|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activity | Population mean (min) | Doer  mean (min)\* | Activity | Population mean (min) | Doer  mean (min)\* |
| Sleeping | 504 | 506 | Child care | 18 | 79 |
| Working | 194 | 424 | Active sports | 16 | 88 |
| Electronic media | 143 | 184 | Outdoor recreation | 11 | 134 |
| Travel | 109 | 118 | Cultural events | 10 | 143 |
| Eating | 89 | 93 | Errands | 8 | 41 |
| Socializing | 56 | 115 | Car repair | 6 | 48 |
| Personal care | 50 | 58 | Hobbies | 5 | 114 |
| Reading/writing | 48 | 104 | Bars/lounges | 4 | 101 |
| Education | 46 | 237 | Animal care | 3 | 33 |
| Cooking | 38 | 73 | Singing/dancing | 3 | 106 |
| House cleaning | 34 | 87 | Other | 2 | 29 |
| Shopping | 25 | 66 | Dry cleaners | 1 | 73 |
| Yard work | 20 | 111 | Services | 1 | 83 |

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Activity | Code | Activity |
| 11 | Agriculture, Forestry, Fishing & Hunting | 53 | Real Estate & Rental & Leasing |
| 21 | Mining | 54 | Professional, Scientific, and Technical Services |
| 22 | Utilities | 55 | Management of Companies and Enterprises |
| 23 | Construction | 56 | Administrative and Support and Waste Management and Remediation Services |
| 31-33 | Manufacturing | 61 | Educational Services |
| 42 | Wholesale Trade | 62 | Health Care and Social Assistance |
| 44-45 | Retail Trade | 71 | Arts, Entertainment, and Recreation |
| 48-49 | Transportation & Warehousing | 72 | Accommodation and Food Services |
| 51 | Information | 81 | Other Services  (except Public Administration) |
| 52 | Finance and Insurance | 92 | Public Administration |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Week 1 | | | | Week 2 and beyond | | | |
| Emer-gency Shelter | Temp-orary Shelter | Temp-orary Housing | Perm-anent Housing | Emer-gency Shelter | Temp-orary Shelter | Temp-orary Housing | Perm-anent Housing |
| Emergency  Shelter | .60 | .40 | .00 | .00 | .50 | .50 | .00 | .00 |
| Temporary  Shelter | .00 | .90 | .10 | .00 | .00 | .90 | .10 | .00 |
| Temporary  Housing | .00 | .00 | .95 | .05 | .00 | .00 | .95 | .05 |
| Permanent  Housing | .03 | .05 | .00 | .92 | .00 | .00 | .00 | 1.00 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Problem Perceived To Be Large | Anglo | Black | Hispanic | Total |
| Dealing with mortgage companies about insurance money | 68 | 49 | 68 | 64\* |
| Dealing with building inspectors | 52 | 38 | 76 | 63\* |
| Living in damaged home | 59 | 63 | 59 | 60 |
| Neighborhood conditions | 55 | 60 | 39 | 47\* |
| Living in temporary quarters | 45 | 61 | 38 | 46\* |
| Dealing with insurance companies | 33 | 26 | 48 | 40\* |
| Dealing with contractors | 38 | 18 | 45 | 37\* |
| Unemployment | 11 | 29 | 30 | 25\* |
| Household finances | 14 | 40 | 20 | 22\* |
| Neighborhood crime | 34 | 23 | 16 | 22\* |
| Transportation | 2 | 28 | 17 | 16\* |
| Job relocation | 7 | 21 | 17 | 15 |
| Dealing with agencies | 11 | 20 | 13 | 15 |
| Behavioral problems with children | 19 | 18 | 10 | 14 |
| Family violence | 17 | 11 | 5 | 9\* |
| Gain of member(s) | 14 | 0 | 4 | 5\* |
| Loss of member(s) | 4 | 0 | 13 | 4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Businesses Change (%) | | Employees Change (%) | | Sales Volume Change (%) | |
| Industry | Florida City | Homestead | Florida City | Homestead | Florida City | Homestead |
| Agriculture | -71 | +4 | -92 | +74 | -93 | +66 |
| Construction | 0 | -20 | +12 | -20 | +12 | -59 |
| Manufacturing | 0 | -12 | -67 | -19 | -59 | -32 |
| Transportation/  communication | -50 | +9 | -100 | +4 | -26 | +51 |
| Wholesale trade | -60 | -4 | -50 | +6 | -84 | +57 |
| Retail trade | -64 | -2 | -84 | +16 | -84 | -5 |
| Finance/  insurance/real estate | -20 | 0 | -59 | -1 | -32 | -32 |
| Business services | -63 | +6 | -94 | -5 | -65 | -14 |
| Professional services | -45 | -3 | -73 | +16 | -69 | +1 |
| Public administration | -50 | +38 | -69 | +7 | n/a\* | n/a\* |

