

DRAFT
NFIP CRS/CAV Evaluation Report
City of Sparks

PREPARED FOR:



PREPARED BY:



October 2012

EXECUTIVE SUMMARY

The purpose of this report is to provide a summary of the results of Phase I, Evaluation of the City's Existing Floodplain Management Program, which includes the following tasks:

1. Evaluate the City's existing floodplain management program to identify whether the minimum requirements to receive incentives under the Community Rating System (CRS) Program are met.
2. Review and provide recommendations to address the seven (7) non-compliant structures identified during the 2009 Community Assistance Visit (CAV).
3. Review the Washoe County's Multi-Hazard Mitigation Plan (MHMP) with respect to hazard mitigation funding eligibility for projects within the City, and provide recommendations to update the MHMP, develop an individual MHMP for the City, or neither (i.e., no revisions required).

CRS Evaluation Results and Recommendations – Based on our review of the City's existing floodplain management program, the City is close to meeting the prerequisites to become a member of the CRS. To meet the prerequisites, the City needs to finish resolving the problems associated with the noncompliant structures identified during the CAV. From the analysis, it was determined that the City would likely qualify as a Class 8 CRS community. This would offer an insurance premium reduction of 10% for insured properties within Special Flood Hazard Areas. During Phase II of this work, thorough analysis and calculations will be conducted to determine a detailed accounting of the total number of points in which the City qualifies. Based on these calculations, it may be possible that the City qualifies for enough points to meet the Class 7 requirements.

CAV Evaluation Results and Recommendations – A detailed analysis of existing site conditions was conducted to evaluate the most practical solutions to mitigate the seven (7) non-compliant structures identified during the most recent CAV. Due to the high cost of implementation, budgetary constraints, and the planned TRFMA Flood Project, it was determined that significant structural flood proofing alternatives are not **practical** or cost-effective solutions for the City.

The primary areas that need to be addressed, since structural flood proofing is not a practical option, were identified during the site visits, and include:

- Electrical outlets in most office spaces are below the BFE;
- A large amount of machinery and equipment, including HVAC are located below the BFE; and
- Structures were not designed to withstand the hydrostatic pressure forces experienced during a flood.

FEMA's letter dated July 11, 2011 requests that the City explore other methods for retrofitting the buildings that provides protection from more frequent occurring storm events. The existing dike around Larkin Circle already offers some protection against more frequent flooding and should be recognized as part of the overall plan.

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The recommended cost-effective options the City should consider includes the following: (1) preparation of a flood action or emergency response plan for each of the non-compliant structures. The plan would assign specific persons and actions in the event of a flood, such as sand bagging, and/or installing temporary light-weight removable flood walls that have become popular alternatives to traditional sandbagging. There are several types of these flood protection walls; many are showcased at floodplain management trade shows and are used across the country, (2) elevating electrical outlets, (3) elevating machinery and equipment, (4) installation of engineered vents to help equalize the water pressure on walls during a flood, and (5) provide flow-through provisions for flood waters via door or vent openings.

Washoe County MHMP Evaluation Results – The goal of this analysis is to (1) provide the City with a summary of the pre-disaster and post-disaster hazard mitigation funding eligibility for projects within the City, as identified in the Washoe County MHMP, and (2) determine if the County’s MHMP adequately addresses the City’s hazard mitigation concerns and does not restrict the City from seeking FEMA Hazard Mitigation Assistance (HMA) funding. In accordance with 44 CFR Part 201, all applicants for HMA funding must have, or be a part of a FEMA-approved state or local Hazard Mitigation Plan. Projects submitted for consideration for HMA funding must be consistent with the goals and objectives identified in the current, FEMA-approved MHMP.

Based on the hazards identified specific to the City’s planning area and the goals and objectives of the County’s MHMP, reasonable mitigation projects to mitigate impacts associated within each of the listed natural hazards should be eligible for HMA funding. The North Truckee Drain was specifically listed as a potential flood mitigation project in the MHMP.

Based on our extensive review of the County’s MHMP, there does not appear to be a compelling reason for revision of the MHMP based on the hazards, concerns, and potential HMA funding interests of the City. Accordingly, we see no reason to prepare an individual MHMP for the City of Sparks. The City can pursue all sources of HMA funding currently available for any hazard mitigation project.

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1. INTRODUCTION

1.1. BACKGROUND

As a participant of the National Flood Insurance Program (NFIP), the City of Sparks (City) would like to establish a Community Rating System (CRS) Program. The NFIP's CRS is a voluntary program that provides incentives for communities who participate in the NFIP to implement floodplain management activities that exceed the minimum NFIP requirements (FEMA, 2012). The primary incentive is the reduction in flood insurance premium rates for the community, commensurate to the reduced flood risk resulting from the community's actions that meet the three goals of the CRS:

- 1) Reduce and avoid flood damage to insurable property;
- 2) Strengthen and support the insurance aspects of the NFIP; and
- 3) Foster comprehensive floodplain management.

For CRS participating communities, flood insurance annual premium rates are discounted in increments of 5%. A community with a CRS class rating of "1" would receive a 45% premium discount, while a community with a class rating of "9" would receive a 5% discount (Table 1). A community receives a CRS *classification* based upon the total credit for its *activities*. There are 19 creditable activities organized into four categories, which are represented by Series 300 – 600, as follows:

- Series 300 – Public Information
- Series 400 – Mapping and Regulations
- Series 500 – Flood Damage Reduction Activities
- Series 600 – Warning and Response

To qualify for the CRS program, the City must meet the following criteria:

- 1) Be in full compliance with the minimum requirements of the NFIP;
- 2) Maintain FEMA elevation certificates for construction in the floodplain;
- 3) Meet minimum repetitive loss requirements;
- 4) Maintain flood insurance policies on properties owned by the City; and
- 5) Qualify for at least 500 points under the CRS Program.

There are seven post-Flood Insurance Rate Map (FIRM) buildings in the Sparks Industrial Area with lowest floor elevations below the controlling Base Flood Elevation (BFE) in a Special Flood Hazard Area (SFHA). These structures represent a violation of the floodplain management regulations and must be resolved for the City to qualify for the CRS program.

The purpose of this report is to provide the City with:

- 1) A summary of the results of an evaluation of the City's ability to meet the minimum requirements of the CRS Program, including recommendations of floodplain management program improvements to effectuate the City's desired CRS score/classification, based on long-term program and funding commitments.
- 2) A summary of the results of an evaluation of the status of the seven non-compliant structures, including recommendations and direction from FEMA Region IX.

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- 3) A summary of the pre-disaster and post-disaster hazard mitigation funding eligibility for projects within the City, as identified in the Washoe County MHMP. Additionally, determine if the County’s MHMP adequately addresses the City’s hazard mitigation concerns and does not restrict the City from seeking FEMA Hazard Mitigation Assistance (HMA) funding. In accordance with 44 CFR Part 201, all applicants for HMA funding must have, or be a part of a FEMA-approved state or local Hazard Mitigation Plan. Projects submitted for consideration for HMA funding must be consistent with the goals and objectives identified in the current, FEMA-approved MHMP.

2. CRS EVALUATION RESULTS

The CRS Coordinator’s Manual (FEMA 2012) spells out the credits and criteria of the CRS for community activities and programs that go above and beyond the minimum requirements for participation in the NFIP. The City’s existing floodplain management program was evaluated to determine the minimum requirements, existing activities and credits, and recommendations for long term commitments. Listed in Table 1 is a summary of the credit points, classes, and associated insurance premium reductions.

Table 1: CRS Credit Points, Classes, and Premium Reductions

CRS Class	Credit Points	Premium Reduction	
		In SFHA	Outside SFHA
1	4,500+	45%	10%
2	4,000 – 4,499	40%	10%
3	3,500 – 3,999	35%	10%
4	3,000 – 3,499	30%	10%
5	2,500 – 2,999	25%	10%
6	2,000 – 2,499	20%	10%
7	1,500 – 1,999	15%	5%
8	1,000 – 1,499	10%	5%
9	500 – 999	5%	5%
10	0 – 499	0	0

SFHA: Zones A, AE, A1 – A30, V, V1 – V30, AO, and AH
 Outside the SFHA: Zones X, B, C, A99, AR, and D
 Preferred Risk Policies are not eligible for CRS premium discounts because they already have premiums lower than other policies. Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage.
 Minus-rated policies are not eligible for CRS premium discounts.
 Premium discounts are subject to change.

