

The Real Economics of Factory Livestock¹

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Livestock factories are taking over the U.S. livestock-meat industry. In spite of growing opposition, the number and size of large-scale, corporate-owned, factory-like livestock operations continues to grow. Consequently, the number of smaller, independent, livestock farming operations continues to decline. Large, corporate feed lots have dominated cattle feeding for several decades. In 1998, for example, the largest 30 cattle feeding operations had pen space for nearly 5 million head of cattle – roughly half of the total number of cattle on feed at any given time over the past few years. Hog production, on the other hand, was almost entirely independently owned as recently as a decade ago. But, today the 50 largest hog operations control over half of total hog production, mostly through contractual arrangements. There is talk in the industry that contract beef cowherds will be next. Within a decade, an independent, non-contract producer of cattle or hogs may be a rarity.

Economics of Self-interest

Many believe that further industrialization of livestock production is not only inevitable but is desirable – for producers and consumers alike. Those who defend these factory-like operations typically base their positions on short-run economic considerations. They point out that the industrialization of livestock production – through specialization, standardization and centralization of control – is being driven by the free market system. They claim that large-scale, specialized operations have lower production cost – that they realize significant economies of scale. They say that consumers are demanding a more consistent quality product and are willing to pay for it. They conclude that new technology in breeding, feeding, and housing of livestock is making these large-scale operations more efficient in meeting consumer demand, and thus, they are more profitable.

The proponents say that rural communities should welcome these large-scale corporate livestock operations as engines of economic development. Investments in livestock factories create jobs and enhance local tax bases in economically depressed rural areas – just like any other factory. After all, such areas don't have a lot of other development alternatives, and these big operations are going to locate somewhere. Family farms have not saved rural communities in the past, so communities must look elsewhere for the future. They reason that if these factory operations are more cost efficient than the smaller, family operations, even if marginally so, then traditional family farmers will inevitably be forced out of business anyway.

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On issues of the environment, supporters reason that if problems arise, it will be easier and less costly to work them out with a few large operations than with many small ones. The big operations have the money to invest in the modern waste handling facilities that ultimately will be required of everyone. Many smaller farmers don't. They admit that concerns for odors may be legitimate for those living nearby, but there are always costs associated with anything that generates benefits. No one wants a hog farm in their "backyard," but they have to be somewhere.

The thing that gives these arguments a ring of truth is their common foundation in the economics of short-run, self-interest. They are based on a deeply held faith that the promise of more profits, no matter how small, is the best means of allocating resources – whether it is allocation of people among alternative occupations, land among alternative uses, money among investments, or people among communities. Unfortunately, we have become a society where the pursuit of short-run economic self-interest is treated as a God-given right.

If short-run economic thinking prevails, there is every reason to believe that livestock factories will totally dominate animal agriculture in America within another decade. And, corporations will locate their livestock factories pretty much wherever they choose, regardless of the ecological and social consequences. They probably will avoid locating them in heavily populated areas to minimize nuisance lawsuits. But, money invested in factory livestock will seek its place of highest return, regardless of where that may be.

The only way to successfully challenge this outcome is to challenge its basic premise -- that short run profits should take precedent over the long run well being of people. The economics of short-run self-interest should be not allowed to dictate either private or public decisions. The legitimacy of livestock factories must be challenged at its economic foundation. Ultimately we must successfully challenge the legitimacy of the economics of narrow short-run self-interest as a guiding principle. But, we can begin by challenging the validity of the economic claims of proponents of large-scale, corporate livestock operations.

Industrialization is not Market Driven.

Proponents of large-scale, corporate operations claim that they provide a lower cost means of production. First, they may have lower cost than the "average" cost of smaller, independent operations – maybe as much as five percent lower, but they do not have lower costs than many independents. In other words, the factory operations are competitive because they have lower cost than "most" existing independent operations. But, it is also true that many independent producers have lower production cost than do the large, corporate operations.

For example, actual farm records routinely summarized by Midwestern universities have consistently shown that anywhere from 20 to 40 percent of independent commercial hog producers have cost of production lower than costs for the large corporate operations.

So a well-managed, smaller, independent hog operation can compete cost-wise with the most efficient of the large operations. If all independent operations were managed as well as the top 20 to 40 percent, hogs could be produced at a lower cost on independent, commercial hog farms than in the large-scale corporate operations. Smaller operations are going out of business because they are losing access to competitive markets – not because they can't compete on cost.

Proponents also argue that consumers will benefit from lower-cost factory livestock operations. Even if they do, it won't be by enough to notice. Consumers spend just a little over a dime of each dollar of their disposable income for food, and beef and pork make up less than 15 percent of the total. Producers get only a small portion of what consumers pay at retail. The farm value of pork accounts for around 35 percent total retail cost (closer to 20 percent in 1998), and the farmers' share for beef is close to 50 percent of retail. So any realistic difference in farm level costs would have relatively little impact on retail meat prices and even less on consumers' total food costs.

For example if production costs, on average, were five percent less for large operations; say \$2/cwt for live hog and \$3.50/cwt for fed cattle; the "maximum" savings to consumers would amount to only about *two cents per dollar* spent for beef and pork at retail. At best, total food costs would be *three-tenths of one percent* less and consumers on average would spend only *three-one-hundredths of one percent* less of their income for food. Any savings would be lost in rounding errors in consumer food cost statistics. With a handful of large corporations gaining control of the livestock and meat industry, it seems far more likely that in the long run meat prices would go up rather than down as a consequence of further industrialization. They wouldn't want to control the market unless they intended to make larger profits – higher corporate profits would drive consumer prices up, not down. The only ones who really need to shave another penny or two off production costs are those who are trying to export more meat into highly competitive world markets. That doesn't include many family farmers or consumers.

Proponents argue also that the trend toward large-scale, corporate livestock operations is driven by consumer preferences. Meat from factory operations may well be more uniform because it all comes from the same basic genetic stock and is produced using very similar feeding management practices – as is currently the case for poultry. Consumers do want consistency in their products – they want a food product, such as a choice steak, to have the same eating qualities each time they buy it. However, that does not mean that all consumers want the same thing – that we would all prefer the same steak or pork chop.

