Cover: A mural depicting community life in the Saratoga Creek Watershed from past to present. The mural was designed by Saratoga Union School District art docents based on a painting by Georges Serat, and painted by school children from the District. Each “dot” represents the contribution of one child. The mural was used as the icon for the Integrated Community Involvement Program.
INTEGRATED COMMUNITY INVOLVEMENT PROGRAM

THE SARATOGA CREEK EXPERIENCE

PREPARED FOR THE BAY AREA STORMWATER MANAGEMENT AGENCIES ASSOCIATION

JUNE 1997

PREPARED BY
CHRISTINA FISCHER
MICHAEL RIGNEY
KAREN COTTER
DAVID JOHNSTON
GARTH BACON

COYOTE CREEK RIPARIAN STATION
INTINTEGRATED COMMUNITY INVOLVEMENT PROGRAM
TABLE OF CONTENTS

BACKGROUND ............................................................................................................. 3
THE NEED FOR AN INTEGRATED APPROACH .......................................................... 3
NEW TOOLS FOR A NEW ERA .................................................................................. 3
LOCAL ISSUES .......................................................................................................... 2
THE PROGRAM ELEMENTS ....................................................................................... 2
STREAM INVENTORY .................................................................................................. 3
STREAMKEEPERS ...................................................................................................... 3
SCHOOL-BASED ACTIVITIES ...................................................................................... 4
WATERSHED FESTIVAL ............................................................................................. 4
WATERSHED-SPECIFIC BROCHURE ......................................................................... 4
RIPARIAN OUTREACH ................................................................................................. 4
THE APPROACH .......................................................................................................... 9
COMMUNICATION AND NETWORKING ..................................................................... 9
THE SARATOGA EXPERIENCE ................................................................................... 9
STREAM INVENTORY .................................................................................................. 11
GETTING STARTED .................................................................................................... 11
Selecting Goals .......................................................................................................... 11
Study Design .............................................................................................................. 12
QA/QC ....................................................................................................................... 12
IMPLEMENTATION ..................................................................................................... 13
Community Outreach and Volunteer Recruitment .................................................. 13
Volunteer Training and Management ...................................................................... 13
Data Collection .......................................................................................................... 14
Data Analysis ............................................................................................................ 14
Project Assessment ................................................................................................... 15
THE SARATOGA CREEK EXPERIENCE .................................................................. 15
Physical ..................................................................................................................... 15
Chemical .................................................................................................................... 16
Biological ................................................................................................................... 16
Value of the Data ...................................................................................................... 16
STREAMKEEPERS .................................................................................................... 17
THE SARATOGA CREEK EXPERIENCE .................................................................. 17
StreamKeepers Training Workshop ......................................................................... 17
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>StreamKeepers Materials</td>
<td>18</td>
</tr>
<tr>
<td>Outfall Mapping, Discharge Pipes, and Water Diversion on Saratoga Creek</td>
<td>18</td>
</tr>
<tr>
<td>StreamKeepers On-going Communication</td>
<td>19</td>
</tr>
<tr>
<td><strong>SCHOOL-BASED ACTIVITIES</strong></td>
<td>20</td>
</tr>
<tr>
<td>THE SARATOGA CREEK EXPERIENCE</td>
<td>20</td>
</tr>
<tr>
<td>Grade Level Curriculum</td>
<td>20</td>
</tr>
<tr>
<td>Future Plans for the Saratoga Creek School Project</td>
<td>21</td>
</tr>
<tr>
<td><strong>WATERSHED FESTIVAL</strong></td>
<td>22</td>
</tr>
<tr>
<td>SELECTING GOALS AND OBJECTIVES</td>
<td>22</td>
</tr>
<tr>
<td>IMPLEMENTATION</td>
<td>23</td>
</tr>
<tr>
<td>SARATOGA CREEK EXPERIENCE</td>
<td>24</td>
</tr>
<tr>
<td>Festival Development</td>
<td>24</td>
</tr>
<tr>
<td>Publicity</td>
<td>25</td>
</tr>
<tr>
<td>Participation by Environmental Organizations</td>
<td>25</td>
</tr>
<tr>
<td>Educational Demonstrations</td>
<td>26</td>
</tr>
<tr>
<td>Entertainment</td>
<td>26</td>
</tr>
<tr>
<td>Food and Refreshments</td>
<td>27</td>
</tr>
<tr>
<td><strong>WATERSHED-SPECIFIC BROCHURE</strong></td>
<td>28</td>
</tr>
<tr>
<td>Goals</td>
<td>28</td>
</tr>
<tr>
<td>Strategies</td>
<td>28</td>
</tr>
<tr>
<td>Key Elements</td>
<td>28</td>
</tr>
<tr>
<td>Distribution</td>
<td>29</td>
</tr>
<tr>
<td>THE SARATOGA CREEK EXPERIENCE</td>
<td>30</td>
</tr>
<tr>
<td><strong>RIPARIAN OUTREACH</strong></td>
<td>30</td>
</tr>
<tr>
<td>THE SARATOGA EXPERIENCE</td>
<td>31</td>
</tr>
<tr>
<td><strong>SOME LESSONS LEARNED</strong></td>
<td>31</td>
</tr>
<tr>
<td><strong>GENERAL OBSERVATIONS</strong></td>
<td>31</td>
</tr>
<tr>
<td><strong>STREAM INVENTORY</strong></td>
<td>32</td>
</tr>
<tr>
<td><strong>STREAMKEEPERS</strong></td>
<td>32</td>
</tr>
<tr>
<td><strong>SCHOOL-BASED ACTIVITIES</strong></td>
<td>33</td>
</tr>
<tr>
<td><strong>WATERSHED FESTIVAL</strong></td>
<td>33</td>
</tr>
<tr>
<td><strong>WATERSHED BROCHURE</strong></td>
<td>34</td>
</tr>
<tr>
<td><strong>RIPARIAN OUTREACH</strong></td>
<td>34</td>
</tr>
<tr>
<td><strong>RECOMMENDATIONS</strong></td>
<td>35</td>
</tr>
<tr>
<td><strong>GENERATE INFORMATION</strong></td>
<td>35</td>
</tr>
<tr>
<td><strong>GENERATE ENTHUSIASM</strong></td>
<td>35</td>
</tr>
<tr>
<td><strong>COMMUNICATE RESULTS</strong></td>
<td>35</td>
</tr>
<tr>
<td><strong>THE LONG-TERM</strong></td>
<td>35</td>
</tr>
<tr>
<td><strong>ACKNOWLEDGEMENTS</strong></td>
<td>36</td>
</tr>
<tr>
<td><strong>REFERENCES</strong></td>
<td>39</td>
</tr>
</tbody>
</table>
INTEGRATED COMMUNITY INVOLVEMENT PROGRAM

BACKGROUND

Watershed stewardship activities have become a priority for many communities and agencies throughout the Bay Area, and many new projects have been initiated over the past three years. Although most of these efforts have included both scientific and educational goals, very few programs have attempted a community-wide, integrated approach involving multiple projects managed concurrently and in concert.

This report provides a detailed summary of activities conducted by the Coyote Creek Riparian Station (CCRS) in support of an integrated community involvement program on Saratoga Creek in Santa Clara County, California. This program consisted of six separate but complimentary projects which were implemented on the stream simultaneously. Funding for the Stream Inventory and StreamKeepers projects was provided by the Santa Clara Valley Water District. School-based activities were supported by the Saratoga School District. Funding provided by the Bay Area Stormwater Management Agencies Association in support of an integrated community involvement program provided additional support for these activities and provided funding for including additional activities to ensure that biological, cultural, historical and educational elements were all included in the program. Activities were conducted during calendar years 1995 and 1996.

THE NEED FOR AN INTEGRATED APPROACH

For a variety reasons, efforts to involve community members in understanding the complex ecological, social and regulatory issues surrounding watershed policy have only recently been undertaken in California. In most cases, where programs have been implemented, efforts have been focused on one element or another with little consideration of the need to integrate concepts (and implementation “tools”) into a unified approach to public education and involvement.

Such a unified or integrated approach leads watershed participants through an ongoing process of discovery and enlightenment, resulting in changes in personal and community behavior which ultimately benefit watershed “health.” In this process as well, participants can gain a perspective of agency mandates (or lack thereof), and how their actions at a local level can influence policy and procedures.
NEW TOOLS FOR A NEW ERA

Over the past few years, environmental policy at national, state and local levels has shifted from one of heavy reliance on regulation to an approach which is more cooperative and interest driven. Whereas under the prior approach of big government regulatory dominance, the general public was primarily excluded from broadly influencing policy, under the new ethic of locally driven, interest-based decision making, the general public has more of an opportunity to be involved and influence policy.

With a more involved local constituency, it is paramount that citizens be made aware of and knowledgeable regarding issues which affect environmental health and integrity. If we are to continue making progress on such complicated fronts as watershed management and planning, an educated and supportive public must be a part of any local efforts. The purpose of the Integrated Community Involvement Program described in this report was to provide a model for combining individual elements of public education and involvement in order to begin this process of preparing the public for a more active role in ecological planning and management.