From 2012 NFIP Community Rating System Coordinator’s Manual (Draft) Table 110-1

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2.1. PREREQUISITES

A community must meet the current CRS Coordinator’s Manual’s prerequisites at the time of each verification visit. The initial visit is conducted in response to a community’s request to join the CRS. To meet the prerequisites for a Class 7, Class 8, or Class 9 community, the prerequisites in Table 2 must be met. The total number of points the City qualifies for will determine the Class in which the City qualifies.

Table 2: Prerequisites for a Class 7, 8 or 9 Community

Prerequisite	Class	Requirements Met?	If not met, do the following:
Participation in NFIP for at least one year.	7, 8 or 9	Yes	
Full compliance with minimum NFIP requirements.	7, 8 or 9	No	Clear the non-compliant structures in Sparks Industrial Area with FEMA and obtain letter of compliance from State NFIP Coordinator.
FEMA elevation certificates maintained in SFHA.	7, 8 or 9	Yes	Have certificates ready for review during verification visit.
Repetitive loss properties	7, 8 or 9	Close to Compliance	Series 501-504: (1) Maintain Repetitive Loss Update Worksheet (AW 501) and/or Repetitive Loss Requirements (AW-503). (2) Maintain map, descriptions, and # of buildings. (3) Send floodplain management and NFIP education and outreach materials to repetitive loss areas annually.
Maintain flood insurance policies required on properties owned by the community	7, 8 or 9	Yes	
Have at least 500 CRS credit points	7, 8 or 9	Likely 8 or 7	Points required for each class: Class 9: 500 to 999 Points Class 8: 1,000 to 1,499 Points Class 7: 1,500 to 1,999 Points

Credit points are determined based on the number of creditable points the City qualifies for under each activity adjusted by the community’s activity on floodplain development, the community’s flood insurance premium base, and the County’s growth rate.

To receive a rating better than a Class 8, the minimum number of credit points must be met as well as the prerequisites for that class. To meet the requirements for a Class 7, the City must qualify for at least 1,500 points.

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To meet the requirements for a Class 6 or better, not only must the City qualify for at least 2,000 points, the City must have received and maintain a classification of 5/5 or better (there are stricter requirements for a Class 4 or better) under the Building Code Effectiveness Grading Schedule (BCEGS). Both the BCEGS classifications (residential/personal and commercial) must be a Class 5 or better. The BCEGS program measures a community’s building code adoption and enforcement as they relate to natural hazards mitigation. Information about the program and requesting a determination can be found at www.isomitigation.com/bcegs/0000/bcegs0001.

2.2. SUMMARY OF ACTIVITIES AND POSSIBLE CREDIT POINTS

The average number of points earned by CRS communities as of October 2011 was used to estimate the number of credit points the City could qualify for based on similar activities for each category. The actual number of points will depend on the City’s Impact Adjustment Ratio (IAR) and the number and frequency of outreach activities.

The IAR is determined by either dividing the number of buildings affected by an by the number of buildings in the SFHA or the area of the SFHA the activity impacts. Since many activities are not implemented the same way throughout the floodplain, their credit points are adjusted to reflect how much of the floodplain they cover. Impact adjustments are calculated by multiplying the points for an element by a ratio that represents how much of the flood problem within the community is being addressed by the element. Some elements and activities have an optional minimum value that can be used in place of a calculated IAR. Listed in Table 3 are the activities that use “areas” for their impact adjustments and the optional minimum value that can be used.

Table 3: Summary of Impact Adjustments for Activities

Activity	Optimal Minimum
320 (Map Information Service)	0.10
410 (Floodplain Mapping)	0.10
420 (Open Space Preservation)	None
	0.10
	0.10
430 (Higher Regulatory Standards)	0.10
	0.5/0.1
440 (Flood Data Maintenance)	0.10
450 (Stormwater Management)	0.15
540 (Drainage System Mgmt.)	0.10
	0.10

From 2012 NFIP Community Rating System Coordinator’s Manual (Draft) Table 402-1

2.2.1. PUBLIC INFORMATION ACTIVITIES - SERIES 300

A community will receive credit for those local activities that advise people about flood hazards, flood insurance, and flood protection measures. The activities can be directed toward floodplain residents, property owners, insurance agents, real estate agents, or other segments of the local populace. Activity 310, Elevation Certificates, is mandatory for CRS classification.

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The IAR for Series 300 activities is determined by dividing the number of buildings affected by an element by the number of buildings in the SFHA.

Table 4: Potential points earned for Public Information Activities – Series 300

Activity	Description	Qualifies?	Points
310: Elevation Certificates/Flood-proofing Certificates	Maintain completed FEMA Elevation Certificates on all buildings in SFHA after date of application into CRS	Likely	46
320: Map Information Services	Provide basic FIRM information, if requested. Provide additional FIRM information regarding floodways. Provide flood depth data, special-flood related hazards, historical flood information, natural floodplain functions	Yes Yes Likely	63
330: Outreach Projects	Informational Materials (flyers & handouts) - 1 point per topic; General Outreach (articles & presentations) - 2 points per topic; Targeted Outreach (directed to a specific audience) - 6 points each; Outreach, flood response preparations messages, public information program, stakeholder delivery	Likely	63
340: Hazard Disclosure	Relies on real estate agents notifying of SFHA; state & local ordinances requiring disclosure	Likely	14
350: Flood Protection Information	Latest FEMA publications local flooding information in community library (20 points); Website flood protection information (up to 76 points)	Likely	33
Total Possible*			219

* The actual number of credit points achieved under this category will depend on the details of the existing program and the level of disclosure and public outreach that is implemented.

Washoe County’s online map warehouse provides online access to FEMA NFIP data for the City of Sparks (http://wcgisweb.washoecounty.us/website/Map_Warehouse/Run.htm).

Improvements to the City’s existing floodplain management program that could be implemented, depending on City resources, to achieve the possible total of 219 credit points in Table 4 include:

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- Providing pre-existing informational brochures, flyers, and similar documents at a static location on six priority topics. These can be obtained from existing programs provided by FEMA, the State, the Truckee River Flood Management Authority, the County, and other agencies. The six priority topics are: know your flood hazard, insure your property, protect people, protect your property, and protect natural floodplain functions.
- Information posted on the City's website, including links to existing programs.
- General outreach projects including posting newspaper articles, signs, and giving presentations designed to resonate with an intended audience. This could include providing a flood preparedness supplement in a regional paper at the beginning of the flood season or having a consultant or City employee give a presentation/workshop about floodplain construction rules at the annual meeting of local homebuilders.
- Target outreach projects could be developed. Examples include having the Mayor send a letter to all residents in the floodplain. A presentation can be given at a neighborhood meeting attended by all repetitive loss residents.
- Provide existing informational resources that are available at the public library (examples provided in Figure above).
- The City could develop a natural disaster preparedness program for public information, education, and outreach.

Publications credited under element LIB (Flood Protection Library)

1. *Above the Flood: Elevating Your Floodprone House*, FEMA-347, 2000
2. *Answers to Questions about the National Flood Insurance Program*, F-084, 2011
3. *Coastal Construction Manual*, FEMA-P-55, 2011
4. *Elevated Residential Structures*, FEMA-54, 1984
5. *Mandatory Purchase of Flood Insurance Guidelines*, F-083, 2007
6. *Protecting Manufactured Homes from Floods and Other Hazards*, FEMA P-85, 2009
7. *Mitigation of Flood and Erosion Damage to Residential Buildings in Coastal Areas*, FEMA-257, 1994
8. *Protecting Building Utilities from Flood Damage*, FEMA-P-348, 1999
9. *Protecting Floodplain Resources*, FEMA-268, 1996
10. *Reducing Damage from Localized Flooding*, FEMA-511, 2005

From 2012 NFIP Community Rating System Coordinator's Manual (Draft) Figure 350-1

2.2.2. MAPPING AND REGULATIONS - SERIES 400

The CRS provides credit to communities that enact and enforce regulations that exceed the NFIP's minimum standards so that more flood protection is provided for new and existing development.

