

**Agenda Back-Up
for the
Barton Springs/Edwards Aquifer Conservation District
Board of Directors**

Regular Meeting

**May 23, 2019
6:00 P.M.**

NOTICE OF OPEN MEETING

Notice is given that a **Regular Meeting** of the Board of Directors of the Barton Springs/Edwards Aquifer Conservation District will be held at the **District office**, located at 1124 Regal Row, Austin, Texas, on **Thursday, May 23, 2019**, commencing at **6:00 p.m.** for the following purposes, which may be taken in any order at the discretion of the Board.

Note: The Board of Directors of the Barton Springs/Edwards Aquifer Conservation District reserves the right to meet in Executive Session at any time during the course of this meeting to discuss any of the matters listed on this agenda, as authorized by the Texas Government Code Sections §551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices), 551.087 (Economic Development), 418.183 (Homeland Security). No final action or decision will be made in Executive Session.

1. **Call to Order.**
2. **Citizen Communications (Public Comments of a General Nature).**
3. **Routine Business**
 - a. **Consent Agenda.** *(Note: These items may be considered and approved as one motion. Directors or citizens may request any consent item be removed from the consent agenda, for consideration and possible approval as a separate item of Regular Business on this agenda.)*
 1. Approval of Financial Reports under the Public Funds Investment Act, Directors' Compensation Claims, and Specified Expenditures greater than \$5,000. **Not for public review**
 2. Approval of minutes of the Board's April 25, 2019, Regular Meeting. **Not for public review at this time**
 3. Approval of amending the contract for Holland Groundwater Management Consultants LLC to add an additional \$9,000. **NBU**
 4. Approval of the Board meeting schedule for June, July, and August 2019. **Pg. 11**
 - b. **General Manager's Report.** *(Note: Topics discussed in the General Manager's Report are intended for general administrative and operational information-transfer purposes. The Directors will not take any action unless the topic is specifically listed elsewhere in this agenda for consideration. A Director may request an individual topic that is presented only under this agenda item be placed on the posted agenda of some future meeting for Board discussion and possible action.)*

Topics

1. Personnel matters.
2. Aquifer conditions and status of drought indicators.
3. Upcoming public events of possible interest.

4. Review of Status Report Update – at directors’ discretion. **Pg. 13**
5. Update on projects and activities of individual teams.
6. Update on development activities over aquifer recharge and contributing zones.
7. Update on activities related to area roadway projects.
8. Update on GMA and regional water planning activities.
9. Update on the State Auditor’s Office audit.
10. Update on the State Office of Administrative Hearings proceedings for the Electro Purification LLC permit applications.
11. Update on Legislation

4. Award Presentations

- a. Recognition of the winners of the scholarships to the Edwards Aquifer Research and Data Center’s Aquatic Science Adventure Camp at Texas State University-San Marcos. **Pg. 22**
- b. Recognition of the winners of the District’s essay contest and the Kent S. Butler Memorial Groundwater Stewardship College Scholarship. **Pg. 28**

5. Discussion and Possible Action.

- a. Discussion and possible action related to amending the District’s Employee Policy Manual to include a maximum limit on sick leave accumulation. **NBU**

6. Directors’ Reports. *(Note: Directors’ comments under this item cannot address an agenda item posted elsewhere on this agenda and no substantive discussion among the Board Members or action will be allowed in this meeting.)*

Directors may report on their involvement in activities and dialogue that are of likely interest to the Board, in one or more of the following topical areas:

- Meetings and conferences attended or that will be attended;
- Board committee updates;
- Conversations with public officials, permittees, stakeholders, and other constituents;
- Commendations; and
- Issues or problems of concern.

7. Adjournment.

Please note: This agenda and available related documentation, if any, have been posted on the District website, www.bseacd.org. If you have a special interest in a particular item on this agenda and would like any additional documentation that may be developed for Board consideration, please let staff know at least 24 hours in advance of the Board Meeting so that we can have those copies made for you.

The Barton Springs/Edwards Aquifer Conservation District is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the District office at 512-282-8441 at least 24 hours in advance if accommodation is needed.

Item 1

Call to Order

Item 2

Citizen Communications

Item 3

Routine Business

a. Consent Agenda

(Note: These items may be considered and approved as one motion. Directors or citizens may request any consent item be removed from the consent agenda, for consideration and possible approval as a separate item of Regular Business on this agenda.)

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- 2. Approval of minutes of the Board's April 25, 2019, Regular Meeting.**
- 3. Approval of amending the contract for Holland Groundwater Management Consultants LLC to add an additional \$9,000.**
- 4. Approval of the Board meeting schedule for June, July, and August 2019.**

**BSEACD Board of Directors
Regular Meeting Schedule
June, July, and August 2019**

JUNE 13

- Review and approval of response to the State Auditor's Report.

JUNE 27

- Draft FY 2020 preliminary annual budget and fee schedule and setting a public hearing.

JULY 11

- Public Hearing on the proposed FY 2020 fee schedule and annual budget.
- Approval of FY 2020 fee schedule and annual budget.
- Approval of conditional renewal of annual Production Permits for FY 2020 contingent on compliance with District rules and renewal requirements.