In California, with recent legislative decisions and ballot initiatives, it is becoming much more difficult for local agencies to generate the funding for non-social services such as the stormwater runoff programs, open space preservation, and habitat restoration which are critical elements of any watershed management effort. With a two-thirds majority requirement for most property tax proposals, it is imperative that more local residents be supportive of such efforts. One way of ensuring that support is through an engaged citizenry where personal actions demonstrate their support of such programs.

LOCAL ISSUES

The Saratoga Creek watershed was chosen as the pilot site for the Integrated Community Involvement Program because the community had become highly polarized by controversy surrounding pollution incidents and the perceived lack of government response to those incidents. The goal of the program in this watershed was to provide a linked series of activities which would provide a less confrontational means of community involvement and provide an ongoing mechanism for supporting local watershed efforts.

THE PROGRAM ELEMENTS

There are many elements and options which can be included in the design of an integrated community involvement program. Those elements which were selected for the Saratoga Creek project are described in detail below. The purpose, benefits, and keys to success for each of these program elements are presented in Table 1 at the end of this section.

Other options which could be appropriate in other watersheds include creek clean-ups, riparian restoration efforts, multi-media outreach programs, and many others. Inclusion of the community in the selection of specific activities will enhance the creativity of the approach as well as ensure its relevance to those you hope to have participate.
STREAM INVENTORY

A core element of the program is the involvement of the community in assessing the existing ecological conditions of the creek through citizen-based monitoring. Depending on the goals and resources of the project, this assessment can range from a simple qualitative walk-through to a carefully designed quantitative inventory of riparian resources. This activity provides a powerful opportunity for watershed residents to explore their stream and discover the many ways their actions affect its health. The data these teams of volunteers collect can also provide a valuable benchmark of stream conditions which can be used to assess the effectiveness of land use and conservation policies, as well as to focus future studies.

Standardized methods have been developed by the Coyote Creek Riparian Station in cooperation with a number of State and Federal resources agencies to support these efforts. With the training and supervision of program staff, small teams of volunteers enter selected sections of the stream to map habitat and pollution impacts, census birds or amphibians, monitor basic water chemistry, or collect other appropriate information regarding the presence and condition of riparian resources within the watershed.

STREAMKEEPERS

Assessment of the watershed is likely to lead to documentation and reporting of pollution and impacts to the stream course both directly and indirectly: the stream inventory teams will see and report problems immediately, while local residents educated through this process to recognize such problems will continue to report them over time. In order to assist and encourage this important stewardship activity, and increase these activities beyond stream inventory volunteers to the greater watershed communities, the StreamKeepers Program was developed.

StreamKeepers staff work with local urban runoff and resource agencies to develop watershed-specific pollution recognition, detection and reporting guides which assist residents in effective and appropriate reporting of pollution incidents and other impacts within the stream. Through workshops held for homeowners associations, schools, community organizations, and other interested groups, StreamKeepers staff provide training in pollution recognition and the use of a watershed specific “StreamKeepers Guide,” which provides guidance for residents who wish to report pollution incidents. Staff thereafter provide ongoing assistance and support for pollution prevention and reporting efforts by residents in the watershed.

This program also provides continuity for volunteers initially involved in the stream inventory or other program elements. Since a biological inventory may only occur for the first year or several years of the project, the StreamKeepers Program can provide the foundation for ongoing involvement in monitoring creek conditions, and establish solid relationships between residents and the government officials charged with ensuring continued compliance with environmental standards.
SCHOOL-BASED ACTIVITIES

In recognition of the importance of educating future generations of residents on the issues surrounding watershed health, active participation by schools is a critical component of any integrated program. CCRS has assisted teachers in developing curricula which provide a meaningful opportunity for teachers to weave watershed issues and awareness into the different elements of daily coursework throughout the elementary school years.

WATERSHED FESTIVAL

People’s interactions with their stream go far beyond the mechanics of stormwater runoff and riparian habitat conservation. An integrated program should acknowledge and showcase the myriad ways streams enhance the community. A watershed festival encouraging all sectors of the community to celebrate their stream can provide a powerful opportunity to inspire long term stewardship activities, as well as to communicate these activities to all participants.

WATERSHED-SPECIFIC BROCHURE

A great challenge of stream stewardship development is effectively communicating to residents the “watershed” concept and the importance of riparian resources to their community. “Generic” watershed awareness and nonpoint source educational materials can provide some of this information, but to enable residents to develop a sense of place within their watershed, as well as to recognize the cultural, historical, and biological resources within it, a far more “watershed specific” approach is often required.

Such a brochure was created for San Francisquito Creek in 1995 by a group of organizations and agencies led by the Peninsula Conservation Center. This beautiful brochure, which includes a map of the watershed and a tremendous amount of very specific information on the history, biology and pollution problems of San Francisquito Creek, serves as an excellent template for future efforts.

RIPARIAN OUTREACH

Direct contact with property owners and residents can provide tremendous educational benefits as well as establish an important link between the watershed-level stewardship efforts and the individuals who often have the most direct affect on the stream itself. Knowledgeable staff members can contact streamside residents and property owners directly through door-to-door contact, presentations to homeowners associations and other means. These direct contacts can prove far more effective than mass mailings or other outreach programs in terms of engaging the community in active stream stewardship efforts.
Table 1. The Program Elements

<table>
<thead>
<tr>
<th>Element: Stream Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong> Documentation of physical, chemical and/or biological conditions within watershed.</td>
</tr>
<tr>
<td><strong>Benefits:</strong></td>
</tr>
<tr>
<td>• Powerful stewardship activity which allows participants to directly experience complexities of watershed management;</td>
</tr>
<tr>
<td>• Results in recognition of impacts human activities can have on resource;</td>
</tr>
<tr>
<td>• Attracts the participation of local agency staff members, scientists, professors, upper division students;</td>
</tr>
<tr>
<td>• Provides valuable baseline information regarding current conditions within the watershed.</td>
</tr>
<tr>
<td><strong>Keys to Success:</strong></td>
</tr>
<tr>
<td>• Study design and quality assurance plans must be developed to standards of potential data-users;</td>
</tr>
<tr>
<td>• Careful coordination of volunteer teams required to ensure safe, effective data collection;</td>
</tr>
<tr>
<td>• Resources must be allocated to permit timely reporting of study results to participants and other interested citizens upon completion of project.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element: StreamKeepers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose:</strong> Identification of areas experiencing dumping and other pollution impacts, notification of proper authorities, remediation of problems.</td>
</tr>
<tr>
<td><strong>Benefits:</strong></td>
</tr>
<tr>
<td>• Effective educational activity for adults or children;</td>
</tr>
<tr>
<td>• Provides ongoing information regarding pollution incidents and impacts;</td>
</tr>
<tr>
<td>• Provides framework for constructive relationships between agency staff members and residents;</td>
</tr>
<tr>
<td>• Attracts the participation of streamside residents and citizens who already spend time along the creek;</td>
</tr>
<tr>
<td>• Supports and encourages long term watershed stewardship activities;</td>
</tr>
<tr>
<td>• Allows residents to be “part of the solution.”</td>
</tr>
<tr>
<td><strong>Keys to Success:</strong></td>
</tr>
<tr>
<td>• Framework for effectively reporting pollution incidents to responsible agency must be in place;</td>
</tr>
<tr>
<td>• A coordinator or liaison between agencies and public supports effective communication;</td>
</tr>
<tr>
<td>• Additional human resources may need to be allocated to handle increased volume of pollution reports;</td>
</tr>
<tr>
<td>• Remediation of reported problems must be evident to public whenever possible.</td>
</tr>
</tbody>
</table>
**Element: School-Based Activities**

**Purpose:** Education of children, engaging families through children's activities.

**Benefits:**
- Attracts participation of very broad spectrum of community;
- Highly successful way to break language and other barriers within community;
- Provides teachers with guidance and hands-on activities which enhances quality of experience;
- Prepares children and families for future stewardship efforts.

**Keys to Success:**
- Anticipate high demand from local school districts;
- Prioritize geographic areas or grade levels to ensure that adequate resources are available for all interested schools/teachers;
- Consider matching funds from many educational support programs;
- Be prepared to provide multi-lingual support where appropriate.

**Element: Watershed Festival**

**Purpose:** Celebration of the value of streams and riparian habitat to the community, recognition of all watershed stewardship efforts.

**Benefits:**
- Opportunity to showcase watershed resources, stewardship efforts and community values;
- Opportunity to involve local businesses, service organizations, and general public;
- Provides momentum to other stewardship activities.

**Keys to Success:**
- Event should be carefully crafted and well funded to ensure success. An unsuccessful event can undermine public support for entire program.
- Community “buy-in” is critical to success.

