APPENDIX B

Alternatives and Criteria Examined and Used by Planning Team

Once planning goals were established, the HMPC identified and evaluated viable alternatives to support identified goals. Several decision-making tools were utilized in this process, including FEMA's recommended STAPLE/E set (Sustainable Disaster Recovery, Smart Growth principles) and Others. These tools are detailed below:

CATEGORIES OF MITIGATION MEASURES

PREVENTION: Preventive measures are designed to keep the problem from occurring or getting worse. Their objective is to ensure that future development is not exposed to damage and does not increase damage to other properties.

- o Planning
- o Zoning
- o Open Space Preservation
- o Land Development Regulations
 - Subdivision regulations
 - Building Codes
 - Fire-Wise Construction
 - Floodplain development regulations
 - Geologic Hazard Areas development regulations (for roads too!)
- o Storm Water Management
- o Fuels Management, Fire-Breaks

EMERGENCY SERVICES measures protect people during and after a disaster. A good emergency services program addresses all hazards. Measures include:

- o *Warning* (flooding, tornadoes, winter storms, geologic hazards, fire)
 - NOAA Weather Radio
 - Sirens
 - "Reverse 911" (Emergency Notification System)
- o Emergency Response
 - Evacuation & Sheltering
 - Communications
 - Emergency Planning
 - Activating the EOC (emergency management)
 - Closing streets or bridges (police or public works)
 - Shutting off power to threatened areas (utility company)
 - Holding/releasing children at school (school district)
 - Passing out sand and sandbags (public works)
 - Ordering an evacuation (mayor)
 - Opening emergency shelters (Red Cross)
 - Monitoring water levels (engineering)
 - Security and other protection measures (police)

- Critical Facilities Protection (Buildings or locations vital to the response and recovery effort, such as police/fire stations, hospitals, sewage treatment plants/lift stations, power substations)
 - Buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities and nursing homes
 - Lifeline Utilities Protection
- o Post-Disaster Mitigation
 - Building Inspections
 - ID mitigation opportunities & funding before reconstruction

PROPERTY PROTECTION: Property protection measures are used to modify buildings subject to damage rather than to keep the hazard away. A community may find these to be inexpensive measures because often they are implemented by or cost-shared with property owners. Many of the measures do not affect the appearance or use of a building, which makes them particularly appropriate for historical sites and landmarks.

o Retrofitting/disaster proofing

- Floods
 - Wet/Dry floodproofing (barriers, shields, backflow valves)
 - Relocation/Elevation
 - Acquisition
 - Retrofitting
- High Winds/Tornadoes
 - Safe Rooms
 - Securing roofs and foundations with fasteners and tie-downs
 - Strengthening garage doors and other large openings
- Winter Storms
 - Immediate snow/ice removal from roofs, tree limbs
 - "Living" snow fences
- Geologic Hazards (Landslides, earthquakes, sinkholes)
 - Anchoring, bracing, shear walls
 - Dewatering sites, agricultural practices
 - Catch basins
- Drought
 - Improve water supply (transport/storage/conservation)
 - Remove moisture competitive plants (Tamarisk/Salt Cedar)
 - Water Restrictions/Water Saver Sprinklers/Appliances
 - Grazing on CRP lands (no overgrazing-see Noxious Weeds)
 - Create incentives to consolidate/connect water services
 - Recycled wastewater on golf courses
- Wildfire, Grassfires
 - Replacing building components with fireproof materials
 - Roofing, screening
 - Create "Defensible Space"
 - Installing spark arrestors

- Fuels Modification
- Noxious Weeds/Insects
 - Mowing
 - Spraying
 - Replacement planting
 - Stop overgrazing
 - Introduce natural predators
- o Insurance

NATURAL RESOURCE PROTECTION: Natural resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. In so doing, these activities enable the naturally beneficial functions of floodplains and watersheds to be better realized. These natural and beneficial floodplain functions include the following:

- storage of floodwaters
- absorption of flood energy
- reduction in flood scour
- infiltration that absorbs overland flood flow
- groundwater recharge
- removal/filtering of excess nutrients, pollutants, and sediments from floodwaters
- habitat for flora and fauna
- recreational and aesthetic opportunities

Methods of protecting natural resources include:

