Ben Forsyth 051623.2

#### CANNABIS CULTIVATION HARMS

#### INTRODUCTION:

Recreational marijuana is one of the most rapidly increasing legal and illegal commercial product in the world. In Montana, recreational cannabis must be grown indoors by law. But, all indoor marijuana cultivation produces directly and indirectly, increasingly massive emissions of harmful planet warming gases and soil and water pollutants. That raises the question about the environmental toll of the rapidly expanding legal cannabis industry. Outdoor recreational-marijuana cultivation, except for limited medical production, is prohibited by Montana Code Annotated (MCA) because of the damage wind-blown male cannabis seeds can do to the more lucrative, expanding, and valuable hemp crop. In Montana, there is little to no regulation of environmental laws to control the increasing proven pollution of indoor marijuana cultivation. I cannot find one marijuana user who is even aware of this area of cannabis-related environmental problems or helps to reduce them.

The marijuana industry likes indoor production because that allows them to grow bigger, more pure plants with much greater yields and higher profits. This branch of the cannabis industry is expanding very quickly without needed consideration for clean air, water, and other contamination, but industry producers do not seem to be aware of the environmental harms their indoor cultivation creates. Existing applicable Montana controls are not sufficient to provide adequate environment protection for the proven, but seldom recognized, indoor cannabis cultivation harms. Compared to outdoor grown cannabis, Indoor marijuana growing provides much greater industry profits from more voluminous, higher-grade products, produced because of better controlled conditions.

For ease of controlled enforcement, seldom-seen glass greenhouse marijuana facilities should be regulated as indoor facilities.

#### CARBON DIOXIDE PRODUCTION:

Colorado State University researchers have found in 2020, that state's expanding cannabis industry produced 2.6 megatons of carbon dioxide exceeding those of the state's coal mining industry's polluted tonnage (1.8 megatons of carbon dioxide). When applied to our state's coal mining and environmental efforts, we are concerned about a similar unrecognized pollution result that will contribute to our long-term environmentally damaging carbon footprint because of marijuana-related pollution.

The CSU study found that indoor pot grown in southern California has the lowest recorded polluting emissions with an ounce of dried cannabis resulting in an average 143 pounds of related carbon dioxide being released into the atmosphere per growing cycle. They found the highest marijuana cultivation gas emissions occur in the northern mountain west (including Montana) where maintaining beneficial indoor growth temperatures, providing the most beneficial humidity, and using longer daily grow-light illumination is necessary for maximum cannabis plant development and related industry profits. The same scientific study in northern mountain states found that the highest carbon emissions

and other pollutants were averaging about 320 pounds (5,120oz.) of environmental pollutants per ounce of dried cannabis product.

When those proven facts are applied to the thousands of ounces of indoor local cannabis products being produced now, (and increased in the near future), manufactured, and sold in our state, the increasing pollution rate of Montana's yearly marijuana crop is staggering, but seldom recognized. If the records of environment damage from indoor pot grown in other states (Colorado, California, Oregon, and Washington) is representative of future problems we can expect in Montana, we foresee a dramatic increase in cannabis-related environmental pollution here.

Across the U.S., a fact based analysis from the Colorado State University study found that production of a kilogram of dried cannabis directly and indirectly released an average 2 to 5 tons of carbon dioxide into the atmosphere. Evan Mills, a respected energy efficiency expert at the Lawrence Berkeley National Laboratory has analyzed the CSU study and feels that their figures are a low estimate. Mills states that legalized indoor marijuana-growing operations account for 1% of total electricity use in the United States. He calculates that such annual electricity generation produced 15 million tons of CO2 gas emissions per year in 2015, equal to the emissions of three million average internal combustion cars. I cannot find one scientific study that contradicts that estimate using scientifically proven evidence as the Colorado State University and the Lawrence Berkeley National Laboratory studies have done.

Most citizens do not realize that higher rates of carbon dioxide (CO2) are essential to grow maximum useable leaves and other useable parts of marijuana plants thus producing more product and greater profits. Other respected scientific methods have proven that one profitable kilogram of final marijuana product is associated with 4600 kilograms (kg) of CO2 emissions into the environment. Professional environmentalists are concerned that increased carbon footprint will significantly contribute to the earth's warming and reduce the quality-of-life of millions of people.