**Element: Watershed-Specific Brochure**

**Purpose:** Provide an opportunity for local residents to visualize their place in the watershed, and to discover the important or unique cultural and biological resources within it.

**Benefits:**
- Opportunity to communicate complex watershed concepts within a familiar, human-scale setting;
- Opportunity to communicate watershed-specific management concerns, public involvement opportunities;
- Attracts participation of those with a “cultural,” rather than an “environmental” interest;
- Provides a tool which supports and encourages long-term stream stewardship activities.

**Keys to Success:**
- Consider including interested residents in development of art and text to ensure relevance to community;
- Be prepared to translate materials as appropriate;
- Tailor development of brochure to the educational needs of other watershed stewardship activities, especially StreamKeepers or School based activities, to increase quality and momentum of integrated effort;
- Consider developing sponsors from among local business and agencies to assist with printing and distribution.

**Element:** Riparian Outreach

**Purpose:** Contact streamside homeowners directly to provide the maximum level of information and assistance in support of beneficial management of streamside properties.

**Benefits:**
- Opportunity to discuss riparian issues, answer questions "on the spot;"
- Opportunity to have greatest influence on property owners' actions, level of understanding of issues, and engagement in stewardship activities.
- Provides "human" connection between resident and efforts of agencies and stewardship project.
- Ensures contact of very high percentage of targeted audience.

**Keys to Success:**
- Contact strategy must consider issues of safety, accessibility and anticipated acceptance level of community;
- Canvassers must be well informed and supported by appropriate educational materials;
- Watershed-specific brochure and other "valuable" handouts can greatly increase interest of residents;
- Activity is labor intensive but cost can be reduced while success is increased if neighborhood residents volunteer to accompany canvassers.

**Element:** Integrated Approach

**Purpose:** Provide a broad spectrum of the population with opportunities to engage in a variety of watershed stewardship activities which are relevant to their interests and concerns and appropriate for their age and abilities, and which are appropriate to the conditions and needs of the riparian resources within the watershed.

**Benefits:**
- Provides a coordinated approach to stewardship activities;
- Clearly demonstrates a commitment to public involvement in watershed issues;
- Can be tailored to meet the scientific and cultural needs of the resource and the community;
- Provides a framework for long-term support of watershed monitoring and stewardship efforts.
**Keys to Success:**

- Long-term public interest and involvement will be best maintained if programs are managed by a community-based partnership such as a local watershed council or riparian station;
- Effective watershed stewardship activities should be considered long-term commitments;
- Coordination of integrated community programs can require substantial human and financial resources.
THE APPROACH

Developing a stable framework for the coordination of all activities is critical to the success of the program. Many of these program elements need to proceed simultaneously or nearly so, and may even overlap on some tasks. Without close coordination and effective planning, program personnel can easily become overwhelmed. Public perception of the program will be affected by the type of framework selected; a stronger sense of community “ownership” of the stewardship activities can be achieved if coordination is provided by local, community-based organization such as a watershed council or riparian station. For communities which have not already formed such a group, guidance is available through a document called “The Riparian Station How-To Manual” (Rigney, et. al, 1996) available through the State Water Resources Control Board.

The Integrated Community Involvement Program was coordinated by the Coyote Creek Riparian Station, with direct participation from the public agencies involved. This arrangement was very successful; nevertheless, some elements of the program provided logistical challenges, which are discussed in the sections of this report titled “Lessons Learned” and “Recommendations.”

For each of the following program elements, a general guideline of how the components could be implemented is presented first, with the “Saratoga Creek Experience” included as an illustration of how CCRS implemented the program within the Saratoga watershed.

COMMUNICATION AND NETWORKING

The timing and logistics of implementation of each of these elements will depend greatly on the human and financial resources of the project, political and cultural conditions within the watershed, and the ultimate goals of the program. Initial contact with community, business and political leaders within the watershed must happen as early in the process as is feasible; these individuals will be a critical link between the project and the community. Communication and networking must be accomplished before any of the elements are implemented, in order to avoid the perception of a strictly “top down” approach, which can severely reduce community acceptance of the project.

THE SARATOGA EXPERIENCE

Each of the programmatic elements described below were incorporated into the Saratoga Creek pilot project:

- Stream Inventory;
- StreamKeepers;
- School-based Activities;
- Watershed Festival;
Watershed-Specific Brochure;
Riparian Outreach.

In order to make all of these elements fit together as smoothly and efficiently as possible, a great deal of personal interaction was necessary on the part of CCRS staff, key watershed residents, and local agency personnel. Planning and status meetings for each program were held on a regular basis and focused on improving the interconnectedness of the individual programs.

Especially important was the good working relationship of CCRS staff with the staff of the Saratoga School District and the willingness of School District staff to make creek issues a major focus of every class level. Also critical were the relationships established within the community's service clubs, which contributed greatly to the success of the watershed festival. Personal contact was also made with each streamside resident in order to acquire access for inventory teams as well as familiarize these important stakeholders with the various elements of the program.

Such local networking proved to be a vital component of the success of the program. It was absolutely essential that these key relationships were firmly established in order to gain the confidence and acceptance of the local watershed constituencies. It was also important that a neutral organization such CCRS was charged with bringing the community together, especially in light of the highly polarized and confrontational nature of the issues surrounding the creek.
STREAM INVENTORY

A biological inventory of riparian resources can be an exceptionally powerful stewardship activity. Citizens who participate in such an effort have an opportunity to discover first-hand how human activities in the watershed affect the health of the stream. Having seen the impacts of dumping, non-native plant invasion, stream bank modification and dry weather flows from outfalls on stream flora and fauna, participants will more closely consider their own activities, and can serve as "ambassadors" for the stream in their neighborhoods.

Such a citizen monitoring effort can also yield valuable baseline information on current conditions within the riparian corridor. Stormdrain outfall and illicit connection mapping, pollution and erosion impact mapping, vegetation surveys, fisheries habitat assessment, bird, invertebrate and amphibian surveys, water chemistry testing and many other activities are well within the abilities of well trained volunteers with professional leadership.

Citizen monitoring can be as qualitative or as quantitative as the needs and resources of the project and the community allow. The following key elements of a citizen-based biological assessment of riparian resources assume that citizen education and involvement and development of high quality biological data are both primary goals of the project.

GETTING STARTED

The initial phase of a stream inventory project includes goal selection, study design (including quality assurance) and development of a public outreach and volunteer recruitment strategy. It is critical to include the community and appropriate resource agencies in these activities, in order to ensure acceptance and support for the program. It is up to the lead organization to provide guidance to ensure the final project plan is scientifically and logistically feasible and meets the needs and the limitations of the resource and the community. Resource and guidance tools are available to assist in this task, including "Volunteer Monitoring Protocols: a reference guide for monitoring California's rivers, streams and watersheds" (Fischer, et al, 1997).

Selecting Goals

Prior to goal selection, program staff must perform the following tasks:

☐ Review current resources in drainage: human (who knows a lot?), data (what's already collected?), priorities (has anyone reviewed resources and set priorities already?);

☐ Contact community (homeowners associations, friends of the creek groups, etc.), listen to their concerns and priorities;

☐ Contact possible data users (agencies, environmental groups, universities) listen to their needs and priorities;

A small team of interested individuals from the community and the potential data us-
ers should work together with program staff to determine goals and objectives. The final goals which are selected must reflect the available budget, expected duration of project, and the abilities of staff and volunteers.

This is the time in the project to recognize and address potential conflicts between scientific and citizen involvement goals and objectives. A common potential conflict arises between the citizen involvement objective of allowing as many people as possible to participate in the program, versus the scientific objective of preserving data quality through small, consistent data collection teams. These potential conflicts can be addressed in the study design. For example, the above problem could be addressed by incorporating multiple activities into the program. Citizen monitoring activities (such as pollution impact mapping) which target small consistent teams, could be paired with other activities (such as creek cleanup teams following the mapping teams) which target many new participants for each event.

**Study Design**

The study design phase must follow goal setting! Resist the temptation to allow the study design to “evolve” throughout the course of the program. In order to maximize the value of the data, as well as to provide a firm foundation for volunteer training and management, a clear, concise study design is critical. Key elements for success include:

- Identifying primary tasks and assigning them to specific personnel for the program, including volunteer coordinator, data manager, trainers, etc. Volunteers respond best to a clear program structure;

- Recruiting technical advisors from the community and the potential data users, as well as other sources such as universities to assist with study design and implementation (these will be your first, and some of your most valuable, volunteers);

- Developing a Quality Assurance/Quality Control plan which considers the requirements of expected data users and the needs and goals of the program;

- Establishing the intended level of analysis of the data and the expected use of the data;

- Developing “success evaluation criteria” for project -- including the expected scope of the final report.

