

# **Potential Impacts of the Proposed CERRS Landfill on Colusa, California**

Submitted by

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Charter Evaporation Resource Recovery System ("CERRS") proposes to construct a regional municipal solid waste landfill, near Arbuckle, CA, that would accept significant amounts of waste from outside Colusa County. Even though this landfill is not immediately adjacent to the City of Colusa, CA, the CERRS Landfill, if constructed as proposed, will have a significant adverse impact on Colusa. The proposed CERRS Landfill will be a minimum Subtitle D landfill that will ultimately pollute the groundwater resources in the vicinity of the landfill. Because of the geological characteristics of the area and the close proximity to high value agricultural crops, a minimum Subtitle D landfill is not suitable for the CERRS site. The proposed CERRS Landfill liner and cover systems will not prevent the escape of hazardous and deleterious chemicals present in the landfilled waste into the surrounding environment for as long as the waste in the landfill will be a threat. Of particular concern is the pollution of groundwaters by landfill leachate (garbage juice). While no one can reliably predict when the pollution of the groundwater by the CERRS Landfill will occur, there is no doubt that this pollution will occur. The waste in the proposed CERRS Landfill will be a threat to pollute groundwaters forever. The landfill liner and cover systems that CERRS proposes to use have a finite period of time during which they can be expected to prevent leachate from being generated in the landfill and leaving the landfill through the liner entering the groundwater system underlying the landfill.

While the CERRS Landfill site geology/hydrogeology has not been investigated to the degree it should have been, the investigations that have been done, show that the CERRS site does not provide natural protection of groundwaters from pollution by landfill leachate for as long as the waste in the landfill will be a threat. Further, the groundwater monitoring proposed by CERRS for the CERRS Landfill has a low probability of detecting groundwater pollution by landfill leachate, before widespread off-site pollution occurs.

While CERRS attempts to justify the development of its proposed landfill with the minimum protection currently required by federal and state regulatory agencies for the landfill liner, cover and groundwater monitoring systems based on these systems complying with current minimum prescriptive standards for landfill containment design, the liner and cover proposed by CERRS for the CERRS site will not result in a landfill that will conform to the state of California Chapter 15 requirements of preventing the impairment of use of groundwaters in the vicinity of the landfill for as long as the waste in the landfill will be a threat. The basic problem is that the current minimum prescriptive

design standards are based on badly out-of-date technology which reflects the level of understanding of the expected performance of landfill liners and covers of the mid- to late 1980's and does not incorporate the substantial amount of information that has been developed in the 1990's which shows that the proposed CERRS Landfill will ultimately pollute groundwaters in the vicinity of the landfill violating Chapter 15 requirements for protecting groundwaters from impaired use for as long as the waste in the landfill will be a threat.

### **Impact of CERRS Landfill Groundwater Pollution on City of Colusa**

While the inevitable pollution of groundwaters by the proposed CERRS Landfill will not be expected to enter Colusa's municipal wells, this pollution will be significantly detrimental to Colusa from several perspectives. One of these will be the loss of groundwater resources in the greater Colusa, Arbuckle area. The pollution of groundwater by landfill leachate is known to permanently destroy the use of the polluted part of the aquifer for domestic and many other purposes. The US EPA concluded as part of developing Subtitle D landfilling regulations, that once a groundwater well is polluted by municipal landfill leachate, that well has to be abandoned and a new well has to be constructed at another location. The greater Colusa area has a finite total water resource available for existing uses as well as future development. By permanently damaging part of this resource as a result of the CERRS Landfill polluting groundwaters, the total water resource for future development in Colusa County is reduced. Since water is the key to future economic development for agricultural as well as commercial purposes, damaging part of the water resource will be detrimental to the County, and especially the City of Colusa, who depend on the agriculture for their support.