JULY 25

- Schedule only if needed.

JULY 29

- Needmore Hearing

AUGUST 15

- Cancel August 8 and August 22 meetings.

Item 3

Routine Business

- b. General Manager's Report.** *(Note: Topics discussed in the General Manager's Report are intended for general administrative and operational information-transfer purposes. The Directors will not take any action unless the topic is specifically listed elsewhere in this agenda.)*

Topics

- 1. Personnel matters.**
- 2. Aquifer conditions and status of drought indicators.**
- 3. Upcoming public events of possible interest.**
- 4. Review of Status Report Update – at directors' discretion.**
- 5. Update on projects and activities of individual teams.**
- 6. Update on development activities over aquifer recharge and contributing zones.**
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- 9. Update on the State Auditor's Office audit.**
- 10. Update on the State Office of Administrative Hearings proceedings for the Electro Purification LLC permit applications.**
- 11. Update on Legislation**

**STATUS REPORT UPDATE
FOR MAY 23, 2019 BOARD MEETING**

Summary of Significant Activities - Prepared by District Team Leaders

GENERAL MANAGEMENT TEAM

Staff: ARM
May 16, 2019

Meetings, Training, Presentations, and Conferences

Meetings: Creedmoor-Maha WSC, Maxwell WSC * Meeting with Integritek regarding District IT needs * Attendance at GMA 9 meeting * Meeting with Texas Department of Licenses and Registrations * **Presentations:** None * **Conferences:** Attended ASR for Texas Seminar. **Teleconference calls:** TAGD Legislative Committee * Kirk Holland regarding HCP implementation * City of Austin regarding HCP Interlocal Agreement * Dave Miller with Rural Community Assistance Program * Several calls with lobbyist * Staff retreat at Shields Ranch.

Ongoing Special Projects, Committees, and Workgroups

Meeting with Region K Water Planning Group * Continue internal discussions with attorney on EP and Needmore contested cases. * Responding to additional information request from the State Auditors Office * Casted vote for TAGD ballot on proposed legislative bills * Presented revised Employee Policy Manual to staff.

Routine Activities and Day-to-Day Operations

Provided general oversight of staff activities and oversight of day-to-day operations * Approved administrative documents * Prepared agendas and backup for April 11 and 25 and May 23 Board meetings * Prepared GM report and assigned tasks * Held two Planning team meetings * Served as liaison between Board and staff * Weekly meetings with Board President * Meetings with teams on the status of 2019 Incentive Projects * Consultation with Attorney on EP LLC and Needmore LLC permit applications and April 11, 25 and May 23 meeting agendas.

REGULATORY COMPLIANCE TEAM

Staff: VE, KBE, and ES
May 15, 2019

Electro Purification Production Permit

A SOAH hearing on the merits has been set for 9/19/19 to 9/27/19. An attempted mediation took place March 4, 2019 at the SOAH offices, but the parties did not resolve any issues. On 4/4/19 TESP and Hays County conducted a deposition with Ronald Bell of Goforth SUD. Staff is currently working on developing pre-filed testimony which is due on 6/12/19.

Needmore Water LLC Conversion to a Regular Permit

On April 10th, the District received the ALJ's response to the District's request for additional explanation and guidance regarding the previously issued proposal for decision (PFD) that was issued on 7/23/18. The April 10th decision describes that SOAH does not have jurisdiction to issue a PFD on whether the Board should issue the Needmore Permit. The ALJ did not weigh in on the uncontested portions of the permit. The ALJ's previous 7/23/18 Proposal for Decision was limited to a few specific contested issues (Needmore's eligibility for a Temporary Permit) and her decision on those contested issues remains in effect. The District has scheduled a Public Hearing for July 29, 2019 at 4PM at Buda City Hall Council Chambers (405 Loop St, Buda, TX 78610).

SH 45 SW/ Mopac Intersections Roadway Projects

SH 45 Community Jubilee for 5/18/19 is canceled due to the weather. The roadway is scheduled to open in late May or early June.

Database Development Intera Contract

Intera and staff are working through several workflow processes and finalizing the last workflow modules. The next step will be for Intera to provide staff with a beta version for testing this summer.

Other Project Efforts/ Planning Discussions

- Coordination with City of Austin on protocols for Barton Springs Risk Management Zone.
- Coordination with Texas Department of Licensing and Registration (TDLR) on updating the interagency variance agreements for well construction.
- Internal coordination on preparation and planning for Annual Reports including Management Plan Annual Report & USFWS HCP Annual Report. (General Management Team/ Regulatory Compliance Team)
- Internal coordination on preparation and planning for Official Audit of from State Auditor's Office. (General Management Team / Regulatory Compliance Team)
- Preparation and planning for pre-filed testimony.
- Review of proposed legislative bills.

Permits Authorized by General Manager

Staff received the following applications that are currently under review for authorization by the General Manager:

- TXI Operations LP for a new Trinity well 1,950,000 gpy for the purpose of commercial (office bldg. < 20 persons) and industrial use (concrete mixing plant – no quarrying).
- Exempt/ Limited Production Permits – five permit applications are currently in review.
- Plugging/ Capping – three well sites are currently in review and may require plugging applications.