The activities in this series affect only certain portions of the community and, in some cases, only portions of the delineated SFHA. Therefore, the credit points are adjusted to reflect the area affected. These activities are also adjusted to reflect the community's growth rate.

The IAR for some Series 400 activities is determined the fraction of area in the SFHA affected by an element.

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Table 5: Potential points earned for Mapping and Regulations – Series 400

Activity	Description	Qualifies?	Points
410: Floodplain Mapping	Credit is given for regulating areas based on flood data not provided with the community’s FIRM, for a flood study conducted to a higher standard, for new studies, for funding portions of the FIS, using higher study standards, more restrictive floodway standard, mapping for special flood related hazards, and becoming a Cooperating Technical Partner with FEMA.	unlikely	0
420: Open Space Preservation	Open space preservation, deed restrictions, natural function areas, regulations and zoning encouraging minimal floodplain development.	Unlikely	0
430: Higher Regulatory Standards	Adopted regulations that provide more protection to new development, redevelopment, and existing development.	Likely	214
440: Flood Data Maintenance	Additional map data (GIS, CAD, and database management) that improves access and quality of data, maintaining earlier flood map editions, and benchmark maintenance.	Likely	54
450: Stormwater Management	Stormwater management regulations, watershed master plan, erosion and sedimentation control regulations, water quality regulations.	Likely	119
Total Possible*			387

* The actual number of credit points achieved under this category will depend on the details of the existing program and the level of disclosure and public outreach that is implemented.

The City of Sparks “Floodplain Management” code implements the requirements for participation in the NFIP. There are requirements in the code that are more restrictive than the standard with respect to elevation of structures in the floodplain that could qualify for additional points. As part of Phase II, a detailed and thorough evaluation of the City’s existing ordinances, along with point calculations will be performed as part of the CRS Application preparation.

2.2.3. FLOOD DAMAGE REDUCTION ACTIVITIES - SERIES 500

This series of activities focuses on reducing flood damage to existing buildings. Damage reduction measures include acquiring, relocating, or retrofitting existing buildings; maintaining and improving drainage ways and retention basins; and planning for the best ways to implement these and other loss prevention activities.

Sections 501 through 503 and Activity 510 (Floodplain Management Planning) are mandatory for all or some repetitive loss communities. The community must review and update its repetitive loss list and provide updates, if necessary, on the Repetitive Loss Update Worksheets (AW 501).

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If no updates are necessary, only AW 503, the Repetitive Loss Requirements activity worksheet, is necessary.

For a community with more than 10 repetitive loss properties that have not been mitigated, the following is required at each verification visit:

- 1) Prepare a map of the areas;
- 2) Review and describe the repetitive loss problem;
- 3) Prepare a list of addresses of all properties with insurable buildings in those areas,
- 4) Undertake an annual outreach project to those addresses, and
- 5) Prepare a floodplain management plan or area analyses for the repetitive loss area(s).

The IAR for Activities 510, 520, and 530 is determined according to the number of buildings affected.

Table 6: Potential points earned for Flood Damage Reduction Activities – Series 500

Activity	Description	Qualifies?	Points
510: Floodplain Management Planning	Community-wide floodplain management plan, repetitive loss area analysis, and natural floodplain functions.	Likely	123
520: Acquisition & Relocation	Acquisition and relocation of properties from the floodplain.	Unlikely	0
530: Flood Protection	Flood protection techniques and improvements since the community's original FIRM. Dry & wet flood proofing, basement protection, barriers, channel modifications, storm drain improvements, and retention ponds, etc.	Likely	52
540: Drainage System Maintenance	Channel debris removal, problem site maintenance, CIP, stream dumping regulations, and storage basin maintenance.	Likely	214
		Total Possible*	389

* The actual number of credit points achieved under this category will depend on the details of the existing program and the level of disclosure and public outreach that is implemented.

Credit points are likely under Series 510 for the Washoe County Multi-Hazard Mitigation Plan. There may be credit opportunities for Regional Floodplain Management Strategies.

To realize the maximum possible credit points, an evaluation of existing and historical flood protection techniques as well as the City's standard maintenance activities will be conducted as part of Phase II.

2.2.4. WARNING AND RESPONSE - SERIES 600

The CRS program recognizes the importance of effective flood warning and response in a comprehensive floodplain management program, and the importance of coordinating public information, regulatory and flood protection efforts with the efforts of emergency management.

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Elements and requirements of these activities require a positive means of recognizing an imminent threat to the community, an emergency response plan that provides for warning the affected populations, the activation of community emergency response efforts, and providing special assistance for critical facilities. Each of these activities also requires public outreach pertaining to flood warning and response, and an annual exercise of the warning and response plan.

Although there are differences, these activities should be bound together under one emergency response plan. Detailed point calculations will be conducted as part of the CRS Application process under Phase II of this work. Calculations will identify the maximum number of points the City qualifies for from, for example the 2011 City of Sparks Flood Response Action Plan (SFRAP) and the Truckee River Flood Threat Detection Plan (FTDP).

Table 7: Potential points earned for Warning and Response Activities – Series 600

Activity	Description	Qualifies?	Points
610: Flood Warning & Response	Flood threat recognition, emergency warning dissemination, flood response operations, critical facilities planning, StormReady community (http://www.stormready.noaa.gov/communities.htm).	Likely	144
620: Levees	N/A	Not Likely	0
630: Dams	State dam safety program, failure threat recognition system, failure warning, failure response operations, critical facility planning.	Likely	30
		Total Possible*	174

* The actual number of credit points achieved under this category will depend on the details of the existing program and the level of disclosure and public outreach that is implemented.

To receive credit under Series 630, there must be at least one insurable building within the community subject to inundation due to the failure of a high-hazard potential dam. To realize the maximum possible credit points, a detailed evaluation and documentation of City’s existing flood warning and response programs will be conducted during Phase II.

2.2.5. RECOMMENDATION

Based on the evaluation of the City’s existing floodplain management program, the cumulative total estimated points the City would be eligible for is approximately 1,169, which would place the City as a Class 8 community. This would offer an insurance premium reduction of 10% for insured properties within the SFHA. During Phase II of this work, detailed calculations will be conducted to determine the total number of points in which the City qualifies. It is possible that the City qualifies for additional points that meet the Class 7 requirements (Section 2.1).

3. CAV EVALUATION RESULTS

3.1. EXISTING CONDITIONS AND PROTECTION

There are seven post-FIRM buildings, all located in the Sparks Industrial Area, with first floor elevations below the controlling BFE (Table 8 and Figure 1). The structures at 915 Bergin Way and 593 Overmyer Road represent a violation because the City allowed the lowest floor to be

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constructed below the BFE. Documentation at the time showed approval of the lower finished floor at 593 Overmyer Road, subject to a flood proofing plan – no documentation exists to certify flood proofing at this address. Flood proofing to the BFE is allowed, but proper documentation and certification is necessary to attest flood proofing design.

Table 8: List of properties with outstanding compliance issues (Source: Revised CAV Report dated January 29, 2010)

Address	BFE*	FFE*	Feet Below BFE
915 Bergin Way	4397	4393.7	3.3
593 Overmyer Road	4394.9	4393	1.9
Properties Protect by Dike			
2080 East Greg Street	4390.5	4387.8	2.7
2205 Larkin Circle	?	?	1.1
2245 Larkin Circle	?	?	2.8
2272 Larkin Circle	?	?	1.6
2255 Larkin Circle (A)	4389.4	4387.9	1.5
2255 Larkin Circle (B)	4390	4387.4	2.6

*Base Flood Elevations (BFE) and First Floor Elevations (FFE) were not provided for 2205, 2245 and 2272 Larking Circle. Feet below the BFE were provided by FEMA in a response to the City’s revised CAV report Elevations are in NGVD 29.



Figure 1: Aerial view of the seven (7) noncompliant structures identified during the CAV.