People are different. Consumers have different tastes and preferences – different perceptions of quality. Making all pork or beef "the same" would not necessarily please more consumers, because they all don't want the same things. The poultry people brag about the great variety of products they offer to consumers. They realize that people want variety, and so, they try to create the illusion of consumer choice. But, the fact of

the matter is that all this so-called variety is nothing more than the “same generic chicken” cut up, packaged, and processed in dozens of different ways. Greater profit for producers and processors, not consumer satisfaction, is the real driving force behind the current trend toward industrial meat production.

Supporters of large-scale operations are simply responding to incentives arising from free markets. It's the promise of profits that is driving the current trend toward industrialization – that's what made America great. The motive most certainly is profits, but it most certainly is not to make profits by supplying free markets. Instead corporate producers are doing everything they can to free themselves from any free market forces that might tend to limit their profits. The poultry industry serves as a model to the pork and beef industries. Once all stages of production, from live animals to the retail meat case, are controlled by a handful of corporate firms they will be able to stabilize supplies and prices at higher and more profitable levels. When shifts in market conditions require supply adjustments to maintain profits, the negative consequences of such adjustments will be shifted to their contract growers. That's not free market competition and that's not what made America great. Control of markets, not free markets, is the driving force for industrialization of livestock.

Livestock Factories are not Good for Rural Communities.

Livestock factories promise badly needed jobs for economically depressed rural areas. When a large, corporate livestock operation locates in a rural community, there almost certainly will be more jobs available in that community than before. But, the overall quantity of meat demanded by consumers will not expand just because corporate operations take control of an industry. If anything, demand for red meats has declined since beef and pork production has become more consolidated. So each hog or steer sent to market from a factory livestock operation means a market for one less steer or hog from an independently owned operation. Every time factory livestock takes a larger share of a market, independent livestock producers lose market share.

The job creation claim is at best only true in a narrow sense because, on balance, industrial livestock operations destroy more jobs than they create. Different studies report estimates of from one-and-a-half to three independent hog producers lost for every job created by industrial hog operations. The specific numbers depend on the underlying assumptions, but the conclusion that more jobs are destroyed than are created relies only on common sense. A fundamental principle of industrialization is the substitution of capital and technology for labor and management – to make it possible for fewer people to produce more. Large-scale operations simply concentrate the jobs created in one place and call it economic development while the larger numbers of jobs lost elsewhere are ignored or denied. In total, numbers of independent livestock producers displaced will most certainly be greater than the number of jobs created in new large scale, corporate operations. North Carolina and Missouri lead the nation in the rate of increase in hog numbers as they led the nation in rate of decline in hog farmers.

Proponents argue that livestock factories offer better jobs than does farming. The risks may be less and the pay may be steady, but most livestock factories pay little more than minimum wage. In other respects, factory jobs are clearly less desirable than farming. Factories "use up" people. Assembly line work is "non-thinking" work. When you work on an assembly line, you simply do what you are told as fast as you can for as long as you can. Ask anyone who has been there. Large-scale livestock operations may not look like factory assembly lines, but the principle is the same. Big hog operators, for example, don't want people who know anything about raising hogs. They want people who can be trained to do what they are told to do without thinking. An experienced hog farmer might start thinking, asking questions, and mess up their process. Livestock factories, like other factories, are looking for people who are dependable, who know how to carry out orders, and will work hard for a little money.

In addition, a large confinement livestock facility is not a pleasant or healthful place to work. For example, known health risks are associated with continuously breathing air that arises from manure pits in confinement hog facilities. Health problems cost money in lost wages and health care costs. But more important, an unhealthy workplace can destroy peoples' lives. So why do people accept such jobs? History has proven that people will choose to work in dangerous work environments when they are desperate for work. Many rural people are desperate.

Supporters of corporate farming contend that contract production provides a way for farmers to continue farming under difficult times. Contract production may be a way to continue producing livestock, but contract production, in concept, is no different from working in a corporately owned facility. When a farmer signs a comprehensive production contract, they have turned all of the thinking over to someone else. The farmer may own the production facilities, but the corporation makes all of the decisions -- genetic selection, feeding and medication regimes, timing of placement and delivery, etc. The farmer becomes just another hired hand carrying out the company's instructions. Once the farmer signs a comprehensive production contract, he or she may have a job on the farm, but they are no longer a "farmer."

Other kinds of factories have come to rural America in the past. When these factories have found people in other regions, or in other countries, who would work even harder under more dangerous conditions for less, they moved on. Corporately owned factories have no roots. They leave behind a workforce that doesn't know how to do anything other than what they are told. Intelligent, thinking, capable, independent people are transformed into detached, non-thinking, possibly disabled people who may be psychologically incapable of earning a living without depending on someone else to tell them what to do. Adam Smith even warned of such an outcome in his landmark book on economics, The Wealth of Nations. Our cities currently are plagued with such people -- people whose capacities have been degraded by factories long since gone. It just doesn't seem to make sense to do the same thing to rural people. The whole truth is that when we replace independent, family farmers with livestock factories we are

degrading the most valuable resource rural areas have to support their future development – rural people.

Livestock Factories Degrade the Natural Environment.

Well-financed corporations may be more capable of dealing with any environmental problems that arise from confinement animal feeding operations, but they are far more likely to create problems than to solve them. They typically are better financed and have access to technologies that may not be feasible for smaller operations. But, large-scale operations are inherently more threatening to the environment than are small-scale operations, and thus, create more problems than they can solve. In fact, the large operations might well lose any competitive edge they now have if they were forced to invest in appropriate environment-protecting technologies.

If animals are scattered out across the landscape -- as in small family farming operations -- with animals running free on pastures, letting their manure lay where it falls, they really don't bother anyone very much. Ten thousand animals spread across ten thousand acres isn't a problem, but ten thousand animals in a five-acre feed lot may create an environmental nightmare. When a large numbers of animals are placed in a confinement facility, environmental problems are created that simply did not exist when livestock were produced on pastures.

