

**The original documents are located in Box 3, folder “Water - Waste Treatment (1)”
of the Norman Ross Files, 1974-75
at the Gerald R. Ford Presidential Library.**

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ERA, INCORPORATED
(ECOLOGICAL RESEARCH ASSOCIATES)
(806) 763-9297 1638 MAIN
LUBBOCK, TEXAS 79401

April 18, 1975

*scheduled mtg.
10:30 May 1-75
they did attend
also they are mtg.
w/ ERA.*

Mr. Norman E. Rossx
Asst. Director, Domestic Council
The Whitehouse
Washington, D. C.

Dear Mr. Ross:

I appreciated your letter of March 11, 1975 in which you invited me to contact you relative to our Water Recalamation Algae Production Process. I am taking the liberty to enclose a small amount of material we have developed over the past few years.

I thought I would be in Washington, D. C. a couple of weeks ago. This trip did not materlize but I did try to call when I thought I was to be in your city, I do plan to be in Washington the week of April 27th. I would like to set a meeting with you at that time.

I am also enclosing a preliminary report on another project we will be constructing, namely, substitute natural gas from feedlot waste. I would like to discuss this project with you. I would appreciate your taking the time to scan the enclosed before I arrive. As I mentioned in my previous letter, the solution to the water pollution problems as well as the energy crisis can be solved by the private sector much more economically than with federal participation.

Please convey to President Ford my admiration for his efforts. I am concerned about the U. S. credibility (see article attached). I would hope he will be very strong in his convictions and that the welfare of the U. S. is uppermost on his thoughts. The opportunity now exists for him to become the leader this nation needs. The people will back him if he will establish a firm policy and not deviate from it.

Very truly yours,

Ralph W. Douglas

Ralph W. Douglas,
President, ERA, Inc.

Encl:





16-A—LUBBOCK AVALANCHE-JOURNAL—Saturday Morning, April 12, 1975

U.S. 'Credibility' At Stake In Vietnam

DITCHLEY, England (UPI) crises we have been through in initiative to continue its attack would have remained your Russian re-entry into Yugo-unreliable ally," reaches far
— Sir Robert G.K. Thompson, the past look like Sunday on the south. It did not have to friends if you had remained slavia after the death of beyond the "Domino Theory"

EPA Discovers Areas Of Mismanagement In Grants

WASHINGTON (UPI) — The Environmental Protection Agency might represent only a fraction of the irregularities. covering audits conducted on 41 EPA grant for 28 sewage rejection rate of 11.2 per cent of the claimed cost. "We concluded that the city of Stockton was not effectively the city for construction work and is considering refusing to included leaking sewage filters and faulty installation and

EPA

(Continued From Page One)
well supervised "during repeat-
ed absences by the resident
engineer."

March 11, 1975

Dear Mr. Douglas:

On behalf of the President I am responding to your January 24 letter regarding the water reclamation process.

He asked me to thank you for your confidence in him and he certainly appreciates your interest in the important issue of our wastewater.

Your letter suggests the desire for a meeting to discuss the water reclamation process. I would be pleased to talk with you at a convenient time for both of us. Would you either write or contact my Secretary at (202) 456-6554, Room 218, The White House, Washington, D. C. 20500.

Sincerely,

Norman E. Ross, Jr.
Assistant Director
Domestic Council

Mr. Ralph W. Douglas
President
ERA, Incorporated
1638 Main
Lubbock, Texas 79401

NEROSS/ee

cc: Roland Elliott - FYI per your request.
The White House Files



ERA, INCORPORATED
(ECOLOGICAL RESEARCH ASSOCIATES)
(806) 763-9297 1638 MAIN
LUBBOCK, TEXAS 79401

April 30, 1975

Mr. Norman E. Ross, Jr.
Assistant Director, Domestic Council
The White House
Washington, D. C. 20500

Dear Mr. Ross:

ERA, Incorporated, was formed in December, 1969, to research and develop an innovative method of waste water purification, together with the production of algae. The results of a pilot plant study verify the fact that a potable quality of water can be produced by utilizing the WRAP (Water Reclamation Algae Production) Process. Also, the by-product of algae is a 46% protein feed supplement.

Several hundred thousand dollars and five years of research and development have been devoted to proving the WRAP Process. The benefits that can be derived from this process are:

1. Potable water is produced without chlorination. Chlorine for purification of drinking water has been used for many years. It has recently been brought to the public's attention that chlorine could cause cancer. Of the many bacteriological tests that have been made on WRAP water, no sample has contained coliform organisms. No chlorine was used to achieve these results.
2. The algae produced has a food value equivalent to soybean meal. This product is also free of bacteria and virus.
3. Using the same testing methods on WRAP water as are used on cities' potable water samples, no virus was detected.
4. Based upon published information from the South Lake Tahoe Plant, the WRAP Process would produce equal or superior water quality for approximately 50% of the operation and maintenance cost at that location. ERA's 50% of these O & M published figures would also include the amortization of the capital costs.
5. ERA has financing arranged whereby WRAP Plants can be constructed for cities without federal grants or assistance. The costs to the cities will be no more than their portion after receiving a grant, and in some cases would be less.



Mr. Norman E. Ross, Jr.
April 30, 1975
Page 2

6. The quality of treated waste water projected by the EPA for 1985 will cost many billions of dollars of taxpayers' money. By utilizing the existing technology and financing by the private sector, these billions could be utilized for other purposes.

7. It is ERA's position that the bureaucracy in Washington, D.C. is so far removed from the wishes of the people of the United States that private industry has been hamstrung to the point that more and more dependence is being placed on these agencies. Why not give the solution to the country's problems back to the people? An economical solution could then be achieved. The Congress of the United States has created the existing problems and does not seem to have a solution, we believe, in light of the fact that many, many problems now existing did not exist until after the New Deal, that it is time to start a reversal of the United States' policies.

8. Three patents have been issued to ERA for the WRAP Process. Each of these patents has several allowable principles. ERA will, under certain conditions, make this technology available to the public.

9. The WRAP Process is a very simple solar energy machine.

In addition to the WRAP Process, ERA has developed an energy producing process that will not only solve many problems with waste disposal, but will produce some energy to supplement our natural resources. Some of the many advantages of this energy source are:

1. ERA, Incorporated has signed contracts with four large cattle feedlot operations in Hereford, Texas. These contracts provide, among other things, for the delivery of enough manure to supply a substitute natural gas (SNG) plant to produce 1.2 million cubic feet of methane gas per day. This size plant will only use 25% of the total capacity of such feedlot operations. In addition to the methane gas, the plant will produce 80 tons of 35% protein feed supplement. The feedlots have contracted for the purchase of this material.