Drought Compliance – May 1st is the water conservation period where voluntary 10% curtailments are in effect.

AQUIFER SCIENCE TEAM

Staff: BAS, BH, and JC

May 17, 2019

Central Hays County Groundwater Evaluation - Well and Hydrogeology Characterization

Aquifer Science staff are continuing to work on enhancing the monitor well network in the EP area and are continuing to collect water-level and water-quality data from wells in the area.

Antioch Cave - Onion Creek Recharge Enhancement Project

Antioch Cave is recharging a considerable amount of water due to above average rainfall in April and an even greater amount of rainfall in the first half of May. Aquifer Science staff have taken advantage of the flow in Onion Creek to better quantify the amount of recharge going into Antioch Cave.

Alternative Water Supplies (ASR and Desalination)

Ruby Ranch has completed Cycle 4 testing of injection of Edwards water into their Trinity well. Buda is expected to start drilling a Trinity well in the summer or fall of 2019 for their ASR project.

Drought and Water-Level Monitoring

With continued flow in the major creeks providing recharge to the Edwards Aquifer, water levels continue to rise. On 5/17/19, the Lovelady well had a level of 532.4 ft msl and is still rising. The water level in the Lovelady well is currently at its fourth highest level in the past 27 years. No data were available from the USGS website for Barton Springs due to flooding from recent heavy rains.

Presentations, Conferences, Reports, and Publications

Aquifer Science staff have finished three manuscripts that will be chapters in a Geological Society of America (GSA) Memoir on the Edwards Aquifer, which will likely be published in the fall of 2019.

Travis County ILA - Hydrogeologic Atlas of Western Travis County

District staff have continued to collect hydrogeologic data in Western Travis County such as water levels and geophysical logging. A monthly status report was prepared in early May 2019.

EDUCATION TEAM

Staff: RHG and JV
May 16, 2019

March Digital Advertising Campaign

In honor of Groundwater Awareness Week, Fix-A-Leak Week, and our many spring programs, we scheduled a general awareness ad to help reach residents of the District. The ads were hyperlinked to our home page.

Metrics and click rates:

March Digital Advertising Campaign		
News Outlet	Ad Duration	Number of Impressions or Page Views
Hays Free Press	30 days	637,117
Texas State University Star	14 days	30,007
San Marcos Corridor News	18 days	101,908
Community Impact-SW Austin	25 days	19,890
Community Impact-San Marcos, Kyle, Buda	25 days	73,682

Well Water Checkup – April 17

Each year as a service to our well owners we host a free Well Water Checkup. This year, 47 well owners brought in water samples to be screened for bacteria, nitrate/nitrite, pH, and total dissolved solids (TDS). Of the 47 well water samples, 20 tested positive for total coliform bacteria and 3 of those samples tested positive for fecal coliform (E. coli) bacteria. Nitrate results ranged from 0 to 4 parts per million (ppm), but all were below the maximum concentration of 10 ppm deemed acceptable for drinking water by the EPA. Nitrite results ranged from 0 to 0.15 ppm and were all below the EPA standard of 1 ppm. All participating well owners have received their results letters.

Travis County Groundwater Study

Staff revisited selected well sites (25 total) for a Spring water level snapshot. This data, combined with Fall and Winter water level measurements, will provide information about water level fluctuations in the Middle and Lower Trinity Aquifers in the study area. The pump was pulled and a geophysical log was run for the St. Stephens well near 360. This will be a new monitor site for the SW Travis Co. area. Staff met with teachers and students to share information about the monitor well and discuss aquifer dynamics.

School Field Trips

- **Kealing Middle School**, 18 students: Watershed Detectives/Whirlpool Cave Trip
- **Austin Waldorf School**, 30 sixth graders: Whirlpool Cave Trip
- **St. Stephens Episcopal School**, students and teachers: Geophysical well logging and monitoring well discussions
- **Small Middle School**, 120 seventh graders: Tour D'Tap Water Source Investigation at the Wildflower Center.
- **Harmony Science Academy**, 84 sixth graders: Tour D'Tap Water Source Investigation at the Wildflower Center.

Aquatic Science Adventure Camp Scholarship Program

The District received 34 applications from 14 different schools. In collaboration with the permittee's conservation credits, we were able to offer 20 scholarships. The winner ceremony is scheduled for the May 23 Board meeting. *This year's sponsors include the City of Austin, Texas Lehigh Cement Company, Centex, Creedmoor-Maha WSC, Goforth SUD, and Slaughter Creek Acres WSC.*

Kent Butler Memorial Groundwater Stewardship Scholarship Essay Contest

The District received 16 applications and essays from 8 different high schools. The winner ceremony is scheduled for the May 23 Board meeting.

Other meetings and activities:

- **Cave Sim:** Austin Water Utility has appropriated funds to build an Austin version of the CaveSim trailer. While the AWU will fund the trailer, they'll need help staffing, coordinating, and planning the trailer. The District is a main collaborator on the project.
- **SH45 educational signs for mixed use path:** Signs are finalized and installed.
- **Barton Springs University:** The event was again cancelled due to rain.
- **A memorial donation** to Texas Cave Management was made in honor of William Russell.
- **G2G:** Registration launched, teachers already signing up, Day 3 will be at City of Sunset Valley—new facilities basically done.
- **Water Conservation Period:** The May-Sept Water Conservation Period was announced through a Press Release and eNews article.