Indoor CO2 levels can boost cannabis plant productivity considerably when it occurs at about four times natural CO2 ratios. Such high CO2 levels were experienced in Great Falls in the old Columbus Hospital 5<sup>th</sup> floor marijuana facility a few years ago by a large marijuana indoor-growing operation. The facility management bought several CO2 generators that, according to a Great Falls Tribune article, ran most days of each six month production cycle for about two years. The indoor growing operation was not airtight and the building's elevators acted as huge pumps to saturate much of the building's interior spaces with an increased carbon footprint that contributed to our planet's atmospheric weather change. Environmentalists of the time were not aware of the problem. As recreational marijuana cultivation increases in our state, we should be concerned with what future numerous large cannabis growing operations will do to our carbon footprint and environment.

#### **ELECTRICITY USE:**

Indoor grown marijuana is an energy-intensive product, using on the order of 2000kWh of electricity per final pound of cannabis product.

#### Comparisons:

1.] The completed production of aluminum consumes only about 7kWh of electricity per pound.

- 2.] Glass is considered a very energy-intensive product, but one pound of finished glass consumes only about half the electrical energy of a pound of indoor-grown cannabis.
- 3.] Statistical scientific analysis has proven that the energy requirements to produce one 1/8<sup>th</sup> marijuana cigarette (average size) is equivalent to the energy necessary to complete the production of 18 pints of beer.

Indoor cannabis production requires about 18 hours of high intensity light per day to produce maximum sized cannabis plants that create the greatest volume of sellable products and make the most profits for the growers.

Ron Flax, an environment sustainer professional working for Boulder County, Colorado, estimated that statewide "cannabis facilities are contributing to roughly half of Colorado's new power needs. Electricity represents roughly 20% of the total cost of a cannabis operation. A 5,000 square foot indoor cannabis facility (there are dozens that size in Montana) was using about 29,000 kilowatt hours of electricity a month. At the same time a local household in Boulder county was consuming about 630kWh per month."

Most of the U.S. marijuana industry agrees that indoor cannabis growing is the best cannabis cultivation option because it can allow more productive use of light, heat, air conditioning, maximum achievable clean air, and less environmentally damaging air exhaust capability. Intense modern indoor growing lights can more closely imitate the natural rays of sunlight regularly producing more profitable crops. Too more closely produce the effects of the sun, modern grow lights used in indoor cannabis production can be 500 times more powerful than normal reading lights, and many times brighter than average hospital lighting.

To stimulate the most productive grow cycles for marijuana plants, local cannabis cultivators have agreed that the most common artificial light/dark cycle used in local indoor marijuana grow operations in Montana is a ratio of about 18 hours of intense light to 6 hours of dark for about 180 days per growing cycle.

Because of the cannabis industry's increased use of polluting energy, Boulder County, Colorado, as well as various governments throughout the U.S., is now requiring commercial cannabis growers to either offset their energy use with a donation to the public grid of at least the same amount of renewable energy, create their own power from only renewable sources without creating a burden to the public electrical source, or pay considerably higher taxes per kWh. To reduce their carbon footprint and contribute less to global warning, Boulder County is also using this method to require the marijuana industry to directly offset 100% of propane and natural gas usage involved in cannabis cultivation that is used to control manufacturing temperature, humidity, and air cleanliness.

The Northwest Power and Conservation Council in Oregon has found that an indoor grow system for only four individual plants consumed as much energy as 29 average household refrigerators per month in a six-month growing cycle. They feel such use has put a considerable strain on public utilities and has predictively driven retail electricity prices up. Last year, their organization recorded seven local power outages associated with increased indoor marijuana cultivation usage. Those outages affected thousands of citizens.

Steve Corson of Portland General Electric said that "...cannabis producers have created dangerous situations by overloading local available electricity supplies. He said that Oregon, like Colorado, does not have the energy efficiency regulations (neither does Montana) that are specific to growing marijuana within the capabilities of power availability without raising consumer power prices across the board." All their local electric users are paying higher prices because of the cannabis industry's power consumption and local methods of electrical production.

Seattle City Light has recommended pot growers save electricity by using 1,000W high intensity discharge lamps (HIDs) which compare to LEDs for electrical draw in the vegetative phase of marijuana plant growth. But growers find that HIDs are not very efficient during the critical flowering marijuana plant stage and would require considerable cost to purchase more efficient other new bulbs during that stage or extend growing cycles to make up the difference. Several out-of-state growers have complained that LED bulbs may save electricity daily, but require an extra four weeks to attain plant maturity. That would reduce the grower's annual productivity over a year of cannabis growth cycles by 25%, and would raise cannabis retail prices and reduce industry profits by considerable amounts. That is proving to be one of the major problems for cannabis cultivation related to their reduction of environmental damage.