Even when diversified livestock/crop farms have feed lots, livestock manure normally is spread back onto cropland where the feed grain was grown. Most of the nutrients used to grow the crops are returned to the soil. But, when feed grains from specialized crop farms are shipped to distant livestock factories, the nation's future productive capacity is being stacked up and flushed out into places where crops can't grow. We can treat the symptoms – air pollution and water pollution – but the basic problem of piling up too much stuff is inherent within the system of large-scale, concentrated production.

Once you start collecting manure, flushing it, spreading and spraying it around – all normal practices in confinement animal feeding operations – it becomes pollution. It pollutes the air with foul odors and pollutes water through leaching or runoff. Air pollution and water pollution are symptoms of the same basic problem -- too much manure in one place. For example, the difference between the hog lagoon spills, such as those occurring in Missouri and North Carolina in recent years, and the normal runoff from a hog pasture is a simple matter of concentration. When you put a lot of hogs in the same place, you have to collect and store the waste. If it gets into the ground water or gets flushed into streams, it kills fish, clogs streams and lakes with algae, feeds water born disease organism, and wreaks havoc on the environment.

Supporters of the concentrated feeding operations claim that less intensive production methods, such as producing livestock on pastures, will require more land to produce the same amount of food and fiber, and thus, will require use of land that might have been set aside for wildlife or other ecological uses. First, each pound of meat that can be produced on pastures is a pound of meat that will not require land to be use for feed

grain production – the single largest claimant of agricultural land and biggest user of agricultural pesticides. In addition, whenever grain feeding is required in producing an acceptable product, livestock can be fed out on small, diversified farming operations. Wildlife habitat can be an integral aspect of such farming operations – farming and wildlife sharing the same spaces. Many species of wildlife do not require isolation from people, but only require isolation from the destructive actions of people – such as factory farming. There is nothing to indicate that ecologically sound livestock would leave any less wildlife habitat than would livestock factories – in fact there are strong arguments to the contrary.

Proponents who admit inherent environmental risks with factory feedlots claim that it will be easier to monitor the problems with a few big feed lots than with thousands of small farmers. However, the “need” to monitor is linked directly to the large-scale, corporate nature of many of today’s livestock operations. Small family-based operations might require far fewer regulations and far less monitoring to achieve higher levels of environmental quality. Without regulation, large-scale corporate operations, by their very nature, will impose costs on their neighbors – air pollution, water pollution, and others – that are not part of the historic costs of producing livestock. It will cost money for these livestock factories to deal with “externalities” such as air and water pollution. No “bottom-line” driven corporation will incur those costs unless they are forced to do so by government regulations – federal, state, or local.

Family farmers are people with human feelings and values, and most feel some sense of responsibility to their communities and the environment. Admittedly, there are some irresponsible and uncaring family farmers. But, family farmers at least have personal incentives to be stewards of the environment and good neighbors, regardless of how they may choose to behave. Public corporations have no such incentives. They are not people. Corporations have no heart or soul. Stockholders often are so detached from their investments they don’t know or care what stocks they own – just as long as they make money. Local managers and workers may be good people who really care about the community, but when it comes to keeping their job, they must put profits and growth ahead of community. Professed corporate support of local communities, by necessity, can be nothing more than another strategy for profit and growth. Thus, government regulation and continual conflict are an inherent fact of corporate life.

Some people argue that contract producers are no different from any other family farmers. But, contract farmers are not making the decisions that affect the environment any more than they are making the decisions that affect the economics of their operations. The folks back at corporate headquarters decide what type of manure handling facilities they are going to use, or at least set production standards which severely limit the logical options. Corporate contractors typically send their contract farmers into the political arena to defend the corporation from environmental regulation. But, regulation of contract producers is just as necessary and inevitable as regulation of corporations.

Some Real Economics

If there is a penny of profit to be made by turning farm feed lots into meat factories, the agribusiness corporations will do it. They will do it even if the benefits to consumers are negligible and the damage to rural communities is great. If there are a handful of jobs and a few dollars in tax revenue to be gained, some desperate rural community will go for them -- even if far more farmers elsewhere are forced out of business and tax revenues eventually fall short of other costs to the community. If the large corporate operations have to clean up their environmental messes, you can bet they will force similar restrictions upon smaller, diversified operations -- not out of concern for the environment, but as a means of upping their own competitive advantage. The only thing that really matters to them is short-run, economic self-interests. A publicly-held corporation is incapable of being concerned with anything else.

But, corporate profits should not be allowed to take precedent over the lives of people. The future of rural communities should not be sacrificed to satisfy corporate greed. The natural environment should not be sold to the highest bidders -- who invariably are its biggest exploiter. True economics does not demand that profits take priority over the earth and its people.

Adam Smith, the father of conventional economic thinking, didn't say that pursuit of profits by large, corporate operations would result in the greatest benefit to society as a whole. Most economic enterprises were in Smith's time, over 200 years ago, were small, family operations. For such operations, land, labor, capital, and management often resided in essentially the same entity, and farming was still the dominant occupation. Few enterprises were large enough to have any impact on the marketplace as a whole. Market transactions were direct between buyer and seller -- there were few opportunities for deceptive sales practices. Trade was mostly in basic commodities -- every seller's wheat, bread, or shoes were pretty much the same offered for sale by other sellers. Under these conditions, profits were quickly competed away in highly competitive local markets.

There were few corporations in Smith's time, but he wrote about the dangers of monopolies and excess profits, -- "the price of a monopolist is upon every occasion the highest than can be got (p. 28)." He considered "joint stock companies," corporations, to be inherently irresponsible entities, and could think of only a handful of endeavors where publicly owned corporations could be justified (p. 341). Even those would require close public scrutiny and government control, he warned.

Human populations back then were small enough and technologies were sufficiently benign that people could have little permanent impact on their natural environment -- at least not on a global scale. Strong cultural, moral, and social values dictated the norms and standards of "acceptable" individual behavior. Smith could not conceive of a society in which the welfare of the poor and hungry would not matter, or where people in general would behave in unethical or immoral ways. "No society can surely be

flourishing and happy, on which the far greater part of the members are poor and miserable” (p 36).