**QA/QC**

Quality assurance refers to a program-wide plan for maintaining consistency, accuracy, and precision in data collection and handling activities. Quality control includes specific activities designed to control and document the introduction of error. QA/QC is a critical component of citizen monitoring activities to ensure consistency across teams and time. The following elements should be considered:
☐ Type and extent of QA/QC must support program goals and study design;
☐ QA/QC plan should be approved by the technical advisors;
☐ Partnerships with consultants, agencies, other non-profits can be an extremely effective means of implementing QA/QC;
☐ QA/QC involves extra effort on behalf of staff and volunteers and must be factored into the program budget.

IMPLEMENTATION

Community Outreach and Volunteer Recruitment

Community outreach efforts should begin early and be maintained throughout the program to ensure the greatest possible community awareness of the program. Volunteer recruitment generally flows easily from the outreach — interested individuals will step forward as volunteers. It is extremely important to have a volunteer management strategy in place early in the project. This must support program goals and study design, including identifying the required age and skill levels of volunteers to meet scientific objectives, as well as minimum and maximum numbers of participants needed to complete the project. The following elements should be incorporated into this strategy:

☐ In order to ensure participation of many different types of volunteers, incorporate several types/levels of data collection in study design to provide opportunity to people of different skill levels and interests. This supports good QA/QC through allowing volunteer managers more opportunities for screening and assigning volunteers appropriately.
☐ Require an appropriate time commitment from prospective volunteers to ensure consistent, well trained presence in field, lab and data entry activities. Ten weeks to six months is a common range.
☐ Provide incentives to stay involved including feedback on quality of work, updates on progress and value of data collection activities, opportunities to learn valuable skills, make connections with staff, technical advisors and other volunteers, and certificates or other concrete forms of appreciation.

Volunteer Training and Management

The level and type of training provided to volunteers must support the program goals and study design. Program staff and technical advisors should provide the training. The following key elements should be incorporated into the training process:

☐ Clear documentation of activities and expectations involved in the volunteer opportunity including a “job description,” data collection protocols and safety procedures;
☐ Organization of volunteers into small teams which specialize in specific

INTEGRATED COMMUNITY INVOLVEMENT PROGRAM
data collection activities;

☐ Training outline approved by technical advisors to ensure consistency across teams and time;

☐ Minimum of three training sessions led by staff, plus ongoing skill building during activities;

☐ Testing and certification of volunteers for highly technical tasks;

☐ Alternative activities (such as creek cleanups) available for those who don’t meet training requirements;

☐ Periodic refresher workshops for long-term projects;

☐ Provision of “mentoring” or periodic training series to train new volunteers -- do not expect new volunteers to “learn on the job” without assistance.

Data Collection

Citizen-based monitoring is most successful when everyone knows exactly what they’re going to do, when, with whom, and for how long. Small teams with consistent leadership and clearly documented methods can collect very high quality information. The following elements will help ensure success:

☐ Data collection strategies, including sampling frequency, timing, extent, and methods must support program goals and study design;

☐ Ensure consistency of data collection through supervision by a designated staff member or highly trained “team leader” present at every data collection event;

☐ Provide every team member with a set of appropriate protocols and training;

☐ Beginning immediately and continuing throughout duration of project, enter, review and assess data to ensure goals are being met. Provide immediate feedback on data collection quality to teams;

☐ Implement QA/QC strategy conscientiously throughout data collection. Note problems!

Data Analysis

There is no end to the types or intensities of data analysis which can be performed on large data sets such as those developed by citizen monitors. Give careful thought to the level of analysis appropriate for the program during the study design phase. Anticipate that data entry, error checking and analysis will be at least as time consuming as the original data collection. The following elements should be incorporated into data analysis activities:

☐ The data analysis strategy, including extent, methods, and reporting, must support program goals and study design;
- Analysis must begin as early into project as possible;
- Contact with potential data users should be maintained to monitor and respond to their changing needs and technical capabilities;
- Resist the temptation to innovate or improve on data collection techniques through the course of the project, unless methods development/adjustment is a program objective.

**Project Assessment**

Project assessment should occur throughout the course of the project, rather than being left until the end. Be sure to include the following elements:

- Project assessment must reflect program goals and stated success evaluation criteria;
- Be sure to document what worked and what didn't;
- Involve volunteers and technical advisors in the evaluation process;
- Budget distribution of the results of this element of the project to other watershed stewardship groups -- let them learn from your mistakes!

**THE SARATOGA CREEK EXPERIENCE**

Stream Inventory activities were already scheduled for Saratoga Creek through the Santa Clara Valley Water District. These activities were further supported through the Integrated Community Involvement Program to provide a more thorough investigation of riparian resources within the watershed.

Three general data collection categories were selected for Saratoga Creek: physical, chemical, and biological. Special teams of volunteers were developed for each of the different types of data collection. These teams included a habitat and pollution mapping team, a water chemistry testing team, two bird censusing teams and two benthic macroinvertebrate teams. Chemical and biological data were collected in the first year, 1996. The mapping team assessed the entire length of the stream within the Saratoga City limits twice in the first year, and is scheduled to assess this area again in 1997 and 1998 to monitor chronic impacts and changes in conditions.

**Physical**

The length of the study area was mapped using GPS (Geographic Positioning Systems), including:

- All stormdrain outfalls, diversions, intakes and illicit connections;
All streambank and streambed modifications, pollution incidents, and evident impacted areas;

Presence and condition of riparian resources including tree communities and targeted non-native invasive plants.

**Chemical**

Water chemistry data was collected at three sites along the stream twice per month for the first year. The data include:

- Dissolved Oxygen
- Temperature
- pH
- Conductivity
- Turbidity

**Biological**

The biological component was intended to provide a watershed level assessment of biological health through monitoring two types of indicator species:

- Bird use of the riparian corridor;
- Benthic macroinvertebrates within riffle habitats.

Bird use was monitored at eleven sites within the study reach. Birds were counted and identified to species for ten minutes at each site once per quarter.

The macroinvertebrate study was a first in the State of California, and involved developing and implementing rapid bioassessment protocols enabling volunteers to collect and assess benthic macroinvertebrates in wadeable urban streams. Samples were collected and processed monthly for one year.

**Value of the Data**

These data significantly increased our knowledge of physical and biological conditions as well as human activities affecting stream quality. Many new outfalls were added to existing maps, illicit residential drains and water intakes were documented, targeted non-native vegetation was mapped, and the development of a baseline of community structures of birds and macroinvertebrates was begun. Each of these achievements will support and enhance future monitoring and restoration design and implementation within the drainage. The benthic macroinvertebrate sampling protocols which were developed provided another tool for future monitoring efforts on urban streams.

In addition, 115 watershed residents were provided with a unique opportunity to explore the stream and discover the connections between human activities and stream health.
STREAMKEEPERS

The StreamKeepers program trains streamside residents and other volunteers to recognize and properly report incidents of runoff pollution and illegal dumping. This program was developed to achieve the following goals:

- Obtain the involvement of citizens, private businesses and public agencies in cooperatively addressing surface water runoff and watershed management issues;
- Educate watershed residents on the linkages between human activities and water quality and the health of a watershed;
- Protect water from contamination at its source;
- Protect and enhance water resources within the watershed;
- Reduce hazards to public safety and property caused by major floods.

StreamKeepers are assigned to specific reaches of the stream, where they:

- Monitor the stream and outfalls for stormwater pollution and dumping incidents;
- Report pollution incidents in a timely manner;
- Change their own behavior as their knowledge and appreciation of the watershed increases;
- Share with neighbors the impacts of stormwater pollution and solid waste dumping and provide alternatives to these behaviors;
- Become a "steward" of their neighborhood natural resources for long-term preservation.

THE SARATOGA CREEK EXPERIENCE

StreamKeepers Training Workshop

A three hour StreamKeepers Training Workshop was held Saturday, Feb. 24th at Saratoga Elementary School. Announcements were sent to all stream-side residents and other residents living within one block of the creek, from Prospect to Springer Avenue, Neighborhood Associations within the City of Saratoga, volunteers participating in the stream inventory program, and other interested citizens. A total of 550 announcements were sent out. In addition, press releases were sent out to the Saratoga Times, the Metro and the San Jose Mercury News. Twelve local residents attended the workshop.

Information provided at the workshop included:

- Background information on water quality of Saratoga and South San Francisco Bay;
An explanation on the results of the Santa Clara Water District's coliform study by a Saratoga City consultant;

Background information on the nonpoint source programs involved in this watershed;

How to recognize and report pollution problems;

How storm water pollution enters creeks and their impact on aquatic ecosystems;

A review of the StreamKeepers' Guide telephone directories;

The overall structure of the StreamKeepers program.

StreamKeepers Materials

Workshop attendees were given materials on the types of problems to look for in creeks and storm drains. In addition, they received information on how and when to make a report. StreamKeepers materials included:

A telephone directory of agencies to whom citizens can report a pollution incident or address a concern about the creek. Agencies included ranged from Saratoga City Public Works, Santa Clara Valley Water District's Environmental Compliance Office, Santa Clara County Department of Environmental Health, to the Regional Water Quality Control Board;

A telephone directory of local recycling business and alternative disposal options;

A map of the creek showing municipal outfall locations and a description of the outfall and area it drains (see Outfall Mapping);

Creek Pollution: Sources and Solutions, a table of information on what common household materials and practices can cause stormwater and creek pollution;

Incident report forms;

An oil dumping fact sheet.