Internet Traffic Report - Page views and visits to the District Website

From April 1 to May 16, the District website had 4,379 total page views by 3,356 unique sessions. Top sites in order of number of views are the home page (985), Kinder Morgan Pipeline (324), Maps (169), Staff (153), and EP Production Application Permit Notice (132). The District Facebook page now has 791 likes 'Likes' and responses to posts have been very positive. The most popular FB posts were Groundwater to the Gulf teacher training (1,300), Well Water Checkup results (287), and Earth Day announcement (161).

ADMINISTRATION TEAM

Staff: SD, TR, and DW
May 17, 2019

Accounts Receivable

May monthly billings were mailed out on April 12 (due on May 5th and late on May 16th). June monthly and 4th Quarter billings were mailed out on May 16th (due on June 5th and late on June 16th).

Budgets

FY 2019 Budget Revision 2 is in process.

FY 2020 Draft Preliminary Budget is in process.

Fee Schedule - Excess Pumpage Fee Calculation

A proposal with different options (volume vs percentage) had been submitted to the General Manager for further discussion.

Financial Reporting – Website

Transparency Star-related. Most current, available financial reports are to be posted. Balance Sheet, Profit and Loss Statements, and Check Registers through March 2019 have been posted on the District website. May will be posted next week.

Southwest Travis County ILA Project

Tracking expenses and in-kind services through August 31st. Current spreadsheets contain up-to-date labor and expenses.

State Auditor's Office (SAO) Audit

The document requests are mostly administrative/financial, so the bulk of this project so far has been directed towards administration. Currently waiting on draft report.

The Administration Team typically has repetitive monthly tasks e.g. monthly bank reconciliations, daily phone answering, monthly adjusting journal entries, contract/grant/and project tracking, monthly meter reading reporting; etc. These types of tasks are not listed here because they are so repetitive. Administration status reports are generally much smaller than the other teams as we list only the extraordinary tasks.

UPCOMING DATES OF INTEREST

- May 27: Memorial Day – Office Closed
- June 4 and 5: TAGD Regular Business Meeting
- June 12 and 13: Groundwater to the Gulf
- June 12 and 13: American Groundwater Trust/Texas Aquifer Conference, Austin
- June 17: GMA 9 Meeting, Boerne
- June 19-21: TWCA Mid-Year Conference, Galveston

Item 4

Award Presentations

- a. Recognition of the winners of the scholarships to the Edwards Aquifer Research and Data Center's Aquatic Science Adventure Camp at Texas State University-San Marcos.**
- b. Recognition of the winners of the District's essay contest and the Kent S. Butler Memorial Groundwater Stewardship College Scholarship.**



**Barton Springs
Edwards Aquifer**
CONSERVATION DISTRICT

MEMORANDUM

Date: 5/16/2019
From: Education and Outreach Team
Re: Camp Scholarship Winners

The District, with generous support from City of Austin, Texas Lehigh Cement Company, Centex, Creedmoor-Maha WSC, Goforth SUD, and Slaughter Creek Acres, is able to offer 20 scholarships to the Aquatic Science Adventure Camp.

In total the District received 35 scholarship applications from 14 different schools. The Board selected the following applicants to win scholarships:

Selected Overnight Camp Applicants (\$599 scholarship)

Ivy	Baker	11	O'Henry Middle School
Mikayla Ann	Berg	11	Buda Elementary
Elena	Castro	10	Fuentes
Indie	Cleveland	9	Tobias Elementary
Pablo	Del Reigo	9	Mathews Elementary
Juliet	Fahnert	9	Austin Discovery School
Astrid	Henschel	13	O'Henry Middle School
Keegan	Holland	9	Barton Hills Elementary
Jamie	Jarratt	11	O'Henry Middle School
Ayden	Jenray	10	Carpenter Hill Elementary
Sydney	Piper	13	Lamar Middle School
Emma	Sanchez	12	San Marcos Academy
Joseph	Williams	14	Stephen F. Austin

Selected Day Camp Applicants (\$349 scholarship)

Chris	Allred	10	Kyle Elementary
Leora Mae	Creel	10	Homeschool
Penelope	Johnson	11	Austin Discovery School
Nadia	Martinez	10	Carpenter Hill Elementary
Viviana	Martinez	10	Carpenter Hill Elementary
Lily	McGlothlin	10	Mendez Elementary
Piper	Norfolk	10	Austin Discovery School

David Masind MANSCHER

Barton Springs, often known as "the Crown Jewel of Austin" like most gems it begins below ground in the Edwards Aquifer. Barton Springs is 85% Aquifer recharge, it's also the habitat for the unique and federally endangered species *Eurycea sosorum*, the Barton Springs Salamander. I want to go to this Camp because recently hydrologists have been warning about diminishing water quality, waste, and nitrate concentration in Barton Springs that has been turning the blue water to a murky brown, all the algae in the pool will some day cause the pool to close permanently. I want people of the future to be able to enjoy this beautiful spring, this is why I want to go to your summer camp, so I can learn how to properly do my part to keep Austin's Crown Jewel shining.