Municipal landfill leachate of the type that will be generated in the proposed CERRS Landfill will contain a variety of hazardous and deleterious chemicals that are threats to public health, animals and some types of crops. While CERRS claims that no hazardous waste will be accepted at the CERRS Landfill, such claims are superficial and misleading in that they do not accurately portray the kinds of wastes that can and will be deposited in the CERRS Landfill. Current regulatory requirements governing the disposal of hazardous wastes in municipal landfills only restricts the disposal of "regulated" hazardous wastes in municipal landfills. There are large amounts of unregulated hazardous wastes that can be legally deposited in municipal landfills. Further, the current US EPA and state of California definitions of hazardous waste allow substantial amounts of hazardous chemicals to be deposited in municipal solid waste landfills. As a result of exemptions created by such definitions of hazardous waste, highly hazardous chemicals can and will be deposited in the CERRS Landfill which are not classified as hazardous waste by current regulatory approaches.

The close proximity of the CERRS Landfill to high-value agricultural areas and their associated crops which depend on groundwaters as a water supply, means that this landfill will not only be a threat to the use of the groundwaters for domestic purposes effectively forever, but it will also be a threat to the quality of many of the high-value agricultural crops produced in the vicinity of the landfill. This threat is manifested in two

ways. One, is the contamination of the crops by chemicals that would be hazardous to those who use the crops as food. Also, the waste chemicals in leachate could cause the crops to be judged of poor quality due to off-flavors. The off-flavors, while not necessarily hazardous, can be highly detrimental to agricultural interests through a loss of demand for the crop.

The inevitable impact to the groundwater resources due to pollution by the CERRS Landfill leachate, coupled with the inadequate bufferland between the landfill and the adjacent agricultural properties will mean that once the landfill is placed into operation, the adjacent property owners will experience significant adverse impacts to their interests. While the pollution of groundwaters at the CERRS site could take a number of decades if high quality landfill liner construction occurs, from a public's perspective, this inevitable pollution could be perceived to be occurring at the CERRS Landfill when the landfill begins operation. The groundwaters in the area of the landfill and the landfill area in general will be considered "tainted" by landfill-derived waste. While initially this will only be a perceived impact, from an adjacent landowner's perspective, this perception can be highly detrimental to their economic interests not only in the value of their land, but also the value of their crops.

### **Active Life CERRS Landfill-Adverse Impacts**

Once the landfill starts to operate, off-site adverse impacts such as those caused by odors, litter, dust, truck traffic, birds, rodents and disease vectors etc. will start to occur on adjacent properties. One of the most significant problems with CERRS proposed development of its landfill is the lack of adequate bufferlands between the areas where waste will be deposited and adjacent properties. Ordinarily a mile or more of bufferland is needed to dissipate the adverse impacts associated with waste releases from the landfill in the form of odors, litter, dust etc. CERRS failure to acquire the necessary bufferland coupled with its approach of doing the minimum necessary in the development of this landfill, is an indication that CERRS intends to try to use adjacent high value farmland for dissipation of the adverse impacts of waste-derived constituents. This will heighten the concern about the pollution of nearby lands and agricultural crops as well as nearby water courses such as the irrigation canal that is immediately adjacent to the landfill by the landfill waste during the active life of the landfill when it receives wastes.

The high value agricultural food crops that are present in the vicinity where CERRS proposes to construct its landfill and the nearby water courses such as the irrigation canal will be threatened by airborne transport of waste. Also, there is appropriate concern about human and plant disease organisms present in the waste that CERRS proposes to landfill that will be transported by vectors and by dust, litter, etc. to nearby properties. Waste derived hazardous and deleterious chemicals and disease organisms transported in odorous air, dust, litter and by vectors will cause the agricultural crops and water supplies in the vicinity of the landfill to be contaminated by municipal solid waste. Purchasers of these crops will not take the chance on having the product in which the crops are used considered contaminated/tainted. This contamination/tainting will lower the value of

these crops to their purchasers. Even if this is only a perceived adverse impact, it still will be significantly detrimental to agricultural interests near the proposed CERRS Landfill.

The proposed CERRS Landfill will be detrimental to the economic interests of all of Colusa County and especially to the City of Colusa. There is a direct coupling between the local adverse impacts of the CERRS proposed Landfill to agriculture in the region and the interests of the City of Colusa. Colusa businesses rely on agricultural activities in the Arbuckle area. Damage to these activities by the CERRS Landfill will be harmful to Colusa business' interests.