In the environment within which conventional economics was born, in Smith's time, pursuit of self-interest might have served the interests of society reasonably well. But, the world has changed over the past 200 years. None of the important assumptions of truly competitive markets -- the prerequisite for efficient resource allocation by free markets -- are valid in today's economy.

Today, giant corporations dominate almost every sector of local and global economies. Through mergers, joint ventures, and strategic alliances, corporations have formed “virtual” monopolies -- irresponsible entities that maximize profits “upon every occasion.” Corporate profits today are far larger than any concept of “normal” profit envisioned in classical economics. Corporations are inherently non-human entities -- regardless of what the Supreme Court has said and regardless of the nature of their managers and stockholders. Corporations have no heart, they have no soul.

The basic economic resources of land, labor, capital, and management now reside in separate entities, sometimes divided even among nations. Labor and management are in continual conflict, and most corporate shareholders -- owners of mutual funds and pension funds -- are hardly conscious of how much of what companies they own. Land has become just another marketable commodity to be exploited and used up.

Producers and consumers have become disconnected, geographically and conceptually, as a consequence of industrialization. Consumers no longer have any personal knowledge of where their products come from or of who is involved in their production. They must rely on a complex set of standards, rules, and regulations for product information, and today's advertising consists of “disinformation” by design. Superficial product differentiation abounds -- through processing, packaging, advertising, and marketing gimmicks -- making price competition impotent if not impossible.

Human activities are no longer ecologically benign -- if they ever really were. The pressures of growing populations and rising per capita consumption are now depleting resources of the land far faster than they can be regenerated by nature. Wastes and contaminants from human activities are being generated at rates far in excess of the capacity of the natural environment to absorb and detoxify them. Fossil fuels, the engine of twentieth-century economic development, are being depleted at rates infinitely faster than they can ever be replenished. Human population pressures are destroying other biological species, upon which the survival of humanity may be ultimately dependent. The human species is now capable of destroying almost everything that makes up the biosphere we call Earth, including humanity itself.

The society of Smith's day was weak on economics -- hunger, disease and early death were common -- but it had a strong cultural and ethical foundation. However, that social

and ethical foundation has been seriously eroded over the past 200 years -- as glorification of greed has replaced enlightened self-interest. Civil litigation and criminal prosecution seem to be the only constraints to the unethical and immorality pursuit of profit and growth. Concerns of the affluent for today's poor seem to be limited to concerns that welfare benefits may be too high or that they will be mugged or robbed if the poor become too desperate. Smith's defense of the pursuit of self-interest must be reconsidered within the context of today's society -- a society that is now strong on economics but weak on community and morality.

The earlier phases on industrialization were likely good -- at least for society as a whole. It lifted much of humanity out of a life to drudgery and despair. But over time, as the "invisibly hand" became less and less capable of transforming greed into good, the benefits of industrialization fell and its costs began to rise. Only in the past 30-40 years has it become obvious to anyone willing to look that industrialization has turned from creating benefits to society in general to creating profits for the few who have money to invest in the industrial corporations.

Proponents of factory livestock operations argue that the industrialization of agriculture is nothing more than a continuation that has been underway in agriculture and elsewhere for the past couple of centuries. And so, they ask, "why is everyone getting so up tight about it now?" They are right, the trend toward industrialization has been underway for a couple of hundred years and the current industrialization of agriculture is just the latest phase in a long painful process. But, there is little doubt in the minds of many that corporations, in general, now do far more damage to the natural environment and communities of people everywhere that any good they might do in additional material goods, employment, and income. People are "up tight" because they don't want the same things to happen to agriculture that has already happened in much of the rest of society. They have had enough.

It's Just Common Sense

Society simply cannot justify destroying the lives and livelihood of thousands of struggling farmers to create huge profits for a few corporations by saving mostly affluent consumers a few pennies on a steak or pork chop -- particularly not when costs could be reduced as much or more by simply helping more farmers manage as well as many already do. It's not socially responsible. It may make short-run economic sense, but it doesn't make common sense.

As consumers, we don't want our meat to come from genetically identical hogs and cattle, fed the same rations, to identical weights, and then cut, processed, and packaged in dozens of different ways to make us think we are getting something different. We are different people and we have different tastes and preferences. Forcing everyone to buy the same corporate hog or steer just to satisfy corporate greed doesn't make sense -- regardless of whether it is possible and profitable.

Free markets might very well be capable of meeting the needs of society through the pursuit of individual self-interests. But we no longer have free markets – at least not free in any sense needed to ensure the common good. What's happening in the livestock industry today is not a response to free markets, but instead is a brazen attempt to serve private interests at the expense of society. It's not socially responsible. It may make short-run economic sense, but it doesn't make common sense.

The people of rural America are being sacrificed in the name of economic progress and corporate growth. Farming is being made obsolete by industrialization, not because farming is inefficient in meeting the needs of society, but because it is inconsistent with maximum profits and growth for corporate shareholders. Livestock factories require assembly line workers, not thinking, caring, independent decision-makers. As rural communities promote growth by trading farmers for corporate hired hands, they are not only destroying the lives of those who have helped build their communities, they are trading away the human resources upon which the future development of their communities must depend. This is not socially responsible. It may make short-run economic sense, but it doesn't make common sense.

Society simply cannot justify destroying the natural environment of rural areas just to create huge profits for a few corporations, even if there are fewer people in rural areas to complain, and rural environments are generally less polluted than elsewhere -- particularly not when society has so little to gain and so much to lose. Industrialization concentrates too much "stuff" in one place. Nature is inherently diverse and naturally dilutes. Thus, industrialization and nature are in inherent conflict. The natural result of this conflict is polluted air, polluted water, degraded resource productivity, and unhealthy people. All of these problems are inherent within the nature of industrial systems of production. Industrial systems are not ecologically sound. They may make short-run economic sense, but they don't make common sense.