Hi, My name is Ayden Jenray and I would like to be a part of the aquatic science adventure camp. When I grow up I would like to be the first human on Mars and study signs of life. I would like to join the aquatic camp because when I get on Mars and find an aquifer I will need to know about aquifers on Earth so I can do the same research on Mars. Starting research and learning early is an amazing way to remember hard things because my mind is open for more things.

For example, your water science program can teach me how to carefully examine and study different types of water and water minerals and other components for the water that I might find on Mars. Since water is biology and a big part of life it is very possible that there is life on Mars.

I will also be interested in learning about the different species living in the aquifer. The many plants, animals and fish that live in and around the water and how to save the endangered species. One of the coolest things about water is how animals can breathe under water and that the moon can control the tides of water.

I love water and all the interesting things about it. My favorite things to do in the ocean at Port Aransas is to hand fish for the different kinds of crabs. Most of them are in the hermit crab family and they have really cool shells and different colors. We feed and study them overnight and release them the next morning. When we watch them, they just move all over, stepping on each other then burying into the sand. They love to climb up sticks and rocks. I wonder what animals live in the aquifer.

I hope you consider me for a scholarship for your camp this summer.

Thank you,

Ayden

Ayden Jenray

Jenray

Mars/future





you!!

3/18/19

Salamander!!

Jamie Jarratt

me: 512-560-3820

mom: 512-648-3920

dad: 512-644-6671



fun fact:

Salamanders

do not need

eyes because

they live in

such a dark

place if they

had eyes

they still

wouldn't

be able to

see!!

Hi, my name is Jamie Jarratt. I would love to go to this camp because I will learn how to take care of the earth. I also want to attend this camp because it is super fun to do all the activities you'll have planned for us. My two favorites are scuba diving and the glass bottom boat. I love meeting new people and making new friends at camp. I hope to learn how to take care of the Edwards Aquifer and also learn more about it overall. I also hope to learn about a BUNCH of awesome animals and what they eat and where they live and also to see them for myself!! I know that the Edwards Aquifer is so important to Texas because, well that's how we get our water after all. I LOVE science!!



Shrimp

fun fact:

shrimp

have an

exoskeleton

which is

a bone on

the out-

side of their

body!!

It's my favorite subject in school. I love to learn about how the earth works. You'll take science and make it SUPER fun! This camp brings out my creative thinking because of all the crafts and quizzes we do. That is why I hope that you will give me this scholarship so I can enjoy my time at camp!!!

MOM: 512-648-3920

DAD: 512-644-6671

My favorite Subject is Science and my favorite part of Science is learning about water and the aquatic Science adventure camp has both, Canoeing, Science experiments, and Scuba diving, has Science, and Water Combined, my name is Juliet Fahnert and I'm passionate about getting into the aquatic Science adventure camp, recently at my school third to fourth grade did a project studying austin blind and jollyville plateau Salamanders third to fourth grade studied their extinction, one reason why I enjoyed doing the Salamander project is because, the Science included and learning about a different species was interesting, and I just loved the Science involved in this project. I'm not completely sure if what I'm about to say is completely true but, I think that my teacher choose me out of my whole class is because saw real potential in me and saw my love for water and Science that's my opinion I hope this essay has inspired you to allow me to join your aquatic Science adventure camp Bye!

Sincerely, Juliet Fahnert

P.S. I ♥ Science



**Barton Springs
Edwards Aquifer**
CONSERVATION DISTRICT

KENT S. BUTLER MEMORIAL GROUNDWATER STEWARDSHIP SCHOLARSHIP

APPLICATION FORM

Application Deadline: March 26, 2019

Scholarship Amount: \$2,500

Name of Applicant: Emma Cook Applicant 13

Home Mailing Address: [Redacted]

City, State, Zip: Buda, TX 78610

Home Phone: [Redacted] Email: [Redacted]

Name of Parent(s) or Legal Guardian(s): Dana ~~Chapman~~ Chapman

Mailing Address (if different than above): N/A

Parent's Work Phone and Email: [Redacted], [Redacted]

Applicant's High School: HAYS HS School District: HAYS

Expected Graduation Date: 6/2019 OR Expected date of G.E.D. _____

How did you hear about the scholarship program? PREVIOUS WINNER

Scholarship Application Checklist (please mark that you have included all 5 elements):

<input checked="" type="checkbox"/>	Completed Scholarship Application Form
<input checked="" type="checkbox"/>	Statement of Purpose – This document should be no more than one typed page and should discuss the applicant's interest and reasons for applying. DO NOT include your name on this page, but DO include the title of your essay
<input checked="" type="checkbox"/>	High School Transcript – Provide an official copy of your transcript or documentation regarding the intent to take the GED or copy of GED certificate
<input checked="" type="checkbox"/>	Groundwater Essay – Essays must discuss general groundwater issues that may include, but are not limited to, non-point source pollution, pollution prevention, water conservation, or hydrogeology.
<input checked="" type="checkbox"/>	Bibliography – Please cite your sources.

Please staple your statement of purpose, high school transcript, and essay to this application and mail or hand deliver documents to Scholarship Contest, BSEACD, 1124 Regal Row, Austin, TX 78748. Application packet must be received by 5:00 p.m. on Tuesday, March 26, 2019.