One of the areas that has not been addressed by CERRS is the sources of the wastes that it plans to deposit in its proposed landfill. From the magnitude of the landfill that is being developed, it is clear CERRS plans to attempt to deposit substantial out-of-County waste in its landfill. This will result in additional truck traffic in transporting these wastes from their origin to the landfill. Possibly a substantial part of this garbage truck traffic could be through the City of Colusa. Since this truck traffic could be detrimental to the City of Colusa, the City needs to know where CERRS plans to acquire the waste that it will deposit in this landfill and the route that the garbage trucks will take in transporting the waste to the landfill.

### **Long-Term Impacts**

The inevitable pollution of groundwaters by the CERRS Landfill will have a significant detrimental impact on future Colusa residents. Ultimately, the CERRS Landfill area groundwaters will be polluted and have to be cleaned up using approaches similar to those used today at "superfund" sites. This clean-up will not restore the aquifer so that it can be used again for domestic and many high value agricultural crops. It basically will only stop the spread of pollution in the aquifer system. Typically such clean-up costs tens of millions of dollars or more. The current post closure (long-term) funding proposed by CERRS does not include the development of a dedicated trust fund from landfilled waste tipping fees of sufficient magnitude to clean-up the polluted groundwaters that will eventually occur at the CERRS site for as long as the waste in the landfill will be a threat. CERRS only proposes to meet the minimum 30 years of post closure maintenance and monitoring of the closed landfill. The waste in the CERRS Landfill will be a threat forever. There is no assurance that in year 31, 40, 50, after this landfill closes, that there will be funds available to initiate the ground water clean-up that will be necessary. The future residents of Colusa as a major metropolitan area in the County that will be depositing waste in this landfill, will ultimately have to pay a substantial part of the tens of millions of dollars that will be needed for clean-up of the CERRS Landfill pollution of groundwaters. By failing to prevent the development of the CERRS Landfill, the current Colusa City Council is committing future Colusa residents to a substantial economic burden that will not have been of their own making. Meanwhile the business base of the City (which is also the tax base) will have been placed in jeopardy due to the potential damage of the agriculture and food processing industry in the Arbuckle area.

The County now faces a significant economic burden associated with inappropriate waste management at its Evans Landfill. The magnitude of the economic burden to future generations of County residents associated with the development of the CERRS Landfill will likely be far greater than exists for the Evans Landfill situation. The County's current short-sighted approach of trying to use the minimal host-fees derived from permitting the CERRS Landfill operations as a means of addressing the County's liability for the Evans Landfill, is economic folly in that the small amount of funds the County will receive as a host-fee from CERRS in exchange for allowing the development of the CERRS Landfill, will represent a small part of the total economic burden that the City of Colusa, as well as the County residents, will ultimately have to pay in cleaning up the CERRS landfill site.

CERRS plans to import large amounts of out-of-County wastes in operating the CERRS Landfill. While the regulatory agencies and the County can impose financial liability on County residents for groundwater clean-up for landfills within the County, there are significant questions about whether those in other areas of the state who will deposit their garbage in the proposed CERRS Landfill can be required to help pay for the clean-up of the pollution that will eventually occur at this landfill. Future generations in the City of Colusa, and the County residents in general, will not only have to pay for the clean-up of the polluted groundwaters at the CERRS site associated with their waste that were deposited in the CERRS Landfill, but also for the waste deposited in this landfill by out-of-County residents. The short-term cheaper-than-real-cost garbage disposal that will be practiced by CERRS in the development and operation of the CERRS Landfill will ultimately cost the County and the City of Colusa residents far larger amounts of funds in clean-up of the CERRS Landfill area groundwaters than will be received in host-fees.

### **Overall Assessment**

It is important for the City of Colusa to fully understand the near-term and long-term impacts of CERRS proposed Landfill. This landfill will be significantly detrimental to Colusa's interests. CERRS approach for the development of this landfill has been established as maximizing profits while doing the least possible to try to get by the minimum prescriptive landfill design standards. The minimum landfill containment system design and siting standards which do not include adequate bufferlands to protect nearby property owner's health, surface and groundwater resources, agricultural crops, and other interests however, are well known to be badly out-of-date and lead to a justifiable NIMBY (not in my backyard) opposition to the development of this landfill. The CERRS Landfill site is not a suitable site for CERRS proposed minimum "protective" landfill. While it would be possible to develop a protective landfill at the CERRS site that would only be minimally detrimental to Colusa interests, CERRS approach for landfill development falls far short of the approach that is needed to protect the City of Colusa's interests. Because of this situation, the City of Colusa should vigorously oppose development of the proposed CERRS Landfill.