2. Natural Gas Pipeline Company of America has signed a contract with ERA for the purchase of the methane gas.

3. The shortage of natural gas has created a shortage of fertilizer for the production of food. The sludge or residue from a SNG Plant is a very good source of soil conditioner and fertilizer.



Mr. Norman E. Ross, Jr.
April 30, 1975
Page 3

4. Anhydrous ammonia has been manufactured from natural gas for many years. This material has been used as a fertilizer and has caused the pollution of many rivers from which cities take their drinking water. By developing a source of natural fertilizer, this pollution problem can be somewhat reduced.

5. The SNG Process developed by ERA can also utilize the solid waste from cities for the production of methane gas and a soil conditioner. This in turn would reduce the problem of solid waste disposal. Many cities are presently confronted with a garbage disposal problem.

6. The sewage sludge and solid waste (garbage) from the cities could be combined to produce usable products instead of problems. The depletion of the humus material in the soils, where commercial fertilizers have been used for several years, has caused the need for more and more anhydrous ammonia to produce a crop yield to make farming profitable.

7. The development of this method of production of methane gas and soil conditioner fertilizer could produce the 25% shortage now existing in the United States. The cost for this development would not be as much as our country is now having to pay for overseas oil.

CONCLUSIONS AND SUMMARY:

Many ideas have been proposed by agencies of the federal government to solve the environmental problems. All of these suggestions involve vast amounts of money which will have to come from the taxpayers. It is hard for those of us who have not been the recipient of federal handouts to understand the necessity for these types of governmental assistance.

Due to the fact, however, that Congress has appropriated these funds, ERA, Incorporated would like to participate to a small extent. By funding ERA some research and development money, many millions could be saved by the federal government.

The enclosed material (letters, newsprints, etc.) indicates the interest of others in the solution to many problems in the field of energy, and protein for economical feeding of livestock and poultry. The existing technology can supply many answers to these problems.

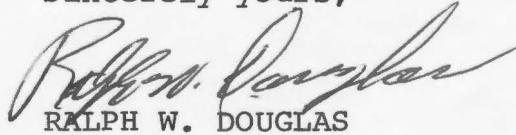


Mr. Norman E. Ross, Jr.
April 30, 1975
Page 4

The Environmental Protection Agency, as well as the Farmers Home Administration, are interested in pursuing ERA's proposals. A massive amount of information, research material from other sources, and research and development from ERA is available. This material tends to overwhelm the average individual. It is hoped that the available information will be requested by those interested in obtaining the solutions outlined herein.

ERA, Incorporated earnestly solicits an investigation of their proposals. They feel they have many (but not all) answers to the environmental problems now confronting our country. Assistance from federal sources is now requested.

Sincerely yours,


RALPH W. DOUGLAS

RWD/jc

Enclosures



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Sincerely yours,

RALPH W. DOUGLAS

RWD/jc

Enclosures



Dried Waste Seen As Cattle Food

WASHINGTON (UPI) — The Food and Drug Administration judge the scientific question as to whether or not this new pro-



Natural Gas Shortage Web Stretches to Many Places

WASHINGTON -- The pinch of the natural gas shortage is being felt in an increasing

already irked by the fact that offshore gas produced in federal tracts is automatically



The Dallas Morning News

ENERGY

Saturday, October 12, 1974 25 A

Use Considered For Manure Gas

CHICAGO (AP)—Millions of natural gas users in the Midwest will be burning a

The methane will come from a plant expected to be completed in mid-1976 in the

Thursday Morning, November 29, 1973

Garbage Into Gas Possibility Seen

CHICAGO (AP) — University of Illinois scientists say they have developed a process cities

campus.

He said in an interview that

Under their method cities would shred municipal garbage and then remove glass, metal

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60



Nicholas Turkey Breeding Farms, Inc.

December 31, 1974



Mr. Ralph W. Douglas
President
ERA, Incorporated
1638 Main St.
Lubbock, Texas 79401

Dear Mr. Douglas:

Thank you for your prompt response to my original letter of November 29, 1974. I apologize that it has taken me so long to respond, however I have been out of the office quite a bit this month due to a combination of surgery and a two week business trip. As always happens, when someone leaves their office, the rest of the staff tends to consider a letter addressed to them as "their baby".

We were very much impressed with the concept of ERA as well as their procedure for going forward. We would like to meet with you when next you come to California. For your information, our operations are headquartered about 40 miles north of San Francisco in the California premium wine country. Prior to that meeting I think it might be well if you were to request the specific information you need from us to proceed, e.g., minimum manure requirements, purity requirements, sight requirements. We will then respond to your requirements, and based upon that response know whether we are in a position to go forward. The reason I feel this step would be necessary is that the High Plains feedlot industry produces an incredible amount of manure, and we would not like to, as I said, waste your valuable time. If the poultry industry of our area is of course not suited to your requirements, then we would of course put you in touch with other operations more suitable to your needs.

One last note - I believe the term "ERA, Incorporated" is trade marked. There is a consulting group originally from Los Angeles now with branch offices across the country with the same name (Economic Research Associates, Inc., abbreviated and referred to in the trade as ERA). Before spending a lot of time on developing your trade name, perhaps it might be well to check into this.

With best wishes for success in your exciting projects, and looking forward to further correspondence and meetings with you, I remain until then,

Sincerely,

NICHOLAS TURKEY BREEDING FARMS, INC.

Robert J. Nicholas
President

RJN:amc





**G. BUCHAN
WATER TREATMENT COMPANY LIMITED**

(BOILER & COOLING WATER TREATMENT SPECIALISTS)

AVAILABLE THROUGHOUT NEW ZEALAND

WELLINGTON
P.O. Box 40-062, Upper Hutt
Phone: 89-058, Upper Hutt

HEAD OFFICE:
AUCKLAND
P.O. Box 65-040, Auckland 10
Phones: Browns Bay 85-716
Auckland 874-547

CHRISTCHURCH
P.O. Box 13-107, Christchurch
Phone: 584-516

E.R.A. INCORPORATED
1638 MAIN ST.
LUBBOCK
TEXAS 79401
U.S.A.