|  |  |
| --- | --- |
| *Disaster Assessment* |  |
| Rapid assessment | Victims’ needs assessments |
| Preliminary damage assessment | “Lessons learned” |
| Site assessment |  |
| *Short Term Recovery* |  |
| Impact area security | Emergency demolition |
| Temporary shelter/housing | Repair permitting |
| Infrastructure restoration | Donations management |
| Debris management | Disaster assistance |
| *Long Term Reconstruction* |  |
| Hazard source control and area protection | Infrastructure resilience |
| Land use practices | Historic preservation |
| Building construction practices | Environmental recovery |
| Public health/mental health recovery | Disaster memorialization |
| Economic development |  |
| *Recovery Management* |  |
| Agency notification and mobilization | Public information |
| Mobilization of recovery facilities and equipment | Recovery legal authority and financing |
| Internal direction and control | Administrative and logistical support |
| External coordination | Documentation |

|  |  |
| --- | --- |
| Damage Assessment | Routine Construction Cost Estimation |
| Rapid Damage Assessment |  |
| Preliminary Damage Assessment |  |
| Site Assessment | Preliminary Cost Estimate |
|  | Detailed Cost Estimate |

*Economic development*. The ROP should provide guidance on the economic development of the disaster stricken areas. The basic strategy for redevelopment should have been planned during the process of envisioning the community recovery strategy. Thus, this is the time at which the strategy is implemented. In communities that are highly dependent on tourism, active promotion is needed to assure prospective visitors that all facilities are back in operation.

*Infrastructure resilience*. One opportunity that is likely to arise during disaster recovery is an opportunity to decrease the physical vulnerability of community infrastructure. In most cases, roads and bridges can be strengthened. Similarly, aboveground lines can be undergrounded to reduce their vulnerability to wind and ice. In some cases, pipelines for water, sewer, and fuel and major transmission lines for electric power and telephone can be rerouted to reduce vulnerability. However, most of these lifelines must pass through high hazard exposure areas at some point. For example, all lifelines must cross seismic faults to serve customers on the other side. All of these lifelines are critical to a community’s disaster resilience, so preimpact planning or postimpact improvisation should provide for rerouting and strengthening infrastructure to decrease its vulnerability to future disasters.

*Historic preservation*. The disaster recovery period is an opportune time to examine the physical vulnerability of undamaged historic structures to determine how to protect them from future disasters (Cliver, 1998). The federal government has funds, as do many states, for the preservation of historic buildings. However, the affected community must initiate the process by recognizing the value of these structures and investing time and money into their preservation (Alfaro, 1998).

*Environmental remediation*. Hazmat spills are an increasing problem during natural disasters and the process of cleaning up oil and chemical spills could take months (Lindell & Perry, 1997b; Showalter & Myers, 1994). In most cases, such work will be performed by specialized contractors hired by state or federal government. However, such efforts should be coordinated with local personnel from the department of public health, land use planning, or fire/hazmat response.