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on Colusa, California

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**Topic Areas Covered in Testimony**

Review the potential impacts of the proposed CERRS Landfill on the City of Colusa, California.

Particular attention given to how the inevitable groundwater pollution that will occur at the CERRS Landfill will be adverse to the City of Colusa's interests.

Also discussed, is how waste releases from the landfill will be adverse to local agriculture, which in turn, will be adverse to the City of Colusa.

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**Qualification to Undertake Review**

Bachelors Degree in Environmental Health Sciences from San Jose State College, California

Masters Degree in Public Health from University of North Carolina

PhD Degree in Environmental Engineering and Environmental Sciences from Harvard University in 1960

Registered Professional Engineer in State of Texas

Diplomate American Academy of Environmental Engineers

Paper Devoted to the Eventual Failure of Landfill Liners Judged by the Water Resources Division of the American Water Works Association - Best Paper Published in the Journal of the American Water Works Association in 1984

Involved in Landfill Groundwater Quality Issues Since the Mid-1960s

30 Years in University Graduate Level Environmental Engineering Teaching and Research Positions at Several Major US Universities

Conducted Over \$5 Million in Research and Published Over 500 Professional Papers and Reports on this Research

Researched Performance of Landfill Liner Systems Beginning in the 1970s

Advisor to Numerous Governmental Agencies, Industry, and Others on Various Water Supply Water Quality, Water and Wastewater Treatment, Water Pollution for Surface and Groundwaters, and the Management of Solid and Hazardous Wastes

Since 1989 has Served as an Advisor to Governmental Agencies Such as Water Utilities and Municipalities and Others in Helping to Evaluate the Potential for an Existing or Proposed Landfill to Cause Pollution of Groundwaters in California, Other States, and Other Countries

Investigated over 50 Landfill situations in the US and Other Countries

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### **Overall Conclusions**

The proposed CERRS Landfill will be significantly detrimental to groundwater resources in the vicinity of the landfill.

The pollution of groundwaters near the landfill will be adverse to the City of Colusa's interests.

The CERRS Landfill County of Colusa EIR does not reliably discuss the potential impacts of the proposed CERRS Landfill. The EIR fails to adequately address both the near-term and long-term impacts of the proposed CERRS Landfill.

The whole truth about this proposed landfill includes:

- The municipal solid wastes that are proposed to be deposited in the CERRS Landfill will contain a variety of hazardous chemicals as well as other chemicals that represent significant threats to public health, groundwater resources, agricultural crops and the environment.
- Many of the waste components that are proposed to be deposited in this landfill will be a threat to public health, groundwater resources, agricultural crops and the environment effectively forever.
- The proposed CERRS Landfill liner system and cover system, which meet minimum Subtitle D design prescriptive requirements, will not prevent leachate (garbage juice) from being generated in the landfill and transported through the

landfill liner system into the underlying groundwater system for as long as the wastes in the landfill will be a threat, i.e. forever.

- Meeting the minimum prescriptive requirements for landfill design does not comply with regulatory requirements and common sense of protecting groundwaters from impaired use by waste-derived constituents for as long as the waste in the landfill will be a threat.
- The leakage of leachate through the liner system will result in the pollution of groundwaters by landfill leachate rendering these waters unusable for domestic and many other purposes.
- The proposed CERRS Landfill groundwater monitoring system will have a low probability of detecting landfill leachate polluted groundwaters before widespread off-site groundwater pollution occurs.

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### **Suitability of the CERRS Landfill Site for the CERRS proposed Landfill**

CERRS' proposed landfill site is an unsuitable site for the proposed landfill:

Proposed landfill is a minimum design Subtitle D landfill with a single composite liner. Such liners will ultimately fail to prevent leachate leakage through the liner.