14TH APRIL. 1975

ATTENTION MR.R.W. DOUGLAS (PRESIDENT)

Dear Ralph,

Many thanks for your letter of 2nd Dec. 1974 answering some of my queries.

Firstly I would like to say that we have now done a complete survey of the country with regard to the potential of the W.R.A.P. system and we find that there has been a remarkable response to our meeting with various local council bodies and large industrial companies e.g. UNILEVER, WATTIES and several freezing works, believe me Ralph it would appear that a visit from yourself or Don is not too far away.

I have recently had a meeting with our company Solicitor and Accountant and it is now felt that we should arrange a formal agency agreement between E.R.A. and our company therefore I would appreciate your comments as to what arrangements should be made.

I have not as yet heard from the Southwest Mortgage Co, however, having discussed the financing arrangements mentioned in your letter with our accountant it appears that they would not be too suitable as at the moment the New Zealand Government are not too keen in bringing in overseas funds, however, Ralph I am sure that we can come to some arrangement that will be to our mutual advantage

I am enclosing some newspaper clippings which are indicative of the position in N.Z.

I have at this stage only discussed the process very briefly, in fact only sufficient to hold the interest, however, I am looking forward to having authority to discuss the process in much more detail.

One of the biggest problems at the moment is that our beautiful lakes are becoming polluted and the public are up in arms plus the fact/

NEW ZEALAND OWNED AND OPERATED

Directors: G. BUCHAN, A.I.M.A.E.
D. R. BRADSHAW, G.I.M.A.E.
G. W. GIBSON, DIP.TECH.



that I was shocked to find out just how many cities and towns pump raw sewage out to sea.

At this stage I have taken on extra staff to allow me to concentrate more on the effluent side, therefore I am looking forward to having the details of mutual agreement or better still, a visit from your good self.

I trust that Mrs. Douglas is keeping well, please convey my regards to her also my regards to Don.

Incidentally, I did receive the package you posted to me, Thank you once again.

Yours sincerely
G. BUCHAN WATER TREATMENT CO.LTD.

G. Buchan

G. BUCHAN
MANAGING DIRECTOR.



Procurement of our Basic Needs

Today mankind has reached a point in its development at which it can no longer afford the luxury of obtaining for itself the necessities of life--food, water, shelter, and clothing--by the same traditional, often inefficient methods that have been used for the last one to three generations. Civilization has reached such turning points before, as in the change from hunting to agriculture, and then to industrial production. We face such a turning point now. The change is being forced on us by the physical restraints of our planet and the effects of man's activities on his environment.

The problems involved include the pressure of an expanding population, with expanding expectations, in a finite world with a finite ability to meet the needs and demands of its people. We see the effect of these pressures in the disturbance of the environment and the ecosystem by our attempts to meet these needs and demands, and in our diminishing ability to provide for all the very large number of people now living on our planet.

What can be done to help solve these problems? When we attempt to meet the needs mentioned above, we apply a certain amount of effort. This effort is multiplied by some sort of efficiency factor to give a product, the result of our efforts. (Effort X efficiency = results, in a manner of speaking). The degree to which we succeed in meeting needs is dependent on the effort expended (bbl. oil or number of man-hours) times the efficiency with which we expend the



effort (i.e., ingenuity, creativity, or originality). The great success of our country in meeting the basic needs of its people is due not only to the large amount of resources available to us, but also to the ingenuity and know-how in using the resources. However due to the pressures of the present time, we must move from the current methods of providing, to a new level of sophistication in meeting needs, i.e., we must increase our efficiency.

A well established scientific principle is that biological processes are many times more efficient than most physical-chemical processes. For example, an enzyme reaction can produce the same amount of the same product as a physical-chemical reaction in seconds rather than minutes or hours, and at near room temperatures rather than elevated temperatures. Biological processes are also inherently less destructive to the ecosystem since they are a part of it. Our efficiency in meeting basic needs can be increased drastically by using biological processes rather than physical-chemical ones.

Chemists tend to see certain forms of matter as essentially the same because they are made from the same elements and formed into similar compounds. This is a simplification, but often a useful one. By this reasoning paper, wood or grass may all be considered cellulose. Natural gas, coal, petroleum, and oil shale are all hydrocarbons. Fish, soybeans, algae, or beefsteak are all high-quality protein foods. Theoretically at least, one member of a group may be substituted for another.



Let us then increase our use of efficient biological processes, using the abundant energy of the sun to meet the basic needs of our society in an efficient, ecologically sound manner. It is not necessary to destroy or damage our environment to produce abundant food (protein), energy (methane) and fresh water. For example, instead of inefficiently pyrolyzing solid waste (garbage), burning much of the fuel produced in the production process itself, let us let nature efficiently (biologically) transform these "wastes" into clean burning natural gas to meet our expanding energy needs. At the same time we would be producing an odorless, sterile, organic fertilizer, which ^{produces} ~~uses~~ methane in its manufacture rather than ^{using} ~~producing~~ it.

Instead of forming a mountain of polluting sewage sludge in New York harbor, let us use the sewage as nutrient to grow algae efficiently with sunlight to give us food. Algae matures at a much faster rate than conventional crops, giving much higher yields per acre and per unit time. Instead of using many acres of our farmland to grow food for animals, let us feed the animals our efficiently produced protein (algae) and use our farmland to grow food for people.

These concepts are not long term solutions. They are immediately applicable. The engineering problems are small compared with mass producing automobiles or building a computer, and they have been solved to a large extent at the present time. The technology is intermediate, not highly sophisticated like a nuclear power plant or an oil refinery. Therefore, the processes can be



used soon, by developing countries as well as the developed, highly technical societies such as ours. We should lead the way because we can put the systems in place easier, because we have the capital, the demand, and an abundance of now-troublesome raw material. It is not necessary for us to have an energy problem or to be dependent on foreign powers for our energy. Plants producing millions of cu. ft./day of natural gas (methane) could be operating by 1977. By 1980 we could be well on our way to energy independence. In this same time frame we could make significant progress in eliminating pollution from our waters, and in increasing our food supplies. Because of the inherent efficiency of biological processes, these concepts are highly profitable and can be implemented mostly by the private sector of the economy.