The buildings on Larkin Circle and East Greg Street are within an area protected by a dike that runs along the north side of the Truckee River near the confluence with Steamboat Creek (Figure 1). At the time building permits were issued for these structures, between 1984 and 1995, City staff relied upon an April 12, 1985 letter from the City’s Public Works Director stating that all buildings within the subdivision shall be considered flood proofed to the BFE of 4,391 feet.

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However, the Public Works Director's determination was not confirmed through the Letter of Map Revision process, and the 4,391 foot elevation is not adequate to provide the required protection from the 100-year elevation identified on the effective FIRM.

Although the dike is not an accredited levee, it does offer some protection during a flooding event. Two large flooding events have occurred since construction of the dike – the winter storms of 1997 and 2005. The 1997 storm, which was determined to be a 117-year event, flooded the industrial area. However, during the 2005 storm, which was determined to be about a 50-year event on the Truckee River and a 100-year event on Steamboat Creek, the industrial area remained dry (Figure 2).

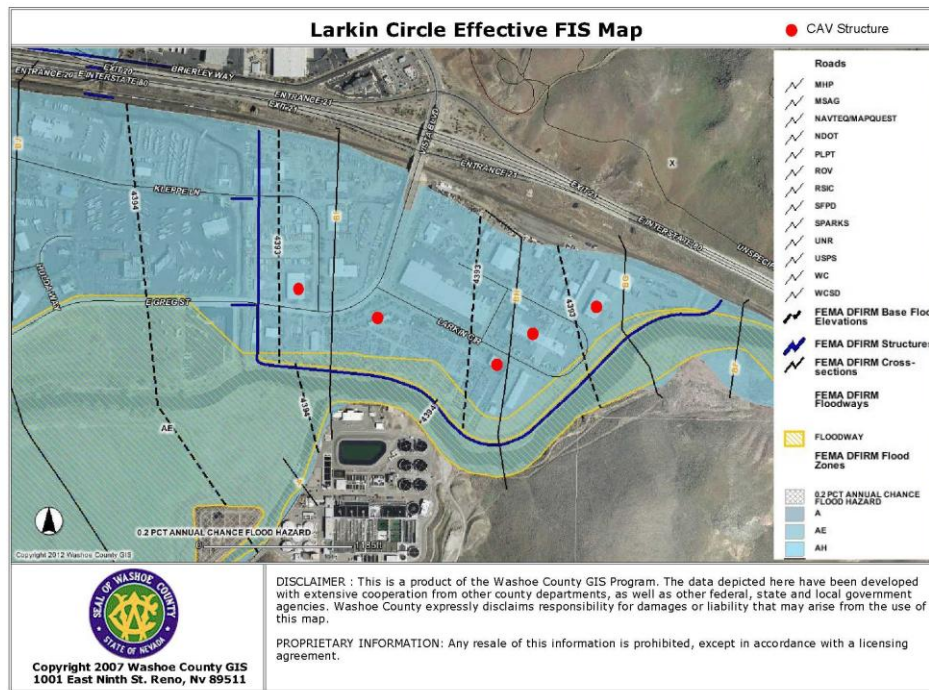


Figure 2: FEMA Effective FIS Map for the Larkin Circle Area. Dark blue line is the existing dike.

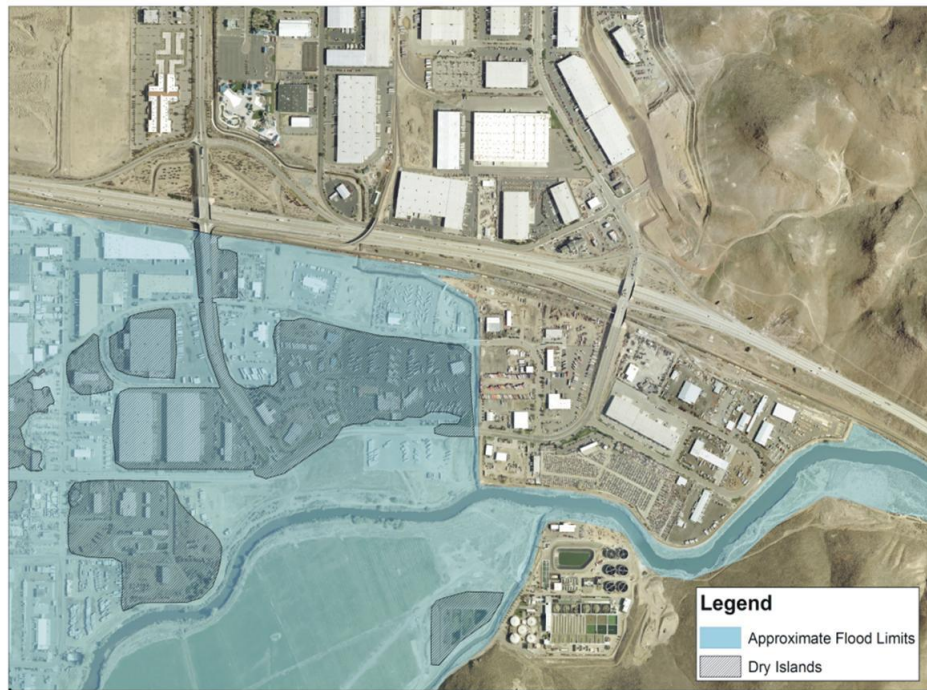


Figure 3: Inundation area for the 2005/2006 New Years Eve Storm.

3.2. PLANNED PROJECTS TO ALLEVIATE FLOODING

The City is one of the primary Sponsors of the Truckee River Flood Management Authority (TRFMA). The TRFMA has a plan to construct a suite of flood mitigation structural measures along the Truckee River that will provide flood protection to the Sparks Industrial Area. This includes relocation and improvements of the North Truckee Drain, which runs through the Sparks Industrial Area, as well as improvements to the levee protecting the Industrial Area from the Truckee River. The City collects a “river flood protection” fee from both commercial and residential sewer customers. The purpose of this fee is to fund the North Truckee Drain realignment as part of the City’s share of the larger regional project under the TRFMA. TRFMA project elements that will reduce flooding impacts in the Sparks Industrial Area include:

- **Levees and floodwalls to protect from external flooding from the 100-year event:**
 - Construction of a levee and flood wall along the north side of the Truckee River from McCarren Boulevard to the existing confluence with the North Truckee Drain. Flood walls will be constructed in the narrow areas between existing buildings and the Truckee River.
 - Construction of a levee along the north side of the river from the confluence of the North Truckee Drain, around the Larkin Circle area, and into the railroad embankment near the northeast corner of the Larkin Circle area.
- **Projects to alleviate flooding from interior drainage:**
 - Relocation of the North Truckee Drain outlet from its existing location to intersect with the Truckee River where the north roadway of Larkin Circle would extend into the west side of the river in the Larkin Circle area.

- Construct interior drainage facilities, including pumping stations where needed, on the land side of any levees or flood walls along either side of the river.

