Report to Council

Date: May 25, 2012

File: 7210-40-00

To: City Manager

From: Jeffrey G. Carlisle, Fire Chief

Subject: Fire Underwriters Survey Overview

Report Prepared By: Candace Friesen

Recommendation:

THAT Council receives, for information, the Report and Presentation from the Fire Chief dated May 25, 2012 regarding the Fire Underwriters Survey and Distribution Study;

AND THAT Council supports the use of the Fire Underwriters Survey and Distribution Study information as one input in the completion of the Kelowna Fire Department's Strategic Plan review process.

Purpose:

To provide Council with an overview of the Fire Underwriters Survey and Distribution Study.

Background:

The Kelowna Fire Department contracted the services of SCM Risk Management Services Inc. (formerly Insurance Advisory Organization) to evaluate the community's fire protection programs. The purpose of the assessment is to determine whether the community's current fire insurance grading classifications are representative of the fire protection programs and fire protection resources that are currently in place within the community. A fire insurance grading review is a key part of the assessment process.

The Fire Underwriters Survey is a comprehensive study and is intended to be used in planning and developing fire protection services that will optimize the service levels and cost benefits through insurance grades for the constituents of the study area. Conducting a Fire Underwriters Survey throughout Kelowna provides numerous benefits, as well as clarifies the needs of the City of Kelowna with respect to strategic fire protection development and serves as a key component in the review of the current Fire Department Strategic Plan.

Considerations not applicable to this report:
Legal/Statutory Authority:
Legal/Statutory Procedural Requirements:
Existing Policy:
Financial/Budgetary Considerations:
Personnel Implications:

External Agency/Public Comments:
Communications Comments:
Alternate Recommendation:
Internal Circulation:

Submitted by:

J. Carlisle, CFO, MA, CD
Fire Chief, Kelowna Fire Department

Approved for inclusion:  D. Gilchrist, General Manager, Corporate Sustainability

FIRE UNDERWRITERS SURVEY AND DISTRIBUTION STUDY

Kelowna Fire Department

Michael Currie GiFireE, AScT, Director , Western Canada

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AGENDA

- Brief History of the Fire Underwriters Survey (FUS)
- Fire Insurance Grading Systems and Index
- Five Elements of the Survey
  - Fire Risk
  - Fire Department operational capacity (40%)
  - Water Supply for Fire Protection (30%)
  - Fire Prevention and Safety Control (20%)
  - Emergency Communications (10%)
- Superior Tanker Shuttle Service (STSS)
- Fire Insurance Grading Impact on Property Insurance Rates
- Fire Protection Liability

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FIRE UNDERWRITERS SURVEY (FUS)

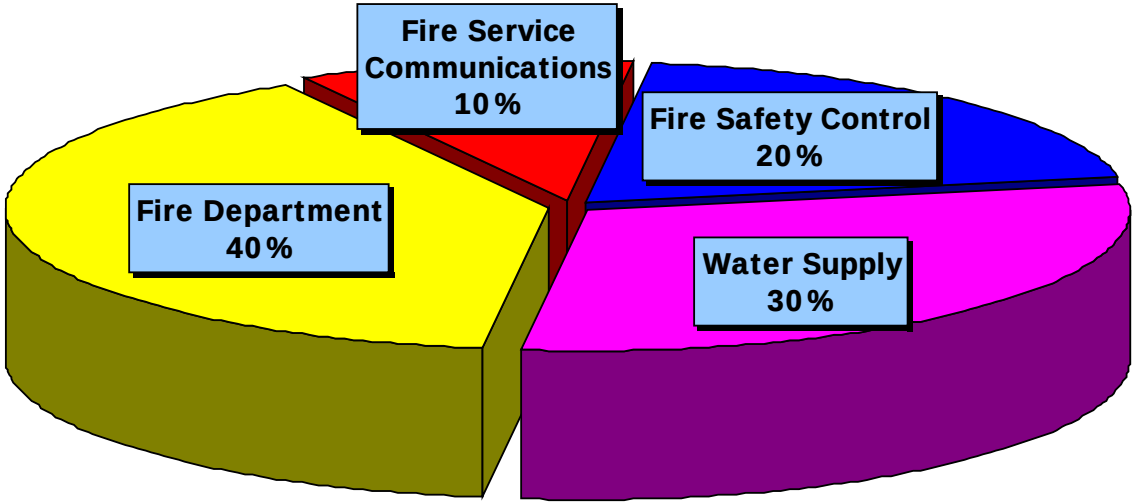
- 1883 formation of the Canadian Fire Underwriters Association
- 1930's transition to Canadian Underwriters Association
- 1970's transition to Insurers Advisory Organization and Fire Underwriters Survey
- 2008 transition to Risk Management Services and Fire Underwriters Survey
- Fire defense reviews carried out since approximately 1900 to establish insurance grading classifications
- Recommendations help communities to plan, budget and justify improvements in their fire protection infrastructure
- Results
  - improvements in municipal fire safety
  - reduction in life and property loss
  - improved return on investment for insurance community through risk management
  - Improved cost benefit for communities that invest in standardized fire protection

FIRE INSURANCE GRADING SYSTEM & INDEX

- Commercial Lines:
  - Public Fire Protection Classification (PFPC)
  - Complex and detailed analysis
  - Grades between 1-10
  - 1 being the best and 10 meaning no organized fire protection
  - Properties affected include all those NOT owned purely for personal use

- Personal Lines:
  - Dwelling Protection Grade (DPG)
  - Simple system of analysis
  - Grades between 1-5
  - 1 being the best and 5 meaning no organized fire protection
  - Properties affected include all those owned purely for personal use (Single Family Residential and Duplex)