Scientists are necessarily sceptical, and must question new concepts. I have, to the best of my ability and understanding, subjected these concepts to my scepticism and objective examination. My considered conclusion is that through these means, we have the ability to implement these ideas practically and soon, to meet in some part our fundamental needs for food, a cleaner environment, and sounder ecological systems, and to provide a good part of the energy we need to progress as a society. Let us use our intelligence and newly found insight to increase our efficiency, thus multiplying our efforts in producing results.

David R. Douglas, Ph.D.



Procurement of our Basic Needs

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Instead of forming a mountain of polluting sewage sludge in New York harbor, let us use the sewage as nutrient to grow algae efficiently with sunlight to give us food. Algae matures at a much faster rate than conventional crops, giving much higher yields per acre and per unit time. Instead of using many acres of our farmland to grow food for animals, let us feed the animals our efficiently produced protein (algae) and use our farmland to grow food for people.

These concepts are not long term solutions. They are immediately applicable. The engineering problems are small compared with mass producing automobiles or building a computer, and they have been solved to a large extent at the present time. The technology is intermediate, not highly sophisticated like a nuclear power plant or an oil refinery. Therefore, the processes can be



used soon, by developing countries as well as the developed, highly technical societies such as ours. We should lead the way because we can put the systems in place easier, because we have the capital, the demand, and an abundance of now-troublesome raw material. It is not necessary for us to have an energy problem or to be dependent on foreign powers for our energy. Plants producing millions of cu. ft./day of natural gas (methane) could be operating by 1977. By 1980 we could be well on our way to energy independence. In this same time frame we could make significant progress in eliminating pollution from our waters, and in increasing our food supplies. Because of the inherent efficiency of biological processes, these concepts are highly profitable and can be implemented mostly by the private sector of the economy.

Scientists are necessarily sceptical, and must question new concepts. I have, to the best of my ability and understanding, subjected these concepts to my scepticism and objective examination. My considered conclusion is that through these means, we have the ability to implement these ideas practically and soon, to meet in some part our fundamental needs for food, a cleaner environment and sounder ecological systems, and to provide a good part of the energy we need to progress as a society. Let us use our intelligence and newly found insight to increase our efficiency, thus multiplying our efforts in producing results.

David R. Douglas, Ph.D.



Biographical Sketch of David R. Douglas

David Ralph Douglas was born on November 1, 1944, in Lubbock, Texas. He lived in Lubbock from 1944-1948, in Littlefield, Texas from 1948-1957, on a farm-ranch near Muleshoe, Texas from 1957-1963. He attended Texas Tech University from 1963-1968 at which time he graduated with a Bachelor of Science degree in chemistry. He served in the United States Army Reserve from 1968-1974 at which time he received an honorable discharge. He attended the University of Houston (Houston, Texas) Graduate School from 1968-1971 at which time he was awarded a Ph.D. in analytical Chemistry. The subject of his dissertation was the analysis of food flavors and the volatile constituents of biological fluids using chromatographic methods. After graduating he spent 20 months (1972-1973) as a post-doctoral fellow in the Department of Dermatology at Baylor College of Medicine (Houston, Texas), studying the chemical nature of skin cancer and its relation to sunlight. From Oct. 1973 to the present he has held the position of research scientist at the Research Center of Philip Morris, USA, in Richmond, Va.

Dr. Douglas is unmarried. His hobbies and interests include music, bicycle riding, science fiction, and ecology. He is a member of the American Chemical Society and the American Oil Chemists' Society.



SHARPLEE
CENTRIFUGES

5906 STAR LANE • HOUSTON, TEXAS 77027 • (713) 781-5416



CORPORATION

April 21, 1975

Fabian, Nelson & Medina, Inc.
P. O. Box 3689
McAllen, Texas 78501

Attention: Mr. Steve Spoor

Subject: McAllen Sewage Treatment Plant
Centrifuge to Remove Algae Solids

Dear Mr. Spoor:

This is to confirm some of my ideas and suggestions on what you might do to remove algae from effluent water at the City of McAllen Sewage Treatment Plant following our phone conversation April 17. It is my understanding that most of the water, except for one million gallons per day, from the McAllen Sewage Plant is disposed of by watering the City Golf Course. The problem is to dispose of one million gallons of water which can not be used for this purpose and which water contains algae cannot be dumped into the Rio Grande River.

I do not think there is any practical way of using a centrifuge to directly remove algae from this waste water. The flow rate is too great and the particle size of the algae is too small to make a reasonable, economical use of a commercial size centrifuge. But I do believe there is a way in which it can be done. I am going to refer you to a company in Lubbock who has done a great deal of work on separating algae.

I suggest you contact Mr. Ralph Douglas of ERA, Inc., 1638 Main Street, Lubbock, Texas 79401, phone, 806/763-4356. Mr. Douglas and his associates have had a pilot plant set up beside the Lubbock Sewage Plant for many years to grow algae in sewage plant water and then to separate and harvest the algae while at the same time purifying the water for disposal. I have seen the system work and I have helped them on some test work in dewatering the sludge. Basically, I think you can gain much from their know how along with the use of the centrifuge to separate the algae for the City of McAllen. You could use ERA's technique to add lime plus air to the sewage plant effluent, then concentrate the lime and algae by air floatation and then centrifuge the lime plus algae to give thick cake for land disposal. Underflow from the air floatation could be satisfactory for dumping directly into the river.



Mr. Steve Spoor
Page Two
April 21, 1975

I suggest you call or write Ralph for his guidance and assistance and maybe even visit their pilot plant in Lubbock. They don't have a centrifuge to dewater their air floatation solids, but we have tested it already at their plant and this stage of their process does work. Maybe later if you and Ralph decided to pilot plant a small system at McAllen, I could loan you the centrifuge to dewater the sludge.

I have talked to Ralph about this problem and I am sending him a copy of this letter in hopes that you can get together.

Very truly yours,

SHARPLES-STOKES DIVISION
Pennwalt Corporation

T. I. Kennedy
District Manager

TIK/bs

attachment: Bulletin 1287B

cc: Mr. Ralph Douglas



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BAILEY GUARD, MINORITY CLERK

United States Senate

COMMITTEE ON PUBLIC WORKS
WASHINGTON, D.C. 20510

April 17, 1975

Mr. J. Phelps White, III
Box 874
Roswell, New Mexico 88201

Dear Phelps:

I agree with your feelings regarding the Western Governor's Conference.

In regard to the "WARP" system, I have reviewed it and I was quite impressed with the benefits that are provided in comparison to the costs which are required to perform the same amount of work clean-up with alternative methods.