Outfall Mapping, Discharge Pipes, and Water Diversion on Saratoga Creek

Outfall maps are used by StreamKeepers to monitor outfalls for unusual looking discharges. Outfall maps can be generated in one of two ways. Information can be taken from a city's stormdrain map and then placed on a smaller, more easily read, 8½ X 11 map. Alternatively, outfalls can be located and mapped by Stream Inventory volunteers using Geographic Positioning System (GPS) equipment. A combination of the two methods – groundtruthing and updating existing maps provides the most complete information on stormdrain outfalls and residential connections present on the stream.
For the Saratoga project, a survey along the Saratoga City portions of Saratoga Creek generated information regarding locations and descriptions of municipal outfalls, draining hoses, and water diversion pumps. The locations of these devices were noted using a Global Positioning System unit (GPS) and downloaded onto a computerized (GIS) map of Saratoga Creek and adjacent streets.

Water diversion devices and discharge pipes were reported as soon as the survey was completed. Water diversion was reported to either the Santa Clara Valley Water District or the Regional Water Quality Control Board. Discharge pipes were reported to the City of Saratoga, Public Works.

StreamKeepers On-going Communication

Follow-up letters after the workshops were sent to all StreamKeepers and Neighborhood Coordinators. Included was information not covered during the training and other creekside activities. In addition, Saratoga StreamKeepers were added to the twice-annual mailings sent out to all StreamKeepers which is funded by the Santa Clara Valley Urban Runoff Pollution Control Program. Included in the July issue was information on the Regional Water Quality Control Board's new regulations for erosion control, diazinon findings in the South Bay, water safety tips for the Santa Clara County Department of Environmental Health, and information on local wildlife.
SCHOOL-BASED ACTIVITIES

Integration of schools (including students, teachers, administrators and parents) is critical to the success of an integrated community involvement program simply because schools are often the "heart" of the community. Ideally, a successful approach will make the creek itself an integrated part of the everyday educational process. However, this intensive, multi-grade level effort can represent a major commitment of funds and school resources and may require a substantial amount of time to fully implement. For a program with limited funding, or a new program, a more modest approach might be more feasible. Such an approach might include focusing on one or two grade levels, involving schools in creek clean-ups, basic stream monitoring (water temperature, etc.) and development of the watershed festival.

THE SARATOGA CREEK EXPERIENCE

A grant from the State Department of Education to the Saratoga School District provided the resources to implement a full multi-grade level "Saratoga Creek Education Project," providing a strong element of school-based activities to the Integrated Community Involvement Program.

The Saratoga Creek Education project was a 1st through 8th grade curriculum which used Saratoga Creek as an integrating vehicle for art, social studies, language skills, math, technology and science elements. Teachers and students from Argonaut, Foothill and Saratoga elementary schools and the 7th and 8th grades of Saint Andrews School participated in the project. In 1995-96, 904 students studied Saratoga Creek.

CCRS staff guided classroom teachers on field trips where they learned to recognize native riparian vegetation, measure water quality, collect and identify stream invertebrates, and explore basic creek ecology. Teachers then developed curriculum for each grade level appropriate with the school district’s objective of providing broad exposure to the creek, and it’s complex ecosystem through science, art and literature.

Grade Level Curriculum

First Grade: Trees and the Riparian Forest

Students began with the basics of leaf structure and shape, the differences between evergreen and deciduous trees, differences between trees and shrubs. From that basis, the students then learned to identify trees using simple leaf keys. Math skills were integrated into this study by mapping and measuring the distance between specific trees and the creek. Students also learned and sang songs about the relationship between themselves and the trees around them.

Second Grade: Monitoring of Life in the Creeks

At this grade level, students learned the differences between invertebrate and vertebrate organisms. Activities focused on vertebrate species and students learned the differences
between the major groups (Orders). Students learned to identify animals through the use of plaster molds of animal tracks.

**Third Grade: Food Webs**

In order to develop an understanding of local food webs and energy cycles, students raised aquatic invertebrates in aquaria. Teachers developed a list of local fauna, both vertebrate and invertebrate, and students used this list to develop food webs and trophic level diagrams. Scientific illustration of the invertebrates was also incorporated into the lesson plan.

**Fourth Grade: Soil Erosion**

At this grade level students focused on the causes of erosion and how erosion affects creeks. Students learned soil types, how to measure particle size and the importance of this measurement in determining erosion. Students also learned about soil suspension. Activities included surveying local geology, soil and mineral types, and measuring the flow and pH of creek water. Students learned about the scientific method, critical thinking, formulating hypotheses, as well as developed observational skills, made measurements using controls and wrote conclusions.

**Fifth Grade: Water Quality**

Students examined micro-organisms collected in Saratoga Creek and learned to use a microscope. They also raised micro-organisms on culture plates. Students at this grade level monitored conductivity, pH, and temperature of Saratoga Creek over the school year and plotted the results. At the end of the year, the students presented and interpreted their data.

In addition, all students used the Internet to access data being collected on local creeks by the U.S. Geological Survey, NASA-Ames Research Center, and other public agencies.

**Future Plans for the Saratoga Creek School Project**

The Science Coordinator of Saratoga Union School District is continuing the Saratoga Creek Education Project during the 1996-1997 school year. Plans include:

- Expansion of water quality monitoring to include dissolved oxygen, phosphate, and nitrate testing;
- Surveying the creek for non-native plants;
- Exploring community history starting with a photographic record of the creek;
- Posting a World Wide Web page on their activities;
- Developing a social studies curriculum on how Native Americans and early settlers used the creek.
WATERSHED FESTIVAL

A watershed festival has several obvious and some less obvious goals. It should be an opportunity for residents, businesses, schools, and other community groups to come together to celebrate one of their community's most important natural assets - their creek. It is also an important element of the integrative approach because it allows everyone to recognize all the different activities which occur within the watershed and to communicate our discoveries.

Within this integrated model, the festival is the key communication device whereby the participants of all program elements can meet each other and share their discoveries. People value the creek for different reasons and this festival allows these values to be shared. The festival is the most likely element within this model to achieve the active involvement of every sector of the watershed community.

There are several different options for implementing a watershed festival. A watershed festival can be a stand-alone event or can be integrated into an existing or compatible community event, such as a County Fair or Earth Day celebration. It can be held at the beginning of the integrated program to promote community participation, in the middle of the program to provide status reports and to build or maintain momentum, or at the end to celebrate achievements and build the foundation for sustained watershed stewardship efforts. Most importantly, the format of the festival should reflect the interests, needs, and resources of the watershed community.

Great care must be taken to ensure this event is a success (good turn-out, high quality presentations and activities, support and participation of important watershed stakeholders). An unsuccessful event can cause the public embarrassment of supportive community leaders, agency personnel, and program participants, and can undermine public support for watershed stewardship activities in general.

SELECTING GOALS AND OBJECTIVES

In order to insure that the format of the festival is appropriate for the community, a planning team should be assembled which includes watershed residents, business leaders, representatives of schools, and service and community groups. This team will assist in the development and implementation of the festival. This team's involvement will be critically important in the community's acceptance and participation in the event.

Goals and objectives which should be considered:

- Outright, joyous celebration of the creek and its watershed communities;
- Showcase and public recognition of watershed stewardship efforts by individuals and groups;
- Bringing together different sectors of the communities to share their views and values through presentations, discussions, and activities;
- Reporting findings of Stream Inventory, StreamKeepers, or other infor-
mation gathering programs;

- Disseminating the Watershed Brochure and other appropriate educational materials.

IMPLEMENTATION

Once teams have been assembled and the goals have been established, clear deadlines and lines of communication and responsibility should be instituted. The festival should be under the authority of one individual or a very small group of individuals who work well together. The human and financial resources available for this event should be clearly delineated and the number and nature of activities should reflect these resources.

Public events carry with them often onerous issues of safety and liability. Carefully selecting the types of events scheduled for the festival can minimize safety and liability concerns. However, some sponsoring agency or organization will, in all likelihood, need to provide liability insurance coverage.

To the extent that safety and liability issues allow, the planning team should be encouraged to consider creative ways to engage the community and express their appreciation for the creek. Key elements for insuring community participation include:

- Appropriate location within the watershed, preferably next to the creek;
- Active participation by schools;
- Distinctive “symbol,” icon, logo or phrase which the community will identify with the event or perhaps the entire integrated program;
- Effective, comprehensive and timely publicity;
- Comfortable facilities including:
  - Availability of food and water;
  - Adequate restrooms;
  - Shelter from the elements;
  - Access to medical assistance;

Other important festival elements might include:

- Music;
- Dancing;
- Dramatic Performances;
- Readings;
- Storytelling;
- Competitions;
- Multimedia Presentations.

