recharge

ACTIONS:
- Creation of a buffer zone
- Implementation of services and facilities
- Consolidation of houses in risks areas
- Stop urban sprawl

OPERATIONAL APPROACHES:
- Reforestation
- Agro reforestation
- Rustic patterns
- Re-naturalization
- Urban re-naturalization
- Community gardens
- Sport field
- Public services and facilities
- Houses consolidation
STRATEGY 2:
To reduce residential water consumption

ACTIONS:
. To enforce punitive actions against illegal tap
. Extra storage and dams
. To promote use of water saving devices
. Roof harvesting

OPERATIONAL APPROACHES:

- DAMS
- ROOF WATER COLLECTION & SAVING DEVICES
- EXTRA WATER STORAGE
- Redefinition OF BARRANCA and creation of BASINS

REDUCE DOMESTIC WATER CONSUMPTION WITH RAIN HARVESTING

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mains Water</th>
<th>Rain Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking &amp; cooking</td>
<td>10L</td>
<td>15L</td>
</tr>
<tr>
<td>Washing up</td>
<td>35L</td>
<td>50L</td>
</tr>
<tr>
<td>Washing machine</td>
<td>13L</td>
<td>20L</td>
</tr>
<tr>
<td>Showers</td>
<td>30L</td>
<td>40L</td>
</tr>
<tr>
<td>Gardens (car washing)</td>
<td>100L</td>
<td>150L</td>
</tr>
<tr>
<td>Flushing</td>
<td>35L</td>
<td>50L</td>
</tr>
</tbody>
</table>

TOTAL USAGE: 200 LITERS PER DAY
52% SAVINGS: 104 LITERS
STRATEGY 3:
To prevent floods &
To reduce losses and pollution in water mains

ACTIONS:
- Modernize the water supply network
- Sectoring of losses in water supply network and campaigning to control leaks
- Redefinition of the barranca’s edges

OPERATIONAL APPROACHES:
- WATER NETWORK IMPLEMENTATION
- TERRACES TO CONTAIN RUN-OFF
- DRAINAGE (FLOOD PLAN)
- REDEFINITION OF THE BARRANCA with PONDS
- LINEAR PARK
- PUBLIC SERVICES and FACILITIES
STRATEGY 4:
To increase re-use and treatment of water

ACTIONS:
. Promote natural cleaning systems
. Separation and local re-use of grey water
. Built waste water treatment systems in consolidated houses to avoid discharge in ravines and barrancas
. Spillways and fito depuration systems

OPERATIONAL APPROACHES:
- NATURAL PURIFICATION
- SPILLWAY
- HOUSES CONSOLIDATION

Fito depuration process
3.75 m³ per inhabitants

Spillway (rebosadero)
PROGRAMMATIC COUNTER PROPOSAL

SIERRA RECOVERY PLANTATION FACILITIES

BUFFER ZONE ADDITIONAL SERVICES

WATER FLOW CONTROL TERRACES LOCAL PRODUCTION

CONSOLIDATION SEPARATION OF WATER ROOF RAIN HARVESTING

WATER STORAGE DISTRIBUTION PURIFICATION
RAINWATER HARVESTING, STORAGE, AND TREATMENT SYSTEM

LEGENDA:

A) 3994 SF SLOPED COLLECTION ROOF
B) GUTTER AND DOWNSPOUTS
C) RAIN WASHERS
D) 10,000 GAL RAINWATER CISTERN
E) FLOOR VALVES
F) SUPPLEMENTAL MUNICIPAL WATER
G) FOOT VALVE
H) BOOSTER PUMP
I) PARTICLE AND SEDIMENT FILTERS
J) CARBON FILTERS
K) FLOW TRANSMITTER
L) DRAINDOWN TANK
M) COMPOSTING BINS SPRAY (NON-CHLORINATED)
N) WALL HYDRANT (NON-CHLORINATED)
O) CHLORINATOR
P) WATER HEATER
Q) ANTIFREEZE SPRAY (CHLORINATED)
R) LAUNDRY WASH (CHLORINATED)
S) EXCESS LIQUID WASTE ("COMPOST TEA")
T) GREYWATER TO ON-SITE WASTE TREATMENT SYSTEM

percentage
VERTICAL FLOW SYSTEM FOR NATURAL PURIFICATION
WATER TRANSVERSAL NETWORK RELATION WITH UUS

URBAN PLANS

Socioeconomic Urban Plan

Collective Framework

Water Transversal Network

ARCHITECTURE PROJECTS

Reconnecting The Social

Making Wastelands Productive

Alternative Urbanity