GRADING COMPONENTS



FIRE INSURANCE GRADING INDEX

OPTIONS

- Search
- Superior Tanker List
- Updates
- List of Terms
- Technical Documents
- Français

Logout

SUPPORT

- E-Mail
- Contact Information

BULLETINS TO INSURERS

- Making a big 'FUS' with GIS
- FUS Bulletin 2010-12-10: Alternative Water Supply Accreditation

Fire Underwriters Survey › Dwelling Protection Details

Protection Grades for Kelowna, BC	
(split grades)	
Hydrant Protected Area	1
Fire Hall Protected Area	3B
All other areas	5

Protection Details for Kelowna, BC	
Territory	20
Pumper flow credited per fire station (minimum) (Imperial gal/min)	625
Water tanker capacity on trucks credited per fire station (minimum) (Imperial gal)	1500
Number of full-time fire fighters or equivalent credited per fire station	9
Number of volunteer fire fighters credited per fire station	17
Appropriate provision of fog nozzles, hoses, etc.	Good
Municipal water supply	Good
Mobile water supply	Specified Tanker
Some commercial risks may be more than 150 m from nearest hydrant	Yes
Some dwellings may be more than 300 m from the nearest hydrant	Yes
Some commercial risks may be more than 5 km from nearest fire station	Yes
Some dwellings may be more than 8 km from the nearest fire station	Yes
Protection is borrowed	No
Minor deficiencies warranting downgrading	No
Jointly managed department	No

Documents	
Description	**Size**
Kelowna Water Service Areas	204 KB
Kelowna Fire Halls	2 MB

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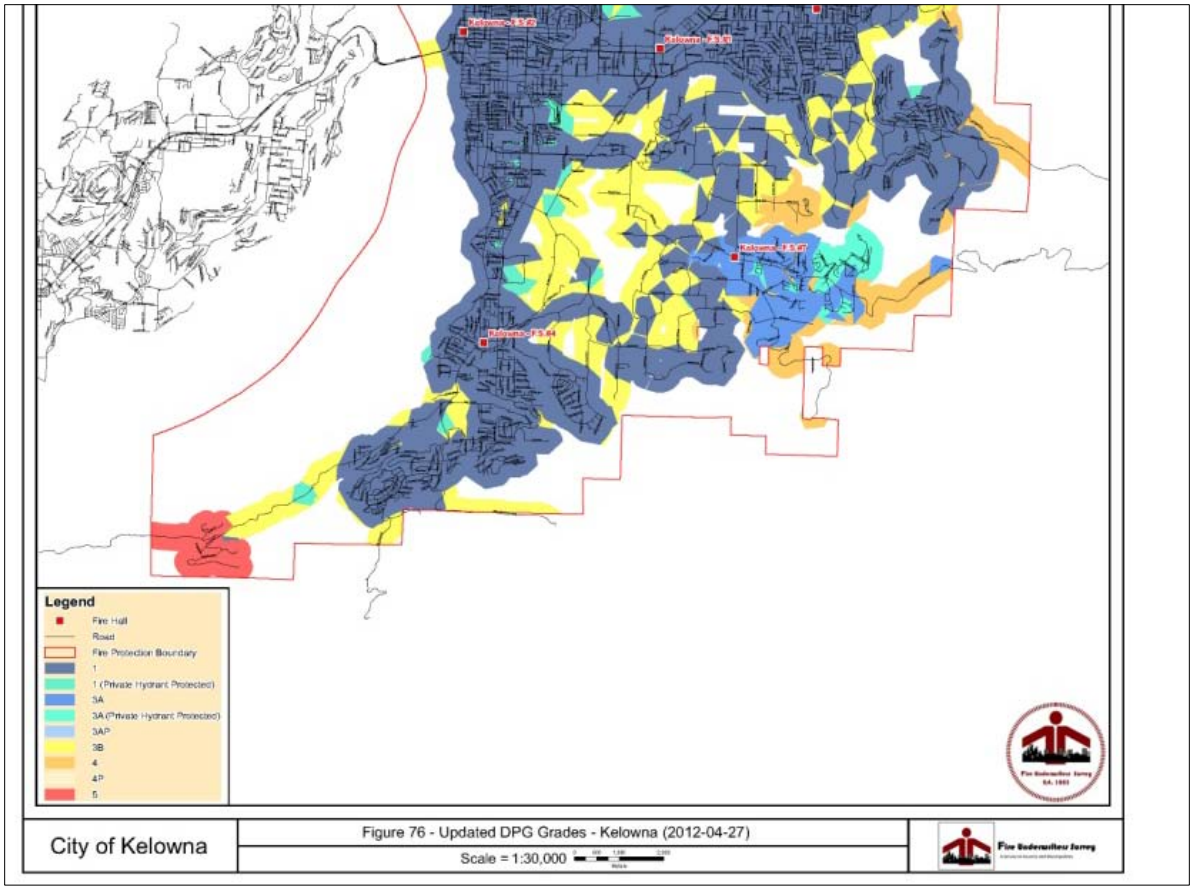
GRADE MAP SAMPLE



FUS - FIRE RISK CONSIDERATIONS

- Number of risks – status and trends
- Value of risks – status and trends
- Geographic distribution of risks - status and trends