Including performances or demonstrations by school children is an extremely important means for developing continued interest among children in watershed stewardship. It is also an effective way to increase participation by adults (parents and relatives) and provide cultural diversity.

If the festival is intended to be an annual event, plans should be made concerning long-term support. Financial and/or logistical support must be provided, at least in part, by the community through business/organizational sponsorship. “Ownership” of the festival by the community is the only way to insure perpetuation of the event.

SARATOGA CREEK EXPERIENCE

The Saratoga Watershed Festival was held on May 19, 1996 at Wildwood Park along Saratoga Creek in the downtown neighborhood of Saratoga. Over 650 people attended the Festival, which was designed to bring together and educate local businesses, watershed residents and school children about the importance of their creek through the use of educational presentations. In addition, it gave the local community an opportunity to celebrate and appreciate the Saratoga Creek Watershed through music, art, and food.

Throughout the day, community residents participated in presentations, entertainment, and food around the central theme of appreciating, enjoying, and preserving Saratoga Creek. School children presented music and dance; environmental organizations distributed educational materials, and event T-shirts, California native riparian plants, and even trout sandwiches were sold.

**Festival Development**

A cross-section of community-based organizations were enlisted to assist in the development of the Festival so that the Festival reflected the community, not just the coordinating organization. Local business leaders, various Saratoga City department heads, and the Saratoga Union School District participated in designing, coordinating, publicizing and fundraising for the Festival.

- The Saratoga Rotary Club donated funds for the Festival and manpower for setting up and dismantling the Festival;
- Youth Science Institute provided tables for the informational booths;
- Saratoga City, Department of Parks and Recreation, assisted with the permit process for using Wildwood Park and the placement of a mural over the main street in Saratoga;
- The Chamber of Commerce donated funds and the Mayor of Saratoga officially opened the Festival;
The Saratoga Union School District, with support from the Superintendent, provided several key components for the Festival, namely:

- Providing time and material for an Art Docent to coordinate the creation of an art mural with input from several hundred school children. The art mural was composed of three pieces depicting a Saratoga Creek scene painted in the style of Georges Seurat’s pointillist painting, *Sunday in the Park with George*. Each child from three different schools applied one dot on the painting;

- Coordinating the printing and distribution of a T-shirt with a copy of the Saratoga Creek painting on the front;

- Coordinating the school’s musical presentations for the Festival;

- Providing guidance and material for the children’s science presentation during the Festival.

**Publicity**

The large mural was used repeatedly in order to gather publicity and funds for the event. The mural was placed in the lobby of a downtown bank prior to the Festival and the image was copied onto T-shirts sold before, during and after the event.

The Saratoga schoolchildren were engaged in studying the creek during the school year and so the Festival was very much tied into what the schools were doing. This also ensured that high numbers of children and their families would attend the festival.

**Participation by Environmental Organizations**

Other organizations with creek-based interests and activities were invited to staff display tables during the festival. This gave the organizations an opportunity to pass out educational literature or provide activities geared towards educating the public about creeks, protecting wildlife, enhancing the creek corridor, or preventing stormwater pollution. Exhibitors included:

- Santa Clara Valley Water District - Environmental Services
- Santa Clara Valley Water District - Public Information
- Santa Clara Valley Nonpoint Source Pollution Control Program (now called the Urban Runoff Program)
- Santa Clara Valley Audubon Society
- Saratoga Union School District
- California Native Plant Society
- Habitat Restoration Group
Coyote Creek Riparian Station - Community Creek Watch Program
Coyote Creek Riparian Station - StreamKeepers Program
City of Saratoga - Public Work Department
Santa Clara County Parks and Recreation
Youth Science Institute
Sierra Club, Loma Prieta Chapter

**Educational Demonstrations**

Throughout the day, children and their parents participated in hands-on learning activities.

- An art docent from the Saratoga Union School District guided children in creating a new pointillist painting of Saratoga Creek;
- The Science Coordinator set up a magnifying video camera and a small laboratory so that students could view aquatic vertebrates found in Saratoga Creek;
- Since there were no buildings in the park, a tent was erected for slide shows and computer demonstrations. Electricity was readily available at the site, but special arrangements had to be made in order to hook up to the Internet. Talks given inside the tent were given by Coyote Creek Riparian Station staff and included:
  - A slide show on creek plant life, wildlife, and the impacts of stormwater pollution;
  - A demonstration on how Global Positioning Satellite (GPS) and Geographical Informational System (GIS) technology can assist organizations and people in mapping watersheds;
  - A demonstration in using the Internet to access creek and natural resource information.

**Entertainment**

The stage at Wildwood Park was put to use all day, as groups as diverse as the Redwood School Band, the Santa Clara Valley Water District, and a blue-grass fiddle band entertained the festival attendees. Before the entertainment began, the Mayor of Saratoga welcomed residents and invited them to learn more about their watershed. Entertainment included:

- Songs by the 5th grade Choir from Argonaut School;
- Music by the Redwood School Band;
Dance and music from the San Jose Children's Musical Theater;
Greg Burger on his guitar and fiddle;
Les Landin and the Skillet Band;
A puppet show by the Santa Clara Valley Water District.

Food and Refreshments

Food booths were hosted by a variety of groups. Both for-profit booths as well as booths where food and staff time were donated participated. The Saratoga Rotary Club assisted in barbecuing trout sandwiches. Funds generated by this booth were donated to offset the costs of producing the festival.
WATERSHED-SPECIFIC BROCHURE

Development and distribution of watershed specific materials which highlight the unique or important historical, cultural and biological resources within a drainage can provide a powerful tool for engaging watershed residents in stream stewardship activities. The first local example of such materials was provided by the Peninsula Conservation Center and Coyote Creek Riparian Station in the form of a watershed specific brochure entitled “San Francisquito Creek—Our Natural Resource.” This highly successful document has provided a template for combining watershed specific information with basic non-point source and riparian conservation concepts.

Goals

The watershed brochure element of a project will include at least three key goals:

- To provide the communities adjacent to the target stream with a deeper understanding of the value of the cultural, recreational and riparian resources within their watershed;
- To enable residents to understand and visualize their place within the watershed and how their activities affect the stream; and
- To provide a tool which supports and encourages long term, active stream stewardship within the community.

Strategies

There are two basic strategies available for the development of a watershed brochure. The first is to simply hire a professional team to design and produce the materials independent of community input or involvement. The second entails providing watershed residents with an opportunity to be involved in developing the goals, design and content of the brochure. The first strategy is likely to be faster and cheaper – the second strategy will take longer, require more coordination, and will almost certainly result in greater success in meeting the goals listed above.

Key Elements

Regardless of the design strategy selected, the key elements of a Watershed Brochure should reflect the conditions of the stream and the needs and interests of the communities within the watershed. In both the San Francisquito and the Saratoga brochures, the following elements were included:
Title: Such as “San Francisquito Creek-Our Natural Resource;”

Brochure Cover: Original artwork depicting a recognizable landmark or popular location within the watershed;

Map: A detailed watershed map showing the creek, streets, and surrounding landforms in order to assist watershed residents in locating themselves within the drainage and to increase the citizens' understanding of their relationship to the local creeks and ultimately the Bay;

Description: A narrative overview of the stream's course from its origins in the foothills or mountains to its confluences with other streams and San Francisco Bay;

Overlays: Artwork and descriptions depicting important flora and fauna occurring within the watershed to enhance understanding and appreciation of the stream ecosystem;

History: Pertinent historic information for the watershed including historical images;

Riparian Conservation: The importance of riparian habitat and techniques for streamside residents to preserve and enhance their property to maintain a healthy ecosystem;

Stewardship Opportunities: Watershed-specific information enabling residents to get involved in stream stewardship activities and encouraging them to modify their own behavior to protect the stream;

Agency Contacts: Phone numbers to facilitate and encourage the public to call the proper authorities to report problems or find solutions;

Credit Panel: Acknowledgment of all funders, collaborators and volunteers contributing to the project.

**Distribution**

Community needs and resources should be considered in the distribution phase of the project as well. Brochures should be translated into additional languages as appropriate, and provided free of charge to existing distribution points within the neighborhoods. This should include but may not be limited to libraries, schools, homeowners associations, community service organizations, conservation and recreation groups, museums, public agencies and local businesses. Partnerships with local utilities permitting mailing the brochure to watershed residents along with materials such as water bills may also be possible.
THE SARATOGA CREEK EXPERIENCE

For the Saratoga Creek Brochure we selected the strategy of involving the community in brochure development. The staff and volunteers of the Saratoga Historical Museum were particularly helpful.

Public Outreach - Public Service Announcements informing the local residents of the entire Integrated Community Involvement Program for Watersheds were produced to encourage citizen participation, including assistance in development of the watershed brochure. The public was encouraged to provide historical or anecdotal information, art and editorial assistance, and logistical support in order to ensure that the project was consistent with community needs and interests.