I have read and agree to abide by the Rules of the Barton Springs/Edwards Aquifer Conservation District Scholarship Contest. In addition, I grant permission to the BSEACD to use part or all of my essay if it is a winner in any manner deemed appropriate by the District, which may include, but is not limited to, publication of the entire essay.

Student Signature [Signature] Date 3/25/19

Parent or Guardian Signature [Signature] Date 3/25/19

12/13

“Expanding the Clean Water Act to Better Protect Groundwater Resources”

Statement of Purpose

I am a graduating senior in high school. While I have received scholarships from the college that I plan to attend, they are insufficient to cover the cost of a college education, especially considering that my family has 5 children that will soon be attending college. I am taking AP Environmental Science, and the class has peaked my interest in environmental action. Currently, I intend to become a lawyer, and so a focus on groundwater litigation was of significant interest to me. Thank you for this opportunity.

Expanding the Clean Water Act to Better Protect Groundwater Resources

Over 115 million people in the United States rely on groundwater for drinking water (Mahler and Campbell). Despite the prevalent use of groundwater, it receives next to no legal or legislative protections. Major water protection legislation tends to focus on moving water, such as the Rivers and Harbors Appropriation Act of 1899, while other water legislation is concerned with surface water writ large, like the Compensatory Mitigation Rule issued by the EPA in 2008. Surprisingly, even the most comprehensive water protection in the United States – the Clean Water Act – does not protect groundwater because they define protected water sources under the Act as “navigable waters” (Fabricant and Morello). With over one-third of the American population dependent on groundwater, it is imperative to analyze the multiple pollutants invading this natural resource, and how we can resolve these problems. Ultimately, the best method to combatting the contamination of our water supply will be to rely on existing legislative frameworks and expand them to include groundwater reservoirs: namely, the Clean Water Act and the National Environmental Policy Act.

Groundwater contamination typically occurs when man-made products enter topsoil and slowly descend to the water table. This method of pollution can be caused by gasoline spills, septic systems, or uncontrolled waste (“Groundwater Contamination”). However, there are less well-known and more insidious methods of groundwater pollution. Human activities like pumping and irrigation have changed groundwater flows (Mahler and Campbell), making them more susceptible to above-ground contaminants by moving shallow groundwater deeper into aquifers. This has led to more than one in five groundwater wells containing at least one contaminant – commonly nitrate, pesticides, and chemicals from the surface – at a level harmful to humans (DeSimone, McMahon, and Rosen).

There are currently laws that regulate hazardous wastes that may leach into groundwater from the surface, like the Resource Conservation and Recovery Act. However, there are no laws that protect groundwater waste dumping, which forces all forms of enforcement surrounding groundwater contamination to be centered on either surface-level waste making its way into groundwater or groundwater contamination spilling over into surface water. A lack of guidelines and specificity have led to a lack of enforcement surrounding groundwater contamination. This is exemplified in an Environmental Integrity Project report from January 17 of 2019 that reported massive violations of the “Coal Ash Rule” that went unreported because it wasn’t required. The Obama administration created the Coal Ash Rule to issue mandates that were intended to ensure that coal ash was properly disposed of (“Disposal of Coal”). In accordance with the rule, the EIP conducted on-site groundwater monitoring for 16 coal-fired power plants in Texas and found that groundwater under every plant was contaminated with carcinogens linked to coal ash. According to the rule, these power plants are required to conduct testing of groundwater and ensure that it falls within limits set by the Coal Ash Rule, however, companies are in charge of conducting their own tests and are not penalized if they fail to report the results. The current process requires additional testing to ensure that there are elevated levels of contaminants. EPA rules are also unclear about what happens to plants found to be in violation – after the publication of the non-profit’s report, the executive vice president of the Lower Colorado River Authority commented that, “EPA rules do not require LCRA to take further action,” and EIP attorney Russ stated that, “The process laid out in the federal coal ash rule is not complete,” (Collier). Independently, the report also found that almost none of the plants were properly lined to prevent leakage – another violation of the Coal Ash Rule with no clear method to ensure compliance. The Coal Ash Rule is

just one example of the difficulties current legislation has with identifying and enforcing groundwater contamination.

There are a variety of court cases surrounding the Clean Water Act and its applications to groundwater. "Navigable waters" in the Act are defined as "waters of the United States", and the precise definition of the term has been the subject of intense litigation. Surprisingly, most courts assume that groundwater is not under the definition, and the legal battles have shifted to determining if contaminants that enter navigable waters from groundwater are covered under the CWA. For instance, in *Hawai'i Wildlife Fund v. County of Maui*, the Ninth Circuit determined that the Clean Water Act applies to pollutants that are indirectly discharged into a "water of the United States" (Dowell). Importantly, the court "assumed without deciding that groundwater was neither a point source discharge, nor a water of the United States" (Dowell) and determined that the Clean Water Act is only applicable if groundwater contamination makes its way into "navigable water". Similarly, in *Upstate Forever v. Kinder Morgan Energy Partners, L.P.*, the Fourth Circuit determined that, "a plaintiff must allege a direct hydrological connection between ground water and navigable waters to state a claim under the CWA" (Chung and Dawson), upholding the Ninth Circuit's decision that the Clean Water act is not applicable for groundwater contamination. Additionally, *Sierra Club v. Va. Electric and Power Co.* determined that landfills, lagoons, and other passive waterways such as groundwater are not point sources (and therefore not covered under the Clean Water Act) because they are not, "discernable, confined and discrete conveyances" (Chung and Dawson). Sixth Circuit rulings in both *Kentucky Waterways Alliance v. Kentucky Utilities Company* and *Tennessee Clean Water Network v. Tennessee Valley Authority* have diverged on whether pollution entering waterways from groundwater is covered under the Clean Water Act, but both have upheld that groundwater on its own is not a "navigable