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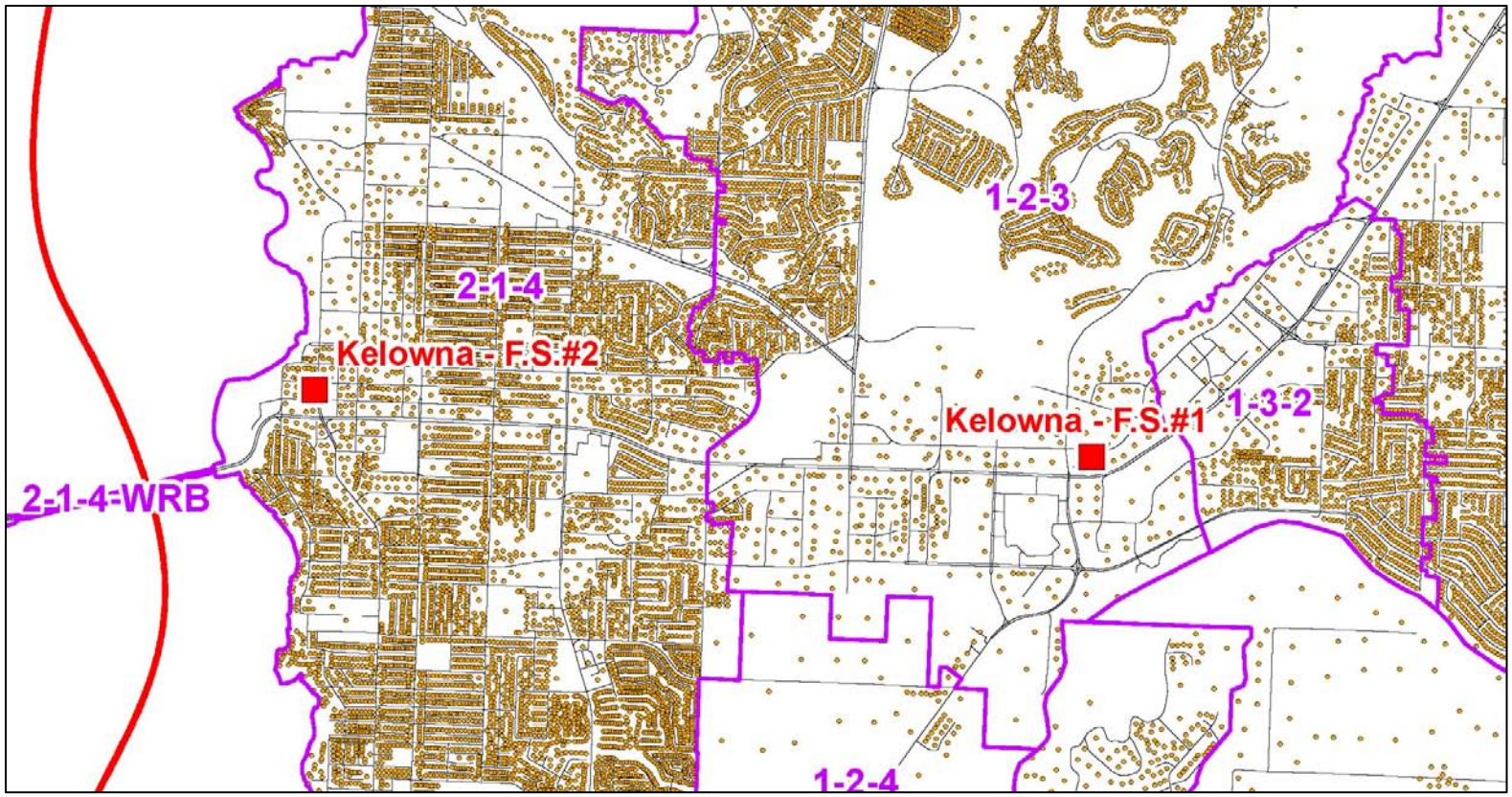
BENCHMARK OF FIRE RISK: *REQUIRED FIRE FLOWS*



