

## CHAPTER 5

### ENVIRONMENTAL CONDITIONS / NATURAL HAZARDS

Within and around Farmington are various natural hazards and environmental conditions which should be taken into consideration in planning new development. The most obvious hazards are discussed below. As other hazards are identified, they should also be included in the development review process.

#### SEISMIC HAZARDS

All of Central Utah is laced with earthquake fault systems. These fault systems are the result of the continental lift which once thrust up the Wasatch Mountains and Rocky Mountains. In terms of geologic time there is a high probability that a major earthquake is imminent. In our own time-frame, however, this event may not happen in our lifetimes or it may happen tomorrow. There is no reliable way to accurately predict such an event.

Earth quake and seismic hazards have been identified in numerous studies and are a significant potential hazard in Farmington. These hazards have been most recently identified in a study done by Davis County. Among the products of this study were a series of maps, titled "Potential Surface-Fault Rupture Sensitive Area Overlay Zone" which identify fault locations and the immediate area that would be affected should a seismic event occur. Even though these maps do not address the secondary effects of seismic events, such as areas susceptible to liquefaction, they do serve as a primary reference in determining where building construction should not occur.

#### Recommendations:

1. Farmington City should require the advice of competent geo-technical advisors when development is proposed in or near potential hazard areas and should identify potential impacts from seismic fault displacement. Additional study should also be done to identify and map areas where, due to soil types and ground water levels, liquefaction may occur.

2. The City's ordinances should be strengthened to require new construction to be designed for mitigation of seismic fault displacement.

3. Provisions of the Building Code relating to seismic safety should be strictly adhered to.

4. Farmington City should require that a detailed soils study be prepared and submitted to the City for all Conditional Use and Subdivision applications. This study should include, among other things, an analysis of soil types and ground water levels, whether or not these conditions make liquefaction probable, the implications of this on the proposed construction, and any mitigating measures that may be necessary.

## FOOTHILL DEVELOPMENT

The foothills along the eastern edge of the City provide both an amenity and a potential environmental hazard. They represent an amenity in that they provide the setting in which Farmington has grown over the years, they provide an area to view and to view from and they provide potential areas for outdoor recreation. The potential hazard lies in the fact that the combination of steep slopes, granular soils, and fragile vegetation cover make them highly susceptible to erosion.

As development has taken place in the foothills more and more has been learned about how environmentally sensitive this area is. In many areas the soils have proven to be very sandy making them highly erodible. In the ravines and canyons moisture may accumulate which can support larger plants with more extensive root systems to help hold the soil, but in the majority of the foothills grasses are the dominant vegetation and only provide a relatively thin root layer to stabilize the soil. Once the vegetative cover is damaged, erosion caused by wind, rain, or melting snow soon begins.

The primary causes of environmental damage are construction, fire, and irresponsible recreational use.

### Recommendations:

1. Mechanized recreation vehicles (i.e. motorcycles, ATVs, four-wheel drives, etc.) should be prohibited from the foothills.

2. As part of a City-wide trail system, designated corridors should be established for hiking and equestrian use only. Signs should be placed at strategic locations to remind users to stay on designated trails.

3. Trail heads should be designed, insofar as possible, to prevent motorized vehicle access to the foothills.

4. The City should establish, in cooperation with the Forest Service, regular patrols along the foothills to enforce use restrictions.

5. An elevation should be established above which building construction will be limited and strictly controlled.

6. The need for fire breaks to protect existing foothill development should be evaluated. In addition, an ongoing program should be established in the Fire Department to equip and train personnel to fight grass fires.

7. The City should encourage programs and volunteer projects to revegetate disturbed areas as soon as possible after the disturbance occurs.

8. The City should work with the Federal Government to obtain control of defined and potential watershed areas.

### FLOOD PLAINS

Due to Farmington's location at the base of the Wasatch Mountains, life and property is occasionally put at risk from flash flooding and mud slides from the creeks and canyons above the City. These risks were most recently experienced during the floods of 1983 which caused hundreds of thousands of dollars in damage resulting from mud slides and flooding. An attempt to minimize and control these hazards has been made with the development, and improvement of debris basins at the mouths of most canyons in the City.

Flood plains and debris flow areas have been identified in Farmington in numerous Federal and local studies. Among these are the Shepard Creek, Farmington Creek, Rudd Creek, Steed Creek, and Davis Creek drainages. These areas are displayed on maps prepared by the Federal Emergency Management Agency (FEMA) which have been officially adopted by Farmington City.

### Recommendations:

1. The City should work closely with FEMA and Davis County Flood Control to accurately identify areas along the major drainages in the City that may be subject to a 100 year flood. These drainages and flood plains should be protected from development.