It doesn't make sense to apply the same environmental rules to small, diversified family farms as to large, specialized livestock factories – the environmental risks are in no way comparable. It doesn't make sense to spend millions of tax payer dollars trying to help corporate agriculture find ways to cope with the environmental problems of factory livestock operations, when there would be no such problems without livestock factories. It doesn't make sense to mine nutrients from the soil in grain growing regions in order to create mountains of environmental wastes in places where crops can't grow. It doesn't make sense to force people out of business who have a obvious vested interest in protecting the environment, only to replace them with corporations that are fundamentally incapable of environmental consciousness. None of these things are ecologically sound. They may make short run economic sense, but they don't make common sense.

The economy is a creation of people designed to serve the people – not the other way around. Any economic system that fails to support society, eventually will be rejected by society – it is not sustainable. Systems that are not socially responsible are not

economically viable over time. Livestock factories are not socially responsible systems of production, and thus, are not economically viable – no matter how profitable they may appear in the short run. This is the real economics of livestock factories.

Opposing corporate interests, in agriculture and in the general economy, is necessary but not sufficient to sustain the quality of human life in rural communities and in society in general. Being against something is not enough, we must also be for something. We must develop a positive vision for the post-industrial society toward which we want to move. That vision is emerging under the conceptual umbrella of sustainability – sustainable agriculture, sustainable communities, and sustainable development.

Sustainability is not just about the future, it is also about “now.” It’s about meeting our needs in the current generation while leaving equal or better opportunities for those of generations to follow. It’s about taking care of ourselves, sharing with our neighbors, and being good stewards of nature so there will be enough left for those of tomorrow. Sustainable farms, communities, and societies must be economically viable, but they must also be ecologically sound and socially responsible. Economics provides the optimum means of using up or exploiting resources – both human and natural. But economics does not even address the necessity for conserving or regenerating resources for the future. Thus, decisions guided by short-run, economics alone will sustain neither people nor nature. In the future we must make purposeful, conscious decisions to take care of each other and take care of the natural environment while taking care of ourselves. In fact this is the only way that we can truly take care of ourselves. We cannot rely on some “invisible hand” to somehow transform our greed into fulfillment of our social and ethical responsibilities.

The “real” economics of livestock factories is not the economics of short-run self-interest, but instead is the long run economics of sustainability. Any system of production that is not socially responsible and ecologically sound cannot be sustained over time, and thus, is not economically viable. Large-scale corporate livestock operations are not socially responsible, they are not ecologically sound, and thus, they are not economically viable. This is the “real” economics of livestock factories – it’s just common sense.

Smith, Adam. 1776. An Inquiry into the Nature and Causes of the Wealth of Nations, Fifth Edition, Edinburg: Adam and Charles Black, London, MCDDDLXI

DEPARTMENT OF ENVIRONMENTAL QUALITY



MARC RACICOT, GOVERNOR

STATE OF MONTANA

PUBLIC NOTICE NO. MT-99-06

Revised September 2, 1999

Purpose of Public Notice

The purpose of this notice is to state the Department's intention to reissue Montana Pollutant Discharge Elimination System (MPDES) General Permit To Discharge Process Waste Water From Concentrated Animal Feeding Operations (CAFOs) under the authority of MCA 75-5-402 and ARM 17.30.1301 et seq. and hold two public hearings.

Permit Information

APPLICANT NAME: Owners and operators of CAFO facilities

APPLICANT STATUS: Renewal

FACILITY LOCATION: Statewide

PERMIT NUMBER: MT-G010000

EXPIRATION DATE: August 31, 2004

The purpose of this notice is to state the Department's intention to issue a "General Discharge Permit" under the authority of MCA 75-5-402 and ARM 17.30.1201 et seq., Montana Pollutant Discharge Elimination System. The permit will allow discharges from concentrated animal feeding operations that meet the effluent limitations and other conditions specified in the permit. Applicants for the general discharge permit will be required to apply to the Department for written authorization. A MPDES permit is required to ensure that discharge limitations are met, water quality standards are complied with and monitoring is conducted where necessary.

CAFOs are required by the permit to contain all process-generated wastewater. CAFO facilities must be constructed and maintained to contain all contaminated runoff up to the amount of precipitation resulting from the 25-year, 24-hour storm event. The tentative general permit requires that facilities housing more than 1,000 animal units develop and implement a comprehensive plan to manage all livestock waste. Plan implementation is required within one year of receiving a written authorization from the Department.

A copy of the tentative permit and accompanying Environmental Assessment and Statement of Basis may be obtained by contacting:

The Department of Environmental Quality
Water Protection Bureau
P.O. Box 200901
Metcalf Building
Helena, Montana 59620
Phone (406) 444-3080.

Two public hearings were held to record public comment on the general permit at the following dates and locations:

1. Tuesday, August 24th from 7 PM to 10 PM
Student Union Ballroom, Montana State University-Billings Campus
1500 North 30th Street
Billings, Montana
3. Monday, August 30th from 7 PM to 10 PM
College of Technology Campus
Heritage Hall
2100 16th Ave. South
Great Falls, Montana

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Register of Interested Persons

Any person interested in a particular application, or group of applications, may submit their name, address, and telephone number to the Department for the purpose of being included on the mailing list of persons with an interest in MPDES permit actions.

Public Comment

Public comments are invited ANYTIME PRIOR TO CLOSE OF BUSINESS, November 2, 1999. All comments received or postmarked PRIOR TO CLOSE OF BUSINESS November 2, 1999 will be considered in the formulation of final conditions to be included in the general permit.

If no objections are received within the specified comment period, the Department will issue a final determination within sixty days of the date of this notice. Additional information may be obtained upon request by calling (406) 444-3080, or by writing to the aforementioned address. The draft permit, environmental assessments, and related documents are available for review and reproduction at the aforementioned address.

GENERAL DISCHARGE PERMIT

CONCENTRATED ANIMAL FEEDING OPERATION

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE

MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Section 75-5-101 et seq., MCA and ARM 17.30.1301 et seq., ARM 17.30.1001 et seq. and ARM 17.30.601 et seq., applicants with an authorization letter for this "CONCENTRATED ANIMAL FEEDING OPERATION - GENERAL DISCHARGE PERMIT", are permitted to discharge process wastewater from concentrated animal feeding operations in the state of Montana, to waters of the state, in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I and II.