water” covered under the CWA. In early 2019, Supreme Court decided to take up the Hawai’i Wildlife Fund v. County of Maui case to determine if pollutants conveyed from groundwater to navigable waters are covered under the Clean Water Act, but their adjudication will ultimately still rest on the firm assumption that groundwater is not navigable (Soronen).

The Clean Water Act is the largest and most comprehensive water protection legislation in the United States. Because it is well-established, the best way to address problems with groundwater contamination detection and ensure the enforcement of regulations is to amend the Clean Water Act to include groundwater and utilize National Environmental Policy Act sampling standards to ensure compliance. First, through Congressional action, the Clean Water Act’s definition of “waters of the United States” ought to be amended to include groundwater. Through this amendment, groundwater will be considered under the legal framework that the CWA has already established. Second, unlike moving water systems, groundwater only has one unified method for sampling for contaminants: EPA Source Water Assessment Steps. This method is regularly utilized in accordance with the National Environmental Policy Act (Brinckerhoff et al). Because of this, the NEPA offers the best metric of enforcement over groundwater regulations that could easily be applied to the Clean Water Act.

Status quo groundwater protections are insufficient to protect a growing source of drinking water in the United States. Without a new method, the number of wells with dangerous amounts of contaminants will continue to increase, and, as the number of Americans dependent on groundwater, increases, this problem will begin to affect more people than ever before. Because of this, the Clean Water Act must be amended to extend legal protections to groundwater.

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**Barton Springs
Edwards Aquifer**
CONSERVATION DISTRICT

KENT S. BUTLER MEMORIAL GROUNDWATER STEWARDSHIP SCHOLARSHIP

APPLICATION FORM

Application Deadline: March 26, 2019

Scholarship Amount: \$2,500

App 4

Name of Applicant: Ian McIntosh

Home Mailing Address: [REDACTED]

City, State, Zip: Austin, Texas 78731

Home Phone: [REDACTED] Email: [REDACTED]

Name of Parent(s) or Legal Guardian(s): Jim and JoAnne McIntosh

Mailing Address (if different than above): _____

Parent's Work Phone and Email: [REDACTED]

Applicant's High School: Liberal Arts & Science Academy School District: Austin ISD

Expected Graduation Date: May 2019 OR Expected date of G.E.D. _____

How did you hear about the scholarship program? High School Counselor

Scholarship Application Checklist (please mark that you have included all 5 elements):

X	Completed Scholarship Application Form
X	Statement of Purpose – This document should be no more than one typed page and should discuss the applicant's interest and reasons for applying. DO NOT include your name on this page, but DO include the title of your essay
X	High School Transcript – Provide an official copy of your transcript or documentation regarding the intent to take the GED or copy of GED certificate
X	Groundwater Essay – Essays must discuss general groundwater issues that may include, but are not limited to, non-point source pollution, pollution prevention, water conservation, or hydrogeology.
X	Bibliography – Please cite your sources

Please staple your statement of purpose, high school transcript, and essay to this application and mail or hand deliver documents to Scholarship Contest, BSEACD, 1124 Regal Row, Austin, TX 78748. Application packet must be received by 5:00 p.m. on Tuesday, March 26, 2019.

I have read and agree to abide by the Rules of the Barton Springs/Edwards Aquifer Conservation District Scholarship Contest. In addition, I grant permission to the BSEACD to use part or all of my essay if it is a winner in any manner deemed appropriate by the District, which may include, but is not limited to, publication of the entire essay.

Student Signature [Signature] Date 3-26-19

Parent or Guardian Signature [Signature] Date 3/26/19

STATEMENT OF PURPOSE

I would like to earn scholarship money to help me to be able to afford college. I worked with Dr. Suzanne Pierce at the Pixel Profundo booth at the 2018 Annual Meeting of the American Association for the Advancement of Science, and she instilled in me a desire to work to protect our aquifers and the creatures that live in it. We all need to work together if we want to continue to enjoy the fruits of our beautiful water system, such as Barton Springs. I would like to continue to teach others and to learn about our aquifers and the creatures who live in it which are the subject of my essay, The Impact of Water on the Arthropods of Bull Creek.