The US EPA Solid Waste Disposal Criteria stated,

*"First, even the best liner and leachate collection system will ultimately fail due to natural deterioration, and recent improvements in MSWLF (municipal solid waste landfill) containment technologies suggest that releases may be delayed by many decades at some landfills."*

The US EPA Criteria for Municipal Solid Waste Landfills stated,

*"Once the unit is closed, the bottom layer of the landfill will deteriorate over time and, consequently, will not prevent leachate transport out of the unit."*

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### **Eventual Failure of the Liner System Unsuitability of CERRS Site**

#### **Geology/Hydrogeology**

Geology/Hydrogeology of the CERRS Landfill site does not provide natural protection of the groundwaters from pollution by landfill leachate.

#### **Eventual Liner Failure**

It is only a matter of time until leachate passes through the liner and into the underlying groundwater system, polluting the groundwaters with hazardous and deleterious chemicals.

### **Unreliable Groundwater Monitoring**

Unreliability of the groundwater monitoring system proposed by CERRS, means that groundwater pollution will occur under adjacent properties rendering the groundwaters unusable for domestic, high-value agricultural irrigation and many other purposes.

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### **Unsuitability of CERRS Site**

#### **Inadequate Bufferlands**

CERRS proposed landfill has inadequate bufferlands between the location of waste deposition areas and adjacent properties.

Waste releases in the form of odors, dust, litter, bird, rodent and vector transport, will be quickly carried onto adjacent properties, contaminating the property and crops.

Threatened surface water supplies-canal and pollute groundwater supplies

High-value agricultural crops will be contaminated and tainted - Concern by crop purchasers about possible hazardous chemicals and disease organisms

#### **Cause significant economic harm to agricultural interests near CERRS Landfill**

City of Colusa business depends on Arbuckle area agriculture

Damaged agriculture will be adverse to City of Colusa

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### **Lost Water Resources and Groundwater Pollution Clean-up**

The greater Colusa area has a finite total water resource available. Pollution of part of this resource is detrimental to future economic development of the greater Colusa area.

Pollution of groundwaters by landfill leachate permanently destroys the use of the groundwater and aquifer area for domestic and high-value food crop use.

Polluted groundwaters will ultimately have to be cleaned up.

The wastes in the proposed CERRS Landfill will be a threat to cause groundwater pollution effectively forever.

CERRS only proposes to provide for post-closure care monitoring and maintenance for a minimum 30 year period.

Who will pay for the groundwater cleanup in year 31, 50, 100? Will CERRS or Allied still be in business then?

CERRS plans to import large amounts of out-of-County garbage.

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### **Who Will Pay for Groundwater Pollution Cleanup?**

Future generation Colusa residents will have to pay a part of the tens of millions of dollars to cleanup groundwaters polluted by in-County and out-of-County garbage.

The small amount of host fees that CERRS proposes to provide the County in exchange with allowing the landfill development, will cover only a small amount of the ultimate cost of groundwater pollution cleanup that the County residents will have to pay.

### **Other Potential Impacts**

What will be the source of the CERRS Landfill wastes?

Garbage truck traffic through Colusa?

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### **Development of Protective Landfills**

Possible to Develop a Protective Landfill at CERRS Site

Acquire a one mile bufferland around landfill in which no waste deposition occurs

Use double composite liner where lower composite liner is a leak-detection system for upper liner. When upper liner fails, and leachate generation cannot be stopped, remove the waste from the landfill.

Close the landfill with a leak-detectable cover that will be operated and maintained for as long as the waste will be a threat

Issue a use permit for landfill so that if more than two adjacent property adverse impacts (odor, dust, etc.) occur in one year, the permit is revoked and the landfill is permanently shut down. CERRS must then remove all waste from the landfill.

Provide cover for irrigation canal for one mile up- and downstream from landfill

Provide dedicated trust fund of sufficient magnitude from disposal fees to address plausible worst-case scenario failure of landfill containment system for as long as the waste in the landfill will be a threat, i.e. forever

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### **Overall Assessment**

CERRS' Approach for Landfill Development is to Maximize Profits at the Expense of Nearby Property Owners; Health, Groundwater Resources and the Interests of City of Colusa and Colusa County Residents

**The City of Colusa should vigorously oppose the development of the CERRS Landfill as proposed. It will be significantly detrimental to the City's interests.**