The Master Plan is founded on the following components:

**General Features**
- 178 acres
- Upland / islands area – 101 acres
- Permanent water area – 38 acres
- Wetlands area – 39 acres

**Flood Mitigation Features**
- 1,680-acre feet of storm water storage
- Water Storage Depth - 13’
- Permanent Water Depth - 6’ Maximum

**Water Quality Features**
- Emergent wetland fringe
- Trash interceptor baskets
- Tree canopy
- Return water flow polishing

**Amenity Features**
- Land forming with variable slopes to create a natural character
- Wet bottom basin
- Reforestation
- Islands (habitat areas)
- Trails
- Nature-friendly habitat areas

**Recreation Features**
- Athletic Sports Fields
- Entrance plaza / water feature
- Parking
- Picnic and open game areas
- Hike and bike trails

* This is a partial list and may include other features to be determined and funded by the Community separate and apart from the flood mitigation and water quality improvements.
Flooding is a result of storm water run-off. Flooding increases as development covers the ground with impervious surfaces and the ground can no longer soak up the rain. Over the last 30 years, flooding has grown to be the number one issue for the Clear Lake City area. TSARP (Tropical Storm Allison Recovery Project) study found that the “100 year” peak flow rate in Horsepen Bayou watershed increased by 20% during the 1980’s. Detention is now becoming recognized as the best method to control flooding along the Upper Texas Gulf Coast. Previously, the favored practice had been to make drainage waterways wider, deeper and straighter. The increasing urban development of the Upper Texas Gulf Coast has made this approach increasingly unaffordable by local jurisdictions and unsupportable by local communities.

CLCWA objectives include: 1) Preventing increased rainwater runoff due to new development; and, 2) reducing current flooding where possible through effective and proven methods such as detention.

Note:
- The use of 100-year and 500-year event terms are somewhat misleading.
- A 100-year event equates to 13.5 inches of rain within a 24 hour period.
- There have been 7 of these events since 1976 in CLC. In April 2009, over 9 inches in 2 hours was recorded.
- A 500-year event equates to 19 inches of rain within a 24 hour period.
- There have been 3 of those events since 1979.
- Markings on the TSARP map only show those areas contiguous to a waterway and does not include depressions (ponding) which are non-contiguous. These ponding areas can be severe and can result in structural flooding and flood during heavy rains such as the 13.5” rains.
site area floodplain
site access points and proposed bicycle facilities / shared-use paths

Bike path locations shown are found in the Clear Lake Pedestrian and Bicyclist Study from 2011. Refer to the masterplan section of this document for bike facility locations within the site under study.
Based on visual surveys performed by the planning team, the existing vegetation includes several tree species dominated by oak, pine and tallow trees with understory planting of some variety. There are in excess of 700 trees on the 178 acres. A combination of the severe drought experienced in Houston in the Summer of 2011 and the inoperable irrigation system resulted in some tree loss. The proposed project improvements, once completed, may preserve up to 42% of the existing mature and native trees especially along the outer edges.
The CLOWA embraced the concept early on of engaging the community in developing ideas for the master plan for the project. Although the primary purpose of the project is flood damage reduction and water quality improvements, CLOWA recognized the important function the property has served and will continue to serve as permanent open space in the community. The CLOWA challenged the community to both develop recommendations for recreational improvements for the project, as well as methods and sources of funds to implement these improvements. The narrative below describes the organization and process of the Advisory Group followed by its recommendations. Implementation of the recommendations are included in the Implementation section.

GROUP MEMBERSHIP

Two Co-chairs – Frank Weary and John Jacob
Steering Committee Members – Diverse group interested in area
Various sub-committee members representing area groups

GOALS OF ADVISORY GROUP

1. Organize the group to include interested stakeholders in area.
2. Gather input from the residential and business community on the types of multi-use facilities desired through input from Town Hall meetings, web-site surveys, etc. Facilities must be compatible and adaptable within a detention pond environment.
3. Evaluate each idea and proposal considering parking requirements, impact on existing homeowners, and in keeping with the greatest number of area residents.
4. Gather landscaping ideas which would enhance the area, consider privacy and safety of existing homeowners along the property lines, and enhance the quality of life for the area.
5. Explore types of funding which might be available through grants, matching funds, donations, and other sources.
6. Promote and build community support and involvement.
7. Evaluate all proposals under the following criteria:
   a. No bright lighting in any area other than the former clubhouse area.
   b. Recreational amenities must be funded from sources outside the CLOWA.
   c. Low impact amenities have priority in keeping with desire to maintain the area as green as possible.
   d. Amenities requiring parking areas should be restricted to former clubhouse area.
   e. Former tennis courts should consider daylight only amenities.
   f. No long term rentals or permanent structures by private organizations.
   g. No sale of property to be considered.
   h. Complete study by September 1, 2012.