- o Wetlands Protection
- o Riparian Area/Habitat Protection/Threatened-Endangered Species
- o Erosion & Sediment Control
- o Best Management Practices

Best management practices ("BMPs") are measures that reduce nonpoint source pollutants that enter the waterways. Nonpoint source pollutants come from non-specific locations. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, and other farm chemicals, animal wastes, oils from street surfaces and industrial areas and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams. BMPs can be implemented during construction and as part of a project's design to permanently address nonpoint source pollutants. There are three general categories of BMPs:

- 1. Avoidance: setting construction projects back from the stream.
- 2. Reduction: Preventing runoff that conveys sediment and other water-borne pollutants, such as planting proper vegetation and conservation tillage.

- 3. Cleanse: Stopping pollutants after they are en route to a stream, such as using grass drainageways that filter the water and retention and detention basins that let pollutants settle to the bottom before they are drained
 - o Dumping Regulations
 - o Set-back regulations/buffers
 - o Fuels Management
 - o Water Use Restrictions
 - o Landscape Management
 - o Weather Modification

STRUCTURAL PROJECTS have traditionally been used by communities to control flows and water surface elevations. Structural projects keep flood waters away from an area. They are usually designed by engineers and managed or maintained by public works staff. These measures are popular with many because they "stop" flooding problems. However, structural projects have several important shortcomings that need to be kept in mind when considering them for flood hazard mitigation:

- They are expensive, sometimes requiring capital bond issues and/or cost sharing with Federal agencies, such as the U.S. Army Corps of Engineers or the Natural Resources Conservation Service.
- They disturb the land and disrupt natural water flows, often destroying habitats.
- They are built to a certain flood protection level that can be exceeded by a larger flood, causing extensive damage.
- They can create a false sense of security when people protected by a structure believe that no flood can ever reach them.
- They require regular maintenance to ensure that they continue to provide their design protection level.

Structural measures include:

- o Detention/Retention structures
- o Erosion and Sediment Control
- o Basins/Low-head Weirs
- o Channel Modifications
- o Culvert resizing/replacement/Maintenance
- o Levees and Floodwalls
- o Anchoring, grading, debris basins (for landslides)
- o Fencing (for snow, sand, wind)
- o Drainage System Maintenance
- o Reservoirs(for flood control, water storage, recreation, agriculture)
- o Diversions
- o Storm Sewers

PUBLIC INFORMATION: A successful hazard mitigation program involves both the public and private sectors. Public information activities advise property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. These activities can motivate people to take protection

- o Hazard Maps and Data
- o *Outreach Projects* (mailings, media, web, speakers bureau, displays)
- o Library Resources
- o Real Estate Disclosure
- o Environmental Education
- o *Technical Assistance* Health & Safety Maintenance (clean-up per hazard)

MITIGATION CRITERIA

Placer County Multi-Hazard Mitigation Planning Project

(For use in selecting and prioritizing Proposed Mitigation Measures)

1. STAPLE

Social: Does the measure treat people fairly? (different groups, different

generations)

Technical: Will it work? (Does it solve the problem? Is it feasible?)

Administrative: Do you have the capacity to implement & manage project?

Political: Who are the stakeholders? Did they get to participate? Is there

public s support? Is political leadership willing to support?

Legal: Does your organization have the authority to implement? Is it

legal? Are there liability implications?

Economic: Is it cost-beneficial? Is there funding? Does it contribute to the

local economy or economic development?

Environmental: Does it comply with Environmental regulations?

2. SUSTAINABLE DISASTER RECOVERY

Quality of Life

Social Equity

Hazard Mitigation

Economic Development

Environmental Protection/Enhancement

Community Participation

3. SMART GROWTH PRINCIPLES

Infill versus Sprawl

Efficient Use of Land Resources

Full Use of Urban Resources

Mixed Uses of Land

Transportation Options

Detailed, Human-Scale Design

4. OTHER

Does measure address area with highest risk?

Does measure protect ...

The largest # of people exposed to risk?

The largest # of buildings?

The largest # of jobs?

The largest tax income?

The largest average annual loss potential?

The area impacted most frequently?

Critical Infrastructure (access, power, water, gas, telecommunications)

Timing of Available funding

Visibility of Project

Community Credibility