Air-tight facilities, grow lights and ventilation to remove marijuana's prolific "dead skunk" odor problem (check with the Four Corners area of Bozeman) continue to account for 80% of all indoor cannabis-growers' electricity use.

A company called Boulderlamp in Colorado has created a 315W CDL Agro light which uses about half the wattage of a standard 1,000W high-pressure sodium grow light. Even though matching brightness requires two such bulbs to achieve maximum plant growth, its wave length is nearer to that of the sun and its manufacturer claims two such bulbs increase production by 25% while decreasing energy use by 45%. While that lamp's statistics are not proven by science or a large consortium of users, that bulb may be at least a partial answer to marijuana energy problems. We will probably have to wait years for widely established conclusive proof. That new product is still basically unproven.

It has become increasingly evident that the existing marijuana industry, no matter where it is located, has a need for huge amounts of electrical power in all phases of its cultivation and manufacturing processes. In other states, that level of electrical costs have resulted in an epidemic of illegal electricity theft, often by a burgeoning expansion of illegal, less regulated, and less expensive (but more profitable) marijuana grow operations. Several Montana law enforcement executives and other government officials have expressed concerns that Montana is ripe for illegal marijuana operations, because of a less dense population, a lower police presence per square mile, and a very long and porous northern international border. They are all aware that the largest illegal marijuana operation in Montana history occurred near Ft. Benton in large, somewhat isolated, wheat fields. The Seattle mafia was regularly flying twin engine aircraft onto that farmer's back roads to transport his illegal product. That operation was only exposed because of a violent Seattle mafia life-threat to the farmer's family that caused a daughter to crack and go to local police. Will it happen again? Federal intelligence says some illegal, international marijuana operators are already reconnoitering Montana. We feel that the future increased level of statewide illegal use will cause greater utility problems and increase the need for more enforcement emphasis.

In February of 2022, the Riverside, California sheriff's office arrested the operators of an illegal grow operation that was estimated to have stolen \$202,000 worth of electricity from the public grid in

less than two months. Last year, a Chinese organized crime ring was arrested in Chino, California, after investigators identified seven of their illegal marijuana grow houses because they were running up huge monthly bills for electricity. In 2020, the Visalia, California, Police Department arrested two men for growing illegal marijuana while using \$80,000 worth of stolen electricity in just a few months. In 2018, police busted four homes in Murrieta, California, and arrested eight people for growing illicit weed for about one year. They had consumed about \$200,000 worth of illegally acquired electricity. In March of 2020, the Netherlands association for Holland's Electricity and Gas Grid Operators said some 2,300 illicit marijuana growers arrested in that country in 2019 were using stolen electricity worth about 60 million Euros, or enough juice to power all the city of Rotterdam for one year. That city almost equals the entire population of Montana.

In 2016, 4 years after recreational marijuana legalization, law enforcement agencies in Denver raided 34 homes and arrested 12 illegal Chinese nationals who were using the homes for illegal cannabis operations under the direction of a head Chinese national. The operation had been active for several years and had laundered millions of dollars to international banks worldwide. It is estimated that most of the money eventually ended up in China. No estimate of electricity use was available for their operation.

In 2019, Spanish police arrested several people associated with an illegal marijuana grow operation that had stolen some \$500,000 worth of electricity in one year. In 2018 more than 500 federal, state, and local law enforcement officials teamed up to raid about 75 residential properties near Sacramento, California, that were being used by several organized crime rings to grow illegal marijuana. Many of those individual grow houses were using 30-40 times more electricity than similar sized homes in that city. In 2017, San Bernardino, California police raided an illegal grow operation in an abandoned three story telephone building after they determined the building was illegally using more than \$67,000 worth of electricity per month.

Between 2013 and 2018, electricity used by Denver's legal marijuana businesses nearly tripled. That increase equaled the total electric consumption of at least four small foreign countries. A scientific analysis in the Morningstar magazine in 2018, estimated that the legal marijuana business in the U.S. was consuming 15 terawatt-hours of electricity per year, and that the industry's consumption would quadruple in just a few years.