DELIVERABLES

1. Evaluate which ideas fit best into the overall plan of detention ponds, highest benefit to the entire area, and desire to keep the area as green as possible.
2. Using the section designations on the master aerial map, provide recommendations as to which proposals fit best into each section with supporting reasons.
3. Understand the final decisions will be made by the Board of the CLOWA after a review of the recommendations, review by the CLOWA engineers and architects, confirmation of funding, and agreement with other governmental entities participating in the master plan.
4. Final decision by the CLOWA will be incorporated into the Master Plan and presented to the community upon approval by the Board of Directors.

ADDITIONAL INFORMATION FROM CLCWA BOARD

1. Planning average depth of detention ponds will be 14 foot.
2. Approved Advisory Group budget of $1,100.
3. Side slope at least 4 to 1 ratio.
4. SNA Landscape Architects was hired by CLOWA to prepare the Master Plan.
5. Setback of 35 feet from property line, drop of 8 foot with hedge for hike and bike trail, and then slope to bottom of detention pond.
6. Filtering (wetlands) at two ends of former fairways feeding into the drainage ditches.
7. Wet ponds (maintain 2 to 3 foot of water) would need to be near either of the two existing CLOWA water wells (current water hazard areas).

Preliminary Interest Groups might include the following: Athletic Fields, Hike and Bike Trails, Wetlands, Community Gardens, Dog Park, Landscaping restoration nature friendly spaces, and “Others”. CLOA Green Plan members are asked to decide which areas they might want to facilitate before the meeting. Additional facilitation duties might include assisting with identifying Interest Group meeting locations, meeting times, and aiding the group in understanding the constraints that we must observe.

HISTORY AND METHODS

- January 24, 2012: First Town Hall meeting - solicited ideas, asked for volunteers.
- February: Frank Weary and John Jacob appointed co-chairs of the Advisory Group.
- March: Remainder of the Advisory Group appointed (met twice a month through August); formal charter was provided to the Advisory Group with primary purpose to solicit community input with target date set for early September.
- May 10, 2012: Second Town Hall meeting - solicited volunteers for subcommittee areas of interest; selected chairs of subcommittee and set deadline for proposals by area for late August.
- July: Advisory Group meeting with subcommittee chairs to clarify objectives and provide proposal format.
- August 30, 2012: Third Town Hall meeting - subcommittee proposals presented, included two landscaping reports and Outstanding ideas (not covered by subcommittees).
- September: Last Advisory Group meeting - reviewed proposals in detail and formulated priorities; co-chairs met with CLOWA Board and presented recommendations.

SUBCOMMITTEE PROPOSALS

Athletic Fields
- 3 multi-use practice fields along Bay Area
- Baseball, sand volleyball, 2 more multi-use fields and other facilities near Rec Center
- Parking and rest room facilities needed
- Sports leagues likely to aid in field creation and maintenance
- Alternate configurations included

Community Gardens
- 2 + acres requested for multiple gardens
- 2 alternate locations suggested – Bay Area or near Rec Center
- Some parking needed for garden irrigation needed
- Funding routes through Urban Harvest and others likely
Dog Park
- 3 acres requested for two dog parks (large and small dogs)
- Dog park fencing and ADA access required; water for dogs required; parking required
- Preferred location near Rec Center
- 501c3 exists to help raise funds for construction; City/County participation on maintenance

Hike and Bike Trails
- 2 trail loops similar to SWA proposal suggested
- As recommended in HGAC, trails tie to existing/proposed trails outside land
- Funding through Conservancy with inter-governmental, corporate and running club financing

Landscape 1 – Trees and Grading
- Recommend using 50 foot buffer to match proximity of old cart path
- Water buffer also helps save existing trees
- Several “specific interest” areas recommended for preservation
- To maintain capacity, recommend going to a greater depth at bottom
- Several specific recommendations included regarding detailed engineering concepts
- Proposals have minimal construction costs

Landscape 2 – Plants and Wildlife Habitat
- Recommends specific trees and shrubs consistent with periodic flooding
- Plantings also recommended for wildlife habitats, birding, butterflies, etc.
- Plantings broken between lower (wetter) and higher (drier) areas
- Funding suggested through intergovernmental, specific corporations, and various grants
- Minimal maintenance plantings are recommended to reduce operating costs

Wetlands and Lakes
- General recommendations for natural water filtration (wetlands) and lakes
- Reefs and shrub areas at water edges of 5-5 feet preferred
- Wetland and lake areas easily incorporated in both Master Plan and detailed engineering
- Minimal construction funding needed beyond grading; Federal grants will supplement

Outstanding ideas
- Many ideas and concerns submitted without assignment to subcommittees
- Primary areas not covered concern playground and other “park” facilities
- Sponsorship and memorial plantings proposed for funding assistance
- Principle concerns were security and funding