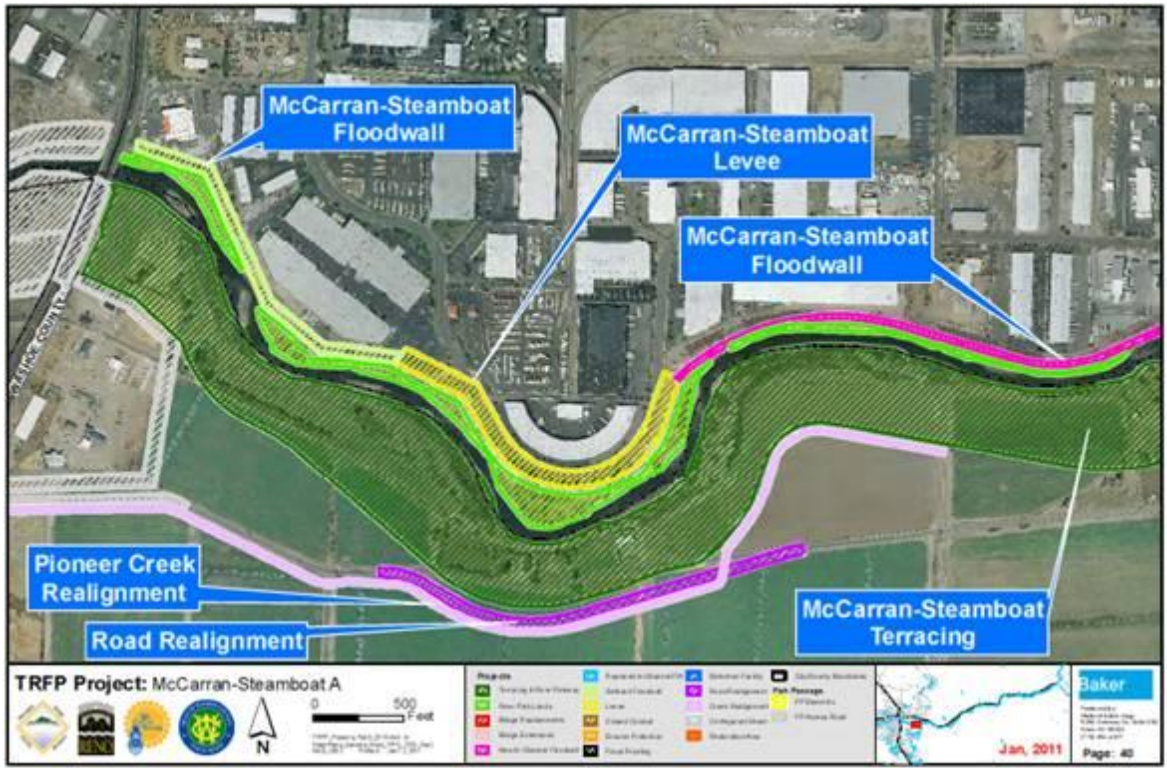


Figure 4: TRFMA Preliminary Project Plans from McCarran to Steamboat A

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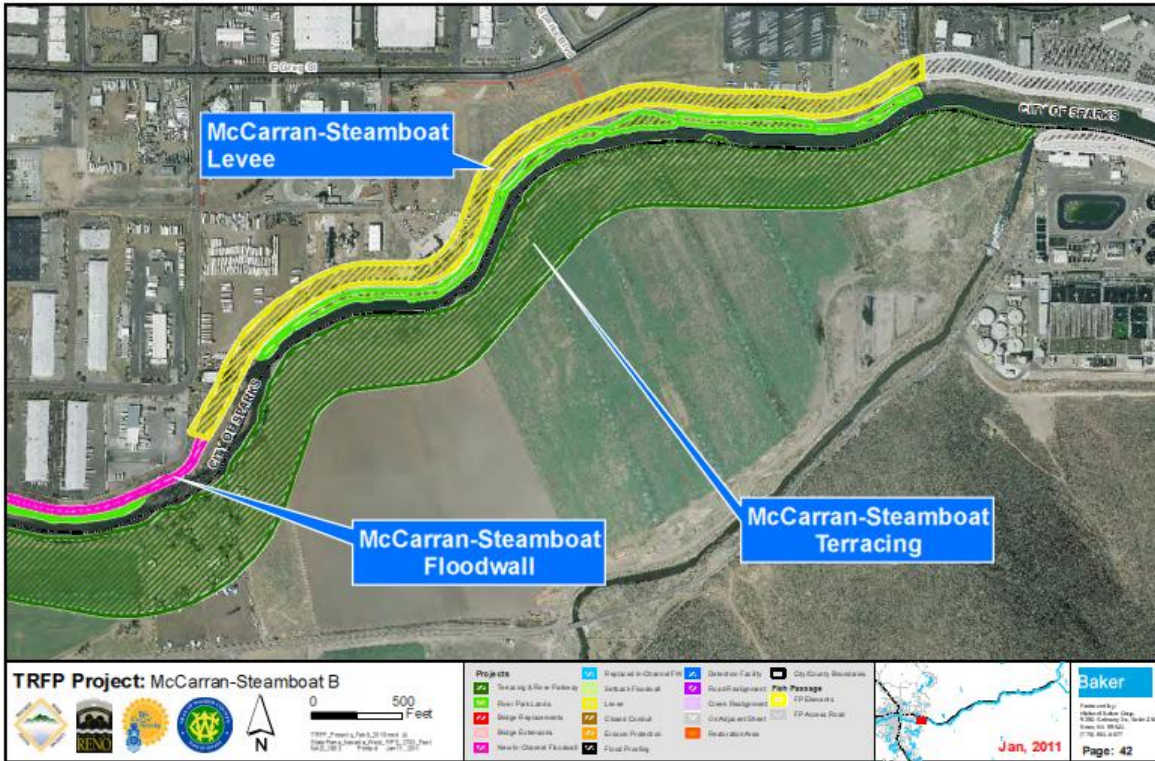