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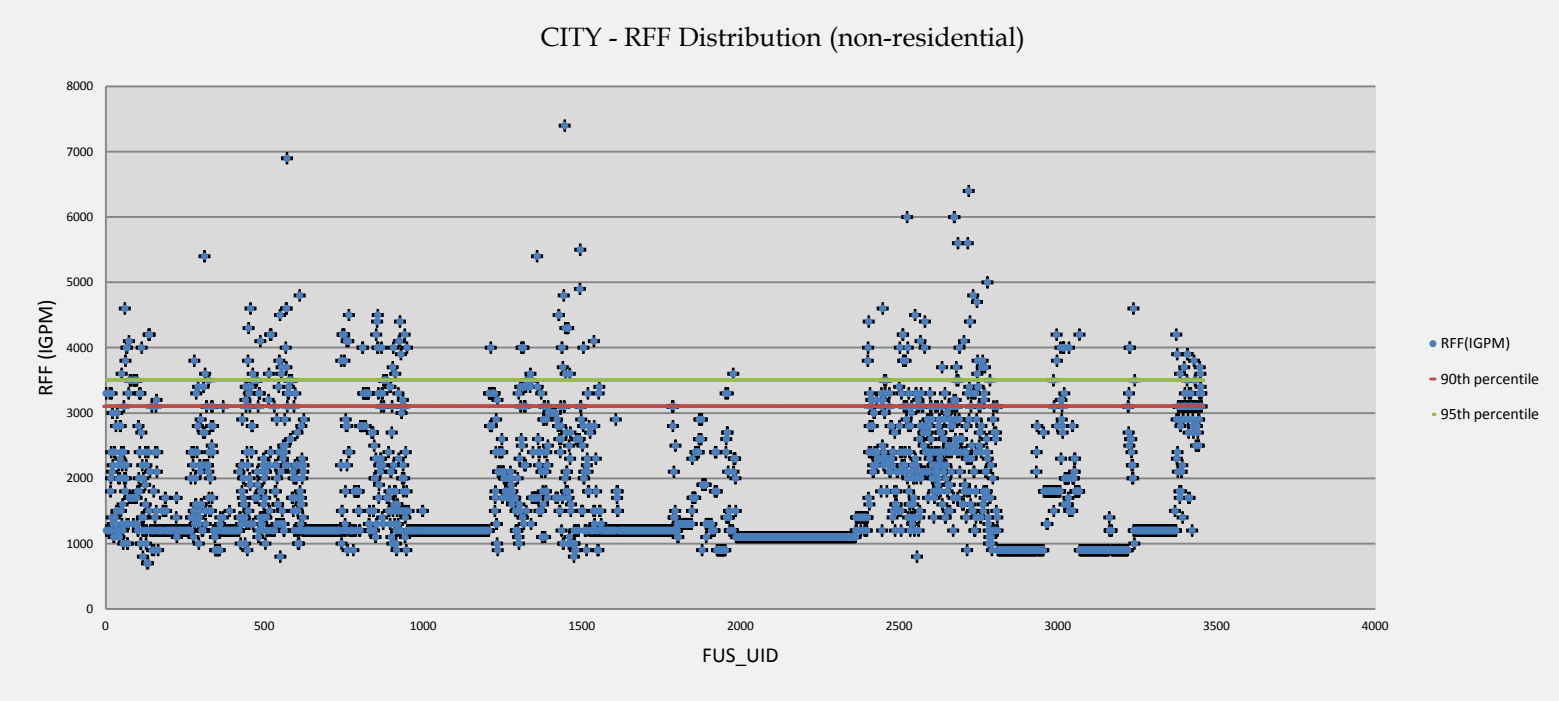
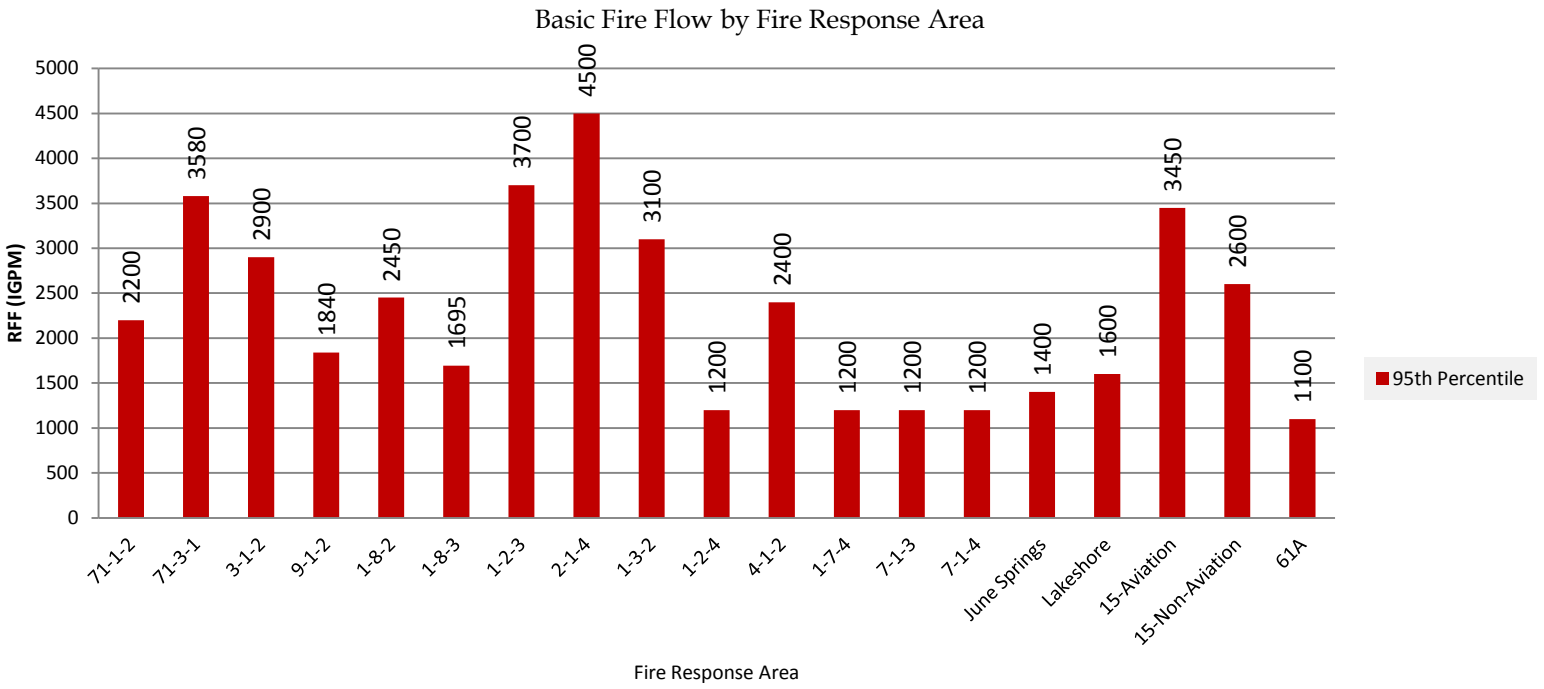
CITY REQUIRED FIRE FLOW ANALYSIS

(SAMPLE)