ADVISORY GROUP RECOMMENDATIONS
- Phase 1 of the development should include:
  a. Hike and Bike Trails
  b. Green space development including:
     - Tree preservation and replacement
     - Flooding tolerant native plants
     - Wildlife areas
     - Water features
     - Wetlands
  c. Open spaces and playground facilities
- Subsequent phases dependent on funding should include:
  a. Community Gardens
  b. Athletic Fields
  c. Dog Park
- Special Attention should be paid to:
  a. Parking, including adding limited parking for access to amenities
  b. Parking and security (primary concern of adjacent home owners)
  c. Limiting noise and nighttime lighting
  d. Rest room facilities are required, but could be somewhat centralized
- Strong consideration should be given to formation of a Conservancy as soon as reasonable
1. SPORTS FIELDS (150' x 250' EACH)
2. PARKING LOT (352 cars)
3. MAIN ENTRANCE AND PLAZA WITH WATER FEATURE
4. USES AND ACTIVITIES TO BE DETERMINED
5. WETLAND AREA
6. TREES AND UNDERSTORY PLANTING
7. PEDESTRIAN BRIDGE CROSSING AND TRAILS
8. UPPER PAVED TRAIL
9. HABITAT ISLAND
10. PRESERVED TREES

NOTE: Native prairie grass and wildflower areas will be intermingled in various sections.
storm water capacity enhancements

The following summary and illustrations set out the details of the recommended master plan. This includes information on how the project will be built over a series of phases. Recreational features that may also be incorporated into the project as funding allows are also illustrated in the master plan.

1. Flood Damage Reduction Features (FDR) Features
   a. 178 acres
   b. 1,680-acre feet of storm water storage
   c. Water storage depth - 13'
   d. Permanent water level - 6'
   e. Permanent water area – 38 acres
   f. Upland/ islands area – 101 acres
   g. FDR Excavation - 3.0 million cubic yards

2. Water Quality and Park Features
   a. Water Quality
      i. Emergent wetland fringe
      ii. Trash interceptors
      iii. Riparian tree canopy
      iv. Return flow polishing
         1. 6m gpd = 4,166gpm = 9.2cfs
   b. Amenity Features (Including recommendations by the Advisory Committee)
      i. Wet bottom basin
      ii. Created wetlands
      iii. Land forming and shaping
      iv. Revegetation
      v. Habitat creation
      vi. Fishing and restrooms
      vii. Lower and upper bench hike & bike trails
      viii. Multi-purpose athletic fields (with expansion on HOA site)
      ix. Community Garden
      x. Dog Park
      xi. Nature playground
   c. Phasing Options
      i. Interim uses
      ii. Five possible construction phases

   d. Potential Capital Funding Scenarios
      i. CLCWA (Retention/Detention Only)
      ii. Harris County and City of Houston
      iii. Corporate Partners
      iv. Government Agency Partners (TX General Land Office, Texas Parks and Wildlife, etc.)
      v. NID Partners
      vi. Foundations

   e. Management & Operations
      i. Structures
         1. Conservancy 501(c)(3)
         2. Intergovernment Partnership
      ii. Operations
      iii. Expenses
         1. Scheduled Items
            a. mowing, trash removal, vegetation pruning, trail maintenance
            b. invasive plants and trees management
         2. Unscheduled Items
            a. tree removal, erosion control
masterplan feature by system
possible phasing diagram

1  1 - 5 YEARS
2  4 - 7 YEARS
3  7 - 9 YEARS
4  9 - 12 YEARS
5  12 - 15 YEARS
proposed typical section

proposed typical section in detail
phase 1

years 1-5

1. MAIN ENTRANCE AND PLAZA WITH WATER FEATURE
2. PARKING LOT (352 cars)
3. PLAZA WITH WATER FEATURE
4. WATER RUNNEL WITH BOULDERS AND BRIDGES
5. TO BE DETERMINED
6. SPORTS FIELDS (150' x 250' EACH)
7. REFORESTED AREA
8. WETLAND AREA
9. HABITAT ISLAND
10. PRESERVED WELLS
11. PRESERVED TREES
12. PAVED UPPER BANK TRAIL
13. BRIDGE CROSSING
14. GRASS LOWER PATH

NOTE: The indicated uses and activities show preliminary ideas and may expand to include other improvements.

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phase 1 entry plan

- MAIN ENTRANCE
- WATER FEATURE AND POOL
- HANDICAP PARKING
- FLAGSTONE PAVING PLAZA
- TRELLIS
- TO BE DETERMINED
- TO BE DETERMINED
- BENCHES
- WATER CASCADE WITH BOULDERS AND BRIDGE
- RAMP
- REFORESTED AREA
- PEBBLE BEACH
- PAVED UPPER BANK TRAIL
- GRASS LOWER PATH
- SPORTS FIELDS (150' x 250' EACH)
- WETLAND AREA
22 Masterplan

Golf course detention facilities and associated open space & park plan

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golf course detention facilities and associated open space & park
Six miles of trails with convenient trail loops connect the 178-acre property to adjoining neighborhoods and the regional Clear Lake pedestrian and bike system.
Storm water storage and water quality features combine with permanent pools and natural habitats to create enhanced recreational experiences.