GROUNDWATER ESSAY

The Impact of Water on the Arthropods of Bull Creek

In one of my high school classes, I was tasked with doing a biodiversity project. I decided to go in a different direction than most of the class by choosing to study arthropods over birds and woody plants. I wanted to determine the impact of water conditions on the ecosystem of arthropods, especially as you get closer to water. In Austin, the condition of the creek ecosystems are conditioned on the health of the groundwater systems. Not only did I find what I believed to be interesting results, but I also had a lot of fun going out to Bull Creek Park every Sunday to catch bugs and collect data.

My data showed a trend towards the distance from water affecting arthropod abundance. There was a minor difference in the value of average morphospecies caught per each distance, with values trended toward illustrating the distance from a water source on having an effect on the dispersal of arthropods, with the values at the far transects being less than those at the medium and close distance.

There are number of factors that affect the abundance of arthropods besides the distance to a standing water source. How the different organisms are able to get access to water is a big factor. Many organisms have developed adaptations in order to take in water without actually drinking it. Furthermore, water can be overabundant in some situations, or under abundant and arthropods have evolved to deal with this factor. (Edney 1977). Human interaction and control of the environment has a wide effect on the distribution of arthropods in a given area. A study of odonata species in South Africa illustrated the effects of humans on the order, with with odonata being very susceptible to the effects of human activity. (Samways 1996). Furthermore, a similar study on RIFA ants was conducted in California analyzing the abiotic factors on the distribution

on the insects. Factors such as elevation and distance to human disturbance were more of a factor on the ants, than distance to water. Argentine ants were more common in areas with more human contact, and in lower elevations, however factors such as distance from water were less important in predicting where the ants were. (Human 1998). This illustrates the view that distance to water only plays a minor role on the effects of distribution of arthropods in a given area, and any difference may not be significant in a numerical sense.

Improvements to our study would allow for clearer implications towards the effects of a water source on arthropod distribution. A larger data pool would decrease the chance of the difference between bug distribution to be left up to other biotic and abiotic factors, such as elevation and human activity. All transects had varying levels of human activity, weather, and elevation, so a larger data pool would help negate these other effects. Furthermore, Bull Creek District Park, the studied area, was quite narrow, so differences between distance from a water source were not that great. If transects were not so close together, then a greater variation between the number of arthropods found could be found.

Sally C. Levings and Donald M. Windsor researched the effect ground water moisture has on litter arthropods in Barro Colorado Island, Panama. The study was conducted in the dry season in artificially watered areas, compared to that of unmanipulated, dryer patches of ground. Levings and Windsor's data illustrated ants were more likely to migrate to wetter patches of ground, with there also being more arthropods collected in wetter areas than that of the drier ones. They concluded that in that more arthropods in general were more likely to migrate and be found in wetter patches of ground, and moisture of the ground plays a role in determining litter arthropod abundance. (Levings). For this reason, more arthropods could be expected to be found near water in Bull Creek because arthropods are more likely to migrate to wetter areas.

A similar study to the previously mentioned was conducted by researchers for Texas A&M University's Department of Entomology, comparing geological factors that affect red imported fire ant (RIFA) distribution and abundance in a Post Oak Savanna environment. Using many unconventional technologies, including aerial photography, videography, geographic information systems, and real-time differential global positioning, in order to map out the distribution and abundance of RIFA in the area. After collecting field data such as size of mounds, type of vegetation and dirt within the area, as well as genetic samples of the ants in order to get a reasonable idea of the geological factors in determining RIFA abundance and distribution. The researchers came to the conclusion that patch size, type, interference, and distance from water all affect RIFA community distribution and abundance. (Coulson). This supports the notion that the distance from water affects arthropod communities.

The book, *Food Webs at the Landscape Level*, Chapter 14, entitled Trophic Flows From Water to Land: Marine Input Affects Food Webs of Islands and Coastal Ecosystems Worldwide, discusses the role and relationship that organisms have between themselves, as well as the environment. The novel uses a multitude of scientific papers and studies to bolster its claims. This book presents data regarding the abundance of arthropods in and away from a large body of water. It illustrates the notion that arthropods are more abundant closer to larger bodies of water. For example, orb web spiders are six times more dense in regions near the coast of Baja California, instead of further inland where they are less common. (Power). This study also does support our hypothesis stating that arthropods and similar insects are affected by their distance to a standing water source.

This class research project inspired me to seek out other ways to learn about the animals and insects of the ecosystems of our central Texas creeks and streams. I was invited by Dr.

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Suzanne Pierce to represent Pixel Profundo at the 2018 Annual Meeting of the American Association for the Advancement of Science. Pixel Profundo creates augmented reality education projects that combine augmented reality and 3D animations of animals and endangered species. I enjoyed presenting and explaining cutting edge technology to both children and adults. In college and beyond, I want to continue to learn and teach others about scientific themes critical to sustainable futures and natural systems.

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Item 5

Board Discussions and Possible Actions

- a. Discussion and possible action related amending the District's Employee Policy Manual to include a maximum limit on sick leave accumulation.**

Item 6

Director's Reports

Directors' Reports.

Directors may report on their involvement in activities and dialogue that are of likely interest to the Board, in one or more of the following topical areas:

- **Meetings and conferences attended or that will be attended;**
- **Committee formation and updates;**
- **Conversations with public officials, permittees, stakeholders, and other constituents;**
- **Commendations; and**
- **Issues or problems of concern.**

Item 7

Adjournment