My staff is forwarding the report to the Environmental Protection Agency for their review and recommendations. I would like to reiterate that the "WARP" system shows a high potential. I will be in touch with you again when I receive a report from EPA.

With kindest regards.

Very truly yours,



Pete V. Domenici
United States Senator

PVD/cdmh





THE CITY OF PLAINVIEW

BOX 520

PLAINVIEW, TEXAS 79072

JOHN D. STONEHAM
MAYOR

April 7, 1975

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FINANCE

Mr. Ralph Douglas
President
ERA, Inc.
1638 Main
Lubbock, Texas 79401

Dear Mr. Douglas:

The Mayor and City Council at a special meeting of the City Council held on April 3, 1975, at 7:30 p.m. discussed your water treatment process (WRAP) and the possibility of this method being used to improve the quality of the waste water treatment in Plainview. This process would provide for a conservation of our natural resource, water, by utilization of the ERA method to produce a water quality suitable for industrial use, park and recreational use on the Running Water Draw Park project, and/or agricultural use.

Having had the opportunity of working with you for the past two years concerning waste water treatment and water quality, we are willing to continue our negotiation for the installation and construction of your process here in Plainview. After having visited with the Texas Water Quality Board, Texas State Department of Health, and the Environmental Protection Agency, we feel there are great prospects for treatment of waste water to a degree to make it reusable for the above mentioned purposes.

The Mayor and City Council are in concurrence that any costs to the operation of the water treatment plant that can be saved would be paid directly to your corporation for services rendered. The present cost of our water reclamation department is \$78,858 of which is broken down the following way: Personnel Services - \$52,678; Supplies - \$4,405; Maintenance - \$4,030; Other Services & Charges - \$16,020; and Capital Outlay - \$1,725.





Mr. Ralph Douglas

April 7, 1975

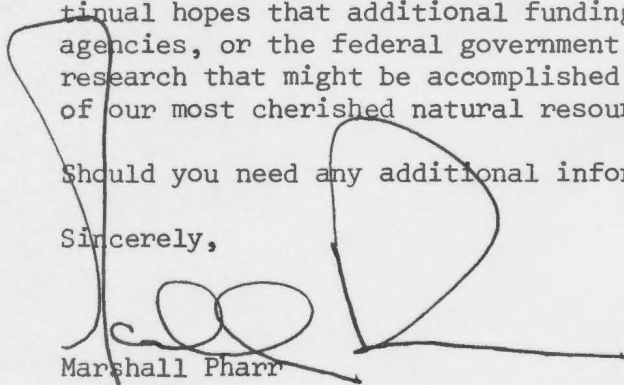
Page 2

The City Council has authorized me to negotiate with your corporation in which compensation with your corporation would be the operational dollar saved due to your treatment process. It is further agreed that any contract for the sale of your treated water would provide you with an additional pro rated credit or income.

We are looking forward to working with you and your organization in our continual hopes that additional funding may be achieved through foundations, state agencies, or the federal government that would assist in the development and research that might be accomplished by this method in the preservation of one of our most cherished natural resources, water.

Should you need any additional information, please feel free to contact me.

Sincerely,



Marshall Pharr
City Manager

MP:lf

cc: Honorable John D. Stoneham, Mayor
Mr. Joe Sharp, City Attorney
Mr. Wm. R. Hogge, Director of Public Works





DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION

December 16, 1974

DALLAS DISTRICT
3032 BRYAN STREET
DALLAS, TEXAS 75204

Mr. Ralph W. Douglas, President
Ecological Research Associates
1638 Main Street
Lubbock, Texas 79410

Dear Mr. Douglas:

On September 12, 1974, Investigator Ralph D. Godfrey made an inspection of your firm. Review of his inspection report by our Bureau of Veterinary Medicine in Rockville, Maryland, indicates that algae derived from the treatment of sewage for animal feed is considered to be a feed additive. As such, you may only market this material as an ingredient in an animal feed by first obtaining an approved feed additive petition in accordance with 21 CFR 121.51.

We are enclosing a copy of the paper entitled, "Health Criteria for Processed Wastes," which speaks to the subject of reclamation of waste products for use as food or feed ingredients.

Until a feed additive petition is submitted by you and approved by the Food and Drug Administration, the product which you manufacture must be considered to be illegal for distribution in interstate commerce under the Federal Food, Drug, and Cosmetic Act.

Sincerely yours,


W. A. GRAHAM
Compliance Officer

Enclosure

cc: Mr. J. E. Ort, Vice-President
Ecological Research Associates
Lubbock, Texas



Health criteria for processed wastes

JACK C. TAYLOR, DONALD A. GABLE, GEORGE GRABER AND ERNEST W. LUCAS

*Division of Nutritional Sciences, Bureau of Veterinary Medicine, Food and Drug Administration,
Department of Health, Education, and Welfare, 5600 Fishers Lane, Rockville, Maryland 20852*

The regulation of processed animal products now considered as feed ingredients, the sequence of testing is dependent on whether or not the chemical and wastes as feed ingredients for food-
ents and described in the official publica-



cases cited illustrate problems of unexpected toxicity that would have been obvious had preliminary chemical screening been conducted.

demonstrate any possible problem areas such as acceptability, utility, or unexpected toxicity.

As pointed out earlier, if the chemical

cattle, sheep, goats and swine, and in milk. Here information is lacking on the amount of poultry litter containing Clopidol that can be fed to ruminants without

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EXECUTIVE DIRECTOR

PH. (512) 475-2651

July 3, 1974

Re: Proposed Sewerage Facilities
Plainview, Texas

Mr. Ralph W. Douglas, President
Douglas-Cheney, Inc.
1638 Main Street
Lubbock, Texas 79401

Dear Mr. Douglas:

We appreciate having the opportunity to participate in the meeting with you and representatives of the Texas State Department of Health on June 19, 1974, regarding the use of your new wastewater treatment system (WRAP System) for the City of Plainview, Texas. We will pose no objection to the use of this system provided the plans and specifications are approved by the Texas State Department of Health (we understand that this has been done) and the waste discharge permits (NPDES and state waste control order) are amended to properly reflect the type of treatment to be used. If the point of discharge has been changed, the permit will need to be further amended through the public hearing process to reflect this difference.