This permit shall become effective on September 1, 1999.

This permit and the authorization to discharge shall expire at midnight, August 30, 2004.

TENTATIVE

FOR THE MONTANA DEPARTMENT OF
ENVIRONMENTAL QUALITY

Frederick C. Shewman, P. E.
Permitting & Compliance Division

Dated this 13th day of May 1999

TABLE OF CONTENTS

PART I EFFLUENT LIMITATIONS AND WASTE DISPOSAL REQUIREMENTS 3

A. EFFLUENT LIMITATIONS3

B. WASTE DISPOSAL REQUIREMENTS.....4

C. COMPREHENSIVE NUTRIENT MANAGEMENT PLANS.....4

D. MONITORING AND REPORTING REQUIREMENTS5

PART II GENERAL CONDITIONS..... 7

A. FACILITIES OPERATION7

B. REMOVED SUBSTANCES7

C. RIGHT OF ENTRY7

D. TRANSFER OF OWNERSHIP OR CONTROL8

E. AVAILABILITY OF REPORTS.....8

F. RETENTION OF RECORDS.....8

G. TERMINATION OF AUTHORIZATION8

H. TOXIC POLLUTANTS8

I. CIVIL AND CRIMINAL LIABILITY9

J. CONTINUATION OF THE EXPIRED GENERAL PERMIT.....9

K. DUTY TO MITIGATE.....9

L. OIL AND HAZARDOUS SUBSTANCE LIABILITY9

M. PROPERTY RIGHTS9

N. SEVERABILITY.....9

O. REQUIRING AN INDIVIDUAL MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES) PERMIT9

P. REQUESTING AN INDIVIDUAL MPDES PERMIT.....10

Q. REQUESTING AUTHORIZATION UNDER THE GENERAL PERMIT.....10

R. PERMIT MODIFICATION, REVOCATION, TERMINATION10

S. REAUTHORIZATION10

T. REOPENER PROVISIONS. THIS PERMIT MAY BE REOPENED AND MODIFIED (FOLLOWING PROPER ADMINISTRATIVE PROCEDURES) TO INCLUDE THE APPROPRIATE EFFLUENT LIMITATIONS, COMPLIANCE SCHEDULE, IF NECESSARY, OR OTHER APPROPRIATE REQUIREMENTS IF ONE OR MORE OF THE FOLLOWING EVENTS OCCURS: 10

PART III. DEFINITIONS 11

PART I EFFLUENT LIMITATIONS AND WASTE DISPOSAL REQUIREMENTS

A. Effluent Limitations

Effective immediately upon issuance of an authorization under this general permit and lasting through the expiration date, the following effluent limitations apply to all of the Concentrated Animal Feeding Operations (CAFOs) covered by this permit: there shall be no discharge of process wastewater pollutants to the waters of the State of Montana except as provided for below.

1. A discharge of pollutants to surface waters of the state may occur whenever rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 25-year, 24-hour, rainfall event for the location of the CAFO.

A map showing 25-year, 24-hour rainfall for Montana is given in Attachment A to this permit. The 25-year, 24-hour rainfall value for the location of the CAFO covered by this permit shall be determined from this map.

For purposes of determining compliance with the effluent limitations of this permit, the amount of precipitation that occurred shall be based on the data from the nearest weather station with a precipitation gage. See Attachment B for a map of weather stations in Montana. The permittee has the option of maintaining a functional and reliable precipitation gage at the facility.

2. A discharge of pollutants to state ground waters may only occur when the seepage or leachate volume from an existing CAFO, combined with the volume of ground water beneath the source, results in a ground water concentrations of nitrate plus nitrite as nitrogen ($\text{NO}_3 + \text{NO}_2 - \text{N}$) and fecal coliform bacteria in compliance with applicable human health standards given in Department Circular WQB-7 and the Administrative Rules of Montana (ARM) 17.30.1006. Except as specified by ARM 17.30.1006, a discharge of pollutants to state ground waters from a CAFO which is a new or increased source may only occur when the seepage or leachate volume combined with the volume of ground water beneath the source, results in a ground water $\text{NO}_3 + \text{NO}_2 - \text{N}$ concentration of 7.5 mg/L or less. These standards and limitations apply immediately below the discharge point or at the down-gradient boundary of an applicable ground water mixing zone.
3. The concentration of fecal coliform bacteria in ground water as a result of CAFO operations shall be less than one organism per 100 milliliters. This standard

applies at the down-gradient edge of an applicable mixing zone.

B Waste Disposal Requirements.

1. All land areas utilized by and operated under the authority of the permittee for the application of manure, other solid waste, and liquid wastes shall provide waste treatment through plant nutrient uptake during the growing season following application. Wastes shall be applied so as to prevent any pollutant from such materials from entering state waters, subject to the provisions as provided in permit conditions on "Effluent Limitations".
2. The land application rates of solid manure, liquid manure, or other solid or liquid wastes, shall not exceed agronomic uptake rates for nutrients. No land application under this section shall cause or contribute to a violation of water quality standards.
3. Irrigation practices shall be managed so as to prevent ponding of wastewater within the application area and minimize the occurrence of nuisance conditions such as odors and flies.
4. All facilities utilized by and operated under the authority of the permittee for the collection, storage, or treatment of manure, bedding materials, silage, feeds, feed concentrates and other substances having a waste contributing potential shall be managed to prevent any pollutant from such materials from entering state waters, subject to the provisions as provided in permit conditions on "Effluent Limitations".
5. All wastes from dipping vats, pest and parasite control units, and other facilities utilized for the application of hazardous or toxic chemicals shall be handled and disposed of in a manner that prevents any pollutant from such materials from entering state waters, subject to the provisions as provided in permit conditions on "Effluent Limitations" and then only in accordance with the provisions of any toxic pollutant effluent standards established pursuant to 75-5-304 MCA.