Figure 5: TRFMA Preliminary Project Plans from McCarran to Steamboat B

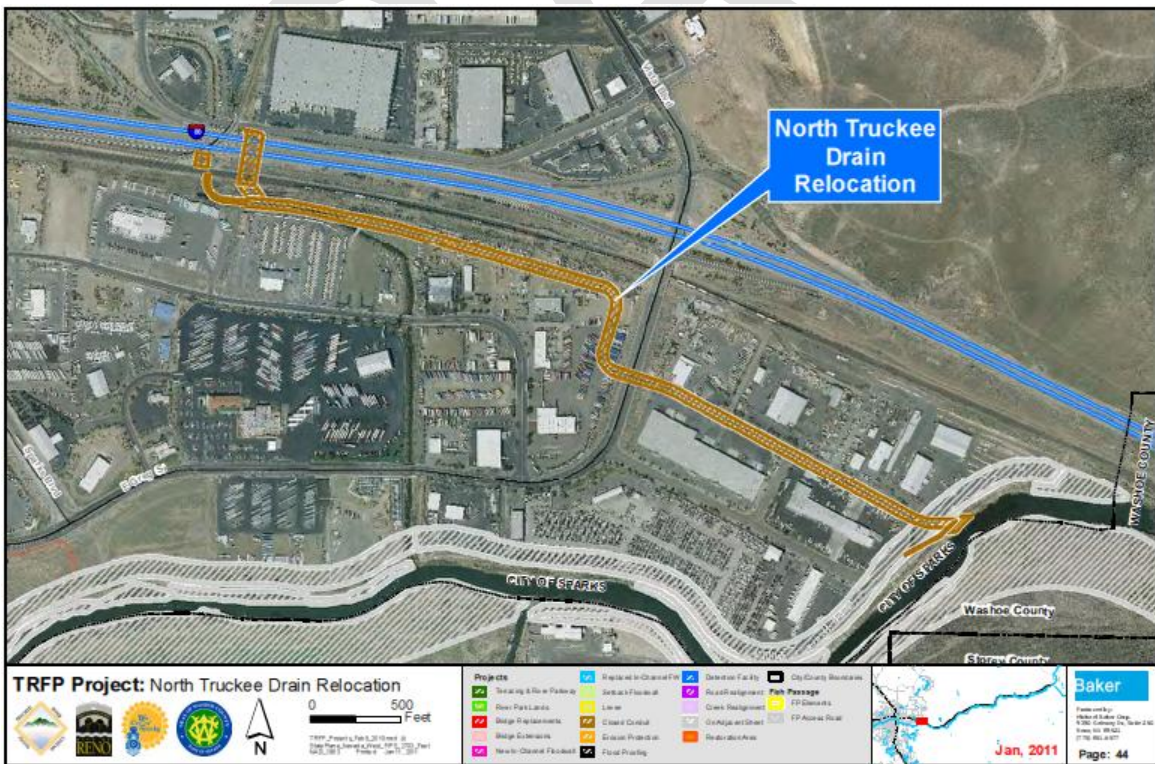


Figure 6: TRFMA Preliminary Project Plans for North Truckee Drain Relocation

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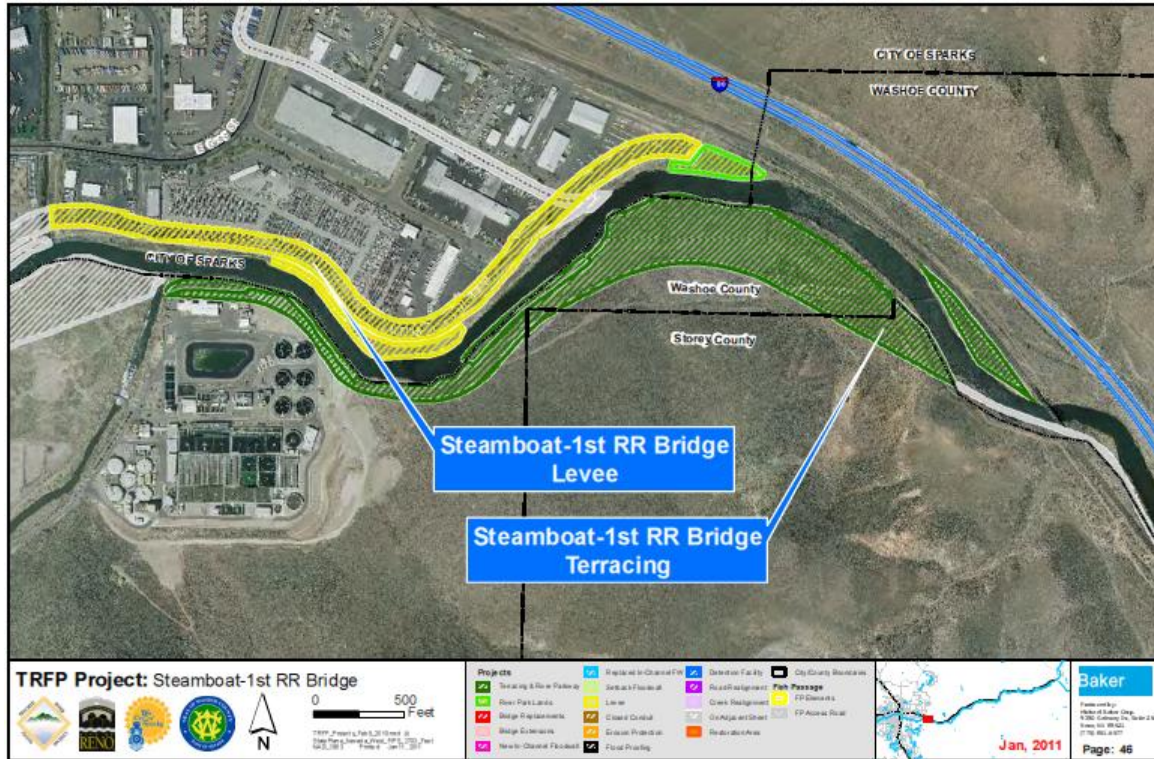


Figure 7: TRFMA Preliminary Project Plans for Steamboat to 1st Railroad Bridge

3.3. EVALUATION OF ALTERNATIVES

Structures at the addresses listed in Table 8 are currently out of compliance with the NFIP. A letter from FEMA dated July 11, 2011 states that all available resources should be used to bring violations into compliance with NFIP regulations to the “maximum extent practical”. Although projects are planned to protect the Industrial Area from flooding, the letter goes on to state that it will be some time before these projects are completed and asks that the City explore methods of retrofitting the buildings that provide protection to the structures from frequent occurring storm events. Since full protection of the buildings until completion of the TRFMA Flood Project is impractical given the cost and conditions under which the developments were permitted, FEMA has asked the City explore more reasonable measures.

An evaluation of each property has been conducted and a summary of the results is provided for each address. On August 6, 2011 Manhard staff met with Michael Hornick at the FEMA Region IX offices to discuss remedial options and alternatives available to the City. A site visit with Mr. Hornick is tentatively scheduled for October 23, 2012.

3.3.1. EXISTING CONDITIONS

A site visit was conducted at each of the properties listed in Table 8 to identify existing conditions in and around each structure. The results are summarized below.

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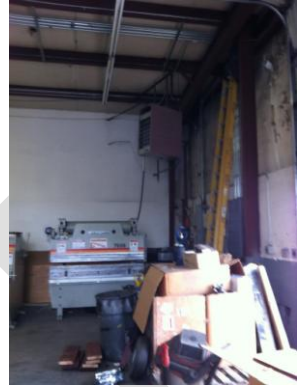
3.3.1.1. 915 Bergin Way (3.3' below BFE)

This location is currently being used as a metal fabricating shop and showroom and muffler shop – Washoe Metal Fabricating and McVay’s Muffler. The 6,900 square foot building is constructed of metal siding and windows on top of 4- to 6-feet of concrete masonry units. Electric boxes and meters, located on the east side of the building, are between 1.5 feet and 4 feet off the ground. There are four (4) 12’x14’ drive-in bays with roll down doors in the warehouse/workshop. In the workshop, electrical outlets are 4’ off the ground and HVAC and wiring are on the ceiling. Fixed equipment in the warehouse/workshop includes three (3) hydraulic lifts, a shear, and a press. In the showroom, electrical outlets vary from 1’ to 2’ off the ground, wiring is located at floor level, and computers/electronics are stationed on shelving approximately 3’ off the ground.

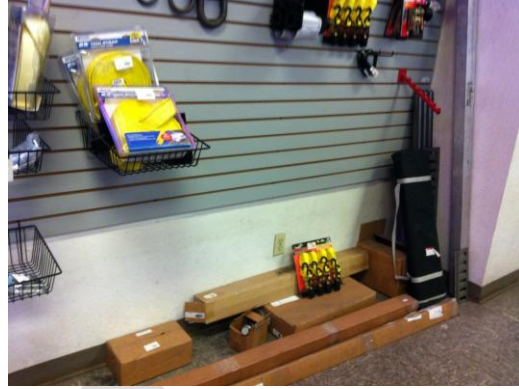
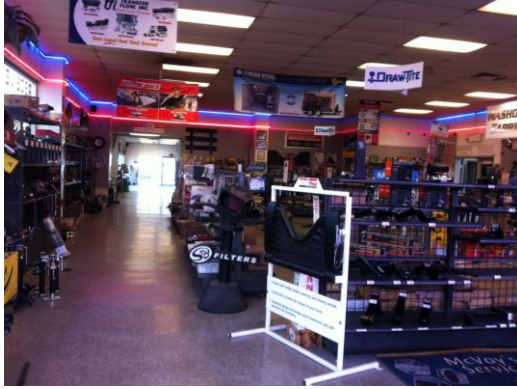
915 Bergin Way



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3.3.1.2. 593 Overmyer Way (1.9' below BFE)

This approximately 12,000 square foot building consists of five (5) spaces for lease. Currently three of the five spaces are leased by RLD Installations, Silverado Trucking, and Truckee Meadows Window Cleaning. The building is constructed of concrete masonry units. Windows on the north, south and west faces start at ground level while the windows on the east face are 1.8' off the ground. There are six (6) 14' wide drive-in bays with roll down doors and five (5) heavy, metal doors on the west side of the building. HVAC units are located outside, at ground level, on the east side of the building. Meters are also on the east side of the building at a height of 1.6' from ground level. In the warehouse areas, outlets are 3'-4' off the ground and heating and ventilation is located on the ceiling. In the offices, outlets are approximately 1.5' from ground level. All computer equipment is either on desks or file cabinets at a height at least 2' from ground level.