As was mentioned in the State Health Department approval letter of June 25, 1974, these facilities must produce the quality of effluent stated in the city's waste discharge permits. This letter was addressed to the aspect of adequate collection and treatment of wastewater before discharge to the waters of the State of Texas and should not be construed as preempting any approvals that may be required by other federal, state and local governmental agencies.



Mr. Ralph W. Douglas, President

Page 2

July 3, 1974

We will look forward to viewing the operation and performance of this treatment plant as soon as it is complete and in operation. Please let us know if we may be of assistance to you in this matter.

Sincerely yours,


Robert G. Fleming, P.E., Director
Central Operations

NWC:mr

ccs: City of Plainview
Plainview-Hale County Health District
TWQB District 1





Texas State Department of Health

JAMES E. PEAVY, M.D., M.P.H.
COMMISSIONER OF HEALTH

FRATIS L. DUFF, M.D., Dr. P.H.
DEPUTY COMMISSIONER

AUSTIN, TEXAS 78756

June 25, 1974

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Douglas - Cheney, Incorporated
Consulting Engineers
1638 Main Street
Lubbock, Texas 79401

RE: City of Plainview, Texas

ATTENTION: Ralph W. Douglas, President

Gentlemen:

We have completed a review of the plans and specifications for a sewage treatment facility to serve the City of Plainview, Texas. The facility will utilize a process known as the WRAP System. This System consists of a series of ponds with algae growth and chemical additions for sewage treatment. Wastewater influent is treated initially in facultative ponds, then aerobic ponds, decarbonation ponds and lime injection followed by flocculation and flotation. Algae is removed as a by-product of the treatment process and is used for animal food supplement. The treated wastewater is discharged after pH adjustment. The design capacity of this plant will be three million gallons per day.

Our review of the plans and specifications, and subsequent discussion with you and your representatives, indicates that the facility is generally consistent with good and accepted wastewater treatment processes and we will, therefore, grant Limited Approval for the plant's construction. Limited approval is given for new treatment processes or treatment processes which are in limited use in the State of Texas. In the event this process fails to meet permitted effluent standards, additional treatment of the wastewater will be required.



Douglas - Cheney,
Incorporated
Page Two
June 25, 1974

Remember that our approval of plans relates only to compliance with our Design Criteria and ultimate State approval for a sewage discharge is vested in the Texas Water Quality Board. We request that you notify us when the plant's construction is complete, so that we may inspect the project.

Sincerely,

Sherman W. Hart

Sherman W. Hart, P.E., Engineer IV
Plans and Specifications
Division of Wastewater Technology
and Surveillance

SWH/dec

ccs: Honorable John D. Stoneham, Mayor
City of Plainview
Marshall A. Pharr, City Manager
City of Plainview
ERA, Incorporated
ATTN: Jay Ort, Vice President
Southwest Mortgage Company
ATTN: Rex Scott
Plainview -Hale County Health
District
Local Health Services
Region I
Texas Water Quality Board
ATTN: Robert G. Fleming, P.E.
ATTN: David A. Lancaster





THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF LIBERAL ARTS

DEPARTMENT OF MICROBIOLOGY
AND MEDICAL TECHNOLOGY

BUILDING #90
AC 602 884-1245

September 9, 1970

Mr. Jay Ort
ERA, Incorporated
1638 Main St.
Lubbock, Texas, 79401

Dear Mr. Ort:

Enclosed is a copy of the final report as I promised you. As you can see there was no change over the tentative report sent on August 17, 1970.

If you have any questions about the report, please let me know. Also let me know if you wish to have other samples processed.

Cordially yours,

Peter P. Ludovici
Peter P. Ludovici, Ph.D.
Consulting Microbiologist



FINAL REPORT

CONSULTATION PROJECT FOR ERA, INCORPORATED, LUBBOCK, TEXAS
PROCESSING OF FOUR WATER SAMPLES FOR THE CONCENTRATION AND
DETECTION OF ENTEROVIRUSES

SAMPLE NO. 1 : INFLUENT (7/29/70)

1. There was an estimated most probable number (MPN) of infectious virus particles of 1844 per gallon of Sample No. 1 influent.
2. These viruses appear to be in the echovirus group of Enteroviruses rather than poliovirus or Coxsackie groups because they do not produce CPE in HEp 2.

SAMPLE NO. 2 : DECARBOXYLATION POND (7/29/70)

1. There was an estimated MPN of infectious virus particles of 40 per gallon of Sample No. 2 Decarboxylation Pond.
2. These viruses also appear to be in the echovirus group rather than poliovirus or Coxsackie groups for the same reasons given above.

SAMPLE NO. 3 : FLOTATION EFFLUENT (7/29/70)

There was no detectable enteroviruses present in one gallon of Sample No. 3, Flotation Effluent as assessed by the aluminum hydroxide viral adsorption concentration procedure (1000-fold concentration).

SAMPLE NO. 4 : FILTER EFFLUENT (7/29/70)

There was no detectable enteroviruses present in one gallon of Sample No. 4, Filter Effluent as assessed by the aluminum hydroxide viral adsorption concentration procedure (1000-fold concentration)

Peter P. Ludovici
Peter P. Ludovici, Ph.D.
Consulting Microbiologist



August 17, 1970

Mr. Jay Ort
ERA, Incorporated
1638 Main St.
Lubbock, Texas 79401
Dear Mr. Ort:

Enclosed is a copy of the report detailing our studies and results for water samples numbered 1 to 4 (July 29, 1970).

Also enclosed are two copies of a billing statement for my services in testing these samples. Please make the check out directly to me.

I decided to send the report to you without waiting for the completed data on the two negative samples since it will be approximately 10 to 14 days longer before the final information becomes available. Our experience has been that if samples are negative to this stage, it is extremely unlikely that subsequent passes will produce virus. Nevertheless, I plan one further pass (Passage 2) on 8/20/70 and 10 days further microscopic observations thereafter.

You will notice that with negative samples considerable more studies were carried out to be sure that viruses could not be detected. This is especially true with concentrates that give toxic effects on tissue cultures and have to be washed off after the viral adsorption period. More testing is required to eliminate the possibility of excluding viruses during such processing. Many of these procedures are still in the experimental stage and no one knows exactly what effects they may have on virus recoveries. This was the reason for the many checks and back-check assays made on your water sample concentrates.

If you have any questions about the material in the report, please let me know. I will send you a short final report around Sept. 1, 1970.

If you have more samples you wish tested, please let me know. You can call me at home since officially I am on vacation the next two weeks (home phone 602-327-5804).