C. Comprehensive Nutrient Management Plans

1. All CAFOs having 1,000 animal units or more are required to have on site and implement a Comprehensive Nutrient Management Plan (CNMP) within 365 days (1 year) of the issuance date of the permit. The CNMP must be updated annually to quantify the amount of animal wastes generated by the facility and demonstrate how the facility provides treatment for these wastes through land application. The land application rate for CAFO-generated wastes shall be according to the conditions of the permit regarding "Waste Disposal Requirements". At a

minimum, the annual CNMP must provide for the following:

- a. modification of animal feeds to reduce the nutrient content of manure, minimize feed wastes and prevent feed wastes and feed additives from entering state waters;
 - b. manure handling and storage to prevent water pollution and minimize odors; diversion of clean water from contact with confinement lots, holding pens and stored manure; construction and maintenance of waste collection, conveyance and storage systems that prevent discharges of organic matter, sediment, nutrients, and pathogens to ground or surface water in amounts greater than that allowed by the effluent limitations and applicable water quality standards;
 - c. application of manure to cropland that balances soil and fertilizer nutrients with crop requirements; soils and manure testing to determine nutrient content; land application methods and timing that prevents the loss of nutrients to surface water and minimizes loss of nutrients to ground water; and calibration of application equipment to ensure the planned application rate; and
 - d. crop residue management, grazing management, and implementation of other conservation practices to minimize movement of soil, organic materials, nutrients, and pathogens from land application areas to surface and ground water.
2. The plan shall be signed by the owner and shall be retained on site in accordance with Part II.F. (Retention of Records) of this permit.

D. Monitoring and Reporting Requirements

1. The permittee shall report any surface water discharges to the Department within 24 hours or during the first business day following a discharge that occurs on a weekend or holiday.
2. The permittee shall provide the Department with the following information within five (5) days of any surface water discharge:
 - a. A description of the discharge and cause, whether excess precipitation, snow melt, or other causes (e.g., structural failure, equipment breakdown, flooding);

- b. The period of discharge, including exact dates and times;
 - c. An estimate of discharge rate;
 - d. Name of the receiving drainage or water body and a description of any visible effects on drainageways, water quality and aquatic life;
 - e. Name of person recording discharge;
 - f. Corrective steps taken, if appropriate; and
 - g. A record of the total precipitation at the official gage station identified with the facility, or at an on-site rain gage, for the period of weather that resulted in the discharge.
3. Any surface discharge resulting from a non-precipitation runoff event (e.g., dike or structural failure, equipment break down, human error) shall be described and reported to the Department as indicated in D.2 above.
4. Monitoring of discharges to ground water from waste collection or storage facilities or land application areas may be required by the Department for CAFOs within areas having shallow ground water or soil materials in the unsaturated zone with low filtering capacity. (Such materials may include coarse-textured sediments or fractured bedrock.)

When required by the Department, the above information shall be sent to:

Montana Department of Environmental Quality
Water Protection Bureau
P.O. Box 200901
Helena, Montana 59620-0901
Phone: (406) 444-3080

5. Records shall be retained for a minimum of three (3) years or longer if required by the Department and must, at a minimum, document the following:
- a. Annual number and class of livestock at the facility;
 - b. Tons of solid waste produced per year;
 - c. Tons of solid waste land-applied per year;

- d. Gallons of liquid waste produced per year;
- e. Gallons of liquid waste land applied per year;

- f. Annual acreage, location and crop cover, of area receiving waste applications;

- g. Total Kjeldahl nitrogen, nitrate-nitrogen and total phosphorus concentrations of applied wastes based on annual sampling

PART II GENERAL CONDITIONS

A. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

- 1. Open lots and associated wastes shall be isolated from outside surface drainage by ditches, dikes, berms, terraces or other such structures designed to carry peak flows expected at times when the 25 year, 24-hr. rainfall event occurs.
- 2. Dead animals shall be properly disposed of within three (3) days unless otherwise provided for by the Director. Animals shall be disposed of in a manner to prevent contamination of state surface or ground waters or create a public health hazard.

B. Removed Substances

Solids, sludges, or other pollutants removed in the course of control of wastewaters shall be managed in a manner that prevents any discharge of pollutants to state waters in amounts in excess of the effluent limitations and applicable water quality standards.

C. Right of Entry

The permittee shall allow the Director of the Department, or authorized representatives, upon the presentation of credentials:

- 1. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- 2. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any pollutant storage area, discharge of pollutants, ground water monitoring point or

surface water.

D. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Department.

E. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 75-5-633, MCA.

F. Retention of Records

The permittee shall retain copies of all records required by this permit for a period of at least three years from the date reported.

G. Termination of Authorization

After notice and opportunity for a hearing, this authorization may be suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this permit;
2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
3. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

H. Toxic Pollutants

If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

- I. Civil and Criminal Liability
Nothing in this permit shall be construed to relieve the permittee from administrative, civil or criminal penalties for noncompliance.
- J. Continuation of the Expired General Permit
An expired general permit continues in force and effect until a new general permit is issued.
- K. Duty to Mitigate
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment.
- L. Oil and Hazardous Substance Liability
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.
- M. Property Rights
The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property to any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.
- N. Severability
The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
- O. Requiring An Individual Montana Pollutant Discharge Elimination System (MPDES) Permit
The Director may require any owner or operator covered under this permit to apply for and obtain an individual MGWPCS permit if:
1. The discharge(s) is a significant contributor of pollution;
 2. The discharger is not in compliance with the conditions of this General Permit; or,
 3. Conditions or standards have changed so that the discharge no longer qualifies for a General Permit.

The owner or operator must be notified in writing that an application for an individual MPDES permit is required. When an individual MPDES permit is issued to an owner or operator otherwise authorized under this General Permit, the authorization under the General Permit to that owner or operator is automatically terminated upon the effective date of the individual MPDES permit.

P. Requesting An Individual MPDES Permit

Any owner or operator authorized under this General Permit may request to be excluded from the coverage by applying for an individual MPDES Permit.