593 Overmyer Way



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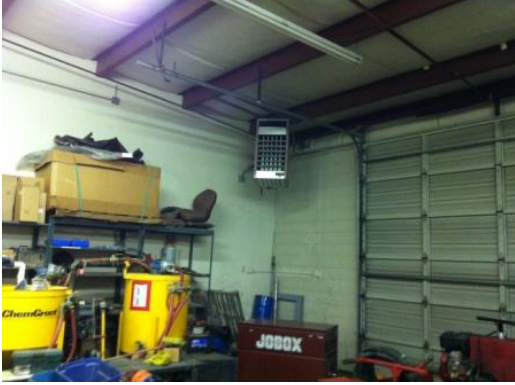


593A Overmyer Way

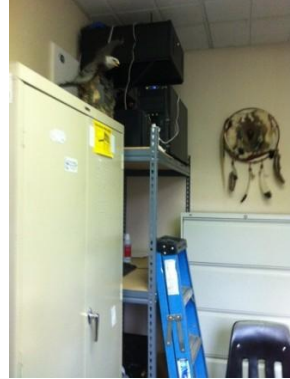


October 2012

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593D Overmyer Way



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593E Overmyer Way



3.3.1.3. 2080 East Greg Street (2.7' below BFE)

This property is currently vacant and for sale. The building is approximately 27,200 square feet with a two-story office/showroom. The construction is metal siding on concrete masonry blocks. There are six (6) 14'x16' grade level doors and three (3) dock doors. Ground level glass windows span the front entrance of the building. Outlets in the warehouse are approximately 4' above ground and ventilation and wiring are ceiling height. In the office, outlets are approximately 2' above the floor. The electrical box and HVAC units are at ground level, located outside, at the front of the building.

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<p>For Sale www.avisonyoung.com</p>	<p>partnership. performance.</p>
<p>2080 Greg Street Sparks, Nevada</p>	 <p>Intelligent Real Estate Solutions</p>



2080 East Greg Street



October 2012

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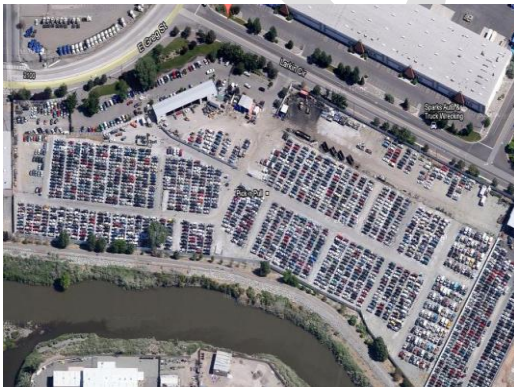
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3.3.1.4. 2205 Larkin Circle (1.1' below BFE)

The business currently operating at this site is a Pick-N-Pull and Reno-Sparks Auto Wrecking. The metal building is 5,250 square feet with two offices at either end. The building has five (5) 25' wide open bays and one storage area with a 16'x16' roll-up door. Electrical outlets in the workshop (open-bay) area are 4' above ground. There are two pits in the workshop area that are 25' wide and 2.5' deep. Electrical outlets in the offices are approximately 1.5' above ground. The ventilation system is at ceiling height. The server is located on the top of a file cabinet. The meter is 1' above ground and the electrical box is, located on the northeastern side of the building is located outside and at ground level, behind a portable toilet. The HVAC system is located outside the main office at ground level.

2205 Larkin Circle



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3.3.1.5. 2245 Larkin Circle (2.8' below BFE)

The business currently operating at this site is Sparks Auto Wrecking. The two-story metal building is approximately 5,600 square feet. There are two (2) roll-up doors approximately 14' in width. HVAC is inside the warehouse with the lowest unit at 4' above ground. There are electrical outlets in both the office and warehouse at about 1.5' above ground level. Computer equipment is stored on desks and tables. There is a drain inlet located in the warehouse lot a few hundred feet south of the building.

2245 Larkin Circle



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3.3.1.6. 2272 Larkin Circle (1.6' below BFE)

The business currently operating at this site is Peterbilt Truck Parts and Equipment. The two-story metal building is approximately 21,000 square feet of office, retail sales, and warehouse spaces. The building was recently remodeled. There are two (2) 14' roll-up doors on the west side of the building, one (1) 18' roll-up door on the east side of the building, and a loading dock on the east side of the building. Ground level glass doors and windows are located on all sides but the rear of the building. Outlets in the office and storefront areas are approximately 1.5' above ground level. Outlets in the warehouse are 3.5' to 4' above ground level. The HVAC system is located, outside at ground level on the east side of the building. The server is located on the second floor.

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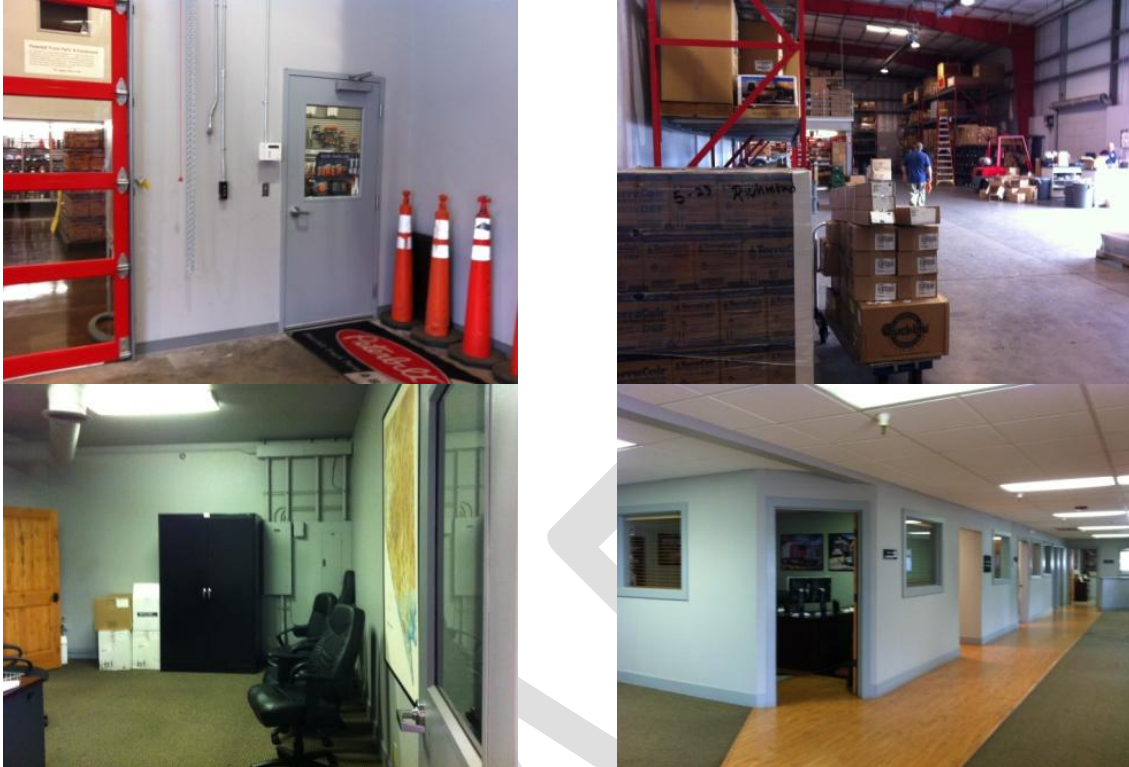
2272 Larkin Circle



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3.3.1.7. 2255 Larkin Circle (1.5' and 2.6' below BFE)

The business currently operating at this site is Silver State International Trucks. The two-story metal building is approximately 47,000 square feet of office, retail sales, and shop spaces. The electrical outlets office and retail space are approximately 1.5' above ground. Windows and doors are floor to ceiling glass. There are fifteen 12' ground-level truck bays along both the north and south sides of the building to allow trucks to drive through. Outlets in the shop space are 3.5' to 4.0' above ground. There is a lot of equipment and tools throughout the mechanic/auto repair space. The ventilation system is at the ceiling level. The HVAC for the offices is at ground level.