Brochure Development - CCRS staff expertise regarding riparian and non-point source issues and participating citizens' local perspective was combined with professional art production to develop an attractive and highly useable reference document. The street alignments on the map are accurate, allowing residents to easily locate themselves within the drainage.

Brochure Distribution - Distribution of 5000 brochures to the widest possible audience within the watershed was targeted for Saratoga Creek. Translation of the brochure into additional languages was considered but rejected based on budget constraints and a small non-English speaking population within the drainage.

The brochure was distributed within the City of Saratoga through a variety of means. Several thousand were provided to the local elementary, middle and high schools, and were sent home with the students. Local businesses assisted in distribution by allowing them to be displayed and made available. The local libraries as well as the Saratoga Historical Museum were also recruited to ensure widespread community access.

Over 500 brochures were personally delivered to streamside homeowners along the entire length of the stream by CCRS staff members through the Riparian Outreach element of this program. Each homeowner was contacted at home through door-to-door efforts. The watershed brochure provided an excellent foundation for discussion with these homeowners regarding nonpoint source issues and opportunities for residents to become involved in stream stewardship activities.

Hand delivery to targeted populations within the watershed such as streamside residents can also be extremely effective, especially if a knowledgeable deliverer can spend a little time explaining the purpose of the brochure and answering residents' questions about the stream.

RIPARIAN OUTREACH

The residents of streamside properties often have the greatest opportunity to preserve or degrade riparian habitat and water quality through the management of their lands. In
order to provide the maximum level of information and assistance to these residents, a Riparian Outreach Program can be implemented in the watershed. Knowledgeable staff members contact streamside residents and property owners directly through door-to-door contact, presentations to homeowners associations and other means. These "Riparian Outreach Specialists" can review the Watershed Brochure with the residents, explain the importance of landscaping with native riparian vegetation, assist them in locating sewer pumpouts for draining pools and spas, and provide other important information regarding appropriate stream care. This activity also builds a human connection between the residents and the watershed level stewardship activities, providing lines of communication for tracking pollution problems affecting the stream and attaining the permission of the property owners for access for stream inventory activities.

THE SARATOGA EXPERIENCE

The riparian outreach program on Saratoga Creek was implemented over a six month period, and included outreach to over 1070 households which bordered directly on the stream in the cities of Saratoga, Santa Clara and San Jose. 775 of these homes were approached directly, with 603 residents opening the door. The 162 families which were not home, as well as 290 apartment dwellers and other residents who had posted their properties as "no soliciting/no trespassing," received a packet of information by mail.

Residents who were contacted were informally surveyed regarding their general attitude towards the creek, whether they had witnessed any pollution problems on the stream, and what their long-term goals for the stream included. Each was then presented with information regarding stream stewardship activities within the watershed, best management practices for their land, and the Watershed Brochure. The Riparian Outreach Specialist was often invited to "inspect" the creek with the resident, answering questions regarding possible problems, and providing information on other sources of assistance such as the appropriate contacts at the local water district and other resource agencies. Residents were also encouraged to sign up as StreamKeepers, and those who agreed were provided with the StreamKeepers Guide designed for this stream.

These activities were very well received by the community. Of the 603 residents contacted in person, only 56 declined to speak with a Riparian Outreach Specialist. 116 signed up to participate in the StreamKeepers and other stream stewardship activities, and virtually every resident contacted accepted the educational materials and Watershed Brochure. The Riparian Outreach Specialists spent an average of 15 minutes with each resident contacted.

SOME LESSONS LEARNED

GENERAL OBSERVATIONS

Despite the high degree of past community "polarity" and political conflict concerning Saratoga Creek, response to this program by participants, creek-side residents, teachers, and students was overwhelmingly supportive, and remained focused on positive activities which

INTEGRATED COMMUNITY INVOLVEMENT PROGRAM
would improve the creek or the community's perception of creek issues.

This program centered on Saratoga Creek from several different perspectives: scientific, educational, and cultural. This multi-objective approach is difficult to implement when relying on a variety of different funding sources and agency timetables, yet it is the key to promoting the creek and its watershed as a unifying theme for the community. This project was fortunate to have three strong funding sources, which provided needed support in a timely fashion. It has been our experience that many agencies define rather narrowly the actions which they choose to support. The integrative nature of a program such as this can become compromised in the absence of funding for key components.

The communities within the Saratoga Creek watershed are more economically advantaged and less ethnically diverse than many other watersheds in the South Bay or San Francisco Bay in general. In some areas, more effort would need to be focused on communicating participation opportunities, including translations of materials such as the Watershed Brochure into languages appropriate to the watershed communities, as well as providing opportunities for non-English speakers to participate in Stream Inventory and StreamKeepers activities.

**STREAM INVENTORY**

Biological monitoring was funded only one year, which did not permit enough data collection of birds for data sets to be large enough to analyze well, and prevented the processing of all the samples collected for benthic macroinvertebrates. The establishment of a solid "baseline" of current biological conditions would require monitoring over a longer period of time.

Many potential volunteers were turned away because data collection teams were full. Future studies should be designed to include phasing in additional monitoring or other activities in the event that large numbers of volunteers are available, in order to maximize the educational benefit of the program.

Funding has not been provided to allow a "final report" to be presented to watershed residents detailing our findings and the success of the project. This is a concern, as relating the results of a project to its participants is an important step in ensuring that they feel their efforts on behalf of a program were valuable. Long term support in the community for these types of projects will not occur if their benefits are not communicated effectively.

**STREAMKEEPERS**

Every creek has a unique set of problems and every community of creekside residents has its own unique set of concerns. Often these problems and concerns are about something other than stormwater pollution problems. Some residents on Saratoga Creek are concerned about coliform levels on the creek, San Francisquito Creek residents were more concerned about homeless issues, and another community was concerned about the impact of heavy trail use on wildlife. It is important to explore what issues the community is grappling with and address these issues during the StreamKeepers training. Occasionally the issues may be so complicated, or politically charged, as with the coliform problem, that it
may be best to bring in an expert to present the information.

The StreamKeepers program should be flexible and prepared to address a wide variety of concerns at workshops and during follow-up discussions with participants. To prepare, the program coordinator must do some detective work by meeting with community leaders and city employees, and by reviewing newspaper articles on past issues.

Sufficient human resources must be allocated to ensure prompt response to reported pollution problems. Follow-up often includes meeting with volunteers at the creek in a moment's notice, substantial documentation of severe pollution incidents, and spending time on the phone with volunteers reviewing their concerns and communicating the outcome of the incident.

SCHOOL-BASED ACTIVITIES

Saratoga Union School District is a small school district with four campuses, 2,000 students and 90 teachers. The Creek Education Project was endorsed and implemented by the Saratoga Superintendent of Schools, Mary Gardner, and was coordinated by the school district's Science Coordinator, Garth Bacon. "Buy-in" from this level of school administration may be difficult to achieve in larger, more diverse and widely dispersed school districts but was, nevertheless, instrumental in gaining acceptance by teachers. Also, many of the schools were in close proximity to Saratoga Creek, making access and safety issues easier to deal with. In other, larger school districts it may be practical to implement a program such as this at a "science magnet" where teacher acceptance of such a program might be easier to obtain.

A prerequisite of any new educational program is allowing time for teachers to conduct in-service training and develop course materials, with the assistance of an environmental professional, who provides vision and the technical and scientific knowledge of riparian ecology. Also, an in-house science teacher or community "mentor" is very important so teachers' questions can be resolved quickly and accurately. Additionally, good coordination between the group or groups developing the inventory and monitoring information and the school district is an absolute necessity. Allowing the teachers to write their own curriculum gives them a feeling of ownership and creativity of the program. In order for classroom activities to benefit by these other watershed programs, some method of regular communication needs to be established between school-based activities and other watershed stewardship activities.

WATERSHED FESTIVAL

The Festival was very successful in drawing positive attention to the creek from people not normally involved in creek issues, including community service organizations, public officials, educators, and community residents. Several strategies were employed to gather widespread support for the event. Representatives from key community organizations and city departments were invited to participate early on in the planning and implementation of the Festival so that the event reflected the community. An attractive logo -- the mural shown on the cover of this report -- was selected early in the process to provide a colorful image associated with the Festival. The schools, which represent the widest cross-section of
the community, participated in almost every aspect of the Festival resulting in a large and diverse body of participants.

Festivals should not be taken on lightly. They are challenging, expensive and time consuming to “pull off.” A detailed budget should be developed, and adequate funds secured early. Such an event should not be viewed as a fundraising activity, as these programs rarely generate funds beyond cost-recovery. Fund development can be difficult, especially in the first year, as local businesses may be reluctant to contribute funds to an unproven program. Once again, participation and support of community leaders is critical for success.

Volunteer participation is extremely important but coordination can also be challenging. In particular, volunteer “chairs” or leaders recruited from important sectors of the community can open many doors, but it is critical that a small number of dedicated and reliable individuals be responsible for ensuring the completion of key tasks.