Q. Requesting Authorization Under the General Permit

The owner or operator of a facility excluded from coverage by this General Permit solely because that facility already has an individual permit may request that the individual permit be revoked and that the facility be authorized by this General Permit. Upon revocation of the individual permit, this General Permit may authorize that facility.

R. Permit Modification, Revocation, Termination

This General Permit may be modified, revoked, revoked and reissued, or terminated with cause in accordance with the Consolidated Permit Regulation Requirements of 40 CFR Parts 122 and 124 (FR Volume 45 No. 98, May, 1980).

S. Reauthorization

Permittees may be reauthorized by the department operate under this General Permit after receipt of written notification no less than 180 days prior to its expiration date.

T. Reopener Provisions. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations, compliance schedule, if necessary, or other appropriate requirements if one or more of the following events occurs:

1. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
2. Water Quality Standards are Exceeded: If it is found that water quality standards or trigger values in the receiving stream or ground water are exceeded either for parameters included in the permit or others, the Department may modify the effluent limits or water management plan.
3. TMDL or Wasteload Allocation: TMDL requirements or a wasteload allocation is

developed and approved by the Department and/or EPA for incorporation in this permit.

4. Water Quality Management Plan: A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.
5. Toxic Pollutants: A toxic standard or prohibition is established under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit.

PART III. DEFINITIONS

1. The "**25-Year 24-Hour Rainfall Event**" means the maximum 24-hour precipitation event with a probable recurrence interval of once in 25 years, as defined by the National Weather Service in Technical Paper Number 40, "Rainfall Frequency Atlas of the United States," May 1961, and subsequent amendments, or equivalent regional or state rainfall probability information developed therefrom.
2. "**Act**" means the Montana Water Quality Act.
3. "**Agronomic rates**" means the recommended number of pounds of nutrient elements per acre required to achieve realistic crop yield goals as given in Montana State University Extension Bulletin 104, February, 1992, for the growing season following application.
4. "**Animal feeding operation**" means a lot or facility (other than an aquatic animal production facility) where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and the animal confinement areas do not sustain crops, vegetation, forage growth, or post-harvest residues in the normal growing season. Two or more animal feeding operations under common ownership are a single animal feeding operation if they adjoin each other, or if they use a common area or system for the disposal of wastes.
5. "**Animal unit**" means a unit of measurement for any animal feeding operation calculated by adding the following numbers: The number of slaughter and feeder cattle and dairy heifers multiplied by 1.0, plus the number of mature dairy cattle multiplied by 1.4, plus the number of swine weighing over 55 pounds multiplied by 0.4, plus the number of sheep multiplied by 0.1, plus the number of horses multiplied by 2.0. (CFR 40, Part 122, Appendix B).

6. **"Concentrated Animal Feeding Operation"** means an "animal feeding operation" which meets the criteria in 40 CFR part 122, Appendix B, or which the Director designates as a significant contributor of pollution pursuant to 40 CFR 122.23. Animal feeding operations defined as "concentrated" in 40 CFR part 122 Appendix B are as follows:

a. New and existing operations which stable or confine and feed or maintain for a total of 45 days or more in any 12-month period more than the numbers of animals specified in any of the following categories:

1. 1,000 slaughter or feeder cattle;
2. 700 mature dairy cattle (whether milking or dry cows);
3. 2,500 swine weighing over 55 pounds;
4. 500 horses;
5. 10,000 sheep or lambs;
6. 55,000 turkeys;
7. 100,000 laying hens or broilers when the facility has unlimited continuous flow watering systems;
8. 30,000 laying hens or broilers when facility has liquid manure handling system;
9. 5,000 ducks; or
10. 1,000 animal units from a combination of slaughter steers and heifers, mature dairy cattle, swine over 55 pounds and sheep;

b. New and existing operations which discharge pollutants into state waters either through a man-made ditch, flushing system, or other similar man-made device, or directly into state waters, and which stable or confine and feed or maintain for a total of 45 days or more in any 12-month period more than the numbers or types of animals in the following categories:

1. 300 slaughter or feeder cattle;

2. 200 mature dairy cattle (whether milk producing or dry cows);
3. 750 swine weighing over 55 pounds;
4. 150 horses;
5. 3,000 sheep or lambs;
6. 16,000 turkeys;
7. 30,000 laying hens or broilers when the facility has unlimited continuous flow watering systems;
8. 9,000 laying hens or broilers when the facility has a liquid manure handling system;
9. 1,500 ducks; or
10. 300 animal units (from a combination of slaughter steers and heifers, mature dairy cattle, swine over 55 pounds and sheep).

Provided, however, that no animal feeding operation is a concentrated animal feeding operation as defined above if such animal feeding operation discharges only in the event of a 25-year, 24-hour storm event.

7. **"Department"** means the Montana Department of Environmental Quality.
8. **"Director"** means the Director of the Department of Environmental Quality or his/her designee.
9. **"Discharge of pollutants"** means any addition of any pollutant or combination of pollutants to state waters from any point source (ARM 17.30.1304(16)).
10. **"New or increased source"** means an activity resulting in a change of existing water quality occurring on or after April 29, 1993. The term does not include the following:
 - a. sources from which discharges to state waters have commenced or increased on or after April 29, 1993, provided the discharge is in compliance with the conditions of and does not exceed the limits established under or

determined from, a permit or approval issued by the Department prior to April 29, 1993;

- b. nonpoint sources discharging prior to April 29, 1993;
 - c. withdrawals of water pursuant to a valid water right existing prior to April 29, 1993; and
 - d. activities or categories of activities causing nonsignificant changes in existing water quality pursuant to ARM 17.30.715, 17.30.716, or 75-5-301 (5) ©, MCA.
11. **"Pollutant"** means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological material, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural wastes discharged into water (ARM 17.30.1304(42)).
 12. **"Process wastewater"** shall mean any process generated wastewater and any precipitation (rain or snow) which comes into contact with any manure, litter or bedding, or any other raw material or intermediate or final material or product used or resulting from animals or poultry.
 13. **"State Waters"** means a body of water, irrigation system, or drainage system, either surface or underground; except irrigation waters where the waters are used up within the irrigation system and the waters are not returned to any other state waters.