2. Once these areas are established and identified on revised Flood Insurance Rate Maps (FIRM), these maps should be adopted by the City and used in administering the provisions of Chapter 31 of the Zoning Ordinance which is the City's Flood Damage Prevention Ordinance.

3. The City should continue to develop its Emergency Preparedness Plan by establishing a written plan of action to handle future flooding.

4. Established debris basins should be preserved, and protected from potential encroachment by development.

## THE GREAT SALT LAKE

The Great Salt Lake has, unexpectedly, become a source of hazard to development. In the past it was difficult to forecast of lake levels because there was no outlet for the lake. With the installation several years ago of a pumping system which now provides an artificial "portal" through which high water can be pumped into the west desert once it reaches the portal level, the maximum lake level has become more certain. The projected high water level of the lake, factoring in potential wind tides and maximum wave crest, is 4217.

### Recommendation:

1. No significant development should be permitted below an elevation of 4218. The only uses that should be considered below this elevation are agriculture and open space unless mitigation measures are taken, i.e. dikes, levees, elevating structures above 4218.

## GROUNDWATER

Shallow depths to groundwater have been a consistent problem in many areas of Farmington City. Currently, no reliable information has been compiled which accurately identifies groundwater depths throughout Farmington.

In addition to the implications for development, groundwater also serves as the aquifer from which a significant percentage of the culinary water throughout the County, both for individuals with private wells and for municipalities, is withdrawn. For this reason it is critical that the discharge of potential contaminants into the aquifer is closely regulated in order to protect this critical resource.

### Recommendations:

1. Farmington City should require that a detailed soils study be prepared and submitted to the City for all Conditional Use and Subdivision applications. This study should include, among other things, an analysis of soil types and ground water levels, the implications of these on the proposed construction, and any mitigating measures that may be necessary. Mitigating measures may include eliminating basements, raising building elevations above identified groundwater levels, or installing subsurface drainage systems to convey water away from structures.

2. Regulations should be established and enforced to prevent discharge of

contaminants into the aquifer and to encourage the disposal of such materials at approved sites.

## WETLANDS

Wetlands represent a natural filtering system to remove sediments and pollutants from water as it flows through the wetland or as it percolates into the ground and is returned to the aquifer. Wetlands also serve as flood retention ponds, wildlife habitat, and are often places of great beauty where nature can be enjoyed in an area rich with life.

In Farmington, wetlands exist where the various drainages from the mountains reach the valley floor and become meandering streams. In some cases, the natural courses of these streams have been obstructed by the construction of highways and other developments which have restricted their outlets and created greater areas of wetland than may have historically existed. Regardless of how they came to be, areas that are true wetlands do have intrinsic value to the City as natural open space and as recharge areas for the aquifer.

In recent years wetlands have come to the forefront of environmental issues, chiefly due to the increased regulation by the Army Corps of Engineers. The situation has been further aggravated by a Federal definition of "wetland" that has, in some cases, led to the designation of land that, from outward appearances, looks like anything but a wetland.

### Recommendations:

1. Continue to work with the Utah Congressional delegation to establish a realistic definition of "wetland" that includes only those lands which are inundated by water and support wetland vegetation for a significant time period each year.

2. Recognizing that State and Federal agencies have adopted regulations pertaining to development in wetlands, the City should continue to cooperate by directing developers to these agencies where it appears that the presence of wetlands may be an issue.

3. The City should explore the possibility of acquiring development rights, or land outright, to preserve prime wetlands as permanent open space.

4. In the area between Highway 89 and Interstate 15, north of Burke Lane, there appear to be significant areas of wetlands. Since the construction of I-15 and the Burke Lane interchange appear to have created these wetlands, UDOT should be encouraged to purchase this land. The City should then explore, with the properties owners and UDOT, alternatives for the use of this land which will preserve the environmental integrity of the area. Such uses may include a regional storm water detention pond, a recreation area with

an emphasis on environmental education or a park.

5. Consider utilizing other wetland areas as segments of a trail system for the City designed to link existing and proposed parks.

6. Where feasible, coordinate with the Corps of Engineers and landowners to reclaim usable land in one area by consolidating wetlands in another area.

7. In the area north of Clark Lane and between the D&RGW tracks and I-15, but south of Spring Creek in the vicinity of the new Burke/I-15 interchange off ramp, the City should encourage consolidation of wetlands where possible. This may allow higher density commercial and/or residential development. The existing stream corridors in this area should be preserved to provide water to these wetlands and as natural landscaping features in future development. Any existing residents within the parcel should be buffered from the higher density development with sufficient open space and landscaping.