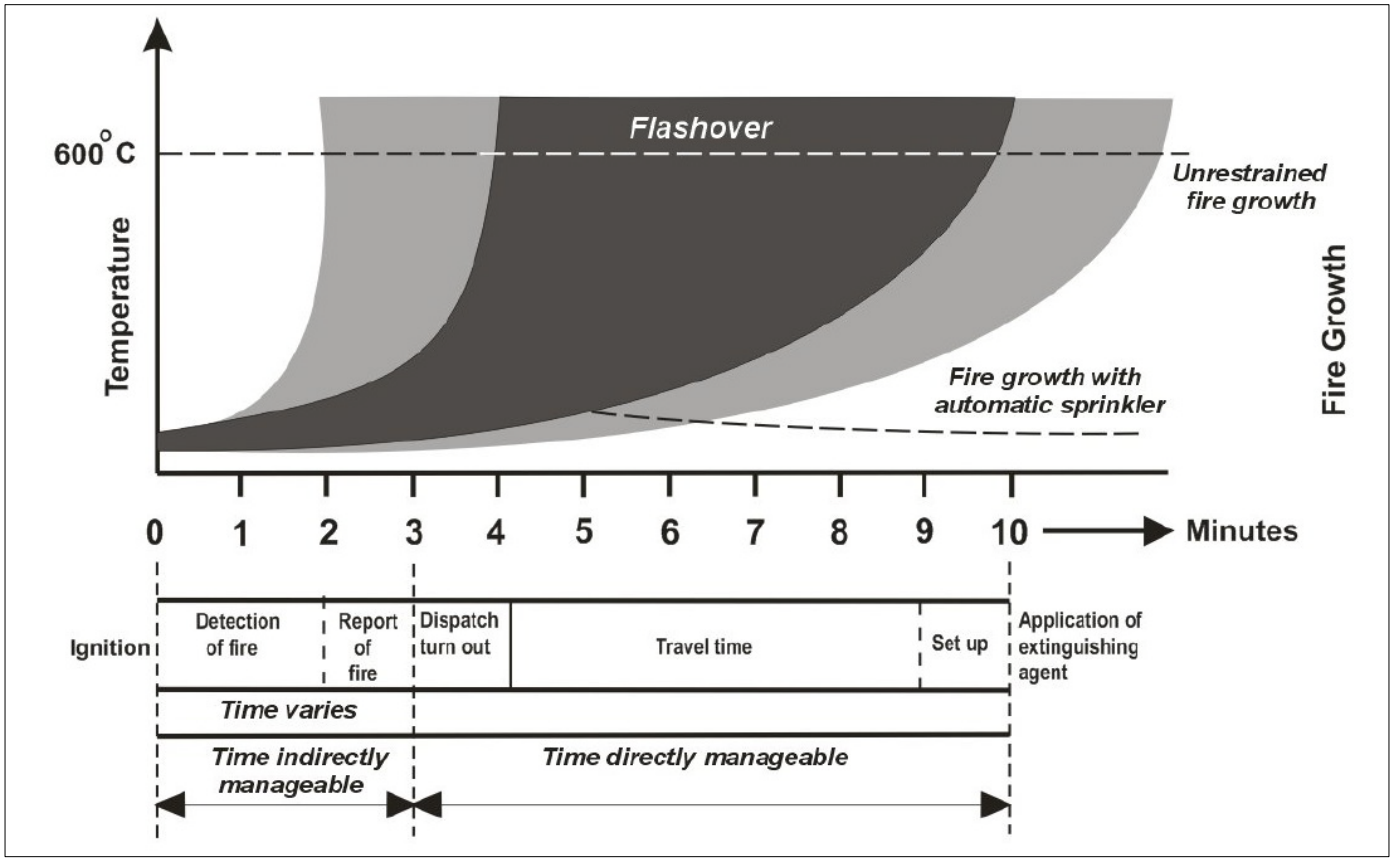
BASIC FIRE FLOW BY FIRE RESPONSE AREA



EFFECTIVE FIRE FIGHTING RESPONSE FOR BASIC FIRE FLOW

RISK RATING	BUILDING DISTRICT EXAMPLES	FIRE FLOW L/min	FIRE FLOW Approx. Igpm	INITIAL RESPONSE TO ALARMS Pumper	INITIAL RESPONSE TO ALARMS Ladder	1st DUE Engine Company,	2nd DUE Pumper Company,	1st DUE Ladder Company,	TOTAL Pumper Companies.		Ladder Companies	
1 (a)	Very small buildings, widely detached buildings.	2	400	1	0	7.5	-	*9	1	7.5	*1	9
(b)	Scattered development (except where wood roof coverings).	3	600	1	0	6	-	*7.5	1	6	*1	7.5
2	Typical modern, 1 - 2 storey residential subdivision 3 - 6 m 10 - 20 ft. detached).	4-5	800-1,000	2	0	4	6	*6	2	6	*1	6
3 (a)	Close 3 - 4 storey residential and row housing, small mercantile and industrial.	6-9 10-13	1,200-2,000 2,200-2,800	2 2	1(if required by Hazards)	3.5 3.5	5 5	*4 *4	2 3	5 6	*1 *1	4 4
3 (b)	Seriously exposed tenements. Institutional. Shopping Centres Fairly large areas, fire loads, and exposures.	14-16 17-19	3,000-3,600 3,800-4,200	2 2	1 1	3.5 3.5	5 5	4 4	4 5	7 7	1 **1	4 4
4 (a)	Large combustible institutions, commercial buildings, multi-storey and with exposures.	20-23 24-27	4,400-5,000 5,200-60,00	2	1	2.5 2.5	4 4	3.5 3.5	6 7	7.5 7.5	2 2	5 5
4 (b)	High fire load warehouses and buildings like 4(a).	28-31 32-35	6200-6800 7000-7600	3	1	2.5 2.5	3.5 3.5	3.5 3.5	8 9	8 8	3 3	7 7
5	Severe hazards in large area buildings usually with major exposures. Large congested frame districts.	36-38 39-42 43-46	7,800-8,400 86,00-9,200 9,400-10,000	3	3	2 2 2	3.5 3.5 3.5	2.5 2.5 2.5	10 12 14	8 9 9	4 5 6	7.5 8 9