A respected journal called Energy Policy reported that successful indoor marijuana cultivation employed energy consumption for many basic reasons- (1)high-intensity lighting, (2)dehumidification to remove water vapor and avoid mold formation, (3)space heating during cooler parts of the year, (4)cooling during other months, (5)product drying to create salable products, (6)preheating of irrigation water when needed (for at least three-six months a year in Montana), (7)removal of generated carbon dioxide created by burning fossil fuels for heating (during winter in our state), (8)periodic cooling to remove natural higher heat levels in warm weather, (9)sewage cleansing to prevent pollution of soil and water sources, and (10) air conditioning for temperature control. All successful cannabis cultivation and manufacturing requires large increases of electricity and gas to produce the much sought-after higher profits.

Most citizens do not realize that carbon dioxide (CO2) is essential to generate maximum cannabis plant growth and related profits, but as cannabis cultivation becomes more prolific, it creates greater warming of our earth with negative environmental consequences. Our state is inter-tied with the Western USA grid which universally uses air quality containing higher carbon densities. Additional

electrical loads anywhere on that grid can have an effect on the whole grid. Although NorthWestern Energy prides itself on low-pollution electricity, additional loads on any part of that grid can have a negative pollution effect on the whole grid including Montana.

#### WATER:

Indoor cannabis cultivation is very water intensive. The average indoor marijuana plant requires about 5 to 6 gallons of water per day for a four to six month growing cycle (a possible 180 days). That can amount to overall 1,000 gallons per plant in its growing cycle with at least two cycles per year. There are already marijuana cultivation companies in Montana that produce more than 6,000 mature plants per year. That level of cannabis entrepreneurship will increase in number as the recently legalized recreational cannabis industry grows, as it did in every other state in the first five years after legalization. Facilities of that size can generate a need for an estimated six million more gallons per year per facility, above the current domestic and commercial use rates. Montana is a semi-arid state, and many small communities are already suffering from severe water shortages in the summer months of June, July, and August. Without proper water use controls, parts of our state are going to suffer considerably from the expanded water consumption of legal indoor cannabis cultivation. Add to that the proven increases in illegal uses in Colorado, California, Oregon, Washington, and Alaska, (after legalization) which we can expect here, and the water-future of our state is grim and more threatened than it already is.

Illegal water-use thefts in other states have set astronomical records of cheaper, more profitable cannabis production. Illegal cannabis growers near Aspen, Colorado illegally dammed up the Aspen River to provide water for their massive growing operations. Illegal cannabis-related water thefts have been so frequent in most western states that thousands of legitimate water owners have experienced bankruptcy (Colorado), unnecessary municipal rationing (California and Montana), reduced crop values (most states), and have switched to less water consumptive crops in some areas. Records indicate that 75-80% of cannabis water demand occurs in the summer months of June, July, and August when Montana's existing municipal and commercial water usage is typically stressed the most. In those months, the conflicts of cannabis, municipal, and existing commercial water demand can be severe without proper regulation, and control. There exists considerable water control logic that indoor marijuana cultivators must develop and own their own water supplies without jeopardizing existing (and anticipated) public and commercial supplies.

Indoor water irrigation methods can improve indoor cannabis crop productivity and efficiency of water use. Drip irrigation systems are much more controllable and efficient, but can be more expensive when installation, flow controls, maintenance, and repair costs are factored in over the long haul. The most protective government regulations for year around maximum water availability for indoor cannabis cultivation, sustainable municipal supplies, and non-cannabis commercial operations are found in laws where the marijuana growers must supply and control their own water in ways that foreseeably will not interfere with municipal and other commercial development, supplies, operations, and waste management. If water quantities from existing, non-municipal, or existing commercial functions (piped or transported from other localities, or from wet season collection, or from underground sources) are not available, cannabis cultivation will continue to use higher rates of public water that would threaten Montana's established supplies and should not be allowed. Municipal and other commercial needs should always take priority in the decisions concerning water availability for just cannabis use.