2255 Larkin Circle



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3.3.2. PERMANENT AND CONTINGENT FLOOD PROOFING MEASURES

The NFIP allows a new or substantially improved non-residential building in an A Zone to have a lowest floor below the BFE, provided that the building has been designed, constructed, and certified to be flood proofed and to meet established criteria. As discussed above, it is expected that the City use all available resources to bring the violations in compliance to the maximum extent practical. *Maximum extent practical is defined as remedying a violation to the most effective level of flood loss reduction attainable given practical and legal constraints.* Permanent and contingent flood proofing measures were explored for each structure to evaluate the practicality of such measures. The measures explored include:

- Closures and Sealants – This includes sealing up windows to BFE and the installing flood shields for doors. The work required to seal exterior walls depends on the structural design. Walls may need to be reinforced with rebar and the hollow cells filled with concrete to structurally withstand flooding. Concrete floors will likely require reconstruction or modification to withstand hydraulic uplift. Impervious cutoffs, subsurface drainage or a combination of the two could be used instead of reconstructing the concrete slab. Other improvements that need to be considered include installing backflow prevention systems to the existing septic/drain lines and raising any exterior utilities (electrical outlets, miscellaneous conduits, A/C units, exhaust fans, etc.). Cost estimates do not include loss of revenue and relocation costs while work is being completed.
- Watertight Cores – This option is similar to the above option but on a smaller scale; flood proofing the office spaces while allowing the shop/warehouse areas to flood. Other improvements that need to be considered include installing backflow prevention systems

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to the existing septic/drain lines and raising any exterior utilities (electrical outlets, miscellaneous conduits, A/C units, exhaust fans, etc.). Cost estimates do not include loss of revenue and relocation costs while work is being completed.

- Floodwalls and Levees – Construct floodwalls or levees around the building. For each location interior drainage will need to be considered along with parking lot repairs, fence/landscaping relocation, and flood shields at driveway entrances. Cost estimates do not include loss of revenue and relocation costs while work is being completed.
- Structure Elevation – Raise the elevation of the structure above the BFE. Cost estimates do not include loss of revenue and relocation costs while work is being completed.
- Property Buyout – Purchase the properties for conversion to open space. Cost estimates do not include loss of revenue and relocation costs. Estimates are based on current real estate prices for commercial property in the Sparks area.
- Demolish and Rebuild – Demolish and rebuild properties to meet the minimum NFIP requirements. Estimate includes demolition, soil and grading, and construction. Cost estimates do not include loss of revenue and relocation costs while work is being completed.
- Flood Shields – Similar to the closure option, but use flood shields for windows rather than sealing them. Other improvements that need to be considered include installing backflow prevention systems to the existing septic/drain lines and raising any exterior utilities (electrical outlets, miscellaneous conduits, A/C units, exhaust fans, etc.). Cost estimates do not include loss of revenue and relocation costs while work is being completed.
- Watertight Doors – Similar to the closure option, but use watertight doors. The windows could be sealed or protected with flood shields. Other improvements that need to be considered include installing backflow prevention systems to the existing septic/drain lines and raising any exterior utilities (electrical outlets, miscellaneous conduits, A/C units, exhaust fans, etc.). Cost estimates do not include loss of revenue and relocation costs while work is being completed.
- Moveable Floodwalls – Similar to permanent floodwalls although parking, fencing and landscaping less likely to be impacted. Need to consider on-site storage of materials.

Preliminary estimates to implement each of these measures for the sites listed in Table 8 are summarized in Table 9.

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Table 9: Preliminary cost estimates for different flood proofing alternatives.

Method	Estimate of Costs (\$1000) ¹						
	915 Bergin	593 Overmyer	2080 E Greg	2205 Larkin	2245 Larkin	2255 Larkin	2272 Larkin
Closures & sealants	\$173	\$196	\$232	NP ²	NP ²	NP ²	NP ²
Watertight Cores	\$113	NP	\$154	\$82	\$84	NP ³	\$78
Floodwalls	\$390	\$309	\$521	\$966	\$582	\$923	\$837
Levees	NP ⁴	NP ⁴	NP ⁴	\$223	\$193	\$294	NP ⁴
Elevation	NP ⁴	NP ⁴	\$574	\$179	\$208	\$1,476	NP ⁴
Property Buyout	\$724	\$1,050	\$1,750	\$1,122	\$523	\$2,870	\$1,623
Demo & Rebuild	\$979	\$1,314	\$3,178	\$570	\$638	\$5,283	\$2,268
Flood Shields	\$170	\$187	\$236	NP ³	NP ³	\$262	NP ³
Watertight Doors	\$172	\$197	\$244	\$88	\$88	\$268	NP ³
Movable Floodwalls	\$426	\$294	\$525	\$1,036	\$583	\$890	\$624

¹Does not include relocation costs, loss of revenue or installation of backflow prevention systems.

²Closing and sealing a steel framed building is not a practical solution for flood proofing.

³Due to the size and type of structure this is not a practical solution.

⁴Lot size too small for this to be a practical solution.

3.4. RECOMMENDATIONS OF NON-COMPLIANT PROPERTIES

Due to the high cost of implementation, budgetary constraints, and the planned TRFMA flood control projects, many of the options listed in Table 9 are not **practical** or cost-effective solutions for the City.

The primary areas that need to be addressed, if flood proofing is not a practical option, were identified during the site visits, and include:

- Electrical outlets in most office spaces are below the BFE;
- A large amount of machinery and equipment, including HVAC are located below the BFE; and
- Structures were not designed to withstand the hydrostatic pressure forces experienced during a flood.

FEMA's letter dated July 11, 2011 requests that the City explore other methods for retrofitting the buildings that provides protection from more frequent occurring storm events. As discussed above, the dike around Larkin Circle already offers some protection against more frequent flooding and should be recognized as part of the overall plan.

The recommended options the City should consider includes the following: (1) preparation of a flood action or emergency response plan for each of the non-compliant structures. The plan would assign specific persons and actions in the event of a flood, such as sand bagging, and installing temporary light-weight removable flood walls that are commonly available and used across the country, (2) elevating electrical outlets, (3) elevating machinery and equipment, (4) installation of engineered vents to help equalize the water pressure on walls during a flood, and (5) provide flow-through provisions for flood waters via door or vent openings.

4. WASHOE COUNTY MHMP EVALUATION RESULTS

The goal of this analysis is to (1) provide the City with a summary of the pre-disaster and post-disaster hazard mitigation funding eligibility for projects within the City as identified in the Washoe County MHMP, (2) determine if the County's MHMP adequately addresses the City's hazard mitigation concerns, and (3) does not restrict the City from seeking FEMA Hazard Mitigation Assistance funding. In accordance with 44 CFR Part 201, all applicants for HMA funding must have, or be a part of a FEMA-approved state or local Hazard Mitigation Plan. Projects submitted for consideration for HMA funding must be consistent with the goals and objectives identified in the current, FEMA-approved MHMP.

According to the Washoe County MHMP (February 2010) Annex B for the City of Sparks, the hazards ranked of moderate or high significance specific to the City's planning area include:

- Drought (High)
- Earthquake (Moderate/High)
- Flood
 - 100 and 500-year events (High)
 - Localized Floods (High)
 - Dam/Levee Failure (Moderate)
- Severe Winter Storms (Moderate)
- Wildfire (High)
- Hazardous Materials Release (High)
- Terrorism and Weapons of Mass Destruction (High)

The goals and objectives of the County's MHMP include:

Goal 1: Minimize the risk of and vulnerability from identified hazards

Goal 2: Reduce Exposure to Hazard Related Losses

Goal 3: Improve Communities' Capabilities to Mitigate Losses

Goal 4: Increase Public Awareness/Education of Risk Vulnerability to Identified Hazards

Based on the hazards identified specific to the City's planning area and the goals and objectives of the County's MHMP, reasonable mitigation projects to mitigate impacts associated within each of the above hazards should be eligible for HMA funding. The North Truckee Drain was specifically listed as a potential flood mitigation project in the MHMP.

Based on our extensive review of the County's MHMP, there does not appear to be a compelling reason for revision of the MHMP based on the hazards, concerns and potential HMA funding interests of the City. Accordingly, we see no reason to prepare an individual MHMP for the City of Sparks. The City can pursue all sources of HMA funding currently available for any hazard mitigation project.

5. REFERENCES

FEMA. *National Flood Insurance Program Community Rating System Coordinator's Manual (Draft)*. Draft 4-6-2012, Edition: 2012. (<http://www.crs2012.org/download-draft-manual>)

FEMA, *Flood Insurance Study, Washoe County, Nevada ad Incorporated Areas*, Revised June 6, 2001.

Washoe County. *Washoe County Multi-Hazard Mitigation Plan - Annex B: City of Sparks*. February 2010.

DRAFT