WATERSHED BROCHURE

The availability of the San Francisquito Creek Brochure model developed by the Peninsula Conservation Center and the assistance of an experienced and dedicated illustrator/designer proved a powerful combination for the smooth development of an appropriate brochure. Community input was provided by the staff of the Saratoga Historical Museum. Having a very small but dedicated brochure development team was efficient and effective; large numbers of people providing input may have slowed the process beyond our ability to meet deadlines.

The value of the San Francisquito Creek brochure as a template for watershed-specific educational materials was tremendous, and should be better acknowledged in future efforts. The Saratoga Brochure, and any other materials developed based on this template, can be considered available for use as a template, without concern for copyrights on the text or the format.

RIPARIAN OUTREACH

The riparian outreach program which was piloted on Saratoga Creek provided us with some very important insights into the ways streamside residents interact with the creek. Most of the residents indicated a strong desire to maintain or enhance habitat value and slope stability on their property, yet most either didn’t know what to do, or in some cases were mistakenly taking damaging actions, due to a critical lack of information. This is particularly interesting given that within the past two years each of these residents had received several mailings of educational materials, including an excellent “Stream Care Guide” published by the Santa Clara Valley Water District.

In addition to being able to take the time to discuss the materials being presented, the Riparian Outreach Specialist was able to directly assist residents in implementing the recommendations presented in the materials. For example, residents had been encouraged for several years to drain swimming pools and spas into the sewer access ports referred to as “Y cleanouts.” One of the more common questions the Specialist fielded was “what is that and where is that?” In most cases it was very easy for the Specialist to assist the pool owner in
locating the drain right on the spot, thereby greatly increasing the likelihood that the resident would in fact use it the next time they drained the pool. It may be that of all the different elements of the program, the Riparian Outreach Project was one of the most effective educational efforts.

RECOMMENDATIONS

Any broad application of an integrated community involvement program should focus on or incorporate the following general goals:

GENERATE INFORMATION

Most watersheds within the Bay Area are poorly understood and their resources are very often inadequately documented. A full implementation of this program will assist resource managers as well as stormwater managers in their initial watershed characterizations. When coupled with professionally administered monitoring and inventory programs, community-based inventory, mapping and monitoring projects extend our “eyes and ears” and add scientific value to educational and outreach activities.

GENERATE ENTHUSIASM

As local residents experience the relationships between the environment, and their actions (both positive and negative), it has been our experience that these people gain a new level of understanding and sustained involvement in support of stormwater programs which protect beneficial uses. The participants of the Saratoga program have become enthusiastic supporters of stream protection and restoration programs and also now better understand the challenges which face public agencies whose duties are to protect these resources.

COMMUNICATE RESULTS

It is vitally important that the community see the results of their activities, either through periodic updates or through focused programs of public presentations. Many of the people who participated in this program and the many other involvement programs CCRS has promoted over the past 15 years have expressed a strong desire to ensure that their efforts “produce results.” At first these results may take the form of data presentations or, as in the case of the Saratoga program, a festival celebrating initial insights. Ultimately, however, they have expressed a strong desire to see changes made within their watershed which reflect the community’s values of resource protection.

THE LONG-TERM

In order for all of the above to happen, all parties should commit to a long-term plan for watershed resource management and the incorporation of this integrated program into such a plan.
ACKNOWLEDGEMENTS

This project would not have been possible without the extraordinary enthusiasm and dedication of the residents of the Saratoga Watershed, as well as the cooperation and support of many local public agencies, corporations, and service organizations. In particular, we would like to acknowledge the efforts of the following program participants and sponsors:

Sponsors:

Bay Area Stormwater Managing Agencies Association
Santa Clara Valley Water District
Saratoga Union School District
State Department of Education
David and Lucile Packard Foundation
Saratoga Education Fund
Hitachi Corporation
Saratoga Springs
Saratoga Rotary Club
Coyote Creek Riparian Station

Participants:

Saratoga Creek Oversight Committee

Craig Breon
Meg Caldwell
Linda Elkind
Marjorie Foote
Micael Lozeau
Kelly Moran
Jeffrey Schwartz
Don Whetstone
Sam Mitchell
Trish Mulvey
Beau Goldie
Mike Heller
Carol Presley
Jill Bernhard
Neil Pelkey
Charles Preuss
Christina Fischer

Benthic Macoinvertebrate Bioassessment Advisory Committee

Steve Fend
Arleen Feng
Morgan Hannaford
Jim Harrington
Douglas Herman
Revital Katznelson
Kate Macneale
Eric McElravy
Craig Miller
Pete Ode
Ron Stecker

Community Volunteers

Steve Acheatel, Stream Inventory
Mark Agan, Stream Inventory, StreamKeepers
Sheila Arthur, Watershed Festival
Barbara Banfield, Stream Inventory
Garth Bacon, StreamKeepers, Watershed Festival, School-based Activities
Jill Bernhard, Stream Inventory
Bill Bilobran, Stream Inventory
Cyndi Brinkhurst, Stream Inventory, Watershed Festival
Ron Bjork, Stream Inventory
Victor Bravo, Watershed Festival
Greg Burger, Watershed Festival
Boni Caldén, School-based Activities
Meg Caldwell, Watershed Festival
Mike Carbeiner, Stream Inventory
June and Pete Cartwright, StreamKeepers
Les Chibana, Watershed Festival
Jill Clay, Stream Inventory
Lisa Cochrum, School-based Activities
Karen Cotter, Watershed Festival
Jayne DiCandio, Watershed Festival, Stream Inventory
Anjuli Deb, Stream Inventory
Jayne DiCandio, Watershed Festival, Stream Inventory
Barbara Dutra, Watershed Festival
Josh Fairbanks, Watershed Festival, Stream Inventory
Steve Fend, Stream Inventory
Arleen Feng, Stream Inventory
Debbie Ford, School-based Activities
Emily Frenzel, School-based Activities
Mary Gardner, Watershed Festival, School-based Activities, StreamKeepers
Joanne Geggett, Watershed Festival, School-based Activities
Chris Gerhold, Stream Inventory
Bill Gianini, Watershed Festival
Shannon Goldshmidt, Stream Inventory
Larry Gonzales, Watershed Festival, Stream Inventory
Amanda Griggs, Stream Inventory
Marcia Guzzetta, Stream Inventory
Bill Halleck, Watershed Festival
Douglas Herman, Stream Inventory
Myla Ilagan, Stream Inventory
Richard Jeffers, Stream Inventory
Dave Johnston, Watershed Festival
Laura Kilgour, Stream Inventory
Diane Kodama, Stream Inventory
Nina Kogut, Stream Inventory
Jenny Krantz, Stream Inventory
Jerry Largent, StreamKeepers
Louis Levy, Stream Inventory
Norman Leung, StreamKeepers
Phil Livengood, StreamKeepers
Sarah Lovgren, Watershed Festival
Barbara Lulu, Watershed Festival
Salley MacElravey, StreamKeepers
Nick Massei, Watershed Festival
Theresa Metz, Stream Inventory
Sam Mitchell, Stream Inventory, StreamKeepers
Bob Moncrieff, Stream Inventory
Christopher Montoya, Stream Inventory
Steve Morris, Stream Inventory, StreamKeepers, Watershed Festival
Shannon Newby, Stream Inventory
Jonathan Olds, Stream Inventory, Watershed Festival
Gary Pastre, Stream Inventory, StreamKeepers, Watershed Festival
Larry Perlin, StreamKeepers
Pam Peterson, Stream Inventory, StreamKeepers, Watershed Festival
William Plomczak, StreamKeepers
Mike Rogers, Stream Inventory
Eleanor Spellman, Watershed Festival
Mark Sutherland, Stream Inventory
Michael Tel, Stream Inventory, Watershed Festival
Joel Tesler, Stream Inventory
Jan Vander Linde, StreamKeepers
Tim Weber, Stream Inventory
Richard Wetzig, Stream Inventory
Jesse Wilson, Stream Inventory

Special thanks to:
City of Saratoga, Public Works
Saratoga Parks and Recreation Commission.
The teachers and students of the Saratoga Union School District
The staff and volunteers of the Saratoga Historical Museum
Sierra Club, Loma Prieta Chapter
Santa Clara Valley Audubon Society
Streamside home owners of Saratoga
International Coffee Roasting Company
Friends of Santa Clara County Creeks
Redwood School Band
Les Landin & the Skillet Band of Saratoga
San Jose Children’s Musical Theatre
Art Docents of Saratoga Union School District

REFERENCES

Literature Cited:


Additional Resources:


*The Mill Valley Watershed Volunteer Stream Survey Manual*, Roques, Dominic,

INTEGRATED COMMUNITY INVOLVEMENT PROGRAM

San Leandro Creek Watershed Awareness Program Implementation Manual, Aquatic Outreach Institute, 1994.


Saratoga StreamKeeper Program Report, Coyote Creek Riparian Station, 1997. Available from Coyote Creek Riparian Station (408) 262-9204.