FIRE PROPAGATION



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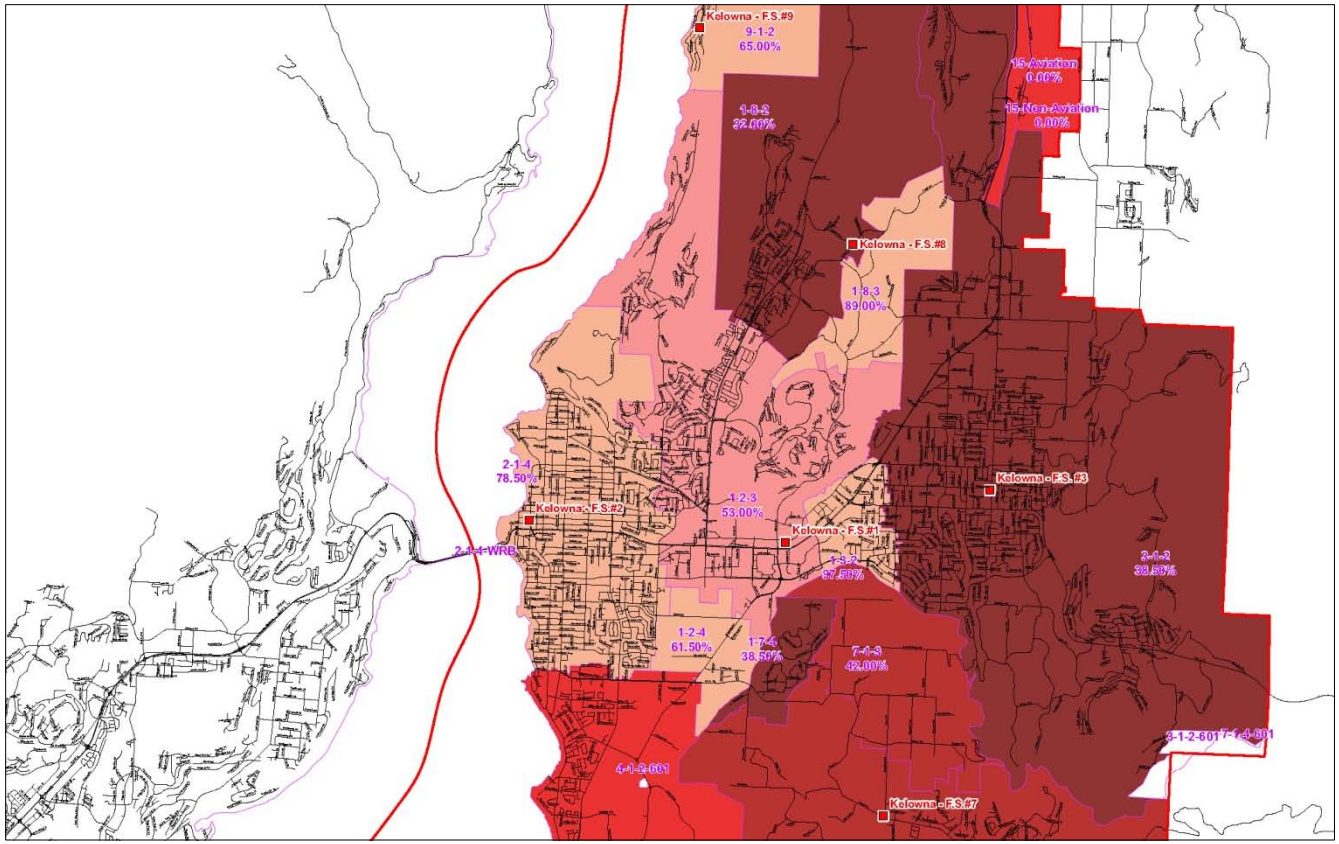
MEASURING FIRE RESPONSE CAPACITY AGAINST FIRE RISK



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FIRE DEPARTMENT

- Standard of Response Cover (distribution)
- Available Fire Force
- Apparatus, companies and capacities
- Apparatus design and conditions
- Personnel training and training programs
- Equipment quality
- Pre-fire planning
- Record keeping

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APPARATUS

- Pumpers
- Ladders
- Initial Attack
- Mobile Water Supply
- Insurance Grading Recognition of Used or Rebuilt Fire Apparatus

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FUS - REPLACEMENT SCHEDULE

Apparatus Age	Major Cities [3]	Medium Sized Cities [4] or Communities Where Risk is Significant	Small Communities [5] and Rural Centres
0 – 15 Years	First Line	First Line	First Line
16 – 20 Years	Reserve	2nd Line	First Line
20 – 25 Years [1]	No Credit in Grading	No Credit in Grading *or* *Reserve [2]*	No Credit in Grading *or* *2nd Line [2]*
26 – 29 Years [1]	No Credit in Grading	No Credit in Grading *or* *Reserve [2]*	No Credit in Grading *or* *Reserve [2]*
30 Years +	No Credit in Grading	No Credit in Grading	No Credit in Grading

[1] All listed fire apparatus 20 years of age and older are required to be service tested by recognized testing agency on an annual basis to be eligible for grading recognition. (NFPA 1071)

[2] Exceptions to age status may be considered in a small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable and apparatus successfully passes required testing.