*Disaster memorialization*. Disaster recovery is a critical time in the life of a community. In the case of major loss of life or of major damage to a community’s stock of historic buildings, the sense of loss can be tremendous. Communities frequently derive some collective solace from the establishment of a memorial structure or for the definition of a memorial day to be commemorated annually. These disaster memorials can play an important part in the recovery of a community’s sense of identity and pride. Thus, they should be considered when a community has suffered a traumatic event. They must be planned and developed in a carefully designed, transparent, and participatory process in order to be effective instruments of community healing. In most disasters, the Recovery/Mitigation Committee should seek representation from a wide range of religious and secular groups. In some cases, the 9/11 World Trade Center attack being one of many examples, a committee of victims’ families has exerted substantial influence on the memorialization process.

*Recovery Management*

*Agency notification and mobilization*. Unlike the incident management function performed during emergency response, the recovery management function performed during the disaster recovery does not require special procedures for agency notification and mobilization because agencies will be well aware of the disaster by the time recovery is initiated. The rapid assessment noted earlier might seem like a counterexample, but this task is actually part of the emergency response.

*Mobilization of recovery facilities and equipment*. Recovery management does require the mobilization of recovery facilities for donations management, debris management, and disaster assistance (the DACs). As noted earlier, a community with a large population of displaced victims and a small housing vacancy rate might need to develop one or more mobile home parks to provide enough temporary housing. Rapid mobilization of such facilities requires preimpact screening to identify appropriate sites. Site selection criteria should, of course, include suitable zoning and access to utilities such as water/sewer, fuel and electricity. In addition, planners should also focus on sites that have access to public transportation and close proximity to the types of jobs that will be held by a low income population.

*Internal direction and control*. There is a need for internal direction and control among agencies within the jurisdiction because many aspects of the recovery process require multiagency coordination. Disaster recovery typically involves local government agencies in tasks that are more like their normal duties than is the case for the emergency response. Thus, the ROP’s allocation of recovery functions to agencies will be relatively simple. In addition, disaster recovery does not require an equivalent to the Incident Commander who oversees the emergency response. Instead, different departments will usually be coordinated by the Recovery/Mitigation Committee. Finally, there is less time pressure during the disaster recovery than during the emergency response, so this committee’s meetings can be scheduled for daily or, later, weekly frequency. Nonetheless, decisions about recovery programs must often be made while victims still focused on satisfying basic needs such as food and shelter. Thus, recovery decisions may need to be made before citizens are ready to participate in a planning process (Smith, 2004).

*External coordination*. There is a need for external coordination, especially in presidentially declared disasters, because of the presence of personnel from other jurisdictions and other levels of government. As is the case for internal direction and control, there should be a relatively clear understanding of which agencies will address each disaster response function. In addition, local agencies need to understand what are the restrictions associated with different state, federal, NGO, and CBO programs.

*Public information*. There is also a need for public information, especially to inform disaster victims about recovery policies and procedures. However, there is also a need to inform other citizens about the progress of the recovery. Thus, the ROP should describe the procedure for disseminating public information during disaster recovery. The procedure should describe which agencies will be the source of each type of information, what will be the general content of their messages, and what communication channels they will use. As indicated in Chapter 4, general information about the recovery process and sources of additional information can be distributed through the mass media. Brochures can be targeted at individuals and organizations located in vulnerable zones (before a disaster strikes) or impact areas (after a disaster strikes). Telephone hotlines can be useful for answering questions about the recovery process, and a full time PIO should be on staff at the DAC during short term recovery. Public meetings should be held frequently to involve community residents in the reconstruction planning process.

Research on disaster recovery has reported that some victims believe there is favoritism toward business interests at the expense of households. Similar concerns have arisen in other disasters where historic preservation, neighborhood, and ethnic organizations mobilized public demonstrations, pressured administrators in hearings, and filed lawsuits (Bolin, 1993). These organizations can slow recovery and make it more expensive (Bolin, 1993) unless there is a transparent process as well as clear and consistent answers to questions such as “Who is eligible for assistance?” and “How will land use change in the impact area and how will this affect adjacent areas?”