Cordially yours,
Peter P. Ludovici
Peter P. Ludovici, Ph.D.
Consulting Microbiologist



CONSULTATION PROJECT FOR ERA, INCORPORATED, LUBBOCK, TEXAS
PROCESSING OF FOUR WATER SAMPLES FOR THE CONCENTRATION AND
DETECTION OF ENTEROVIRUSES

GENERAL PROCEDURES:

Four water samples shipped air freight were picked up at 5:30 P.M. on Weds. July 29, 1970 at the Continental air freight office, Tucson Airport. Samples were refrigerated overnight at - 4 C. Approximately one gallon samples were processed the next morning by the aluminum hydroxide ($Al(OH)_3$) viral-adsorption procedure. This consisted of adding 40 ml of specially prepared $Al(OH)_3$ per gallon of each water sample and stirring magnetically for 2 hours to permit enteroviruses present to adsorb to the $Al(OH)_3$ crystals.

The $Al(OH)_3$ precipitates were collected by filtering the water through individual 142 mm AP-20 Millipore pads using positive air pressure at 20 psi. The $Al(OH)_3$ precipitates were scraped from the pads using sterile stainless steel spatulas into mortars containing 4 ml of fetal calf serum (FCS). After grinding the precipitates in the mortars to release viruses from the crystals, the concentrates were collected in plastic tubes and frozen at - 65 C until tested on tissue cultures. This $Al(OH)_3$ virus concentration procedure effects a 1000-fold concentration of the viruses in the water specimens.

The concentrates were thawed, inoculated, or further treated prior to inoculation as indicated, into test tube cultures of primary human amnion (HAM) and the human fibroblastic cell line WI 38. Inoculated cultures were examined microscopically at daily intervals for 7 to 10 days for evidence of viral cytopathology. When cultures showed viral cytopathology (CPE) in at least 75 % of the cells, the cultures were frozen for subsequent passage. Culture medium was changed at 3 to 4 day intervals when necessary. At the end of 7 to 10 days, tubes of negative specimens were frozen at - 65 C, thawed, pooled, and inoculated into two fresh tubes of the same tissue type (Passage 1). Passage 1 cultures were examined microscopically for 7 days and a second passage done in the same manner (Passage 2).

Adequate positive controls to show the susceptibility of the HAM and WI 38 tissue cultures to virus (polio 1) as well as negative non-inoculated controls were employed in all assays.



SAMPLE NO. 1 : INFLUENT

Special Procedures:

Dirty brown, turbid water with considerable debris, pH 7.4 was processed directly by the $Al(OH)_3$ procedure. The method required two AP-20 pads and one hour filtration time to collect the precipitate which was frozen at - 65 C.

The dirty brown colored concentrate on thawing required a 1:10 dilution with 2% FCS, Eagle's minimum essential amino acid medium (MEM) plus antibiotics prior to filtration through a 0.45 u Gelman, one inch membrane to remove bacteria and debris. Then 0.1 ml amounts of the 1:10 filtrate were inoculated into 10 WI 38 tubes.

Tubes of WI 38 cultures showing positive cytopathogenic effects (CPE) of virus were frozen and thawed and passed into HAM cultures as well as HEP 2 cultures to separate polioviruses or Coxsackie viruses, (HEP 2 positive CPE) from echoviruses, (HEP 2 negative).

RESULTS FOR SAMPLE NO. 1 : INFLUENT

1. Concentrate sample 1, 1:10 diluted, filtered through 0.45 u Gelman one inch membrane.
 - 7/31/70 Inoculated 10 WI 38 tubes, 0.1 ml per tube.
 - 8/3/70 Four out of 10 tubes positive CPE.
 - 8/4/70 Seven out of 10 tubes positive CPE.
 - 8/5/70 Nine out of 10 tubes positive CPE.
 - 8/7/70 Ten out of 10 tubes positive CPE.

Estimated most probable number (MPN) of infectious virus particles equals at least 1844 per gallon of Sample No. 1.
2. 8/4/70 Passage 1, positive CPE tubes passed to 2 HAM and 2 WI 38 tubes.
 - 8/6/70 Positive CPE in all tubes.
3. 8/7/70 Passage 2, positive CPE tubes from Passage 1 passed to one HAM and One WI 38 tube.
 - 8/9/70 Positive viral CPE in both tubes.
4. 8/7/70 Two tubes of HEP 2 inoculated with Passage 1 material.
 - 8/10/70 No CPE, therefore echovirus type (s).
5. 8/13/70 Repeat inoculation into 2 tubes of HEP 2 with Passage 2 material.
 - 8/16/70 No CPE, therefore echovirus type (s).

LA
X

SAMPLE NO. 2 : DECARBOXYLATION POND

Special Procedures:
Green, turbid water with considerable debris, pH 9.0 was adjusted to pH of 8.0 with 10 N HCL and processed directly by $Al(OH)_3$. The processing required two AP-20 pads and 1 hour filtration time to collect the precipitate.

The green algae-colored concentrate on thawing required a 1:10 dilution with 2% FCS, MEM prior to filtration through a 0.45 μ Gelman one inch membrane to remove bacteria and debris. Then 0.1 ml amounts of the 1:10 filtrate were inoculated into 10 WI 38 tubes and 6 tubes of HAM. In addition 4 HAM tubes were inoculated with 0.1 ml of non-filtered but centrifuged (1000 RPM) 1:10 concentrate of sample 2. One positive CPE tube was frozen and thawed and passed into HAM, WI-38 as well as HEP 2 cultures to separate polioviruses or Coxsackie viruses (HEP 2 positive) from echoviruses (HEP 2 negative). To further substantiate that only one out of 10 tubes were positive in the initial WI 38 series, the remaining 9 negative tubes were frozen after 10 days and passed individually into fresh WI 38 tubes. The one frozen positive tube was also passed at the same time as a positive control.