[3] Major Cities are defined as an incorporated or unincorporated community that has:
- *a populated area (or multiple areas) with a density of at least 400 people per square kilometre; AND*
- *a total population of 100,000 or greater.*

[4] Medium Communities are defined as an incorporated or unincorporated community that has:
- *a populated area (or multiple areas) with a density of at least 200 people per square kilometre; AND/OR*
- *a total population of 1,000 or greater.*

[5] Small Communities are defined as an incorporated or unincorporated community that has:
- *no populated areas with densities that exceed 200 people per square kilometre; AND*
- *does not have a total population in excess of 1,000.*

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ITEMS OF NOTE

- Aerial Apparatus should be replaced
- McKinley Landing Mini Pumper should be replaced with Triple Combination Pumper for additional credit
- Areas of reduced response noted.
  - OCP shows area 4-1-2(Mission) developing and currently receiving 6.5% credit in distribution of response.
  - UBCO Area and 71-3-1(Contract Area with Lake Country). Implementing a sprinkler bylaw will aid in combating the reduced level of response.
- Establish and adopt Standards of Response Coverage

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ITEMS OF NOTE

- Optimized fire hall locations presented
- Reduced fire hall roster at McKinley Landing fire hall 9 could result in large insurance rate increases in the area. 12 months assigned to address the issue.
- Large number of responses for Engine 2/Ladder 2 company (consider quint)
- Having a training facility in the community would increase the level of training available to fire fighters.
- Pre-Incident plans should be available in Mobile CAD

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS

- NFPA has numerous standards for the delivery of Fire Protective Services
- Many of these are used by the Fire Underwriters Survey in assessing Fire Department Equipment and Operations
- Examples include:
  - 1201 Organization
  - 1710 Career Departments
  - 1720 Volunteer Departments
  - 1901 Apparatus / ULC S515
  - 1001 Training/Certification
  - etc.

WORKING TOGETHER WITH SURROUNDING COMMUNITIES

- Mutual Aid agreements
- Automatic Aid agreements
- Contract for suppression service agreements, to a Municipality and from a Municipality (Borrowed protection)
- Joint Agreements
- Agreements not recognised for fire insurance grading purposes:
  - Duck Lake IR#7 (no agreement in place)
  - Lakeshore Road and June Springs Fire Service Area (Kelowna reserves sole discretion in deciding whether to respond).

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FIRE PREVENTION &SAFETY CONTROL - 20%

- Elevated to 20% to reflect the need to shift from fire fighting to fire prevention
- Permanent or part-time staff assigned to fire prevention department
- Fire Prevention Program and Code Enforcement
  - Sprinkler bylaw would aid in combating the reduced levels of response as identified.
- Building Inspections
- Plan Check Program
- Public Education Program
  - Kelowna has no formal public education program in place. A Fire Inspector/Public Educator could serve dual duties in maintaining the pre-incident plan program and public education.
- Pre-Plan Program
- NFPA 1730

FIRE SERVICE EMERGENCY COMMUNICATIONS 10%

Factors considered include:

- The communications centre
- Means of transmitting alarms by public
- Means of alarm dispatch and dispatching services
- Radio communications

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FIRE UNDERWRITERS SURVEY - WATER SUPPLIES FOR PUBLIC FIRE PROTECTION

FUS GRADING

- *Water Supply – Distribution System*
  - No in-depth analysis conducted and no recommendations provided
  - *Hydrants*
    - Installation and Maintenance
    - Spacing & Distribution (min's: 150m Commercial / 300m Personal)
  - *Sizing and installation of water mains*
    - Layout
    - Looping
    - Redundancy
  - *Valving –*
    - isolation capacity
    - Maintenance
  - *Multiple Point Failure Analysis*

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WATER SUPPLY STANDARDS

Fire Underwriters Survey:

Water Supply for Public Fire Protection

- The accepted Canadian standard for requirements for water supplies for fire fighting
- Includes details for calculating Required Fire Flows for individual buildings or zones
- Includes details for calculating required water volume storage for reservoir sizing
- Design to this standard ensures that water supplies will be adequate for fire insurance grading

NFPA 1142 STANDARD ON WATER SUPPLIES FOR SUBURBAN AND RURAL FIRE FIGHTING

- Establishes the minimum requirements for water supplies for structural fire-fighting purposes in rural and suburban areas not on municipal water supplies
- Includes cistern design, water hauling operations, and how to calculate water supply needs

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ALTERNATIVE WATER SUPPLIES

- NFPA 1142 required for Dwelling Protection Grade (DPG) 3B
- Hydrant protected equivalency?
- Superior Tanker Shuttle Service Accreditation Program
- Standardized protocol available online
- Requires evidence that fire department can meet or exceed the minimum requirements of a hydrant system consistently 365 days per year.

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SUPERIOR TANKER SHUTTLE SERVICE (STSS) ACCREDITATION

- A noticeable portion of South East Kelowna has reduced hydrant distribution which results in reduced levels of recognized fire protection for fire insurance grading purposes.
- Conducting STSS Accreditation can combat this and result in improved levels of fire protection for fire insurance grading purposes.