*Recovery legal authority and financing*. The Recovery/Mitigation Committee needs to obtain legal authority for a wide range of short term recovery actions including a development moratorium, temporary repair permits, demolition regulations, and zoning for temporary housing (Schwab, et al., 1998). They also need to explore the feasibility of an *adequate public facility ordinance* requiring developers to pay for extending infrastructure to locations where it does not already exist, *increased participation in the National Flood Insurance Program*, and revising *annexation procedures* for incorporating additional land. In addition, the Recovery/Mitigation Committee should examine the adequacy of existing zoning tools including *development density controls* that limit the number of lots per acre of developed land, *overlay districts* that add special restrictions to the customary limitations of type (residential, commercial, and industrial) of construction, and *setback requirements* for minimum distances from hazardous terrain or landscape features. In addition to ensuing adequate legal authority, the Recovery/Mitigation Committee must identify financial tools for achieving mitigation objectives. Financing can be obtained by *directing Community Development Block Grant funds* to mitigation activities, *establishing special assessment districts*, and *charging impact fees* for new development— especially when it is in a hazard prone area.

*Administrative and logistical support*. During the recovery period, the pace of operations decreases so the management of specific emergency response and recovery functions does not need to be focused at incident scenes or centralized in the EOC. Thus, the activities performed by the Planning, Logistics, and Administration Sections within the IMS are gradually dispersed back to the jurisdiction’s normal departments listed in Figure 11-2. Nonetheless, special provisions are required to support the additional staff generated by obtaining mutual aid personnel from other jurisdictions and volunteer personnel such as architects and engineers used as building inspectors. Moreover, records accumulated by the Finance Section must be available to provide a justification for expenditures on disaster recovery and hazard mitigation that are reimbursable by state and federal agencies.

*Documentation*. As is the case in the emergency response, documentation is needed during disaster recovery to provide the basis for organizational learning. Maintaining an event log of who took what actions in response to what conditions will provide the Recovery/ Mitigation Committee with the information it needs to produce the “Lessons Learned” document and, later, to revise the ROP. In addition, detailed documentation provides the jurisdiction’s legal counsel with the information that might be needed to defend against any lawsuits.

**Case Study: Disaster Recovery in Wichita Falls**

An F-4 tornado struck Wichita Falls on April 10, 1979 that killed 46 people and injured another 3245 (Bolin, 1982). The tornado also destroyed 2500 homes, seriously damaged 879, and slightly damaged 1659. In addition, it destroyed 1274 apartment units, 85 mobile homes, and 81 businesses. In the aftermath of the storm, nearly one fifth of the city’s population of 100,000 was homeless. Temporary housing began to be delivered after four days, telephone service was restored after nine days, and debris clearance from private lots had begun within two weeks. Although the EOC was deactivated five days after the storm, the emergency declaration was not lifted for a month. By that time, basic services (water, sewer, electric power, fuel, telecommunications, and transportation) were restored. Debris clearance was delayed by the need to obtain permission from property owners who were, understandably, not readily accessible due to relocation elsewhere. Nearly 50% of all homeless families had temporary housing within 45 days after the storm and almost all had temporary housing within 90 days. Most major commercial businesses had resumed operations within 120 days. Housing reconstruction was delayed by Small Business Administration funding problems, some victims’ lack of insurance and inability to qualify for federal aid, and the scarcity of building contractors and building materials. Nearly 90% of the lost housing had been rebuilt by the end of two years, but there were problems in the interim. First, the influx of construction workers increased pressure on the tight housing market. Second, reconstruction in lower socioeconomic neighborhoods was only 30% at 18 months when reconstruction in higher socioeconomic neighborhoods reached 80%. The community faced a number of foreseeable recovery issues for which it was unprepared. First, the city council reversed itself twice on the issue of siting mobile homes on lots where owners were attempting to rebuild. Second, the council imposed rent and price controls, but these only delayed increases that skyrocketed as soon as they were terminated. Third, the city incurred substantial costs for rebuilding infrastructure at a time when its revenues were down because of the losses in the property tax base.