#### AIR, SOIL, SEWAGE, and PRODUCT POLLUTION:

Any air, soil, or chemical contaminants used in the cultivation of indoor recreational marijuana will penetrate to some degree into the plant at some point in its development. That can create problematic use of some harmful (but much cheaper) illegal fertilizers, additive chemicals, contaminated water, pesticides, rodenticides, and insecticides. Although harmful to humans, but because of cheaper and faster effectiveness, some of these chemicals that are illegal are often used to the detriment of the product users. All soils used to cultivate marijuana should be tested by a certified laboratory before planting begins for each cycle. In 2017, as reported in the Great Falls Tribune, 17 marijuana users died in about one week in Pittsburg, Pennsylvania, because they had used marijuana contaminated with dangerous illegal agriculture chemicals. In 2019, hundreds of users in the San Francisco Bay area were hospitalized for the same reason. Legal laws, regulations, and testing should not allow any chemical additive by name, composition, or as a derivative, that is not 100% accepted by all national and state agriculture regulations. Any proven provision to any person of such chemicals should imprison all providers, their employees, and the business supervisors or owners to a minimum of several years in prison. Heavy fines with a minimum of \$5,000 to each guilty individual should accompany such convictions.

All cannabis product batches should be adequately tested for chemical safety by a legitimate testing laboratory before the products are packaged, distributed, or sold. Any cannabis organization that in any way (directly or indirectly) contributes chemically, psychologically, or physically to harmful marijuana products, their employees, and financial supporters should be banned from having any contact with any cannabis cultivation, manufacturing, or sales operations for one year after conviction. The cannabis industry should be additionally taxed yearly to specifically cover these enforcement efforts. If the same company, organization, or personnel commit similar crimes a second time, their prison times and fines should double, and they should be banned from any marijuana operation ever.

If natural gas is used for heating of water, cannabis products, or air temperature control, the marijuana cultivation facility should provide to the public electricity source, enough renewable electricity to equal the market cost of the natural gas or provide their own electrically renewable heating source.

All sewage residue that is produced directly or indirectly from marijuana cultivation and manufacturing facilities must be disposed of in ways that will not contaminate any soil, water, or natural resources. All cannabis-related operations must provide their own sewage tanks and pump them out when necessary, without depositing any sewage residue in a way that would contaminate any public soil or water drainage resources. Cannabis facilities must be responsible for their own sewage systems and tanks, must clean up their own leaks and spillage, and must not in any way contribute to the contamination of any soil or water.

Ben Forsyth

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I want answers from the city commission and city manager on what appear to be illegalities in the operation and funding of the Great Falls Public Library.

1. Under what authority did the library board contract for legal representation for the library when no where in the city code or the 1993 Agreement does the city grant the library board such power?

The April 20, 1993 Agreement signed by then City Manager Lawton and the Library Board Chairman states: *The City Manager shall execute all contracts and agreements for the library*;

The Official Code of the City of Great Falls, 2.18.070 states:

• Any and all contracts between the City and the Board in effect as of the date of adoption of Ordinance 3140 shall remain in full force and effect.

Ordinance 3140 was adopted on June 2, 2016. So that would mean the 1993 Agreement stating the City Manager shall execute all contracts and agreements for the library board would remain in full force. Thus, it appears that the library board unlawfully secured outside legal representation. The fact that the legal representation is pro bono is irrelevant to the fact that the library appears to have no authority to enter into such a contract. In addition, nothing in MCA TITLE 22. CHAPTER 1, PART 3, FREE PUBLIC LIBRARIES would contradict the part of the 1993 agreement that the city manager execute all contracts and agreements for the library.

2. <u>Under what authority did the city sign an agreement with library for 7 additional mills without a city commission vote or a public vote?</u>

I question the legality of "7 mills by agreement." The 1993 Agreement, signed by the city manager Lawton and the Library Board Chairman, with no apparent commission vote and no public levy, doesn't appear to be a legal way to award 7 mills to the library.

Official Code of the City of Great Falls: 2.18.040 - Tax levy—Special library fund.

• Subject to provisions of state law and the Charter of the City of Great Falls, the City Commission may levy in the same manner, and at the same time, as other taxes are levied a tax for the support of public library services.

This is similar language to what is found in MCA 22-2-304.

• MCA 22-1-304. Tax levy -- special library fund -- bonds. (1) Subject to 15-10-420, the governing body of a city or county that has established a public library may levy in the same manner and at the same time as other taxes are levied a tax in the amount necessary to maintain adequate public library service.

For clarification, MCA 15-10-420 merely codifies the procedure for calculating levies on property taxes; it doesn't change the manner of levying for the public library.

I haven't found, either in the city code or the MCA, any law stating that a public library can be funded mills "by agreement."

3. HB 234 clarified that public libraries and schools can be found guilty of violating Montana's obscenity law, specifically MCA 45-8-201. I request immediate removal of all materials available to minors that violate Montana's obscenity law.