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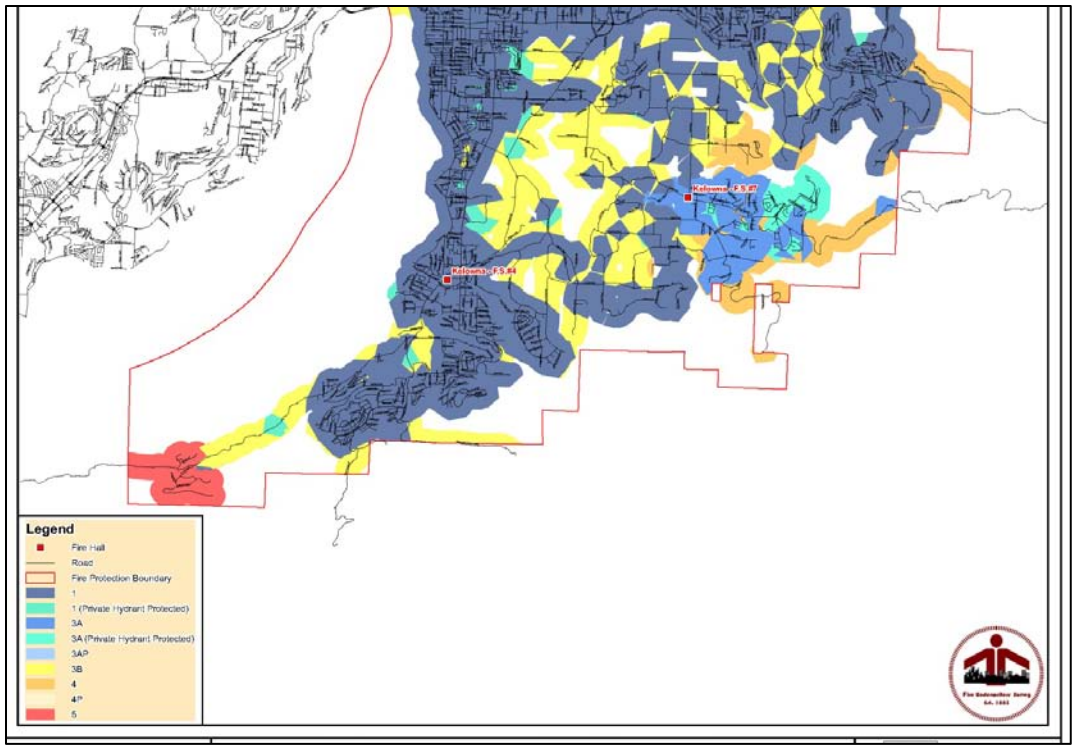
SUPERIOR TANKER SHUTTLE SERVICE ACCREDITATION



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FIRE UNDERWRITERS SURVEY
FIRE INSURANCE GRADING IMPACT ON

- Cost Benefit of Investment in Fire Protection
  - Property Insurance Rates?
  - Personal Lines?
  - Commercial Lines?
  - Capacities?

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HOMEOWNERS AND RENTERS FIRE RATING CLASSIFICATIONS

- Fire Rating Classification is the main premium rating component used by Insurance companies to determine premiums or if a property is insurable

- Homes that do not have access to adequate Fire Department protection ("Unprotected") will almost always sustain more damage than homes that have access to quality fire response ("Protected")

- Homeowners and Renters insurance premiums are classified into three categories or fire grades

  - Home is located in an Unprotected Area – Category 3
  - Home is located in a Semi Protected Area – Category 2
  - Home is located in a Protected Area – Category 1

DWELLING PROTECTION GRADES (DPG) – RESIDENTIAL – PERSONAL LINES

- Grading reflects the ability of a community to handle fires in residential buildings
- Scale of 1-5, & DPG 1 is the best

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DWELLING PROTECTION GRADES
5-GRADE SYSTEM SIMPLIFIED TO 3-TIER SYSTEM USED BY INSURERS

DPG Grade	Versus	**3-Tier System (Industry)**
1 2 3A		**1 or "Protected"**
3B 4		**2 or "Semi-Protected"**
5		**3 or "Unprotected"**

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HOW DO FIRE GRADES AFFECT HOMEOWNERS INSURANCE PREMIUMS?

The following illustrates premium rating on a standard construction home:

- Built 2002,
- 2,100 square foot ,
- Three bedroom,
- 3 baths,
- Partially finished basement,
- Replacement cost of $375,000

HOW DO FIRE GRADES AFFECT HOMEOWNERS INSURANCE PREMIUMS?

Summary

Average premium over 4 major insurers

Protected Area (1): $1350

Semi-Protected Area (2): $2208 (64% more than 1)

Unprotected Area (3): $4188 (210% more than 1)

HOW DO FIRE GRADES AFFECT SMALL COMMERCIAL BUSINESS PREMIUMS?

The following illustrates premium rating on an example typical masonry retail building:

- Built 1990,
- 2,000 square foot ,
- Alarms and fire extinguishers,
- Small light commercial – retail store, office,
- Replacement cost of $300,000

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PUBLIC FIRE PROTECTION CLASSIFICATION 10-CLASS SYSTEM SIMPLIFIED TO 3-TIER SYSTEM USED BY INSURERS

PFPC Class	Versus	**3-Tier System**
1 2 3 4		**1 or "Protected"**
5 6 7		**2 or "Semi-Protected"**
8 9 10		**3 or "Unprotected"**

HOW DO FIRE GRADES AFFECT SMALL COMMERCIAL BUSINESS PREMIUMS?

Summary

- Built 1990,
- 2,000 square foot ,
- Fire alarms and fire extinguishers throughout,
- Small light commercial – retail store, office,
- Replacement cost of $300,000

Average premium over 4 major insurers

Protected Area (1): $748
Semi-Protected Area (2): $1,235 (65% more than 1)
Unprotected Area (3): $2,788 (272% more than 1)

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CONCLUSION...

"Since the last FUS assessment of the City of Kelowna (1983) it has been noted that the Kelowna Fire Department has successfully managed to keep pace with expanding community risk in the majority of the Fire Protection Area. Notable areas of weaker coverage have been noted throughout the report as well as areas where fire insurance grades may be downgraded. The City of Kelowna is growing fast and the fire department will face challenges in keeping pace with this growth while optimizing an efficient level of service."

THANK YOU

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