RESULTS FOR SAMPLE NO. 2 : DECARBOXYLATION POND

- A)1. Concentrate sample 2, 1:10 diluted, filtered through 0.45 μ Gelman one inch membrane.
 7/31/70 Inoculated 10 tubes WI 38, 0.1 ml per tube.
 8/6/70 One out of 10 tubes positive CPE.
 8/10/70 One out of 10 tubes positive CPE.
 Estimated most probable number (MPN) of infectious virus particles equals 40 per gallon of Sample No. 2.
2. Passage 1, positive CPE tube passed into 2 HAM and 2 WI 38 tubes.
 8/6/70
 8/10/70 Positive viral CPE in all tubes.
3. 8/13/70 Passage 2, positive CPE tubes from Passage 1 passed to 1 HAM and 1 WI 38 tube.
 8/15/70 Positive viral CPE in both tubes.
4. 8/13/70 Two tubes of HEP 2 inoculated with Passage 1 material.
 8/16/70 No CPE, therefore echovirus type (s).
- B)1. Concentrate diluted 1:10, filtered etc and :
 8/5/70 Inoculated into 6 tubes of HAM, 0.1 ml per tube.



8/12/70 No CPE in any tubes; frozen, pooled, and passed to two HAM tubes.

8/16/70 Negative, no CPE to date, still in progress.

C)1. Concentrate diluted 1:10, centrifuged but not filtered :

8/5/70 Inoculated into 4 tubes of HAM, 0.1 ml per tube.

8/12/70 No CPE in any tubes ; frozen, pooled, and passed to two HAM tubes.

8/16/70 Negative, no CPE to date, still in progress.

SAMPLE NO. 3 : FLOTATION EFFLUENT

Special Procedures:

Clear water, pH 11.0 adjusted to pH 8.0 with 10 N HCL and processed directly by $Al(OH)_3$. The processing required one AP-20 pad and filtration time was less than 15 min. (to collect the precipitate).

The colorless concentrate on thawing was inoculated into 10 tubes of WI 38 (undiluted 0.1 ml per tube). After 2 hours adsorption the cultures were washed with 2% FCS, MEM plus antibiotics to remove $Al(OH)_3$ and debris before adding one ml of the same medium.

A similar procedure was used to inoculate 10 tubes of HAM except 2% FCS, Melnick's B medium was used to wash and feed the cultures after the 2 hour adsorption period.

Finally, as a further check on the absence of viruses in this sample, the concentrate was diluted 1:5 with 2% FCS, MEM and 7 tubes of HAM as well as 7 tubes of WI 38 were inoculated with 0.1 ml per tube. No adsorption period or wash was involved in this series.

RESULTS FOR SAMPLE NO.3 : FLOTATION EFFLUENT

A)1. Concentrate undiluted, adsorption, and washing:

7/31/70 Inoculated 10 tubes of WI 38.

8/10/70 No CPE; Frozen, pooled, and passed to 2 WI 38 tubes.

8/16/70 Negative, no CPE to date, still in progress.

B)1. Concentrate undiluted , adsorption, and washing:

8/5/70 Inoculated 10 tubes of WI 38.

8/12/70 No CPE; Frozen, pooled, and passed to 2 HAM tubes.

8/16/70 Negative, no CPE to date, still in progress.

C)1. Concentrate diluted 1:5, no adsorption period or wash.



8/5/70 Inoculated 7 tubes of HAM.

8/12/70 No CPE; Frozen, pooled, and passed to 2 HAM tubes.

8/16/70 Negative, no CPE to date, still in progress.

2. 8/5/70 Inoculated 7 tubes of WI 38.

8/12/70 No CPE; Frozen, pooled, and passed to 2 WI 38 tubes.

8/16/70 Negative, no CPE to date, still in progress.

SAMPLE NO. 4 : FILTER EFFLUENT

Special Procedures

Clear, colorless water, pH 11.3 adjusted to pH 8.0 with 10 N HCL and processed directly by $Al(OH)_3$. The processing required one AP-20 pad and filtration time was less than 15 min (to collect the precipitate).

The colorless concentrate on thawing was inoculated undiluted into 10 tubes of WI 38 (0.1 ml per tube). After 2 hours adsorption the the cultures were washed with 2% FCS, MEM to remove debris and one ml of the same medium added per tube.

A similar procedure was used to inoculate 10 tubes of HAM except 2% FCS, Melnick's B medium was used to wash and feed the cultures after the 2 hour exposure period.

Finally, as a further check on the absence of viruses in this sample, the concentrate was diluted 1:5 with 2% FCS, MEM and 10 tubes of HAM as well as 7 tubes of WI 38 were inoculated with 0.1 ml per tube. No adsorption or wash was involved in this series.

RESULTS FOR SAMPLE NO. 4: FILTER EFFLUENT

A) 1. Concentrate undiluted - WI 38.

7/31/70 Inoculated 10 tubes of WI 38.

8/10/70 No CPE; Frozen, pooled, and passed to 2 WI 38 tubes.

8/16/70 Negative, no CPE to date; still in progress.

B) 1. Concentrate undiluted - HAM.

8/5/70 Inoculated 10 tubes of HAM.

8/12/70 No CPE; Frozen, pooled, and passed to 2 HAM tubes.

8/16/70 Negative, no CPE to date, still in progress.

C) 1. Concentrate diluted 1:5.

8/5/70 Inoculated 10 tubes of HAM and 7 tubes of WI 38.

8/12/70 No CPE; Frozen, pooled, and passed to 2 HAM and 2 WI 38 tubes.

8/16/70 Negative, no CPE to date, still in progress.

CONCLUSIONS:

SAMPLE NO. 1 : INFLUENT (7/29/70)

1. There was an estimated most probable number (MPN) of infectious virus particles of 1844 per gallon of Sample No. 1 influent.
2. These viruses appear to be in the echovirus group of Enteroviruses rather than the poliovirus or Coxsackie groups because they do not produce CPE in HEp 2.

SAMPLE NO. 2 : DECARBOXYLATION POND (7/29/70)

1. There was an estimated MPN of infectious virus particles of 40 per gallon of Sample No. 2 decarboxylation pond.
2. These viruses also appear to be in the echovirus group rather than poliovirus or Coxsackie groups for the same reasons given above.

SAMPLE NO. 3 : FLOTATION EFFLUENT (7/29/70)

1. Tenative Report as of 8/16/70.
2. There was no detectable enteroviruses present in one gallon of Sample No. 3 Flotation Effluent as assessed by the aluminum hydroxide viral adsorption concentration procedure (1000-fold concentration).

SAMPLE NO. 4 : FILTER EFFLUENT (7/29/70)

1. Tenative Report as of 8/16/70.
2. There was no detectable enteroviruses present in one gallon of Sample No. 4 Filter Effluent as assessed by the aluminum hydroxide viral adsorption concentration procedure (1000-fold concentration).