#### AGREEMENT

This Agreement made and entered into this 20 day of Agric 1993, by and between the City of Great Falls, Montana, a municipal corporation of the State of Montana, hereinafter referred to as "City" and the Great Falls Library Board of Trustees, hereinafter referred to as "Library Board";

WHEREAS, an Agreement is deemed necessary to provide a basis for cooperation between the Library Board and the City for a more efficient management of library services; and,

WHEREAS, the powers and duties of the Library Board are established by statute under Title 22, Chapter 1, Part 3, MCA with implementation and policy decisions to be exercised by said board; and,

WHEREAS, pursuant to 22-1-309, (3) MCA, the Library Board is empowered to contract with City to provide library services;

NOW, THEREFORE, the parties mutually covenant and agree as follows:

- 1. All provisions of state statutes regarding the powers and duties of the Library Board are acknowledged by the parties hereto;
- The Library Board shall have the exclusive power and authority to determine policy for the operation of the library; prepare budgets; authorize expenditures; determine the selection of materials; and negotiate contracts and agreements as set forth in 22-1-309, MCA;
- 3. The City shall have authority and responsibility for all personnel matters, including hiring, firing and disciplinary proceedings, for all library employees, including the Library Director, except that appointment of the Library Director must be made in consultation with and be confirmed by the Library Board;
- 4. The Library Director shall have the "de facto" administrative status of a City department head and the Library Director shall report directly to the City Manager;

- 5. The Library Director shall be responsible to the Library Board for the execution of the policies of the Library Board as authorized in #2 above;
  - The City Manager shall execute all contracts and agreements for the library;
- 7. The City of Great Falls agrees to support the library budget in the amount of at least seven (7) mills. The funds so collected will be placed in a library fund and neither the principal nor the interest from such funds will be used for any purpose except to fund the library budget;
- 8. The term of this Agreement shall be for one year from and after July 1, 1993. The Agreement shall automatically renewed each year unless and until 90 days written notice of termination is given by either party prior to the anniversary date of the Agreement;
- 9. This Agreement shall be binding upon the successors and assigns of the parties hereto.

IN WITNESS WHEREOF the parties have caused this instrument to be executed by the persons duly authorized thereto the day and year first hereinabove written.

CITY MANAGER

Chairman of Library Board

CITY CLERK

Approved as to form: City Attorney

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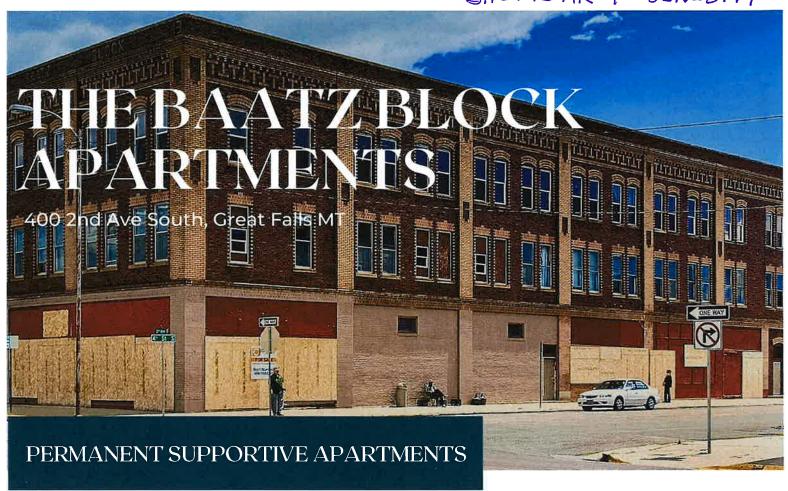
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The redevelopment of the Baatz building is a partnership between NeighborWorks Great Falls and Homeword to create The Baatz Block Apartments. The project will feature 25 apartments, with 24 units dedicated to permanent supportive housing for individuals and families who have experienced housing instability.

## What is Permanent Supportive Housing?

Permanent supportive housing is an intervention that combines affordable renter assistance with voluntary support services to address the needs of people experiencing chronic homelessness. The services are designed to build independent living and renting skills and connect people with community-based health care, treatment and employment services.

### **Project Details:**

- 25 Apartments Studio, 1 & 2 Bedrooms
- Service provider offices on ground level, such as physical and behavorial healthcare, employment assistance, etc.
- Expected completion in 2024



